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H.R. 12932

Senate Hearings

Before the Committee on Appropriations

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Fiscal Year 1979

95*th* CONGRESS, SECOND SESSION

H.R. 12932

Part 3 (Pages 1–1178)

DEPARTMENT OF AGRICULTURE
DEPARTMENT OF ENERGY
DEPARTMENT OF THE INTERIOR

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DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1979

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE

NINETY-FIFTH CONGRESS

SECOND SESSION

ON

H.R. 12932

AN ACT MAKING APPROPRIATIONS FOR THE DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1979, AND FOR OTHER PURPOSES

PART 3 (Pages 1–1178)

Department of Agriculture
Department of Energy
Department of the Interior

Printed for the use of the Committee on Appropriations

U.S. GOVERNMENT PRINTING OFFICE

38-172 O WASHINGTON : 1979

For sale by the Superintendent of Documents, U.S. Government Printing Office
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DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1979

TUESDAY, APRIL 25, 1978

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:25 a.m. in room 1114, Everett McKinley Dirksen Office Building, Hon. Ted Stevens presiding.

Present: Senators Stevens, Hatfield, and Young.

DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

STATEMENT OF JOAN DAVENPORT, ASSISTANT SECRETARY—ENERGY AND MINERALS

ACCOMPANIED BY:

JOHN D. MORGAN, JR., ACTING DIRECTOR
THOMAS A. HENRIE, CHIEF SCIENTIST
ROBERT L. MAROVELLI, ACTING ASSISTANT DIRECTOR—MINING
RALPH C. KIRBY, ASSISTANT DIRECTOR—METALLURGY
ALFRED WEISS, ASSISTANT DIRECTOR—PROGRAM DEVELOPMENT AND EVALUATION
ROBERT J. LAMB, CHIEF, DIVISION OF BUDGET
FRANCIS M. WILES, DIRECTOR OF BUDGET, OFFICE OF THE SECRETARY
WILL DARE, CHIEF, OFFICE OF ENVIRONMENTAL COORDINATION

OPENING REMARKS

Senator STEVENS. Good morning. The hearing this morning on the appropriation for the Bureau of Mines is to be chaired by Senator Hatfield. I thought I would take the occasion to drop by and ask some questions about Alaska activity—if you would be prepared to answer some questions on that.

FUNDING FOR ALASKA d-2 AND d-1 LANDS

I am most concerned with the level of the request for continuing the inventoring of the so-called d–2 and d–1 lands in Alaska. Is there money in this budget to continue that activity in Alaska?

Dr. MORGAN. There is money for all our general land examination work, sir, including the operation of the Juneau office, and what we do out of that office there. There is no specific item for d–2 land studies, per se. I understand we have 23 studies in progress, and most of these will be released in short order in reports prepared—some by our in-house people and some by contract people.

These studies were made possible by earlier congressional add-ons of $300,000 in fiscal years 1975 and 1976 and $600,000 in a supplemental appropriation in fiscal year 1977. They covered the Brooks Range, from the western end to the Canadian border; the general area of the upper Yukon and Tanana River; the Wrangle Mountains; part of the Seward Peninsula; and parts of the Central Alaska Range.

And we, sir, got your letter just yesterday, in which you requested preliminary reports on Alaskan field work in time for the hearing, and we're pulling as much together as we can, sir, to get it right to you.

Senator STEVENS. It is my understanding, in the zero base budgeting concept, that the ongoing program that would flow out of those add-ons that we made in the past has been discontinued this year. Is that right?

Dr. MORGAN. There is no specific request, sir, in fiscal year 1979 for d–2 lands, per se. It is lumped in our general land examination work, with whatever we would do in Alaska.

Senator STEVENS. Our original projection would have shown a funding sequence of $300,000, then $500,000, and this would be one of the peak years at $600,000.

Could you give us a statement for the record of what you could accomplish if we continued the congressional add-on for that activity for the Juneau office?

Ms. DAVENPORT. Certainly, Senator.

Dr. MORGAN. Yes, sir.

ALASKA OPERATIONS

Senator STEVENS. With regard to your general operations in Alaska, could you give me some idea what is planned in this budget?

Dr. MORGAN. Essentially, sir, our entire land assessment area is a level effort. In fiscal year 1978 in the Wilderness and Public Land Assessments, we had $3.6 million. We are asking for $3.4 million, which is slightly less, this year—the reason being the completion of studies in the Overthrust Belt in the United States. So that while the number is down a little bit, the work would be essentially a level effort.

In Alaska, we have a major field office under John Mulligan in Juneau. They have about 25 full-time people. And because of personnel ceilings, we have been very limited in our ability to hire more full-time Government people. Therefore, we have turned increasingly to the employment of outside contractors for land examination work.

This raises some very serious problems because of the potential for conflict of interest. I really do not think it is the best possible

way to examine lands where the Government has a very deep interest. With outside people, there is always a possibility that something is found and alerting others from the inside to stake claims, and things like that. It raises all kinds of problems.

Senator STEVENS. I would agree with that. I would hope that we would explore the possibilities of getting a ceiling that would reflect your needs to carry on that work.

There was one instance, as you know, that was very touchy, having to do with knowledge of a new discovery, in your work.

Dr. MORGAN. That is right, sir. We have taken every precaution we can. Where we think there is likely to be a leak, we have then proceeded immediately to put out a press release. But, unless funds are accompanied by an adequate number of personnel, then we are really put into a box on our site examinations.

Senator STEVENS. In that summary of d-2 needs, would you tell us how many people you would have to have to carry out that level of work at $600,000?

Dr. MORGAN. Yes, sir.

[The information follows:]

ALASKAN d-2 LANDS ASSESSMENTS

An increase of $600,000 for studies of Alaska d-2 lands would allow the Bureau to make important supplemental field studies in seven of the proposed national wildlife refuges and eight of the proposed national parks and preserves. These in-house studies would require an additional 15 positions.

Based on our current estimate of the highest priority areas, the following areas would be assessed:

1. Togiak National Wildlife Refuge.
2. Arctic National Wildlife Refuge additions.
3. Kanuti National Wildlife Refuge.
4. Yukon Flats National Wildlife Refuge.
5. Nowitna National Wildlife Refuge.
6. Innoko National Wildlife Refuge.
7. Aniakchak National Monument.
8. Bering Land Bridge National Preserve.
9. Cape Krusenstern National Monument.
10. Gates of the Arctic National Park.
11. Katmai National Park additions.
12. Kobuk Valley National Park.
13. Noatak National Preserve.
14. Yukon Charley National Rivers.
15. Alaska Marine Resources National Wildlife Refuges.

These studies would add significantly to our current mineral information base, which is quite limited, and would provide Congress with more comprehensive information of d-2 lands mineral potential. This information would be available as open file and published reports.

TRANSFER TO DEPARTMENT OF ENERGY

Senator STEVENS. As I mentioned earlier, Senator Hatfield will be here in a few minutes to hear your opening statements and conduct the remainder of the hearing. Until he arrives, let's look into the transfer of functions from the Bureau of Mines to the Department of Energy.

This is the first opportunity we have had, Ms. Davenport, to discuss the transfer of some of your functions from your 1978 budget to the DOE. As you know, I have tried to prevent part of that. I do not like the fractionization of the Bureau of Mines that

seems to have occurred. But what really has taken place in terms of dollars, functions, and personnel?

Ms. DAVENPORT. The total amount reflected in the budget is $67.7 million related to the transfer of personnel to the Department of Energy. Those personnel largely work in the area of our fossil fuel data system and also in our mine production research.

Senator STEVENS. I show a transfer on this chart that I have of $65 million.

Dr. MORGAN. There were some final adjustments in the numbers, sir, when we looked over the contracts and decided who had primary responsibility for what; but the official figure in the budget—taking into account everything, including fuels data gathering—is $67,770,000.

Senator STEVENS. And 348 positions?

Dr. MORGAN. It is 348, plus 28 on working funds, which totals 376.

IMPACT OF THE DOE TRANSFER

Senator STEVENS. Last year we discussed the possible effect of the Department of Energy transfer on the programs of the Bureau of Mines, specifically as it relates to personnel. Would you describe the steps you have taken to minimize the impact of losing 376 positions and $68 million?

Dr. MORGAN. While the Bureau transferred its responsibilities for energy productivity research and energy data gathering activities, it still retains responsibilities for a very broad and important mission. The Bureau still has a unique and vital role to play in addressing the Nation's minerals and materials needs. We have dealt with the transfer by first doing all we can to insure the success of the new agency and, at the same time, by concentrating on the important responsibilities that remain in the Bureau. We took the opportunity to reexamine our work in the environmental area. The fruit of that work was the creation of a new budget activity, Mining Environmental Research. Now the Bureau of Mines has been concerned with the environment since 1910, so this is not a new concern for us. But the DOE transfer did provide us with the stimulus to reexamine our efforts and highlight them in a way in which we might not have done in the past.

I might point out that the Bureau of Mines has evolved over the years in order to address the changing materials and minerals needs of this country. This evolution continues even today. For example, we need more knowledge to mine more safely and more efficiently, improved metallurgical processes to recover more minerals from lower-grade domestic ores, better data gathering on strategic and critical materials, and more knowledge about the Nation's minerals position and the mineral values of its Federal lands. The Bureau has a very important role to play. What we have been emphasizing is what still needs to be done, not what we may have lost as the result of shifting around organization charts.

Senator STEVENS. Have you got a memorandum of agreement or some sort of understanding between the Bureau and DOE?

Ms. DAVENPORT. Well, in the first area, the transfer of the fossil fuel information, those people are still physically located in the Bureau using the Bureau's computers. There has not been a prob-

lem, up to this point, of coordination because of that physical location. We will be reaching an understanding with the Department of Energy relating to that activity.

The activity which is more troublesome is the mining research, basically because many of the projects which the Bureau of Mines has carried out in the past were a combination of differing budget items. For example, we might fund a longwall miner which has some productivity and mining benefits associated with it, but as that piece of equipment was developed there could be a new methane sensor built into it, new technology for roof faulting—so, in those areas, it's sometimes difficult.

We have discussed with the Department of Energy the necessary interface between our responsibilities—remaining responsibilities—for health and safety research and their responsibilities for advancing mining equipment and productivity. I think Dr. Morgan could give a little greater detail in this discussion.

COAL MINING TECHNOLOGY TRANSFER

Senator STEVENS. Doctor, I am told that you had $70 million for advancing coal mining technology; only $60 million was transferred to DOE. What happened to the other $10 million?

Dr. MORGAN. That is roughly correct, sir. The split that was made by the Congress in Public Law 95-91 was that productivity research dealing with solid fuels was to go to DOE. Now that left health and safety research, and environmental research with the Bureau of Mines. Any mining system has to embody elements of all three. The system can't be 100 percent productive and have serious health and safety omissions, nor can it be 100 percent productive and have serious environmental effects. The system has to be designed to accomplish all three.

Therefore when we sorted out the work, many of the projects that the Bureau of Mines had launched under its earlier research work clearly embodied all three. So it was necessary to go over every major project and decide: Was it primarily productivity oriented? Or was it primarily environmentally oriented? Or was it primarily health and safety oriented?

If it was primarily health and safety oriented, it stayed in Bureau of Mines; if it was primarily environmental, it stayed in the Bureau of Mines; if it was primarily productivity, it went to DOE.

COORDINATION—DOE AND MSHA

Now, you inquired about the coordination. I would like assure you, sir, at this point, that we have very excellent relations with the Department of Energy for several reasons. One is that the productivity over in the Department of Energy comes under George Fumich. George Fumich had been in the Interior Department many years ago. He was the head of the Office of Coal Research in the 1960's up into the 1970's, and he worked very closely with the Bureau of Mines in those years when the Office of Coal Research had a relatively small budget and we provided technical backup to the OCR. So George Fumich knows our people, we know him, and are working very closely with him in his new responsibility at DOE. Actually, we transferred the mining engineers that George

Fumich has on his staff to him, and they are still in our building and in day-to-day contact with our people. We're still administering many of the contracts with our contract people.

Furthermore, in the field, we transferred part of our facility at Pittsburgh—the Bruceton Mining Research Station—to the Department of Energy. Yet, we maintain a very large complement of Bureau of Mines people at the Bureau of Mines portion of the same Bruceton field station. So in the field where DOE is now working on productivity research in Pittsburgh, our people are side-by-side and hand-in-hand, working together, and I really think we will keep this relationship going. There is more than enough work for everybody to do, with limited funds.

We have, I think, the identical relationship with MSHA, the new Mine Safety and Health Administration over in the Department of Labor because we have worked out there, with assistant Secretary Robert Lagather, the same kind of relationship.

On the data—back to the Department of Energy—Lincoln Moses, who is the head of the Energy Information Administration, and I are in very close touch; and in fact, the 125 or so data people are still in our building, still collecting the information on the same Bureau of Mines forms. We are still printing all the same fuels information in our Pittsburgh printing plant and distributing it. The only difference is that the masthead says "Department of Energy" instead of "Bureau of Mines."

We also have a close working relationship with the energy regulatory people, where Dave Bardin was working very closely with the Bureau in the recent coal strike, and so forth.

So I think, by the fortituous combination of where people are physically located and that they had worked together beforehand, that there are no real problems that I am aware of.

DEPARTMENT OF NATURAL RESOURCES PROPOSAL

Senator STEVENS. Under data collection and dissemination, $2.75 million was transferred to DOE. How did you determine that amount?

Dr. MORGAN. This was fairly easy to identify. We simply transferred our entire fuels data gathering activity which was the organization under our assistant director, fuels.

Senator STEVENS. Under the reorganization proposal that we understand is being reviewed in the Administration, Ms. Davenport—the so-called "DNR" proposal—what happens to the Bureau of Mines? Is it changed?

Ms. DAVENPORT. Senator, I have to plead ignorance to a certain extent, because at this point that decision is being made, of course, in the White House, and I probably know as much as anybody knows from public sources. There were early on some discussions of some minor changes in the Bureau of Mines. I don't think any of them are in the final proposal.

However, I would add that from the Interior Department's perspective, reviewing the fortunes, if you will, of the Bureau of Mines over the past decade, we are concerned that the Bureau has been successively chipped away at and we feel the Bureau needs to be put on an upgrade path to regain some of its former strength.

Senator STEVENS. I share that feeling.

The Geological Survey through its Mineral Information Systems and Resource Analysis apparently wants to develop a capability similar to what the Bureau already has. The Survey indicates it wants to assess mineral resources with respect to technological availability, economic availability, and alternative sources of supply.

We thought that was a function of the Bureau of Mines. Isn't that what your minerals availability system is doing already?

Dr. MORGAN. Yes, sir, but there has to be a close working relationship with the Geological Survey, which I believe exists. Under the scheme that we have devised, and we have a detailed memorandum of understanding signed off by the Director of the Geological Survey and the Director of the Bureau of Mines, the Geological Survey is responsible for so-called resource assessment.

I think we have to understand the technical distinction that often is lost sight of by nontechnical people between the resource and the reserve, where the reserve is the smaller quantity of the resource which is exploitable by current technology and at prices roughly in the current price range.

Senator STEVENS. What's the difference between your minerals availability system and their minerals information systems and resource analysis?

Dr. MORGAN. I would say, sir, that the difference is in the depth of engineering evaluation that is applied by the Bureau of Mines.

Let's just review for a moment the whole process, if I might. We need the topographic maps that are developed by the Geological Survey. We need the geologic maps which show the surface geology and the underground geology as far as they know it. Those are developed by the Survey.

We need the geochemical, geophysical, and geobotanical analyses that the Geological Survey is uniquely equipped to make.

Now when you have all of this geologic information, then you have to look at the engineering situation and the economic situation to decide if you have an economically mineable deposit.

In fact, to get at the reserve, you have to have more information than what you would get from the surface or from geological inferences. Preferably in order to define a reserve, you have to drill some holes. That's one of the problems that we have in Alaska. People just go around and look at the surface and get a few samples of rock—but we need far more detailed information to reach definitive conclusions as to the possible mineral content of areas of interest.

Senator STEVENS. Pardon me just a minute. [Pause.]

I thank you for your courtesy. I've got to go to another hearing.

Senator HATFIELD [presiding]. Dr. Morgan, would you give us a moment to sort of get ourselves adjusted?

Dr. MORGAN. Yes, sir.

Senator HATFIELD. We're in a relay program today. [Pause.]

PREPARED STATEMENT

Senator HATFIELD. Dr. Morgan, I wonder if now we could sort of shift gears and let me go my route.

Would you begin, please, with your written statement, which I understand you have not yet commented on or read. Is that correct?

Dr. MORGAN. That is correct, sir. We have a prepared statement of four or five pages, which we can cover, if you wish. We have abstracted it into a series of charts.

Senator HATFIELD. I would like to have you start from the beginning with the presentation of your statement. First, would you introduce those who have accompanied you here today, and then just please proceed to highlight or summarize your statement using charts or whatever material you wish to use.

[The statement follows:]

PREPARED STATEMENT OF DR. JOHN D. MORGAN, JR., ACTING DIRECTOR BUREAU OF MINES

Thank you for this opportunity to present for your consideration the Fiscal Year 1979 budget proposal for the Bureau of Mines.

As you know, the Bureau of Mines has served as the principal mineral science and technology arm of the Federal Government since its establishment in 1910. Over the years, the Congress has enacted many items of legislation which have extended and enhanced the Bureau's role in addressing the Nation's changing mineral and materials needs. For example, the Strategic and Critical Materials Stock Piling Act of 1946 authorized and directed the Bureau to make scientific, technologic, and economic investigations of mineral substances essential to the common defense or the industrial needs of the Nation. Later, the Wilderness Act of 1964 directed the Bureau, in cooperation with the Geological Survey, to determine mineral values of lands proposed for protection and preservation within the wilderness system. And recently, the Federal Mine Health and Safety Amendments Act of 1977 was enacted by Congress, containing provisions which reemphasize the important role of Bureau research in providing technological solutions to health and safety hazards involved in mining operations. Thus the mission of the Bureau of Mines has been a dynamic, evolving mandate; adjusted, enlarged, and refined to meet the needs of the day.

Over the years, Bureau-developed technology has helped to assure an abundance of minerals and materials. Today, the Bureau's mission seeks to ensure the continued viability of the domestic minerals and materials economy and the maintenance of an adequate minerals base, so that the Nation's economic, social, strategic, and environmental needs can be better served.

Let me briefly review the major objectives we are pursuing to accomplish our mission.

Bureau of Mines Objectives

Critical Minerals. Our metallurgy research programs seek to reduce the requirements for critical mineral commodities through conservation and substitution, and to increase minerals and metals recovery from primary and secondary domestic resources. Our work in this area will significantly improve the economic and technological availability of minerals by increasing available supplies and by improving the utilization of domestic primary and secondary resources. Progress in this area will also contribute to reducing vulnerability to foreign supply disruptions, to relieving domestic inflation, and to the easing of potential minerals shortages.

Health and Safety. As you know, our mining research programs seek to minimize the health and safety hazards of mining. Progress in this area of research will ultimately reduce the hazards in mining operations which lead to injuries and death of miners and will contribute to the stability and viability of the domestic mining community. The Bureau is continuing its technological developments to alleviate immediate health and safety problems, to provide support to the Mine Safety and Health Administration in developing its regulations, and to design inherently safe mining systems.

Environmental Impact. Our mining and metallurgy research programs also aim at minimizing the undesirable environmental conflicts associated with mining and mineral processing operations. Progress toward this goal is essential to improving the availability of minerals by lowering the environmental costs of mineral operations. We feel that it is imperative that environmentally sound mining, land reclamation, and mineral processing technologies be accelerated to support the Department's environmental responsibilities and to mitigate the environmental damage done by past mining and mineral processing activities.

Informed Decision-Making. Our minerals and materials supply and demand analysis capabilities seek to assure fully informed consideration of mineral issues and problems in policy development and in public and private sector decisionmaking. Our progress in achieving this goal will improve the quality of public and private actions affecting minerals availability, reduce the Nation's vulnerability to unexpected foreign supply disruptions, alleviate shortages of critical minerals, strengthen the minerals sector of the economy, and reduce environmental conflicts.

Mining and Mineral Processing Technology. The Bureau's mining and metallurgy research programs seek to increase the productivity and reduce the capital, labor, and energy requirements of mining and mineral processing. Our progress in this area will improve the economics and efficiency of mining and mineral processing operations and aid in converting present subeconomic resources into economic reserves. It will also reduce mineral costs, strengthen domestic supplies, and ease potential critical material shortages.

In order to pursue these goals, we are requesting the appropriation of $121,329,000 for fiscal year 1979. Let me briefly describe the major elements of our budget proposal.

Data Collection and Analysis - $15,327,000

The budget provides the current level of funding for activities used to collect, verify, analyze, and distribute technical and economic data on foreign and domestic non-fuel mineral supply and demand. The development, analysis, and interpretation of this data is needed for government and private policymaking at all levels, and for keeping the public informed about the Nation's mineral posture.

Metallurgy Research - $28,645,000

Our budget request includes a net increase of $840,000 for metallurgy research. Emphasis in fiscal year 1979 will continue on developing substitutes for, and new sources of, scarce or critical minerals; increasing recoveries from low-grade ores; reducing processing and energy costs in mineral recovery operations; developing non-polluting, energy-conserving metallurgical processing methods; and increasing the recovery and reuse of minerals from municipal, industrial, and other wastes. The additional funds requested for fiscal year 1979 would permit fundamental research on uranium extraction from low-grade ores, work on substitutes for asbestos, and basic research on the physical chemistry of metallurgical reactions.

Mining Research - $57,431,000

The budget estimate includes a net increase of $300,000 for mining research. A total of $50,451,000 is proposed for health and safety research focused on improving on-the-job protection for mine workers. A total of $6,980,000 is included for advancing metal and non-metal

mining technology to increase production, improve efficiency, promote resource conservation, and meet environmental standards. The additional funds are proposed for basic studies to improve in-situ mining techniques.

Mining Environmental Research - $14,616,000

Our budget request includes a net increase of $860,000 for mining environmental research. Thus research program is aimed at reducing critical mining environmental problems and minimizing the adverse environmental effects associated with the past, present, and future mineral extraction operations. The increased funds proposed for fiscal year 1979 would support research on predicting ground subsidence over abandoned mines and preventing its effects; minimizing ground vibration and air blast hazards from the use of conventional explosives; controlling problems associated with water during the mining process; and developing techniques for restoring previously mined lands.

Mined Land Demonstrations - No Funding Requested

Legislation authorizing Federal efforts to reclaim and restore land and water resources adversely affected by past mining has been extended as a result of passage of the Surface Mining Control and Reclamation Act of 1977. Because of provisions contained in Title IV of the Act, reclamation work on abandoned mine lands will be financed by a special fund, created by fees on coal production, appropriated to and administered by the newly-created Office of Surface Mining in the Interior Department. Therefore no funds are requested for the Bureau's Mined Land Demonstration Program for fiscal year 1979.

Mineral Land Assessments - $5,310,000

The budget proposes that Bureau programs involving assessments of the mineral potential of wilderness areas and other public lands remain at current levels, except for a reduction of $268,000 due to the completion of studies on mineral availability in the Overthrust Belt area in Idaho, Utah, Wyoming, and Montana. These assessments provide the data on mineral resources that is needed by Federal agencies for determinations involving public land planning and land use decisions and the environmental impact of mineral exploration, development, and use.

Impact of Legislated Changes

A number of important changes affecting the Bureau's mission and responsibilities have taken place since we appeared before this subcommittee a year ago. The passage of the Surface Mining Control and Reclamation Act has resulted in the creation of the new Office of Surface Mining within the Department of the Interior which I have just described. In addition, as a result of provisions contained in the Department of Energy Organization Act, the Bureau has transferred all of its fuel data and fuel productivity research programs to the new Department of Energy.

As you know, the Bureau has long been involved in examining the environmental effects of mining operations and the development of technology and methodologies to reduce the environmental costs associated with mineral extraction processes. With the transfer to the Department of Energy of research and development programs aimed at increasing the productivity of mining solid fuel minerals, however, we have taken the opportunity to reexamine and consolidate mining research activities involved in addressing environmental problems. The result of this program review is the listing of a line entry in this year's budget request for Mining Environmental Research which will serve to focus the Bureau's research in this area.

Helium Study

Finally, as a result of directives contained in last year's House and Senate Appropriations Subcommittee Reports, we have conducted a in-depth review of the Nation's helium supply and demand requirements and provided a report to both Subcommittees detailing possible options and recommendations. We think the report will be of value in determining Federal helium policy for the years ahead and will be pleased to discuss our findings with you.

Mr. Chairman, this concludes my statement. I will do my best now to answer any questions that you or other members of the Subcommittee may have.

INTRODUCTION OF ASSOCIATES

Dr. MORGAN. Very good, sir.

On my left, we should certainly introduce first the Honorable Ms. Joan Davenport, who is the Assistant Secretary of the Department of the Interior for Energy and Minerals. On my immediate right is Mr. Robert Lamb, who is our Budget Officer, and an able one. Next, over here, is Dr. Thomas Henrie, who is the Associate Director of the Bureau of Mines for Research and Development and also our chief scientist.

In the audience we have a number of other top people. We have Mr. Marovelli, who is our Assistant Director in charge of mining. We have Mr. Kirby, who is our Assistant Director in charge of metallurgy. We have additional staff people in a number of Bureau of Mines areas, that you might wish to get into, sir.

Senator HATFIELD. We're happy to welcome the Secretary and all of you gentlemen here today. So please proceed.

Dr. MORGAN. Probably, sir, the simplest would be to look at the series of charts which really abstract our statement. And we have indicated down at the bottom of them the figure number so we can refer to them very quickly. That would probably be most expeditious.

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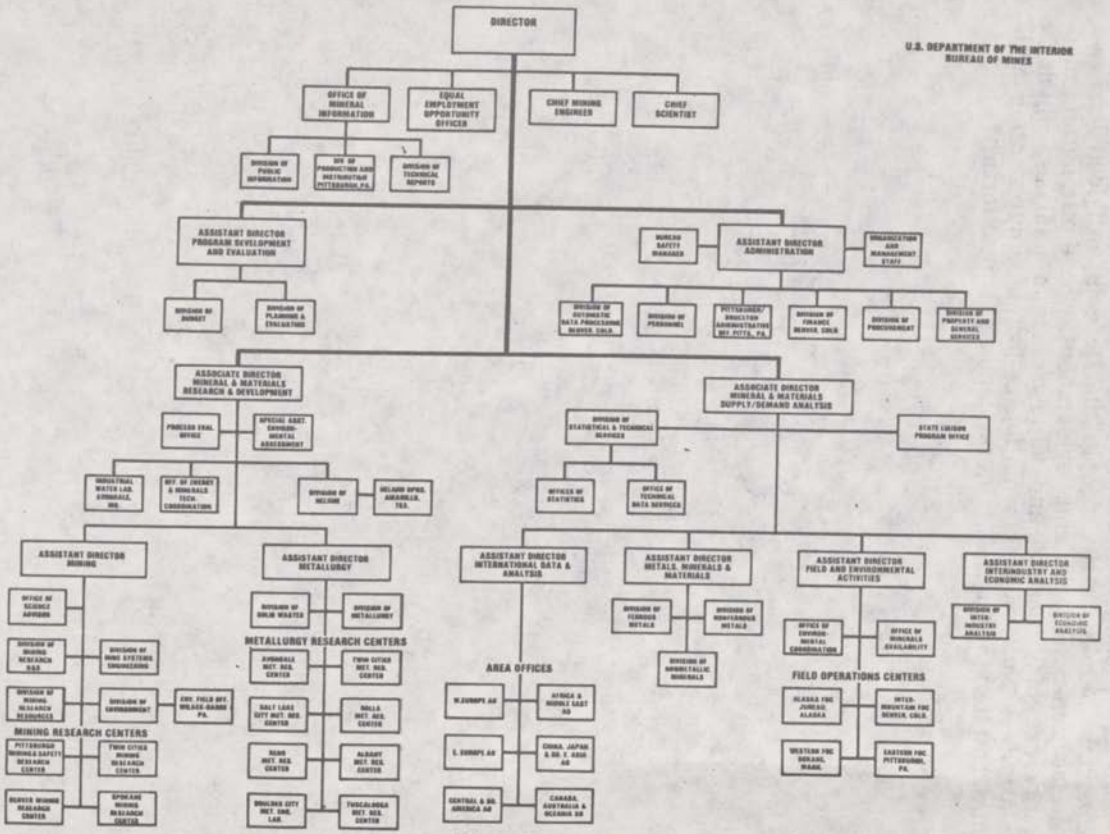
BUREAU OF MINES

STATEMENT OF MISSION

TO ENSURE THE CONTINUED VIABILITY OF THE DOMESTIC MINERALS AND MATERIALS ECONOMY AND THE MAINTENANCE OF AN ADEQUATE MINERALS BASE, SO THAT THE NATION'S ECONOMIC, SOCIAL, STRATEGIC AND ENVIRONMENTAL NEEDS CAN BE BETTER SERVED.

Figure 1

The mission of the Bureau of Mines is shown on figure 1. Our mission is to insure the continued viability of the domestic minerals and materials economy and the maintenance of an adequate minerals base so that the Nation's economic, social, strategic, and environmental needs can be better served.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ASSISTANT DIRECTOR ADMINISTRATION
ORGANIZATION AND MANAGEMENT STAFF
DIVISION OF AUTOMATIC DATA PROCESSING DENVER, COLO.
DIVISION OF PERSONNEL
PITTSBURGH/ DENVER ADMINISTRATIVE SVC PITTS., PA.
DIVISION OF FINANCE DENVER, COLO.
DIVISION OF PROCUREMENT
DIVISION OF PROPERTY AND GENERAL SERVICES
ASSOCIATE DIRECTOR MINERAL & MATERIALS RESEARCH & DEVELOPMENT
PROCESS EVAL OFFICE
SPECIAL ASST. ENVIRON-MENTAL ASSESSMENT
INDUSTRIAL WATER LAB, ERMAVILLE, MD.
BIT. OF ENERGY & MINERALS TECH. COORDINATION
DIVISION OF HELIUM
HELIUM OPNS. AMARILLO, TEX.
ASSOCIATE DIRECTOR MINERAL & MATERIALS SUPPLY/DEMAND ANALYSIS
DIVISION OF STATISTICAL & TECHNICAL SERVICES
STATE LIAISON PROGRAM OFFICE
OFFICES OF STATISTICS
OFFICE OF TECHNICAL DATA SERVICES
ASSISTANT DIRECTOR MINING
OFFICE OF SCIENCE ADVISOR
DIVISION OF MINING RESEARCH R&D
DIVISION OF MINE SYSTEMS ENGINEERING
DIVISION OF MINING TECHNOLOGY RESOURCES
DIVISION OF ENVIRONMENT
ENV. FIELD OFF. WILKES-BARRE PA.
MINING RESEARCH CENTERS
PITTSBURGH MINING & SAFETY RESEARCH CENTER
TWIN CITIES MINING RESEARCH CENTER
DENVER MINING RESEARCH CENTER
SPOKANE MINING RESEARCH CENTER
ASSISTANT DIRECTOR METALLURGY
DIVISION OF SOLID WASTES
DIVISION OF METALLURGY
METALLURGY RESEARCH CENTERS
AVONDALE INVT. RES. CENTER
TWIN CITIES INVT. RES. CENTER
SALT LAKE CITY INVT. RES. CENTER
ROLLA INVT. RES. CENTER
RENO INVT. RES. CENTER
ALBANY INVT. RES. CENTER
BRADLEY CITY INVT. ORE LAB.
TUSCALOOSA INVT. RES. CENTER
ASSISTANT DIRECTOR INTERNATIONAL DATA & ANALYSIS
AREA OFFICES
W. EUROPE, AS
AFRICA & MIDDLE EAST AO
E. EUROPE, AO
CHINA, JAPAN & SO. E. ASIA AO
CENTRAL & SO. AMERICA AO
CANADA, AUSTRALIA & OCEANIA AO
ASSISTANT DIRECTOR METALS, MINERALS & MATERIALS
DIVISION OF FERROUS METALS
DIVISION OF NONFERROUS METALS
DIVISION OF NONMETALLIC MINERALS
ASSISTANT DIRECTOR FIELD AND ENVIRONMENTAL ACTIVITIES
OFFICE OF ENVIRON-MENTAL COORDINATION
OFFICE OF MINERALS AVAILABILITY
FIELD OPERATIONS CENTERS
ALASKA FOC JUNEAU, ALASKA
INTER-MOUNTAIN FOC DENVER, COLO.
WESTERN FOC DENVER, COLO.
EASTERN FOC PITTSBURGH, PA.
ASSISTANT DIRECTOR INTERINDUSTRY AND ECONOMIC ANALYSIS
DIVISION OF INTER-INDUSTRY ANALYSIS
DIVISION OF ECONOMIC ANALYSIS

Figure 2

Figure 2, sir, shows our overall organization chart. In addition to the normal administrative people the Bureau is divided into two major sections: Research and development, where mining and metallurgy are major areas, and supply/demand analysis, which is essentially a worldwide information collection group dealing with mines, smelters, refineries, mineral deposits, and so forth.

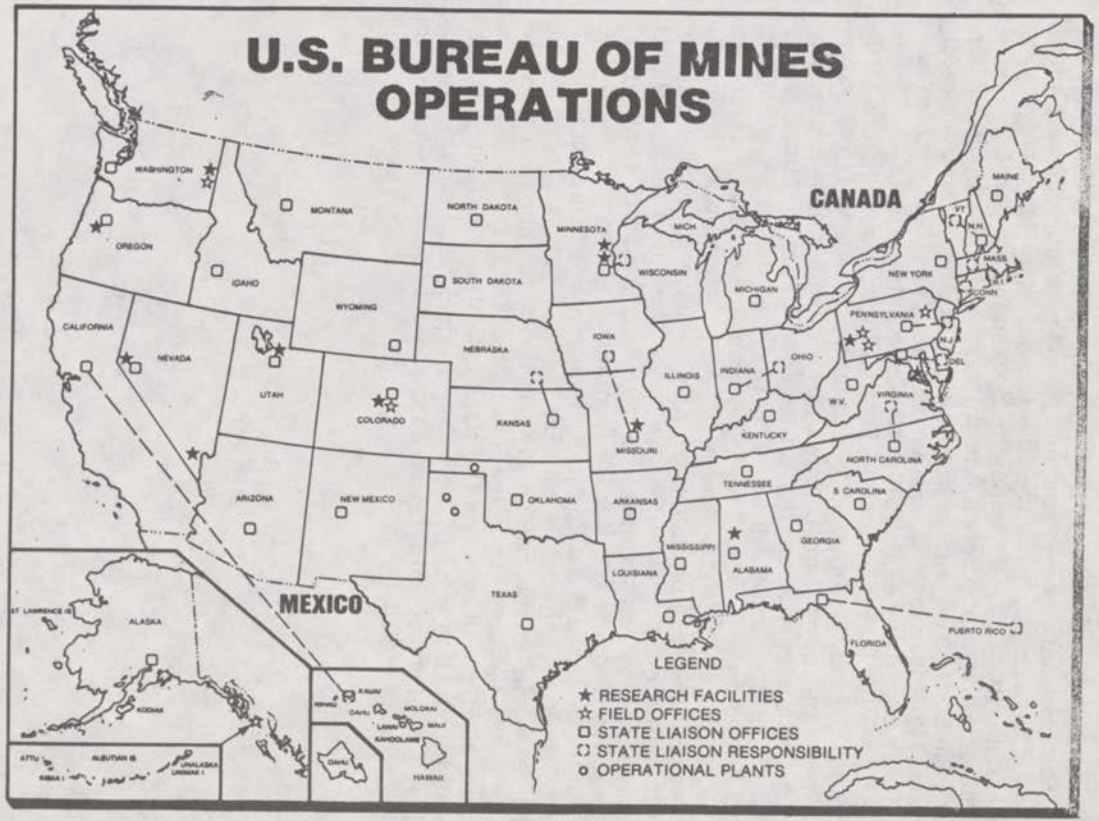

U.S. BUREAU OF MINES
OPERATIONS
CANADA
MEXICO
WASHINGTON
OREGON
CALIFORNIA
IDAHO
NEVADA
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICH
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
S. CAROLINA
NORTH CAROLINA
VIRGINIA
W.V.
PENNSYLVANIA
NEW YORK
MAINE
VT
N.H
MASS
CONN
R.I
N.J
DEL
PUERTO RICO
ALASKA
HAWAII
LEGEND
★ RESEARCH FACILITIES
☆ FIELD OFFICES
□ STATE LIAISON OFFICES
⬚ STATE LIAISON RESPONSIBILITY
o OPERATIONAL PLANTS

Figure 3

Figure No. 3, sir, which is the map, shows in schematic relationship that we have some function in every State of the United States. For example, we have five mining research centers scattered from Pittsburgh in the East to Spokane in the West.

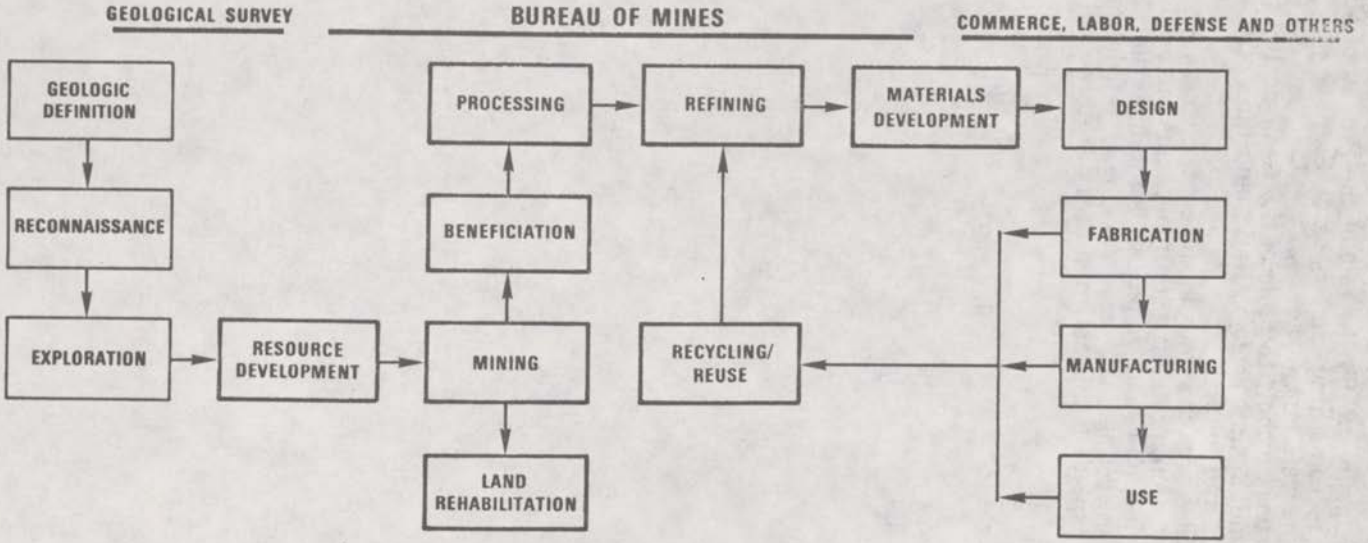
Senator HATFIELD. There's one further west than Spokane, sir.

Dr. MORGAN. Yes, sir, I was talking of the mining research centers. The Albany, Oreg., center is a metallurgy research center, and that's one of our eight metallurgy research centers.

And we have four information field stations, ranging from Pittsburgh on the East to Juneau, Alaska on the North and Spokane on the West, and a very important operation that's shown here are the State liaison officers who are senior Bureau of Mines people stationed at the State capital of virtually every State, except in small States up in New England, one man covers several. They are in touch with the State Bureau of Mines, the State Geological Survey, and other State agencies, and we have cooperative agreements with all of the States whereby the Bureau of Mines collects the mineral information for the country. Company confidential information comes to the Bureau from industry and we return it to the States under the confidentiality banner, thus eliminating duplicate collection for the entire country.

These people on the ground give us the capability to respond in emergencies because the Secretary of the Interior has asked the Bureau of Mines to serve as the nucleus of the Emergency Minerals Administration, which is chartered under the Defense Production Act to mobilize mineral resources should there be a war, an emergency, or a disaster.

THE BUREAU OF MINES ROLE IN THE MINERAL CYCLE



MAJOR MINERAL SCIENCE & ENGINEERING DISCIPLINES

GEOLOGY
MINING ENGINEERING
GEOPHYSICS, GEOCHEMISTRY
HYDROLOGY
PETROLEUM & NATURAL GAS ENGINEERING
MINERAL ECONOMICS
EXTRACTIVE & PROCESS METALLURGY
PHYSICAL METALLURGY
CERAMICS
CHEMISTRY, CHEMICAL ENGINEERING
MECHANICAL & INDUSTRIAL ENGINEERING

Figure 4

Figure 4, sir, attempts to clarify the role of the Bureau of Mines in the mineral cycle, something that Senator Stevens was just asking about before he went out.

On the left-hand side we show the role of the Geological Survey, which deals with fundamental geologic work, definition of the deposit, reconnaissance, and so forth.

The Bureau of Mines area is shown in the center, where we deal with mining, beneficiation, processing, refining, some materials development like alloying, and then we pick up scrap material where we do research on recycling. At every stage, land rehabilitation and environmental aspects of this entire industry are reviewed and researched.

THE ROLE OF NONFUEL MINERALS IN THE U.S. ECONOMY ESTIMATED VALUES FOR 1977

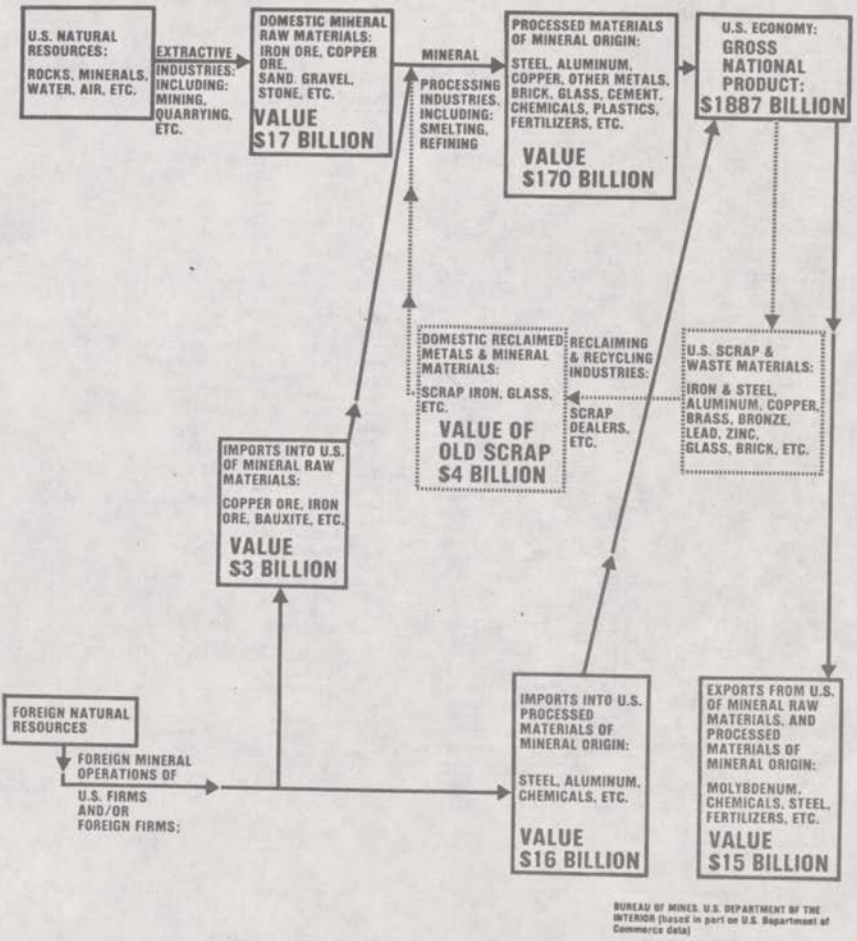


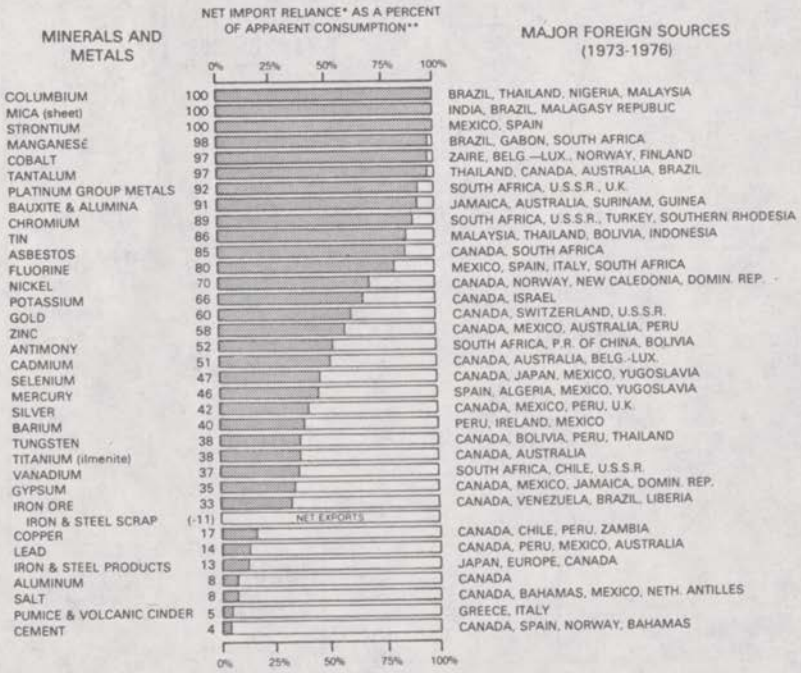
Figure 5

DATA COLLECTION AND ANALYSIS

Figure No. 5, sir, illustrates our data collection and analysis system in terms of value to the U.S. economy. We look at the raw mineral materials as they come out of the ground in this country. Last year they were valued at $17 billion. When they're processed, turned into metals, glass, cement, things like that, there's a tenfold increase in value to $170 billion. Then these materials enter into the economy.

We also follow the scrap that is recycled and try to improve the processes of recycling. We follow the imports into the country, both raw and processed. We follow the exports, and we have virtually complete information on all this. It's not a statistical sampling operation. It's virtually 100 percent covered so that we can run materials balances.

U.S. NET IMPORT RELIANCE OF SELECTED MINERALS AND METALS AS A PERCENT OF CONSUMPTION IN 1977



*NET IMPORT RELIANCE = IMPORTS-EXPORTS ± ADJUSTMENTS FOR GOV'T AND INDUSTRY STOCK CHANGES

**APPARENT CONSUMPTION = U.S. PRIMARY + SECONDARY PRODUCTION + NET IMPORT RELIANCE.

BUREAU OF MINES, U.S. DEPARTMENT OF THE INTERIOR (import-export data from Bureau of the Census)

Figure 6

Figure 6 is an area that we follow with day-to-day concern and that is our import reliance on a number of commodities coming from foreign countries.

As you know, sir, the Federal Government, under the Strategic and Critical Materials Stockpiling Act, maintains a stockpile of strategic materials for a 3-year war period. The stockpile is administered by the Federal Preparedness Agency in the General Services Administration. The stockpile is valued at more than $9 billion at the present time. Of these stockpiled materials, 93 materials are strategic and critical and 79 of these are metals and minerals under our primary jurisdiction. Therefore, we are reporting regularly to the Federal Preparedness Agency the situations with respect to all of these mineral materials.

BUREAU OF MINES' MINERALS & MATERIALS SUPPLY/DEMAND ANALYSIS

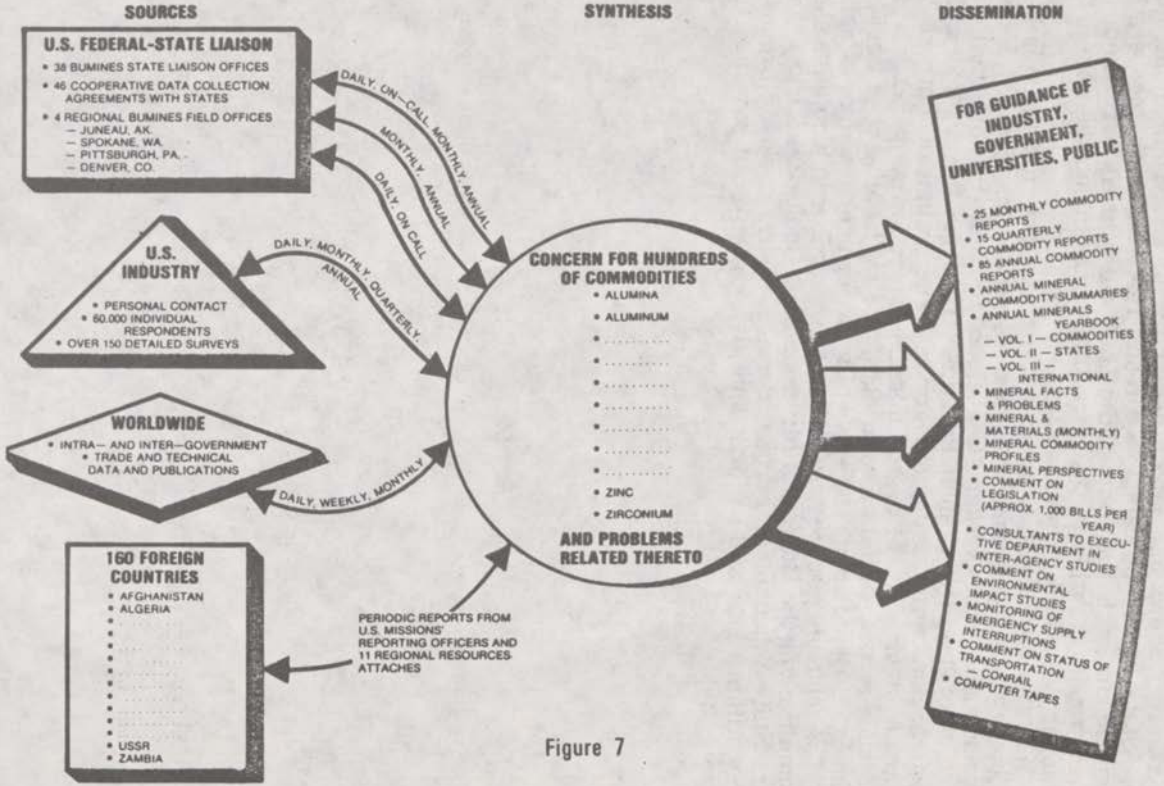


Figure 7

Figure 7 shows our supply/demand analysis system. It includes the State liaison officers I've already referred to, the cooperative agreements with the States, and the field offices. Sixty thousand firms report monthly to the Bureau of Mines in considerable detail company confidential information.

We're in touch with a number of foreign governments. We have a cooperative agreement with the research arms of many foreign governments—the National Coal Board in Great Britain, the Polish Coal Ministry, the French Bureau of Geological and Mineral Research, Bergbauforschung of Germany, and a number of others. We have contact with all of our missions abroad where the consular officials report special mineral data, and we have worked out with the State Department the stationing of regional resource attachés.

The regional resource attachés are technical men who have spent some time in the Bureau of Mines and the Geological Survey. They are State Department Foreign Service officers covering broad regions like Africa and so forth and giving an overall coverage that way.

FREQUENCY OF REGULARLY ISSUED BUREAU OF MINES COMMODITY REPORTS

(M=MONTHLY, Q=QUARTERLY, A=ANNUALLY, I=INTERMITTENTLY, AND MORE FREQUENTLY IN EMERGENCY SITUATIONS)

MINERAL INDUSTRY SURVEYS:

ABRASIVE MATERIALS (A)
ALUMINUM (M,A)
ANTIMONY (Q,A)
ASBESTOS (A)
BARITE (A)
BAUXITE (Q)
BERYLLIUM (A)
BISMUTH (Q,A)
BORON (A)
BROMINE (A)
CADMIUM (Q,A)
CALCIUM-MAGNESIUM CHLORIDE (A)
CEMENT (M,A)
CESIUM AND RUBIDIUM (A)
CHROMIUM (M,A)
CLAYS (A)
COBALT (M,A)
COBALT REFINERS (Q)
COLUMBIUM AND TANTALUM (A)
COPPER INDUSTRY (M,A)
COPPER PRODUCTION (M)
COPPER SULFATE (Q)
DIATOMITE (A)
FELDSPAR (A)
FERROALLOYS (A)
FERROSILICON (Q,A)
FLUORSPAR (Q,A)
GEM STONES (A)
GOLD AND SILVER (M,A)
GRAPHITE (A)
GYPSUM (M,A)
IODINE (A)
IRON AND STEEL (A)
IRON AND STEEL SCRAP (M,A)
IRON ORE (M,A)
KYANITE AND RELATED MATERIALS (A)
LEAD INDUSTRY (M,A)
LEAD, PRIMARY PRODUCTION (M)
LIME (M,A)
LITHIUM (A)
MAGNESIUM, PRIMARY (Q,A)
MAGNESIUM AND MAGNESIUM COMPOUNDS (A)
MANGANESE (M,A)
MERCURY (Q,A)
MICA (A)
MINERAL PRODUCTION, WORLD (A)
MINOR NONMETALS (A)
MOLYBDENUM (M,A)
NICKEL (M,A)
NITROGEN (A)
PEAT (A)
PEAT PRODUCERS (A)
PERLITE (A)
PHOSPHATE ROCK (M,A)
PLATINUM GROUP METALS (Q,A)
POTASH (A)
PUMICE AND VOLCANIC CINDER (A)
RARE EARTH ELEMENTS AND THORIUM (A)
RHENIUM (A)
SALT (A)
SAND AND GRAVEL (A)
SELENIUM (Q)
SELENIUM AND TELLURIUM (A)
SLAG, IRON AND STEEL (A)
SODIUM COMPOUNDS (A)
STONE (A)
SULFUR (M,A)
TALC, SOAPSTONE, AND PYROPHYLLITE (A)
TIN (M,A)
TITANIUM (Q,A)
TUNGSTEN (M,A)
URANIUM (A)
VANADIUM (M,A)
VERMICULITE (A)
ZINC INDUSTRY (M,A)
ZINC PRODUCTION (M)
ZINC OXIDE (M)
ZIRCONIUM AND HAFNIUM (A)

OTHER REPORTS:

STATUS OF THE MINERAL INDUSTRIES (A)
MINERAL COMMODITY SUMMARIES (COVERS 89 COMMODITIES) (A)
MINERALS IN THE U.S. ECONOMY (A)
MINERAL COMMODITY PROFILES (I)
MINERAL TRENDS AND FORECASTS (A)
MINERAL PERSPECTIVES (I)
MINERALS AND MATERIALS (COVERS 17 COMMODITIES) (M)
INTERNATIONAL COAL TRADE (M)
MINERAL TRADE NOTES (M)
MINERALS YEARBOOK, VOL. I (COVERS 92 COMMODITIES) (A)
MINERALS YEARBOOK, VOL. II (COVERS 50 STATES) (A)
MINERALS YEARBOOK, VOL. III (COVERS 157 COUNTRIES) (A)
MINERAL FACTS & PROBLEMS (COVERS 83 COMMODITIES) (EVERY 5 YEARS)

BUREAU OF MINES
U.S. DEPARTMENT OF INTERIOR

Figure 8

All of this information flows into the Bureau of Mines and we put out hundreds of reports, the most important of which are listed in figure 8. I have samples of many of this here with us, which could be made available to the committee.

MINERAL PROBLEMS
1977 AND BEYOND

PRELIMINARY DATA, OCTOBER 1977
BUREAU OF MINES

- **MAJOR PROBLEMS FROM THE NATIONAL VIEWPOINT**
- **MODERATE PROBLEMS FROM THE NATIONAL VIEWPOINT**
- **MINOR OR MORE LOCALIZED PROBLEMS**
- **NO KNOWN PROBLEMS**

a WORLD RESOURCE INADEQUACY, TO YEAR 2000
b US HIGH-GRADE RESOURCE INADEQUACY, TO YEAR 2000
c US LOW-GRADE RESOURCE INADEQUACY, TO YEAR 2000
d US RESERVE INADEQUACY, TO YEAR 2000
e US FOREIGN EXCHANGE DRAIN
f US VULNERABILITY TO FOREIGN DISRUPTIONS
g MINERAL INDUSTRY HEALTH AND SAFETY PROBLEMS
h MINERAL INDUSTRY MANPOWER PROBLEMS
i SIGNIFICANT ENERGY USE
j INADEQUATE RECYCLING
k SIGNIFICANT ENVIRONMENTAL IMPACTS ON AIR
l SIGNIFICANT ENVIRONMENTAL IMPACTS ON WATER
m SIGNIFICANT ENVIRONMENTAL IMPACTS ON LAND
n HEAVY LOAD ON US TRANSPORT SYSTEM
o LACK OF ACCESS TO MINERAL LANDS
p LACK OF INCENTIVE TO EXPLORE OR DEVELOP DOMESTIC RESOURCES
q EXPLORATION METHODS INADEQUACY
r US PRODUCTIVE CAPACITY INADEQUACY (MINE OR WELL)
s US PRODUCTIVE CAPACITY INADEQUACY (SMELTER OR PROCESSING PLANT)
t INADEQUATE SUBSTITUTES
u INADEQUATE RECOVERY FROM CURRENT EXTRACTION AND PROCESSING
v INADEQUATE RECOVERY OF BYPRODUCTS AND COPRODUCTS

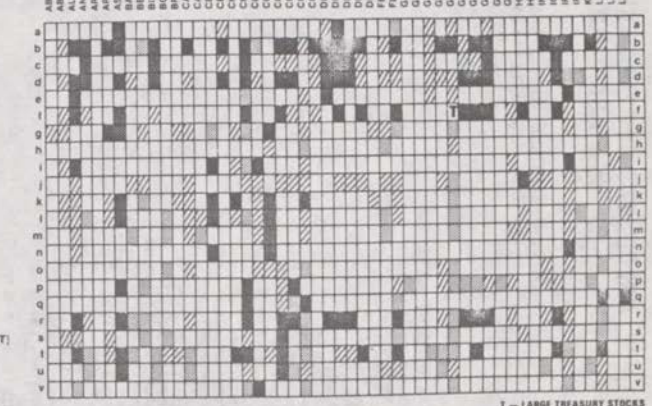


Figure 9a

MINERAL PROBLEMS
1977 AND BEYOND

PRELIMINARY DATA, OCTOBER 1977
BUREAU OF MINES

- MAJOR PROBLEMS FROM THE NATIONAL VIEWPOINT
- MODERATE PROBLEMS FROM THE NATIONAL VIEWPOINT
- MINOR OR MORE LOCALIZED PROBLEMS
- NO KNOWN PROBLEMS

a WORLD RESOURCE INADEQUACY, TO YEAR 2000
b US HIGH-GRADE RESOURCE INADEQUACY, TO YEAR 2000
c US LOW-GRADE RESOURCE INADEQUACY, TO YEAR 2000
d US RESERVE INADEQUACY, TO YEAR 2000
e US FOREIGN EXCHANGE DRAIN
f US VULNERABILITY TO FOREIGN DISRUPTIONS
g MINERAL INDUSTRY HEALTH AND SAFETY PROBLEMS
h MINERAL INDUSTRY MANPOWER PROBLEMS
i SIGNIFICANT ENERGY USE
j INADEQUATE RECYCLING
k SIGNIFICANT ENVIRONMENTAL IMPACTS ON AIR
l SIGNIFICANT ENVIRONMENTAL IMPACTS ON WATER
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n HEAVY LOAD ON US TRANSPORT SYSTEM
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r US PRODUCTIVE CAPACITY INADEQUACY (MINE OR WELL)
s US PRODUCTIVE CAPACITY INADEQUACY (SMELTER OR PROCESSING PLANT)
t INADEQUATE SUBSTITUTES
u INADEQUATE RECOVERY FROM CURRENT EXTRACTION AND PROCESSING
v INADEQUATE RECOVERY OF BYPRODUCTS AND COPRODUCTS

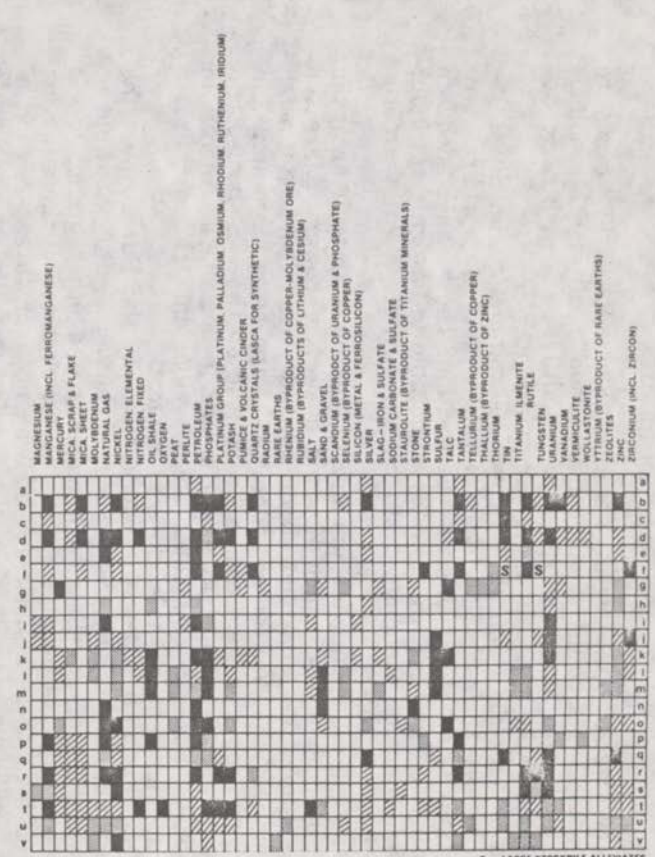


Figure 9b

Now I won't go into in any detail on figures 9A and 9B except to say that it is a result of our consideration of all of the problems listed. We attempt to analyze what the situation is with respect to each one of the minerals under our cognizance.

So in figures 9A and 9B, we cover 100 mineral commodities. We try to assess their position in the world. What is the world resource position? What is the U.S. reserve position? Do we have adequate productive capacity? Are supplies vulnerable to foreign disruption? Is this a major exchange drain on our currency? What are the manpower problems?

Do some use significant amounts of energy, as in your area, the aluminum industry, which is a big drawer of power; as are the magnesium, titanium, and zirconium industries. Is there enough recycling? What are the environmental impacts on air, water, and land? Do some of them pose a heavy load on the U.S. transportation system, like iron or coal or cement? Is there lack of access to mineral lands which is inhibiting development? Do we need to develop new methods to explore and so forth?

Now this matrix has been worked out by the Bureau over the years, worked out with the Geological Survey, and checked out at any number of meetings with industry and other groups. So it represents pretty much a consensus, an estimate of the situation for each of these materials. And we endeavor to assess each of these problems as to whether it is a major problem, or a moderate one, or a minor one, or isn't it very serious? Based on these assessments, then, this leads to the research work of the Bureau of Mines, where we are trying to abate many of the problems. If it is a serious environmental problem, a health and safety one, a national security one, whatever the problems are, our research is aimed at abating these problems.

Of course, we don't solve them all at once. We've been at this, sir, since 1910. But each year we make a certain amount of progress and put some technology into practice and other technology on the shelf for use in an emergency.

38-172 O - 79 - 3

FISCAL YEAR 1979 BUDGET REQUEST (MILLIONS)

	FY 1978 APPROP.	FY 1979 BASE	FY 1979 ESTIMATE	CHANGE FROM BASE
METALLURGY RESEARCH	$26.7	$27.8	$28.6	$+0.8
MINING RESEARCH	56.2	57.1	57.4	+0.3
MINING ENVIRONMENTAL RESEARCH	13.5	13.7	14.6	+0.9
MINED LAND DEMONSTRATIONS	18.8	18.8	—	-18.8
DATA COLLECTION AND ANALYSIS	14.7	15.3	15.3	—
MINERAL LAND ASSESSMENTS	5.4	5.6	5.3	-0.3
TOTAL, MINES AND MINERALS	135.3	138.4	121.3	-17.1

Figure 10

Figure 10 is an overall summary of our budget, and if you look at the bottom line, sir, in 1978, the Bureau of Mines had $135 million. We are appearing before you today asking for what looks like a decrease because the total for fiscal year 1979 is only $121 million. But this is largely a bookkeeping transaction because if you notice, the fourth item down shows minus $18.8 million.

MINED LAND DEMONSTRATIONS

This is the result of mined land demonstration work that has been carried on for a number of years by the Bureau of Mines but which now, since the Congress passed the Surface Mining Act, will be carried on by the Office of Surface Mining, a sister agency in the Interior Department. They will receive a lot of money from the Coal Mining Fund that Congress set up, and we look to doing much of the engineering work and the contracting work for the Office of Surface Mining. But the money will come from that fund, rather than from our budget. Therefore, we ask for no money for mined land demonstrations in fiscal year 1979.

If you look at the other items, starting at the top, metallurgy research goes up about $2 million from fiscal year 1978. Mining research goes up about $1 million. Mining environmental research goes up about $1 million. Data collection and analysis goes up about $0.6 million. Mineral land assessments stay about the same. Therefore, we have roughly a continuation of the present level of activity with some dollar increases.

Now in the next series of charts, we can go into as much detail as you wish, sir. First we have metallurgy, next mining, and last, the information and land evaluation programs.

FISCAL YEAR 1979 BUDGET REQUEST
METALLURGY RESEARCH
PROGRAMS
(MILLIONS)

METALLURGY RESEARCH	FY 1978 APPROP.	FY 1979 BASE	FY 1979 ESTIMATE	CHANGE FROM BASE
ADVANCING MINERALS TECHNOLOGY	$17.0	$17.7	$18.6	$+0.9
EFFECTING POLLUTION ABATEMENT	3.1	3.2	3.2	—
SECONDARY RESOURCE RECOVERY	2.6	2.7	2.5	-0.2
MINIMIZING MINERAL AND METAL NEEDS	4.0	4.2	4.3	+0.1
TOTAL	26.7	27.8	28.6	+0.8

Figure 11

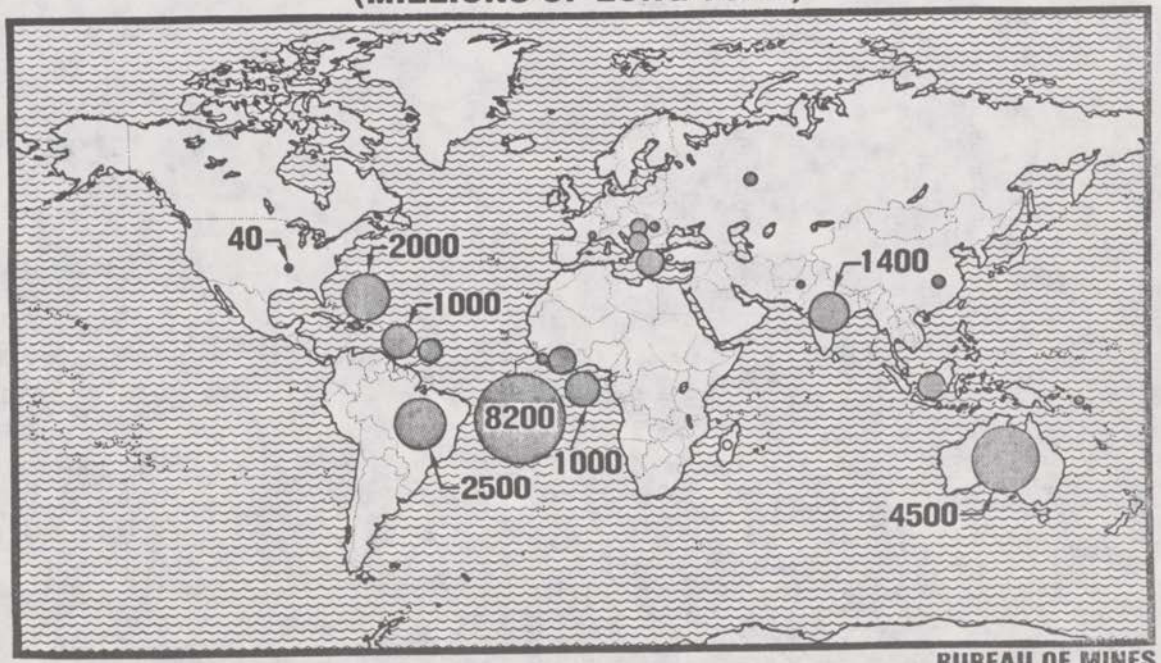
Figure 11, on metallurgy shows an increase from $26.7 million in fiscal year 1978 to $28.6 million in fiscal year 1979, which is an increase of about $2 million.

BAUXITE

Now, the reason we included a couple of pictures here on bauxite is simply to give an illustration of the type of work that we have underway. We have this type of work underway for any number of materials. We simply picked bauxite as a matter of wide public interest, and we really didn't have in mind, sir, that there are some high-alumina clays in Oregon when we put this together.

PRINCIPAL BAUXITE RESERVES (1977 ESTIMATE)

(MILLIONS OF LONG TONS)



BUREAU OF MINES

Figure 12

If we look at the overall situation as shown on figure 12, the U.S. reserve—that is, the amount of bauxite which is economically producible with current technology—is very small, 40 million tons, only enough for a couple of years at the current rate of use, and the big reserves of bauxite are in the tropical countries such as Surinam, Jamaica, Guyana, Brazil, Australia, India, and in Africa in the tropical areas. Many of these countries have banded together in the International Bauxite Association to endeavor to raise the price of bauxite to the United States and other users. Consequently, bauxite, alumina, and aluminum are strategic materials. There's a possibility of price escalation.

What is the Bureau of Mines doing about it?

If you look at figure 13——

Senator YOUNG. May I ask a question?

Senator HATFIELD. Please do.

Senator YOUNG. I noticed this chart on bauxite reserves. In our own country—is it 40 million tons?

Dr. MORGAN. Forty million tons, yes, sir.

Senator YOUNG. Is that in Arkansas?

Dr. MORGAN. That's largely in Arkansas, yes, sir.

Senator YOUNG. The late Senator McClellan expressed concern about that. Is that being developed now?

Dr. MORGAN. They are mining bauxite there now and they're producing about 2 million tons a year. But that's only a fraction of the total amount that we need and 90 percent of our aluminum raw materials come from abroad. That's why we're doing the research.

Senator YOUNG. Thank you.

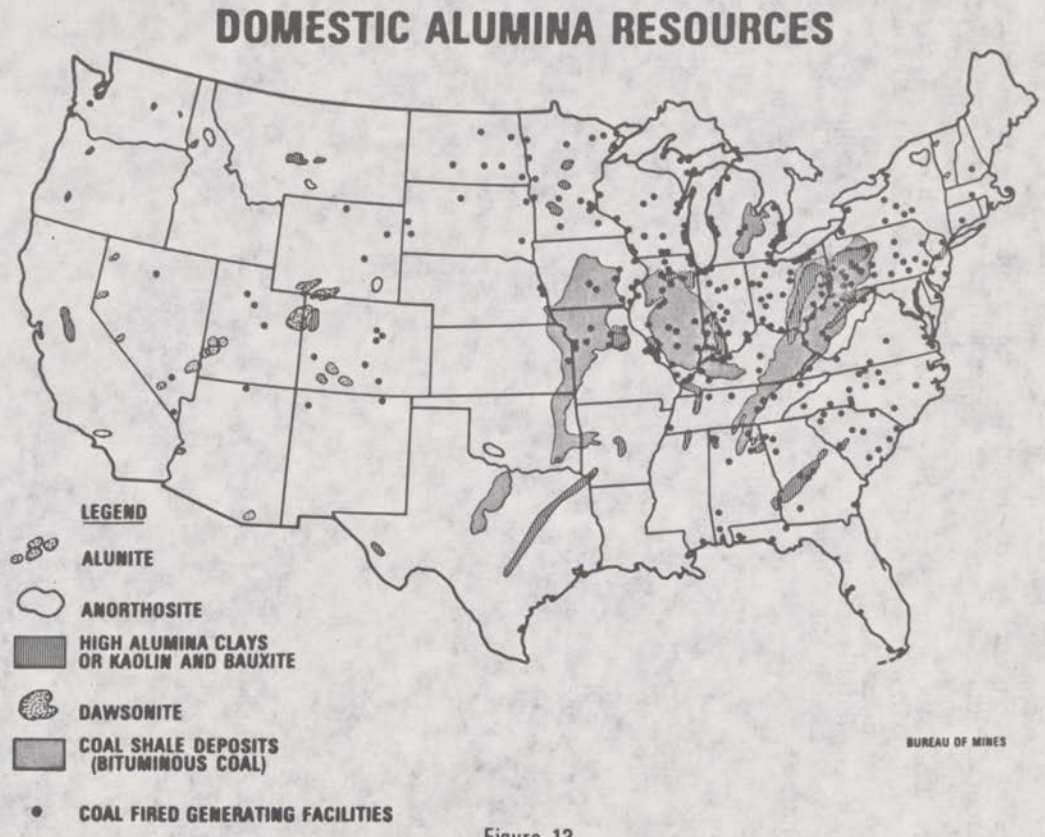

DOMESTIC ALUMINA RESOURCES
LEGEND
ALUNITE
ANORTHOSITE
HIGH ALUMINA CLAYS OR KAOLIN AND BAUXITE
DAWSONITE
COAL SHALE DEPOSITS (BITUMINOUS COAL)
COAL FIRED GENERATING FACILITIES
BUREAU OF MINES

Figure 13

Dr. MORGAN. In figure 13, sir, we show a mapping of domestic resources that could be used to obtain aluminum. Some are specific minerals, like alunite, anorthosite, dawsonite. Some are the high-alumina clays. Some are coal shales. The shale associated with coal contains aluminum. And when you burn coal, there is a fair amount of alumina remaining in the ash, either in the ashpit or in the fly ash that's collected.

So in virtually every State of the Union, there is some lower grade material than bauxite that could be used as a source of alumina.

ALUMINA FROM DOMESTIC RESOURCES

[QUANTITIES (±30%) BASED ON 25 LB PER HOUR ALUMINA]

PROCESS TECHNOLOGY / RAW MATERIAL	HYDROCHLORIC ACID LEACHING	NITRIC ACID LEACHING	SULFUROUS ACID LEACHING	ALKALINE SINTER-CAUSTIC LEACH	REDUCTION ROAST-CAUSTIC LEACH	CHLORINATION	DILUTE CAUSTIC LEACH	BAYER PROCESS
CLAY ARKANSAS, GEORGIA OKLAHOMA, OREGON, TEXAS, OTHERS					NOT APPLICABLE			
ANORTHOSITE CALIFORNIA, IDAHO, MONTANA, NEW YORK, WYOMING			NOT APPLICABLE		NOT APPLICABLE	NOT APPLICABLE		
ALUNITE NEVADA, UTAH	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE		NOT APPLICABLE		
DAWSONITIC OIL SHALE COLORADO	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE		
COAL SHALE ILLINOIS, KENTUCKY, OHIO, PENNSYLVANIA, WEST VIRGINIA, OTHERS					NOT APPLICABLE	NOT APPLICABLE		
COAL ASH AVAILABLE AT WIDELY DISPERSED POWER PLANTS					NOT APPLICABLE			
BAUXITE ARKANSAS, HAWAII OREGON	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE		

LIKELY CANDIDATE POSSIBLE CANDIDATE UNLIKELY CANDIDATE

BUREAU OF MINES

Figure 14

Now the next chart, which is in very fine type, figure 14, shows our current research work with respect to these materials. Running down the left-hand side of the chart are the seven different domestic materials. Running across the top of the chart are the eight different processes that could be applied to treat these materials.

ALUMINA MINIPLANT

Out in Boulder City, Nev. is our pilot plant in which 10 U.S. firms are cooperating with the Bureau of Mines, each putting up $50,000 a year—that's $0.5 million—and we're putting in about $700,000 of our own money, so the effort runs well over a million dollars a year. And we are testing these materials. We're producing 25 pounds of alumina per hour, which is not very much, but in addition to just producing the alumina, we are carefully measuring the input of different required raw materials, the chemicals, the heat, the electricity, and we are measuring not only the output of alumina—25 pounds, which is standard in all the processes—but we are measuring the output of wasteful products, the tailings, the fumes, and we are assessing, can it be done in conventional steel equipment or do we need specialized stainless steel corrosion-resistant equipment, and so on. We can then make a complete environmental assessment of what would be involved in producing alumina from these different domestic resources.

Now we have to do that for several reasons. If we were a private company, we would just zero in on the best process that made the most money and go ahead and try it on a larger scale. But the Government has an obligation to look at the total resources in the country. We have an obligation to look at what is on public lands as well as on private lands. We have a real obligation toward the environment. We don't want to sponsor a process that, when it's operating full scale, turns out to cause more degradation or more energy problems than we have with existing processes.

Furthermore, we have an obligation, I think, to the Members of Congress who have these diverse materials in their own States or districts so that they can fully understand what the positive benefits and the adverse effects would be of developing that resource, so they can consider all aspects when people come to them and say, "We're going to develop this material here or that material there." So that they see both the good and bad side. Because often, in the past, promoters have just pushed one particular process or one particular deposit—without considering possible adverse impacts.

So this is one illustration of the type of research we've been doing these lines for many years.

CHROMIUM

In the case of chromium, for example, the Bureau of Mines years ago looked at low grade domestic chromium deposits, just as I've indicated here we're looking at alumina deposits. We took that low grade domestic chromium and we showed that we could concentrate it and produce a concentrate which met every test of the foreign concentrates. We went a step further: We showed that we could produce chromium metal, chromium refractories, chromium chemicals, and ferrochromium from that domestic material.

Now some of those processes were put into effect in the Korean war period when foreign sources of chromium were cut off from us. Then in the ensuing years when the Russian shipments came in and the Rhodesian shipments and the South African in greater quantity, the domestic chrome mines shut down. However, with the recent increases in price, with the uncertainty of Rhodesia, and other areas, there is renewed interest in the chrome deposits in the West, particularly in California and Oregon, and some small mines have reopened, knowing that these processes are available which have been developed by the Bureau of Mines.

NICKEL RESEARCH

Another example of our work out in your area, sir, involves nickel. Years ago, the Government encouraged the Hanna Nickel Co., under the Defense Production Act, to develop the Riddle nickel deposit in Oregon, which is producing about 13,000 tons per year of nickel in the form of ferronickel.

Senator HATFIELD. The only one in the whole United States.

Dr. MORGAN. That's right, sir. That's the only working nickel mine in the U.S., and it accounts for about 10 to 15 percent of our total supply of nickel.

Senator HATFIELD. They're also facing the problem of lowering the quality of the ore, or the amount of nickel in the ore, are they not?

Dr. MORGAN. That is correct, sir. And the Bureau of Mines is working right now on research on the lower grade cobalt-nickel-chrome laterite deposits in the California-Oregon area to develop new processes which will treat the lower grade ores which will be environmentally acceptable and which will permit the recovery, not only of the nickel but also of the cobalt, which is a minor constituent but a very important one, and also the chromium. Our big supplier of cobalt today is Zaire in Africa. Also, we'll be able to recover some of the chromite.

INPUT TO WILDERNESS BILL

Senator HATFIELD. Dr. Morgan, let me interrupt, if I could, at this point, because this brings to my mind a question.

Did you have a formal input into the endangered wilderness bill, as it related to the impact on metals and these strategic materials?

Dr. MORGAN. Yes, sir. We, together with the U.S. Geological Survey, examine areas that are proposed for some form of Government classification, whether it be wilderness or wild and scenic river, or the lands in Alaska or military reservations or special damsites or whatever. The Bureau of Mines and the Geological Survey are generally involved in making mineral assessments of what may be there.

Senator HATFIELD. That, then, finds its way into an agency report. When we were drafting the boundaries of the Siskiyou Forest relating to the Kalmiopsis down in southern Oregon, I recall working directly with mining interests which were presenting material and information on deposits and assessments of such deposits on the mining and mineral industry. But I don't recall any direct contact with your agency during those hearings on either our

omnibus wilderness bill related just to Oregon or that which was broader, the Endangered Wilderness Act.

Did you testify at any of those hearings?

Dr. MORGAN. We did not testify specifically, sir. But in an orderly process, if it's followed, there is written a joint report signed off by the Directors of the Geological Survey and the Bureau of Mines on the specific land area.

I am not sure what the situation was, but I have the head of our mineral assessment office here, Mr. Dare. I will ask him what the situation was.

Senator HATFIELD. I just do not remember a very significant profile by your agency.

Dr. MORGAN. Sir, this is Mr. Will Dare, the head of our land examination work.

Mr. DARE. The Bureau testified in the House on H.R. 3454. We did not testify in the Senate.

Senator HATFIELD. I see.

Did you request to testify in the Senate, do you recall?

Mr. DARE. We were directed to by the chairman of the committee in the House. We were asked to.

Senator HATFIELD. I see. You did not initiate a request to testify, then, before either House?

Mr. DARE. No, we did not initiate it. I might say that the Bureau of Mines has recently completed an assessment of all the major laterite deposits in the California-Oregon area as part of the metallurgy research program. They would include the major deposits in the Kalmiopsis area.

Senator HATFIELD. I know your data was used in the materials that we had, but it seems to me that we ought to develop some kind of a procedure whereby you are really here in person to testify at such hearings, because the reports have a way of getting lost, in terms of their review in these matters. The constituent groups are very vocal; they're very much present. Outside of the head of the agency, I am not sure we have adequate presentation in those hearings.

I became aware of them, really, through your constituent group of the mining industry, rather than through direct contact with your agency. And I feel that because of the importance of all this, we should perhaps develop a procedure where, either by your initiation or by call of the committee, you would participate in those hearings. That is a vital bit of information that should be considered in an assessment of values of what we are doing in such land classification.

Dr. MORGAN. Sir, we would be delighted to cooperate with you in any way, because this is a specific part of our mission not only under our Organic Act but also under section 7(a) of the Strategic and Critical Materials Stock Piling Act of 1946 wherein the Secretary of the Interior is specifically directed, acting through the Geological Survey and the Bureau of Mines, to examine public lands for strategic materials and to point out what the situation is there.

WILDERNESS ACT—OPTIONS

Senator HATFIELD. Are you reviewing now the various options relating to the 1984 expiration of the Wilderness Act of 1964 regarding mining exemptions?

Dr. MORGAN. Yes, sir, we are. And a little while ago, we thought we would be able to complete the report due to the Congress on the original wilderness designations, which is due to the Congress, I believe, in 1983.

But what is happening is, there have been so many more areas added more recently requiring wilderness examination that while we will complete roughly the same acreage that we set out to do, we will not complete all of the originally designated areas, but will instead complete some newly designated areas. We are focusing our attention on the higher priority areas from the mineral point of view, insofar as we can.

In other words, if we know, in our best judgment, that some older area clearly is not a high mineral potential one, but that a newer area that has been focused on is more likely to be a highly mineralized area, then we are transferring our people to work on the more highly mineralized area.

Senator HATFIELD. And that is an integral part of the whole study in which you are involved?

Dr. MORGAN. That is correct. We are working with the Forest Service, with Chief John McGuire over there, on a day-to-day basis.

RARE II

Senator HATFIELD. I would assume we are going to see a great deal of each other, then, after January 1979, hopefully, I would see a great deal of you; it depends in November what happens. But I say that on the basis that when we get into the RARE II, I would think we ought to have you at our elbow, along with other agencies that have such material. So I would assume, Madam Secretary, that you would be very much in evidence.

Ms. DAVENPORT. Yes, Senator, within the Department of Interior both the Geological Survey and the Bureau of Mines do work with mineral assessments. So, as with most of our studies for the proposed or actual wilderness areas, we put out reports that both agencies agree upon. That is the sort of data we would be willing to present in committee.

Senator HATFIELD. I think it would be very important, because I can visualize now the pressure building to remove that clause from the 1964 Wilderness Act by various groups that have found it odious all the time that it has been in there. And those groups have, as you know, great impact in the world today.

I think we need the balance that you can bring, in making those assessments—I don't think we ought to get carried away with any action on that proviso, or in the designations of RARE II, until we have had time to look at the various values that we are determining in both the short range and the long term.

I hope a momentum does not develop before we get to that point. That is why I am raising the question here today.

Ms. DAVENPORT. We have been in contact with the Department of Agriculture, and also of course with the Forest Service, to make

sure that they are aware of the work both of the Geological Survey and that the Bureau of Mines have done in the RARE II area. I think that is a good working interface at this point in time.

Senator HATFIELD. I am glad you are on top of that. Please feel free to seek the assistance of my office, since I am on both this subcommittee and the Energy and Natural Resource Committee. We have kind of a dual approach to these matters. I would hope that you would follow up my invitation to make the most of our office for information or questions, or in any way that we can be helpful.

Dr. MORGAN. Sir, we are there to serve the people and the Congress. Whatever information we have we will make available promptly to you.

Senator HATFIELD. You have always been very helpful.

Dr. MORGAN. That briefly covers our metallurgy activity. There is no amount of detail that we can go into with you. We have samples here of the work we are doing, but if you want to try to cover our entire program very quickly, I guess we had better proceed to the mining, which is a substantial part of our budget.

Senator HATFIELD. Let's proceed.

FISCAL YEAR 1979 BUDGET REQUEST/MINING RESEARCH AND ENGINEERING PROGRAMS (MILLIONS)

BUREAU OF MINES

	FY 1978 APPROP.	FY 1979 BASE	FY 1979 ESTIMATE	CHANGE FROM BASE
MINING RESEARCH				
COAL HEALTH AND SAFETY RESEARCH	$40.5	$41.1	$41.1	$ —
METAL AND NONMETAL HEALTH AND SAFETY RESEARCH	9.2	9.3	9.3	—
ADVANCING METAL AND NONMETAL MINING RESEARCH	6.5	6.7	7.0	+0.3
TOTAL	56.2	57.1	57.4	+0.3
MINING ENVIRONMENTAL RESEARCH				
ENVIRONMENTAL ENGINEERING SYSTEMS	6.0	6.1	5.1	-1.0
ENVIRONMENTAL CONTROL TECHNOLOGY	3.6	3.6	4.9	+1.3
MINED LAND RECLAMATION TECHNOLOGY	3.9	4.0	4.6	+0.6
TOTAL	13.5	13.7	14.6	+0.9
MINED LAND DEMONSTRATIONS				
MINED LAND INVESTIGATIONS AND DEMONSTRATIONS-ANTHRACITE AREA	11.9	11.9	—	-11.9
MINED LAND INVESTIGATIONS AND DEMONSTRATIONS—BITUMINOUS AREA	6.7	6.7	—	-6.7
FIRE CONTROL IN COAL DEPOSITS	0.2	0.2	—	-0.2
TOTAL	18.8	18.8	—	-18.8

Figure 15

MINING RESEARCH

Dr. MORGAN. The summary of the mining appropriations, sir, is carried on figure 15. Here we show, again, essentially, a level effort with the exception of that $18.8 million which was in the mined land demonstrations in fiscal year 1978.

In "Mining Research: Coal Mine Health and Safety," in fiscal year 1978 we had $40.5 million. This reflected a very real concern on the part of the Congress for coal mine health and safety because the original Federal Coal Mine Health and Safety Act of 1969 contained a ceiling of a $30 million appropriation. But last year, the Congress added $10 million more than the amount authorized in the act because they wanted that work accelerated.

Now the new unified Mine Health and Safety Act which combines the coal mine, and the metal and nonmetal acts, contains a ceiling of $60 million. So we are proceeding here to move toward the new increased authorization and carry that forward. We request $41.1 million for coal mine health and safety, and $9.3 million for metal and nonmetal health and safety research which then is somewhat over $50 million, approaching the $60 million ceiling.

Consequently the bulk of our mining research is aimed at health and safety. In this research, we work very closely with the Mine Safety and Health Administration in the Department of Labor where Assistant Secretary Lagather is the newly appointed head of that agency. It used to be a sister agency in the Interior Department until recently. Both the Bureau of Mines and MESA reported to the Honorable Ms. Joan Davenport, the Assistant Secretary for Energy and Minerals, but in March of this year they transferred the mine inspection force to the Labor Department. But we have a very close, continuing working relationship with them. They sit down with us annually in the formulation of our health and safety program, so that whatever they uncover in their mine inspections, where we can be of assistance in doing research, we do that. And also, our research lays the foundation for the promulgation of regulations by the mine regulatory people—because if we don't do the research and show what is possible, then a regulation which might be promulgated could be easily challenged if something mandated were not possible.

In addition, we work very closely with the Department of Energy because productivity research dealing with the metals and nonmetallic minerals is still in the Bureau of Mines. But productivity research dealing with the fuel minerals was transferred to the Department of Energy by Public Law 95-91. Any mining system has to have health and safety aspects; it has to have productivity aspects; and it has to have environmental aspects. On the fuel research, we work very closely with the Department of Energy.

Another line in our mining research budget is advancing metal and nonmetal mining research. This is advancing technology and productivity. As I indicated, the only reason we don't do that for coal is that that is now in the Department of Energy.

Therefore, when we look at the mining research program, per se, we go from $56.2 million in fiscal year 1978, to $57.4 million in fiscal year 1979, which is an increase of about $1.2 million.

MINING ENVIRONMENTAL RESEARCH

Now, of increasing importance in the Bureau of Mines is mining environmental research. We have always been concerned about the environment. In fact, every once in awhile I get out the report of the Pinchot Commission of 1909 and the message of President Theodore Roosevelt that he forwarded to the Congress in 1909 leading to the establishment of the Bureau of Mines in 1910. And if you were to just change a few of the numbers and dollars in those reports there are still pretty good messages in them for today.

They were concerned, then, about conservation and the environment—the effects of mining, and so forth, and in health and safety. So the Bureau of Mines has been involved in this work ever since its inception.

We want to make it very clear that with the expansion not only of mining in this country, but also the metallurgical industry both of which emit fumes and contaminate waters and so forth—that we are working across the board on the solution of problems before they become problems, if that is possible, and the abatement of old ills to the extent that those problems were not solved beforehand. So, therefore, we have these three different sections: environmental engineering systems, environmental control technology, and mined land reclamation technology.

Now, in the environmental engineering systems we're trying to design systems for new mining processes that keep the problem from happening. In the environmental control technology we're trying to develop research that will actually control and abate known problems that are already extant at the present time. Then in the mined land reclamation technology we are trying to demonstrate systems that will take lands that have once been mined and restore them hopefully to at least as equivalent a use as the land was before it was mined and hopefully, in many cases, a more efficient, more economic use of the land than existed before.

Senator YOUNG. Mr. Chairman, could I ask a question?

Senator HATFIELD. Yes.

RELATIONSHIP WITH OFFICE OF SURFACE MINING

Senator YOUNG. Dr. Morgan, you mentioned earlier about the amount of money collected from various strip mining States and put in the fund that you've distributed.

Just how do you use that fund?

Dr. MORGAN. Well, sir, that fund would be collected by the Office of Surface Mining, which is a sister agency in the Interior Department. I guess that that fund will run to the order of around $200 million a year.

Now, because there are many, many scarred lands and other problems as the result of past mining—because mining has gone on in this country for 200 years, ever since it's been a country and before that—the first priority will be the abatement of situations which pose a real threat to the public health and safety. And the second priority will be to abating nuisances or environmental aspects which affect the general populace round about but are not imminent sources of danger.

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Let me give you one example where we've had some of our engineers now out working, doing the preliminary engineering work for the Office of Surface Mining. In Youngstown, Ohio, which was mined extensively years ago for bituminous coal, there are any number of abandoned mines, mine shafts, and so forth. And I had a rather horrifying experience just a few weeks ago. They came and showed me film of one of the actual situations in Youngstown.

Here was this woman who had a nice brick house, a lovely little brick house, with a two-car garage. The car was sitting in the garage. She got in it and drove off to work. When the children came home from school and looked in the garage, there was a hole 14 feet across and 150 feet deep. What happened is that the old mine shaft had been sealed off at the top and for some reason—God must have been looking out for her—it collapsed in the middle of the day rather than when she was in the automobile. It just collapsed by itself.

The more we check we find that throughout areas of Youngstown and many other places in the country this sort of situation exists. Mines that were abandoned 50 or 100 years ago—people might not even know the location of them.

STATE SURFACE MINING PROGRAMS

Senator YOUNG. If I could interrupt—the thing that concerns our State—I got a letter just a few days ago from the Governor talking about the funds we're contributing when we have probably one of the very best surface mining laws of any State. We're contributing to help other States that should have better laws, and we're paying for the mistakes that they have been making. May I ask, what are you doing to encourage other States to have better surface mining laws?

Dr. MORGAN. Of course, there's the surface mine inspection, the new surface mine law that was passed by the Congress and is now being implemented by the Office of Surface Mining headed by Walter Heine in the Department of the Interior. They are promulgating regulations which nationwide will force the States to come up to the Federal standards, if they have not already been doing so.

Senator YOUNG. What credit does a State like North Dakota get for having good mining laws? Do they keep on paying to other States that don't have good laws?

What incentive is there for a State like ours?

Ms. DAVENPORT. The Surface Mine Act sets up really two major programs. The first is a regulatory program whereby the Federal Government issues regulations running very closely to performance standards in the law.

The law is set up in such a way that it is intended that the States will take over the enforcement program and will assume the enforcement responsibilities. For the first 3 years that the abandoned lands fund moneys are collected, 50 percent of those collected in each State are, in essence, put in a bank account for that State. When that State conforms its surface mining program to the requirements of the Federal law, then those 50 percent of the moneys collected in that State become available to it for expenditure on the problems within the State.

Of the other 50 percent, 10 percent—and as the law currently reads, not to exceed $10 million—is to go into a fund to help small operators meet the hydrological requirements of the law; 20 percent goes to the Department of Agriculture under their rural lands reclamation program which can be expended in any State; and 20 percent of the funds remain with the Department of Interior to be used on these high-priority situations.

Senator YOUNG. Thank you.

I want to take this opportunity to express appreciation for the work that the Bureau of Mines has done and its Director, Dr. Morgan, and also the Geological Survey. They're two of our best agencies of the Government.

I'm pleased that you give the late President Teddy Roosevelt credit for water and soil conservation laws. He was really the first evangelist in this field.

Dr. MORGAN. Thank you very much, sir, for your kind words about the Bureau, and I can assure you that we will continue rendering that type of service to you as we go on down the road.

Sir, back on our appropriation request there for mining, we have now looked at the mining research, which is $57.4 million; we've looked at mining environmental research, which is $14.6 million, and that ends the request for 1979, except that we have to show, in order to reconcile with prior years the withdrawal of any request for mined land demonstrations, per se, which will be funded by the new Office of Surface Mining. But in last year's budget we did have $18.8 million for specific demonstrations.

FISCAL YEAR 1979 BUDGET REQUEST
MINERAL AND MATERIALS SUPPLY/DEMAND ANALYSIS PROGRAMS
(MILLIONS)

	FY 1978 APPROP.	FY 1979 BASE	FY 1979 ESTIMATE	CHANGE FROM BASE
DATA COLLECTION AND ANALYSIS				
INFORMATION COLLECTION AND DISSEMINATION	$13.1	$13.6	$13.6	$ —
POLICY AND ECONOMIC ASSESSMENTS	1.6	1.7	1.7	—
TOTAL	14.7	15.3	15.3	—
MINERAL LAND ASSESSMENTS				
WILDERNESS AND PUBLIC LAND ASSESSMENTS	3.6	3.7	3.4	-0.3
ENGINEERING AND ENVIRONMENTAL INVESTIGATIONS	1.8	1.9	1.9	—
TOTAL	5.4	5.6	5.3	-0.3

Figure 16

DATA COLLECTION AND ANALYSIS

Now, the next sheet, figure 16, shows the budget request for our data collection and analysis. In fiscal year 1978 we had $14.7 million. In fiscal year 1979 we're asking for a modest increase to $15.3 million. I might just take a minute there and say something about our data efforts.

We've been under very great pressure from Government, from industry, and everybody to have the most accurate information, as up to date as possible. Some 60,000 firms report to the Bureau of Mines on a company-confidential basis under a program which is essentially voluntary. They submit this information to the Government because they want the answers. We get the production from mines beneficiation plants, smelters, refineries, the use by major users, and the recycling. We also get from the Customs Bureau the imports and the exports. So we can run a quantitative check on these materials as they flow through the economy.

Now, we're sometimes asked—and I was asked in our House hearings—isn't this a burden on industry? They're complaining about Government forms and so on.

I would like to tell you, sir, it is not a burden, because industry participates voluntarily. If they thought it was a burden, all they'd have to do is take the form and throw it away and not answer.

And yet we have virtually 100 percent coverage, and we have many requests from industry to either speed the system up so they can conduct their business in a more orderly way or to provide more detail or to cover more advanced forms of the materials that flow through the system.

So we need all the help we can get to keep this system going.

What we're putting out now—we had good favorable comment from the Congress on that—is a new series of publications on materials like this one. Here's one on chrome. We have one on phosphate, one on copper, one on nickel, and so on.

So that as Congress and others consider ocean mining or what to do with the stockpile or other matters, we have the information in handy form.

Senator HATFIELD. Do you handle all that through a computer?

Dr. MORGAN. Yes, sir. We have a giant computer out in Denver, Colo., and all the information is stored out there in that computer.

In addition, we've had increased calls upon us for information on a geographic basis. So we've been putting out new publications with maps and summary data. Here's one on Africa. Here's one on the mineral industry of Europe.

We're very proud of our coverage of countries that don't put out a lot of public information. Here's a report on the mineral industry in Communist China with data 6 months after the close of the year. That's almost as good as we can do in this country with our own data.

Senator HATFIELD. What are your sources for that?

Dr. MORGAN. We have native-born Chinese, educated in China and the United States, working for us and in contact with all sorts of people.

Every year, when Congress convenes on Janauary 15th, on the desk of every Senator and Congressman is our mineral commodity

summaries with data as of the close of the year. There's a little bit of estimating in there, but that only gives us about 15 to 30 days to get the information before the Congress.

EROS PROGRAM

Senator YOUNG. May I ask a question?

Do you use the EROS program to secure some of the information you just mentioned?

Dr. MORGAN. Sir, we're experimenting in four different States with the Earth satellite program, and our work so far is essentially of a research nature. The resolution, the degree of detail which you get with the EROS is about 200 feet by 200 feet, and it doesn't really give us enough detailed information. We prefer our mining research aerial photographic coverage from airplanes, where the resolution is much better.

But we are experimenting in four different States, working with our State liaison people and State governments on possible use of EROS. Maybe something will come of it in the future. It's generally useful for broader areas, like vegetation and drainage and environmental problems and the weather. The EROS has been very useful for that sort of thing.

Senator YOUNG. In countries like Russia, I would think it would be very helpful, wouldn't it?

Dr. MORGAN. That's right, sir. It permits high-level coverage of broader areas that you couldn't get any other way.

So our information collection and dissemination is under real pressure and I think we've been doing a pretty good job in delivering the goods.

NONFUEL MINERALS POLICY STUDY

Assistant Secretary Davenport, for example, is running the nonfuel mineral policy study that the President mandated, where Secretary Andrus and the President's science adviser are in charge. The bulk of the quantitative information about different mineral commodities is feeding into this policy study.

So, therefore, we have in our budget policy and economic assessments, and I'd like to clarify our role. Ours is an initial cut at policy. The Bureau of Mines doesn't make mineral policy. Instead The Bureau of Mines studies it and makes recommendations. But policy, per se, is made by the entire gamut of political officers, such as Assistant Secretary Davenport and Secretary Andrus, so that at each successive level of the government, policy is made by those officials. We make statistical input and recommendations, or if they come up with some policy, then they may ask us, What do you think the implications of this might be? So there's a constant feedback with the higher levels from the Bureau.

MINERAL LAND ASSESSMENTS

Now the next item is Mineral Land Assessments. And there, in total, we had $5.4 million in fiscal year 1978. We're asking for $5.3 million in fiscal year 1979. That looks like a slight reduction, but it really is a slight increase because there was about $300,000 for work in the Overthrust Belt which will be completed, which was in

the $5.4 million. Therefore, the $5.3 million is a little bigger than the $5.4 million.

Here, again, one of our real problems is that the Congress and other Government agencies keep coming up with more and more land areas that they wish to take some action on. They either want to make a wilderness out of it or a wild and scenic river, or a national forest, or a national park or a military base, or a damsite or a powerplant site, or something that inhibits the use of that land for mineral exploration and development. Then they come to the Bureau of Mines and say, "Well, what is the mineral potential of that area?" And I really wish we knew. I wish we could tell the people. Some of our mines are a mile deep. In South Africa, the gold mines are 2 miles deep and we can't really tell anybody for sure what is down a mile or so below the surface of the Earth by just walking around and looking at the top of it.

Therefore, there's just no end to the work that could be done to get an adequate mineral assessment. Within the limitations of money and funds that are available, we are keeping the work going forward.

Senator HATFIELD. Now Dr. Morgan, let me interrupt you a moment. Do I assume, then, that since you're dropping from $3.6 million in fiscal year 1978 in wilderness and public land assessments to an estimate in 1979 of $3.4 million, that you have completed most of your work?

RARE II REQUIREMENTS

Dr. MORGAN. No, sir, the reason we dropped down there was the work in the Overthrust Belt, which we will have completed. But the work on RARE II is just beginning and is getting deeper and deeper all the time.

The Assistant Secretary tells me that RARE II is part of the plan. Let me ask Mr. Dare: Have we done everything in RARE II? If so, why are you going to meetings and writing letters? [Laughter.]

Mr. DARE. The Forest Service has really not identified the areas that they want to make wilderness by instant designation, nor the areas that they're calling areas for further planning.

This is going to be something like the old wilderness study classification. We really haven't gotten into the individual areas to any degree. We have, like Dr. Morgan said a few moments ago, have advised the Forest Service—the Bureau met with the Forest Service and on the basis of the known RARE II roadless areas identified in November—gave them as much information without going on the ground which they could put into their computer and analyze whether the areas should go instant or nonwilderness or into the further planning process.

Senator HATFIELD. How long do you assume that it will take, or do you estimate that it will take, to make your analysis once those instant wilderness areas and further planning areas are identified?

Mr. DARE. That's a tough question, Senator. We, of course, don't know what the acreage might be. I think we can say that the Forest Service has told us that they tentatively believe that they're going to have between 20 and 40 percent of the 67 million acres of

roadless areas going into this wilderness study or further planning category.

The plan now is not to ask us to do an onsite specific study of each area. They're in a bind for time. They want to report on these areas by 1983, years before the land planning commitment date of the Renewable Resources Planning Act comes up, which is 1985.

Senator HATFIELD. Well, they want to have RARE II brought to us by January 1979.

Mr. DARE. That's the date for the final environmental impact statement.

Ms. DAVENPORT. I think the Forest Service's plan, at least the last time I had the opportunity to discuss it with them, is that they're going to try to identify those areas that will be put back into multiple use management, and then, of the areas left, what would be left would be those put into this planning status or suggested for instant wilderness.

So there, as I understand it, they don't want us to start homing in on areas which a year or two from now they may just put back into multiple use management.

Senator HATFIELD. But that carries with it a very interesting assumption, too, and that is how are they going to handle the areas of land which they designate for return to multiple use? If they go the administrative route, they are faced with your part in the environmental impact statement. If we go the legislative route—instant return—we avoid the environmental impact statement.

Ms. DAVENPORT. I think you would have to pose that question to the Assistant Secretary.

Senator HATFIELD. I appreciate that. But the point is that, it seems to me, whichever route they go, there will be a tremendous impact on your agency for your participation in making assessments of those land classifications. And it puzzled me why you would be going downward. I would expect you to be cranking up for a higher level of personnel to handle that, because as you well know, once that report is made, assuming that it is made in January of 1979, the heat's on—from all the interest groups, constituent groups, and so forth, to move to final determination. And I would imagine that there would be bills dropped in pretty quickly on wilderness classifications and even return to multiple use.

I just raise the question because, as I say, it looked to me like you were diminishing your capacity to handle what I would assume to be an increasing burden of work.

PERSONNEL CEILINGS

Ms. DAVENPORT. My own assessment, Senator, is that over the past few years, there has been a growing problem within the Bureau of Mines relating to the numbers of personnel available.

My assessment of the situation is that the number of personnel is more of a difficulty than the research funds available. Of course, the personnel we're allowed is our part of a larger program endorsed by this administration to try and keep the Federal bureaucracy tight and at a more reasonable level.

Senator HATFIELD. Has OMB imposed a ceiling limitation on you?

Dr. MORGAN. Yes, sir. We operate under ceilings that come down from the administration to the Bureau.

Senator HATFIELD. When was the last ceiling limitation indicated to you by OMB?

Dr. MORGAN. It's done every year as part of the budgetary process.

Senator HATFIELD. Were there many adjustments? For instance, you know the situation. First, we've been under this personnel ceiling limitation for a number of years now. They certainly haven't increased their ceiling in the workload, particularly on environmental capacity and so forth.

Have you had a ceiling limitation of some period of time? That is, has the figure been revised upward?

Dr. MORGAN. It's gone up and down a little bit. It went up a little bit this last year, but only a little bit. We're only talking about a few people, and the ceiling that we're operating under now is 2,534. The other week or so the Department transferred one man and our ceiling went up from 2,533 to 2,534, the amount of one man.

But there are little changes like this. And I appreciate very much what Secretary Joan Davenport said about the personnel situation, because what it has done in the land area that I find particularly troubling is where the Congress has given us funds for accelerated land examination work, as they did in Alaska 2 years ago, there was an add-on of $500,000 of which $300,000 was earmarked for Alaska, and more recently, in fiscal year 1977 a supplemental of $600,000. But it has forced us to go to outside contractors to complete the work.

OUTSIDE CONTRACTING

Senator HATFIELD. I was going to ask you how much of that you used.

Dr. MORGAN. Much of the add-on is done by outside contractors, and this, I think, is not a good practice.

We do it where we have to. There are certain safeguards that we can put on it, but I do believe that the examination of the public lands by the Federal Government should preferably be done by Government employees, because the opportunities for conflict of interest or tipping off someone ahead of time where there is likely to be a mineral find or something like that and then they go ahead and stake a claim in advance of proper opening of the area to everyone, is too great. And also, if you have the skilled land examination people, you can divert them from one area to another; whereas when you have outside contractors and they come in on a specific job and then go off again, you haven't trained the people.

So we try to get around this. We hire a fair number of part-time people. In the summer they are university professors, graduate students, and so forth, that we can use to augment our field examination work in the summertime, and this is good because it provides additional employment to graduate students, college professors, and others, who have other employment in the wintertime. So that's part of the solution.

We're doing everything we can within the ceiling limitations that have put upon us. But if you look at figure 17, sir, which is

our personnel situation, you can see that we were authorized 2,690 positions by the Congress in fiscal year 1978, and that our fiscal year 1979 estimate is 2,677, which is a slight decrease. And yet, I cited to you that we were working on ceiling at the present time of 2,534, which is about 150 lower than the positions that had been authorized.

FISCAL YEAR 1979 BUDGET REQUEST

FULL-TIME PERMANENT POSITIONS	FY 1978 APPROP.	FY 1979 BASE	FY 1979 ESTIMATE	CHANGE FROM BASE
METALLURGY RESEARCH	817	817	814	-3
MINING RESEARCH	640	640	640	—
MINING ENVIRONMENTAL RESEARCH	196	196	238	+42
MINED LAND DEMONSTRATIONS	42	42	—	-42
DATA COLLECTION AND ANALYSIS	458	458	453	-5
MINERAL LAND ASSESSMENTS	108	108	103	-5
SUBTOTAL, MINES AND MINERALS	2,261	2,261	2,248	-13
OTHER MISCELLANEOUS ACCOUNTS	429	429	429	—
TOTAL BUREAU POSITIONS	2,690	2,690	2,677	-13

Figure 17

Senator HATFIELD. Let's take a close communication, because if this RARE II thing breaks in upon you, we may have to go the supplemental route or help somebody to accelerate your capacity to respond.

Dr. MORGAN. This is a real area of concern, yes, sir. Well, sir, that finishes the charts that we have prepared to brief our budget presentation, and we will be delighted to respond to any questions that you wish to pose.

Senator HATFIELD. We will also have placed in the record the statement of Assistant Secretary Davenport which has been presented to the committee.

[The statement follows:]

PREPARED STATEMENT OF JOAN M. DAVENPORT, ASSISTANT SECRETARY ENERGY AND MINERALS

Mr. Chairman:

I appreciate the opportunity to be with you today to discuss the proposed budget for the Bureau of Mines for Fiscal Year 1979. This budget reflects several important changes in the Bureau's programs. As you know, certain programs of the Bureau related to energy fuels data and fossil fuel productivity research were transferred to the Department of Energy. Even with this reorganization many functions which are essential to our domestic minerals situation remain with the Bureau of Mines.

This budget reflects the initial steps in establishing new program priorities for the Bureau. Program areas which will become more important are research in the environmental and health effects of energy and non-energy minerals mining, new processes for use of lower-grade resources, technologies which can produce minerals with less pollution, and improvements in conservation and recycling.

I would like to touch briefly on several related aspects of the proposed budget.

Enactment of the Surface Mining Control and Reclamation Act expanded Federal responsibilities for reclamation efforts on abandoned mined lands. We have decided that the Abandoned Mine Reclamation Fund administered by the Office of Surface Mining should provide all future funding for these activities. OSM has requested $61 million in appropirations for reclamation programs for FY 79 compared with the Bureau's FY 78 appropriations of $19 million. We will no longer request Bureau of Mines appropriations for these purposes. We fully intend to utilize the Bureau's expertise in this area to assist the Office of Surface Mining in the management of these projects by pass-through funding.

The Bureau will also be reinforcing its efforts to develop new and improved techniques for mined land reclamation and the correction of problems caused by past mining activities under its Mining Environmental Research Program. This will employ the staff formerly used to manage the Bureau's Mined Land Demonstration projects.

The Bureau's mining, environmental, and health and safety research programs will assume greater importance as we attempt to increase the role of coal as a part of the President's energy program. The coal productivity research efforts of the Department of Energy are closely related to the Bureau's research involving mine health and safety and environmental issues. Close and continuing coordination will be required to assure that advances in any one of these three areas enhances rather than impedes efforts in the others. We also intend to continue the close and effective working relationship between the Bureau and the Mining Enforcement and Safety Administration. Bureau mine health and safety research efforts have been responsive to MESA's expressed needs for solutions to current problems.

The Bureau of Mines took advantage of the DOE transfer to reexamine and consolidate its mining research activities directed toward addressing environmental problems. The result of this program review is the creation of a new budget activity, Mining Environmental Research, which will focus the Bureau's research in this area, and which is presented as a separate activity for the first time in the budget which you have before you. We are requesting $14.6 million in this area for FY 79, an increase of $860,000. Mine Health and Safety Research would remain at its current level of $50.4 million.

The Budget which you have before you provides for continuation of the Bureau of Mines Helium Program under the provisions of the Helium Act Amendments of 1960. Last year you requested the Bureau of Mines and the Energy Research and Development Administration to conduct a joint study of the Federal helium program. An Interagency Helium Committee, composed of representatives of the Bureau of Mines and the principal helium-using agencies (Department of Energy, Department of Defense, and National Aeronautics and Space Administration), has completed this study, and its report has been made available to you. Briefly, this report discusses several promising areas for changing the current helium policy. These will receive careful analysis in the coming months, and we will report back to you with the results of the evaluation in four months.

Finally, I should note that the Bureau of Mines will be playing a substantial role in the Presidentially directed review of nonfuel minerals policy. This review will span the coming 15 months, and will address a wide range of issues affecting our domestic minerals posture. The results of the review could have implications for the work of this Committee. We would like to involve you in reviewing the issues we plan to consider and other work of the review. We would be pleased to brief you on the details at your convenience.

We appreciate your assistance in assuring the vitality of the programs of the Bureau of Mines and look forward to further discussions on this year's budget.

INTERAGENCY HELIUM FUND

Senator HATFIELD. I have a few questions prepared by staff that I would like to go over with you at this time, and then submit the remaining questions to you for response for the record.

Dr. MORGAN. Yes, sir, we will get that together promptly and get it back to you.

Senator HATFIELD. Secretary Davenport, in your statement on page 2, in the middle of the page, you refer to the helium study. The committee has received the interagency helium study that was requested in the fiscal 1978 appropriations bill. I wonder if you could briefly summarize the policy changes that were suggested in that report?

Ms. DAVENPORT. I think the largest overall suggestion is that the helium program be made a national program rather than being limited to the extent it is today.

Do you have the summary?

Excuse me, I can do this easier by looking at the memo. The study concluded that the need for helium in the future is still a most difficult question facing us. We have many technologies under research which, if they come to fruition, will require helium. Some of these relate, for example, to the transmission of electricity over long areas.

There are several major energy technologies which would require large amounts of helium. So those technologies have not come to fruition and so, in the area of projecting long-term demand for helium we are on very thin ice to the extent that we have to make some assumptions. But in spite of those uncertainties, we believe that helium demand—uses of helium—are likely to grow.

The most economical source of helium is from helium-rich natural gas today. Helium can be extracted from the atmosphere, but at great cost. The question comes down, in general terms, to how much helium should we conserve, how much should be separated

from natural gas, and stored by the Federal Government, and by private industry.

Then we get down to questions as to what incentives would be required to have private industry extract and conserve the helium. Part of the recommendations—or the conclusions of this intergovernmental study, is that the Federal supply of helium largely become a stockpile, and that incentives should be created for the private sector to extract and conserve helium. There are a number of problems associated with that.

The conclusions of the report went on to suggest some remedies. We, however, recognize that there is a basic gap in this report, and that is that many of the suggested recommendations were not adequately costed out. That was not the Bureau, and ERDA's, and the other agencies fault; it was that those recommendations—especially, for example, the tax recommendations—just could not be costed out within the time frame we had for producing the report.

We are going ahead——

Senator HATFIELD. Who would be involved in the development of that analysis?

Ms. DAVENPORT. Well, the costing out of the recommendations is being done by the Bureau of Mines and the Office of Mineral Policy, an office which is also under my office. They are working with the other Federal agencies—for example, the Treasury—on the tax aspects. We expect to have that report which will, in essence, try to place estimated costs on these various recommendations to the Congress, by July.

Senator HATFIELD. July?

Ms. DAVENPORT. Right.

OUTCOME OF HELIUM STUDY

Senator HATFIELD. Will there be legislation then proposed by the Department for this overall study program?

Ms. DAVENPORT. I would have to reserve my answer on that. I think we are going to have to consider the cost to American public. It is possible that some changes could be made that would not require legislation. On the other hand, most of the changes suggested, I believe, would require legislation—but before I became a bureaucrat, I was an economist, so I am waiting to see that economic report.

Dr. Morgan might want to add——

Senator HATFIELD. You're saying that it has not yet been determined what you are going to do with this report?

Ms. DAVENPORT. I think that is correct. We have the basic conclusions of the interagency committee which all four departments signed off on, but we do want to look at what the cost would be to implement those conclusions. And those costs, in and of themselves, may lead to altering some of the conclusions.

Senator HATFIELD. If you have the report completed by mid-July, I would assume that you would have your agency policy determined as to how you were going to follow through shortly thereafter.

Ms. DAVENPORT. I think so, but I think that policy can't be just a Department of the Interior policy. It must include the Department

of Energy, and also it should include, I would guess, NASA and Defense.

Dr. MORGAN. Yes, we involved the National Aeronautics and Space Administration—NASA—and the Department of Defense. The Congress told us to make the study between the Bureau of Mines and ERDA, which is now part of DOE, but 80 percent of the current use of helium is in the defense and space programs. So we asked those two agencies to participate, as well, because we didn't want to come to the Congress and overlook anything that they had.

I think one of the real important conclusions of the study so far is that, certainly to the year 2000 and maybe to the year 2020 or something like that, we are in pretty good shape for helium. We have a 40-year supply down in the ground right now under Bureau of Mines control—a 40-year supply at the current rate of use.

So therefore, it is very difficult to see what the situation is going to be 40 or 50 years from now. The cost of doing something today where you have a known cost against a possible or potential use 30 or 40 years from now is part of the problem that Secretary Davenport referred to. These costs have to be set out in some understandable way.

BUDGET CHANGES

Senator HATFIELD. What about budget changes? Secretary Andrus' letter indicates that at this time no budget revisions are suggested for fiscal year 1979. Is that still the situation?

Dr. MORGAN. Yes, sir; the current helium program is conducted by the Bureau under the provisions of the Helium Act Amendments of 1960. Budget changes will not be required unless the act is amended.

FEDERAL AND PRIVATE ROLES IN HELIUM STUDY

Senator HATFIELD. One of the points made in the helium study involves Federal and private roles. Do you feel we are moving toward an overall Federal helium program, or is it likely that Federal involvement will remain limited to supply Government agencies?

Dr. MORGAN. The extent of future Federal involvement in helium is one of the issues being considered by Interior as a result of the helium study. This issue, along with other issues raised in the study, will be carefully analyzed to determine an appropriate Federal role for the future. Therefore, all we can say at this time is that expansion of the Government's role is under consideration.

Senator HATFIELD. What about the demand for helium? Isn't the present helium reserve adequate to meet our needs well into the future?

Dr. MORGAN. The present helium reserve is adequate to meet our needs through the turn of the century and beyond. Referring to figure 20 of the helium report; on page 94 of volume II, helium reserves in nondepleting gas fields and in storage are shown to be adequate for the highest demand scenario until about the year 2015. In scenario 2, demand can be met until about the year 2030.

HELIUM LITIGATION

Senator HATFIELD. In addition to lawsuits for breach of contract, the Government faces potential liability as a result of court cases concerning the value of helium. What is the extent of the potential liability being considered?

Dr. MORGAN. Helium litigation is discussed in some detail on pages 4549 of the second volume of the helium report. Briefly, the private ownership of the helium purchased by the Government for conservation is the subject of a number of lawsuits. Federal courts have ruled that the helium producers acquired title to the helium sold to the Government, but that as a matter of rate regulation, they must pay the lessee producers for the fair market value of the helium. The question of the value of the helium prior to its extraction from the natural gas is yet to be determined by the courts.

The Government's potential liability stems from a provision the helium purchase contracts under which the companies would have claims against the Government for payments to third parties for the value of helium in excess of about $3.15 per thousand cubic feet. Should the courts set the value at $3.15 per thousand cubic feet, or less, the Government's potential liability would, of course, be zero. If the value is set at more than $3.15 per thousand cubic feet, the Government will assert certain legal defenses against the validity of such claims. The companies might ultimately submit claims against the Government for $300 million or more. However, until the value of the helium has been set and the legal defenses examined by the courts, we have no reasonable basis for estimating the extent of the Government's potential liability arising from payments for the value of helium in the natural gas.

Senator HATFIELD. Do you have any idea when these claims might be settled?

Dr. MORGAN. No, sir; but I believe it would be safe to say that final settlement will not be made within the next 10 years or more. The helium value cases have already been in the courts for about 15 years. It seems likely that these cases will continue for several more years. After these cases are completed, and if the value of helium at the wellhead were to be set at more than $3.15 per thousand cubic feet, the former helium conservation contractors will likely have to sue the Government in the U.S. Court of Claims to recover the excess amounts paid to third parties. Such suits could be in process for many years.

NONFUEL MINERALS POLICY REVIEW

Senator HATFIELD. Let me turn now to the nonfuel minerals policy, to which you referred in your testimony. You indicated that the Bureau of Mines would play a substantial role in this study. Could you fill us in on the details of the progress of that review at this point?

Ms. DAVENPORT. As you probably are aware, the nonfuel study is the first study being conducted under the President's new domestic study system. It is chaired basically by the Secretary of the Interior and the Science Adviser to the President.

After quite a bit of discussion between the White House staff, the Department of the Interior, and the Science Adviser, we did indeed

take the route of forming a number of task groups. We can provide you, for the record, what area each task group was looking at to try to define the specific issues that this study should cover in the nonfuel minerals area.

We could study it for 20 years and still have issues that we hadn't looked at. At present, we do have—those work groups have completed their work. We do have a list of issues. That list of issues is going through policy review which is among all of the Federal agencies concerned. We will scale those issues down to those on which there is a concensus that they are the most important issues, and immediately start the substitute work.

In the meantime, two other areas have actually begun. One, the Department of the Interior has an ongoing study to review all of the nonfuel mineral studies that have been done to see, in essence, what data they presented and what their conclusions were. We also are beginning to work to try to formulate an analytical system which, in essence, would take nonfuel mineral industries and make it the focus of an analysis in which taxes, land-use policy, and other things would be the variables. For example, you can look at taxes as part of the Government's general tax policy, but you also can look at taxes as one of the many variables affecting the minerals industries.

So we are progressing on those two flanks. I would hope that within the next 2 to 3 weeks the issues will be well enough stated that the work groups can start their activities.

Senator HATFIELD. You have indicated too, here, that there will be implications for the work of this committee in this review.

Ms. DAVENPORT. Yes, sir.

Senator HATFIELD. Could you elaborate a bit on that?

Ms. DAVENPORT. We are committed to a broad-scale public and congressional input process. The public input process is under development. We intend to include whatever Members of the Senate and House wish to be included in this study, to the extent of presenting them with drafts that are underway, asking their advice as to what issues they think should be looked at. That will be an ongoing process.

Senator HATFIELD. Did you anticipate getting the fiscal impact on your budget relating to this review? Will it be necessary to reapply for current funding, or other budget changes?

Ms. DAVENPORT. I believe, up till now, we have been able to do it within our current budgetary situation. It is a large amount of money. But, in essence, this is a policy review, and our Bureaus do have money for policy reviews.

I haven't heard any complaints, yet, but should it become a burden then we will have to come back.

Senator HATFIELD. Does the study—the nonfuel mineral policy study—visualize identifying the future importance of MAS, the minerals availability system?

Ms. DAVENPORT. That is a two-way street. First of all, as Dr. Morgan indicated earlier, a lot of the data we will be using will come from the Bureau of Mines. As we use that data, and as we try to formulate an analytical structure, which feeds technical material into a mode for decisionmaking, we will also be evaluating the

MAS structure to see if it has the capabilities we need to present data that are useful, in an analytical sense, leading to decisions.

I would expect—I would be surprised if, after the policy review is over, that we didn't decide that there were some changes which were appropriate in the MAS system.

SUBMITTED QUESTIONS

Senator HATFIELD. Thank you, Secretary Davenport, Dr. Morgan, gentlemen. In keeping with high the high degree of professionalism for which your agency is noted, you made a very excellent statement here today on your budget request.

Dr. MORGAN. Thank you very much, and if any further questions come up, we shall be glad to respond to them.

[The following questions were not asked at the hearing, but were submitted to the Department for responses subsequent to the hearing.]

SUBMITTED QUESTIONS

Unobligated Balances

Question. Looking at your summary table in the justification we note that you had an unobligated balance at the end of FY 1977 of $15 million. With that in mind, how realistic is your projection of no unobligated carryover in either FY 1978 or FY 1979?

Answer. The Bureau programs the total funds available at the beginning of each fiscal year. Programs conducted through contracts occasionally experience delays beyond our control resulting in unobligated balances. Our experience has lead us to believe that there will be a small amount of funds unobligated at the end of the year, but has provided no sound basis to identify the amount of such balances. Exclusive of funds provided for construction projects, the Bureau obligated 99.97 percent of its FY 1977 funds.

Question. Please explain the carryover from FY 1977. What programs were involved? You may give us the details for the record, but we would like a brief description at this point.

Answer. The bulk of the unobligated funds are attributed to construction projects totaling $11.3 million for the planning and construction of the Salt Lake City Metallurgy Research Center ($9.7 million) and the boiler installation at our Pittsburgh/Bruceton facility ($1.6 million). The remaining balance consists of $2.3 million for Metallurgy Research and $1.5 million in Mining Research programs.

A table of unobligated balances by subactivity follows:

Unobligated Balances - FY 1977
(In thousands of dollars)

Metallurgy Research:	
Advancing minerals technology	$ 479
Effecting pollution abatement	1,830
Minimizing mineral and metal needs	42
Planning and design of Salt Lake City Metallurgy Research Center	404
Construction of Salt Lake City Metallurgy Research Center	9,259
Mining Research:	
Coal mine health and safety research	529
Pittsburgh/Bruceton boilers	1,013
Mining Environmental Research:	
Environmental engineering systems	200
Environmental control technology	300
Mined land reclamation technology	449
Pittsburgh/Bruceton boilers	587
Total	$15,092

Question. What action have you taken that will avoid the same problems in unobligated funding? How can the Committee be sure that you can obligate all 1978 funding and the full request for FY 1979?

Answer. The Bureau always strives for full and efficient use of the monies available for its use. Research conducted through contracts often results in delays beyond our control, sometimes extending into the following year. The transfer of certain programs to DOE also caused uncertainties as to responsibilities for awarding and monitoring of contracts. The Committee can be assured, with the completion of the transfer to DOE and bareing any unforeseen delays in construction of Salt Lake City Metallurgy Research Center, the Bureau intends to obligate all funds available for its use in fiscal years 1978 and 1979.

Office of Surface Mining

Question. Dr. Morgan, besides the transfer to DOE there are two other major changes in your budget. First of all you are requesting no funding for the mined land demonstrations activity, since this work will be done with funds from the Office of Surface Mining. What about the positions? Will they transfer to OSM?

Answer. The positions will remain in the Bureau of Mines as a part of our mining environmental research work. We have many projects under way that are not completed under the old demonstration program. Some of these will take two or more years to finish up, to inspect, and to make sure they come up to standard.

Question. What reclamation work will the Bureau continue to perform?

Answer. After the completion of the projects described above, the Bureau will no longer engage itself in mined land demonstration projects per se. The Bureau's work instead will focus on research efforts to improve reclamation techniques and methodologies as part of the Mining Environmental Research Program. In addition, the Bureau will provide technical assistance as needed to the Office of Surface Mining which now has the mined land reclamation responsibility in the Department. In addition, the Bureau will carry out reclamation projects for the ARC and may continue some work under the Drainage of Anthracite Mines appropriation.

Question. The arrangement that you propose would be to fund this work through the consolidated working fund with pass-through money from OSM. How much money will be transferred?

Answer. We have not been, at this early date, made aware of the program extent of the amount of pass-through funding from the Office of Surface Mining (OSM) for FY 1979. We would assume, however, that it would be sufficient to provide OSM with the technical assistance they will need to execute their reclamation activities. In the FY 1978, the Bureau conducted a $19 million reclamation program, funded through direct appropriations.

Question. Wouldn't it be simpler and more logical to transfer the qualified people to OSM? Why should the Bureau of Mines be involved at all?

Answer. It would be a great mistake to further fragment the Bureau of Mines. We have a homogenous working organization. These people don't just work by themselves; they depend on the five mining field stations; they depend on our State liaison offices where we have 38 specialists who know what is going on in the different States. To take a small group like this and move them physically to another agency would be far less efficient than having the Bureau of Mines

with its existing organization provide the service to the Office of Surface Mining and bring the full competence of the technological resources of the Bureau to bear on problems as they come up.

Relationship With OSM

Question. The Office of Surface Mining budget includes funding for technical assistance and applied research. Since this has been your area of expertise, have you worked with OSM in the development of R&D plans?

Answer. Although the Bureau has worked with OSM on many facets of its program, we have not been involved in the development of the OSM R&D plans. It is our view that the Bureau of Mines should conduct the environmental research needed to effectively implement and support the OSM regulatory program as we have done on health and safety problems for the Mining Enforcement and Safety Administration (now MSHA) for many years. The OSM research role should, in our view, be patterned on the technical support function of MESA; that is, the regulatory agency (OSM) should possess the technological base to assist mine operators in complying with existing regulations. The Bureau should continue to conduct the basic and applied research studies for surface mines, underground mines, coal and metal/nonmetal mines in keeping with its research mandate.

Question. The OSM justification indicates that some $20 million will eventually be required to inventory lands in need of reclamation, and that the Bureau of Mines assisted in developing that estimate. How did you determine that figure, and what will be your involvement in the inventory?

Answer. The Bureau of Mines has been involved in abandoned mine land reclamation activities for over 20 years. During that time, the Bureau has had a number of publications concerning the extent of the various aspects of abandoned lands. However, this information has been concerned mainly with rough estimates of only the magnitude of the abandoned mine land problem. The detailed data necessary to implement a nationwide reclamation program. such as that to be initiated by the Office of Surface Mining (OSM), does not, to our knowledge, exist. What information is available is fragmented and nonconforming in nature. What is needed to effectively carry out the abandoned mined land program is a comprehensive nationwide inventory which will include the location of all problem sites, the acreage involved, surface and subsurface ownership, cost estimates for correction of the problem, health and safety concerns, and other detailed information. This will allow the Office of Surface Mining to evaluate and to set a priority on each project based on factors such as community health and safety, environmental quality, cost-benefit analysis, etc.

In anticipation of the OSM program, the Bureau initiated a demonstration project in FY 1977 to assess the feasibility of acquiring detailed data on the nature and extent of abandoned coal mined lands on a nationwide basis. The project provides for a detailed survey of several counties in the Appalachian coalfields which have a history of past coal mining activities as intense as any county in the country. Based on early response to this project and to past Bureau experience, an estimate was made that such an inventory on a nationwide basis would require between $1.5 million and $2.5 million in each State that has a history of intense coal mining activity. On this basis, the estimate for the entire United States would be about $21 million.

In order to carry out a nationwide inventory to provide the data necessary to accurately evaluate project work, a detailed work plan should be established with specific methods and parameters so that a uniform set of data can be obtained for the Nation. Since projects must be given priorities according to set criteria, it is vital that the inventory data from the various States be comparable. Once parameters and methods are established, inventory work can be contracted out to the States or directly by the Federal Government.

The degree to which the Bureau will become involved in future mined land inventory work has yet to be determined. It will, of course, provide OSM with the results of its present inventory demonstration work when it is completed.

Question. Would you briefly describe the work you plan to do which will tie into the efforts of the Office of Surface Mining? Are there other areas besides the ones we have just discussed?

Answer. The Bureau provided administrative and technical support to the task forces that worked on OSM organization and on some of the regulations to be enforced by OSM. As a result of these interactions, OSM present and future technological needs were incorporated into the Bureau's mining environmental research program. We plan to continue to support OSM in the areas we have just outlined as well as to assist them in any other areas where Bureau support can be helpful. As we have done with other agencies in the past, we have requested that a Memorandum of Understanding be executed between our agencies.

Environmental Research Activity

Question. The other major change in your budget is the establishment of the environmental mining research activity. You indicate that this is a result of reexamination and consolidation of your research work. What former funding and personnel were used to create this new $14.6 million activity?

Answer. The new Mining Environmental Research activity was created from key elements of the Mining Research Program remaining after the DOE transfer: advancing coal mining technology and advancing oil shale mining technology. The programs funded in these two subactivities were examined and redirected toward reducing and eliminating the adverse environmental effects associated with the extraction of minerals, metals, and fuels. Personnel for the program came from these subactivities and the Mined Land Demonstration Program.

Question. Please supply a table for the record tracking the funding and personnel shifts used to establish the new activity:

SOURCE OF FUNDING AND PERSONNEL ESTABLISHING
MINING ENVIRONMENTAL RESEARCH PROGRAM
(In thousands of dollars)

FORMER STRUCTURE

Activity And Subactivity	1978 Adjust. Approp. 1/ Perm. Pos.	Amount	1979 Estimate Perm. Pos.	Amount
Mining Research:				
Advancing coal mining technology ...	174	$10,216	--	--
Advancing oil shale mining technology	22	3,265	--	--
Total mining research	196	$13,481	--	--

PRESENT STRUCTURE

Mining Environmental Research:				
Environmental engineering systems ..	88	5,993	88	5,116
Environmental control technology ...	52	3,572	52	4,944
Mined land reclamation technology ..	56	3,916	98	4,556
Total	196	$13,481	238 2/	$14,616

1/ The adjusted appropriation for 1978 reflects the transfer of coal productivity research to DOE and the distribution of program administration costs to Bureau programs as follows:

Mining Research:	Approp.	DOE Trans.	Distribution Prog. Admin.	Adjusted Approp.
Adv. coal mining technology	$70,081	$-60,000	$135	$10,216
Coal preparation	5,020	-5,020	--	--
Adv. oil shale mining tech.	3,221	--	44	3,265

2/ Reflects the transfer of 42 positions from Mined land Demonstration Program.

Question. How will your new emphasis on environmental research concerns tie in to the DOE and OSM programs?

Answer. Based on Section 302 of the Department of Energy Organization Act (P.L. 95-91), the DOE was assigned primary responsibility for R&D to improve the productivity of solid fuel mining. The Bureau of Mines has primary responsibility for the environmental aspects of mining as well as research on mine health and safety. The Bureau has a close working relationship with the new agency so that the research efforts of both agencies may proceed in a complementary fashion.

The work of the Bureau will support OSM in providing a technologic basis for standards and will also permit more cost effective compliance with regulations by industry through the development of improved technology to control environmental impacts. The interface areas between OSM and the Bureau are currently under discussion to assure that no duplication occurs and a Memorandum of Understanding is planned to guide the relationship between the two agencies.

Question. We now have at least three agencies involved in surface mining research the Bureau, DOE, and the Forest Service. Who's responsible for coordinating these efforts?

Answer. The assigned missions of these three agencies should provide the necessary guidance to prevent overlapping work. The Bureau has responsibility for all surface mining research with the exception of solid fuels productivity. DOE has responsibility for solid fuels productivity and we understand the Forest Service is working in specialized areas of postmining soil conditioning.

Bureau officials have met with their counterparts in DOE to discuss the coordination of research responsibilities. In addition, the DOE organizational elements responsible for surface mining are still occupying adjacent office and research space with the Bureau. The fact that these individuals are former Bureau employees and are still physically housed in Bureau facilities provides the opportunity for close coordination.

The responsibility to coordinate these efforts lies with all three agencies and, in the Executive Branch, with the Office of Management and Budget.

Question. Please explain how research responsibilities are allocated so that there is no duplication among these three agencies--and any other agencies that may be getting into the act.

Answer. The Bureau's mining environmental research work goes back over several decades. Our recent program structure for this research is the result of P. L. 95-91 which transferred only the productivity research on solid fuel minerals and fuels data gathering responsibilities to DOE and left all other Bureau of Mines responsibilities intact. The structure of this program is as set forth in our budget justification for FY 1979. It encompasses an analysis of the environmental effects from all phases of the mining for all minerals commodities and the development of technology through research to prevent these adverse effects in a cost effective manner. The Bureau has been vigilant to restrict its work to that mandated by law and to seek coordination with other agencies involved in related activities.

Question. To what extent will your mining environmental research be getting into coal mining technology?

Answer. The Bureau of Mines is deeply involved in coal mining technology through its missions in environmental and health and safety research. The only aspect of coal mining technology which is not addressed by the Bureau's research programs is that which is concerned with providing the technology to increase the productivity of coal mining. This area of increasing productivity, which was assigned to the DOE by Section 302 of the Department of Energy Organization Act, considers modification to equipment and some new equipment items to improve productivity.

METALLURGY RESEARCH

General

Question. Your FY 1979 request for metallurgy research is $28.6 million. How does this compare with your request to OMB?

Answer. Our FY 1979 budget estimates submitted to OMB for the Metallurgy Research program contained zero-base budget decision packages totaling over $36 million. This amount representes an increase level of funding of approximately $9 million. Careful consideration was given to our budget request and weighed against other requests of competing priority programs. Owing to the necessity of limiting Federal spending to maintain a strong economic program and a balanced program effort, funding of the Metallurgy Research Program was set at $28.6 million.

Question. What program areas were reduced as a result of the OMB action?

Answer. As a result of the OMB review, no on-going metallurgy projects were eliminated. However, a number of proposed increases recommended by the Department were not funded, including the following research proposals:

Advancing Minerals Technology

- Metallurgical Engineering to Reduce Pollution. Thorough evaluation of current mineral processing flowsheets and the physical chemistry of unit operations to identify process changes or modifications to control pollution within the metallurgical system.

- Phosphate. Field demonstration of new technology for improved recovery of phosphate from ores and reduction of environmental problems associated with slimes disposal.

- Potash. Scaleup of laboratory-developed processes for recovering potash from high-clay ores.

- Rare Earths. Beneficiation investigations of Idaho euxenite and California bastnasite deposits to recover rare earths and the byproducts, barite and strontium.

- Uranium. Investigation of less-polluting, in situ leaching methods and more efficient processes for treating low-grade domestic uranium ores and materials not recoverable by conventional processing technology.

- Lithium. Development of leaching techniques for recovering lithium from extensive deposits in Nevada.

Effecting Pollution Abatement

- Metallurgical Wastes. Development of alternative processing technologies, such as in situ leaching, to avoid generation of waste materials commonly resulting from the extraction of minerals and metals from ore bodies.

- Gas Cleaning Technology. Investigation of improved methods to remove ultra-fine particles from hot gas streams within metallurgical systems, and for pilot-testing of improved sulfur dioxide control systems for metallurgical applications.

- Process Water Treatment. Initiation of studies on the removal of entrained organic chemicals from mineral processing waste streams so that the water can be reused effectively.

Secondary Resource Recovery

- Industrial Scrap and Wastes. Investigation of recycling technology for recovering critical minerals from metallurgical wastes; silver and chromium-nickel alloys from scrap aircraft parts; critical and toxic metals from batteries, other than lead/acid ones; and of simple methods for identifying and sorting complex scrap.

- Urban Refuse Processing. Adaptation of effective refuse processing technology to the needs of communities that are currently considered too small to use other than landfills that lose minerals and metals refuse.

Minimizing Mineral and Metal Needs

- Performance Materials. Development and evaluation of improved, superior-performance materials to measurably extend service life under extreme conditions in minerals and metals processing. Research on advanced casting methods that would require less total metal use to produce high-quality incremental ferrous alloy castings for achieving superior physical properties.

Program Increases - Metallurgy Technology

Question. You are seeking a $100,000 increase under metallurgy research for work on extracting uranium from low-grade resources. Is this the total available for uranium research?

Answer. Yes; the $100,000 is the total available for conducting a modest research effort on the basic physical and chemical properties required to develop extraction technology to recover uranium from the very low-grade resources. This research is an important first step in helping to provide the uranium reserves of the future.

Question. How does this tie in to the Department of Energy programs? Is there any DOE funding in this area?

Answer. The Department of Energy in a June 1976 report entitled "Uranium Reserves, Resources, and Production," estimated that U.S. uranium resources were adequate to supply fuel over the 30-year lifetimes of existing, planned, or projected reactors expected to be in domestic service by 1990. Beyond that time, requirements are expected to exceed domestic reserves, leading to the necessary exploitation of lower grade and more refractory resources that require development of more efficient metallurgical processing methods. Information collect-

ed by DOE indicates that about $200 million was spent in 1977 on exploration activities for uranium, but to the best of our knowledge none of the current exploration efforts have developed major new uranium deposits or provinces. Accordingly, Bureau of Mines metallurgical research on uranium is directed toward developing basic information on extremely low-grade resources that must eventually be used.

The Bureau of Mines is coordinating its research efforts toward processing these uranium resources with the Supply Evaluation Branch, Division of Uranium Resources and Enrichment, Department of Energy. No DOE funding in this area is provided to the Bureau of Mines for metallurgical research. While DOE maintains an interest in this area, the primary responsibility for the metallurgical aspects of uranium extraction and recovery from low-grade resources remains with the Bureau of Mines.

Question. What specifically do you hope to accomplish with the requested FY 1979 funding for uranium extraction research?

Answer. A fundamental investigation will be initiated for developing the basic physical and chemical information needed to extract uranium from extremely low-grade resources.

The extremely low-grade resources to be considered include sea water, western shales, and phosphate rock. The uranium content of sea water is only about 3 parts per billion, but the total resource in sea water is estimated to be around 4 billion tons. The problem is that at least 200,000 tons of sea water would have to be processed to recover 1 pound of uranium. We hope to develop the basic scientific and engineering information for considering the recovery of uranium from sea water.

Resources of western shales are poorly defined but probably comprise a very large uranium resource in North Dakota, Utah, Montana, and parts of adjacent states. To determine with any accuracy the availability of uranium from the extremely low-grade western shales would require a large exploration effort in addition to the $200 million search now being conducted. It is known, for example, that the Bakken Formation of northeastern Montana varies in thickness from a few inches to 100 feet, but selected samples have analyzed only 0.005 to 0.008 percent uranium, which is about the concentration present in Chattanooga shales. In contrast, current reserves contain 0.06 to 0.19 percent uranium. We hope to develop the knowledge of the fundamental characteristics of uranium resources needed to enhance the recovery of uranium from low-grade.

The total identified uranium resource in phosphates of the Western States of Idaho, Wyoming, Utah, and Montana is 153,000 tons uranium in deposits that contain 0.009 percent uranium. The 95,000 tons of uranium identified in the North Carolina phosphates are in deposits that contain 0.008 percent uranium. At the present time TVA, in cooperation with DOE's Oak Ridge National Laboratory, is investigating the distribution and occurrence of uranium in Florida, North Carolina, and western phosphates.

TVA and DOE have an interest in extracting uranium from the phosphoric acid in commercial production. The Bureau of Mines role in this activity is in recovering the uranium from phosphate processing wastes in accordance with the concept of total resource recovery. In addition, the Bureau of Mines is interested in reducing the radioactivity problem associated with wastes from phosphate mining and processing operations.

Question. You also mention acceleration of current efforts in coordination with DOE on recovering minerals from geobrines. What is the total funding? Does DOE contribute any funding?

Answer. Our geobrines minerals research effort is directed toward recovering valuable critical minerals and metals from geobrines, and the concomitant determination and selection of the most corrosive-resistant materials available to withstand the corrosive, erosive attack of high-salinity fluids. Past work has been concerned mainly with the testing and evaluation of improved, superior-performance materials, and with the chemistry of geobrines. More recently, emphasis is being placed on the recovery of dissolved mineral constituents from a wide spectrum of geobrine resources. This work is based on our long-standing experience in solution chemistry and evaporite minerals recovery. In conducting this effort, we coordinate our activities closely with DOE's geothermal program. The total funding for this effort currently is $700,000. DOE does not contribute any funds.

Question. The justification for the $835,000 increase under mineral recovery is vague. You state that the studies proposed are not by nature laboratory research. What then is the nature of these studies?

Answer. The low-grade resources which should become much of the mineral reserves of the future and the intensified concern for the environment make it necessary to change our concepts of minerals processing technology. Processing flowsheets are going to have to incorporate the environmental dimension. Tailings, slags, sludges, residues, and other processing wastes will have to be eliminated or be cleaned free of pollutants. Fugitive dust and fume must be prevented. We feel this can most effectively be accomplished within the metallurgical system. Post-operational controls are costly, frequently are not effective, and are a waste of resources, both minerals and energy. A better basic information base on the minerals processing sequence is essential if process improvements are to be forthcoming that will truly provide for total resource recovery and assure safeguards for the environment. The increase of $835,000 would be used to initiate studies that would provide the needed information base. The kind of studies we propose would draw on the extensive literature of thermodynamics and physical chemistry. For each of the major mineral commodities, the flowsheets and unit operations incorporated in the flowsheets would be examined and the theoretical distribution and partitioning and fate of each mineral species moving through the system would be predicted. This information has been considered pertinent in the past for only those minor constituents of an ore for which there is obvious economic value, such as the gold, silver, and platinum associated with copper ores. The kind of study proposed does not require laboratory work. Instead, it requires extensive knowledge and application of the principles of thermodynamics and physical chemistry. Once available, the information base will provide insight into how metallurgical process changes or modifications can be made to capture and recover the metals, minerals, and other substances that are now escaping from the minerals processing systems.

Question. You go on to mention that because of the scientific nature of the research that you will be relying on outside expertise. Why is the Bureau not equipped to handle this kind of work?

Answer. The Bureau's metallurgy capability is mostly occupied in mission-oriented applied and engineering research. There is, however, the required expertise to complement the type of proposed studies in universities and private research institutions.

We do not wish to imply that research involving non-laboratory approaches is better done outside the Bureau than inside, nor that the Bureau is not equipped to handle this kind of work. However, with a limited manpower situation, it is necessary that some of the Bureau's research be contracted out to other competent research groups in order to achieve the needed results in a reasonable time period. Academic and other research institutions have often been used by the Bureau for conducting non-laboratory research. Some recent examples include:

- Thermochemical model of the sintering of lead concentrates at the University of Utah.
- Thermodynamic modeling of proposed metallurgical processes at the University of Denver.
- Simulation of comminution processes at the University of California.
- Modeling of the leaching of copper oxide ores at the University of Utah.
- Energy use patterns in metallurgical and nonmetallic mineral processing at Battelle Columbus Laboratories.
- Environmental factors in processes for producing alumina at Colorado School of Mines.
- Energy use patterns for metal recycling at Arthur D. Little, Inc.

Resource Recovery

Question. Your are proposing a slight decrease of $195,000 in your research effort on recovery of industrial scrap. The justification states that the reduction is based on successful completion of research into silver and zinc recovery. What have you learned from that research work?

Answer. Research to recover zinc from galvanizing wastes and silver from aircraft scrap was conducted in laboratory-scale tests. The research on zinc recovery has not been encouraging and, as a result, other research of higher priority will replace this effort in FY 1979. However, more success has been achieved with the research on silver and stainless steel recovery from aircraft scrap. A laboratory technique has been devised to electrolytically recover the silver from the scrap. It is expected that DOD will accept the laboratory results for possible large-scale testing upon completion of the laboratory tests at the end of FY 1978.

Question. You also mention changing priorities under industrial waste recovery. Do these new priorities effect other aspects of the program, or are they limited to reductions for silver and zinc recovery?

Answer. A ranking procedure was used in the zero-base budget process to assign priorities to projects throughout the Metallurgy program. The slower progress than hoped for gave the zinc project its lower priority and resulted in the project being replaced by other, more promising research in the overall Metallurgy Research program.

Substitute Materials

Question. You have a $100,000 increase for work in finding substitutes for asbestos. Would this be the total funding, or would it be in addition to a base amount?

Answer. The $100,000 increase requested represents the total funding for this work. We have proposed a relatively low level basic research project aimed at developing a substitute for natural asbestos fibers. Until we are more assured of success in this work, we do not propose more funding.

Question. Would this research be in any way related to the health problems associated with asbestos?

Answer. Yes, the Bureau of Mines has a dual concern about asbestos. Our chart, "Mineral Problems 1977 and Beyond," figure 6A, page BM-10 of our FY 1979 budget justifications, indicates the nature of the supply problem. Our second concern is with the health and safety aspects of asbestos. We hope that a synergistic result of developing a synthetic asbestos will be that the new material will not have the detrimental health aspects of natural asbestos fibers. A cooperative program with the National Institute of Environmental Health Sciences (NIEHS) with whom we already work would be proposed if promising substitute materials are developed.

MINING RESEARCH

Health and Safety

Question. Your request for health and safety research both in the coal and metal and non-metal areas remains essentially at the same level as in the current year. How does this compare with your request to OMB?

Answer. The following chart displays the differences in the amounts recommended to OMB and those included in the budget request.

	FY 1979 OMB Request	FY 1979 Budget Request	Difference
Coal ($000)	$47,090	$41,090	$-6,000
Metal/Nonmetal ($000)	10,071	9,361	-710
	$57,161	$50,451	$-6,710

Question. Can you briefly tell us what projects were reduced in the coal area, and then in the metal and non-metal area.

Answer. In the coal area, the following projects were not funded:

- Demonstrate stability control measures for highwalls (controlled blasting) and produce safety guidelines by 1979.
- Develop a reliable rotary water seal in 1979 for ripper-type continuous miners which should produce about a 25 percent dust reduction compared to conventional water spray systems.
- Demonstrate safety methodologies to protect against dust explosions by 1980.
- Review and develop for MSHA new certification methods for toxic products as required.
- New product improvement by better design for noise control of major types of underground electric face equipment by 1983.

- Develop test procedures and toxic product criteria for explosives and products of combustion to assist MSHA in development of standards criteria by 1982.
- Provide regulatory criteria for MSHA use on cutting and welding operations by 1980; and on combustible loading correlation by 1980.
- Produce fully automatic rock burst warning system integrated into mine plans by 1981.

In the metal and non-metal area, the following projects were not funded:

- Survey a wide variety of mining operations for health hazards in 1980. This would be a continuation of the effort now being conducted in 22 noncoal mines in cooperation with MSHA and NIOSH.
- R&D on analytical techniques for measurement of airborne contaminants, especially quartz and asbestos fibers, to be completed by 1981.
- Determine typical costs of ventilation in uranium mines to determine the costs of a reduced standard for radon daughters such as now is being considered by EPA.
- Product improvement by redesign for noise control on milling/processing operations by 1983.
- Develop test procedures and toxic product criteria for explosives and products of combustion to assist MSHA in development of standards criteria by 1982.
- Provide regulatory criteria for MSHA use on cutting and welding operations by 1980; and on combustible loading correlation by 1980.
- Produce fully automatic rock burst warning system integrated into mine plans by 1981.

Question. Your justification lists 11 functional areas under mine health and safety research. Please provide a breakdown of funding based on these functional categories, and indicate for each category how much is for coal and how much is for other.

Answer. The information follows:

Mine Health and Safety Research
FY 1979
($ in Thousands)

Functional Category	Coal	Other
Respirable Dust	2,650	600
Radiation Hazards	--	1,100
Noise	1,900	880
Industrial Hygiene	2,655	540
Ventilation	--	610
Total Health	7,205	3,730
Fire & Explosions	4,310	1,250
Methane Control	2,560	--
Ground Control	11,200	1,820
Industrial Hazards	11,385	1,886
Post Disaster	1,870	365
System Engineering	2,560	310
Total Safety	33,885	5,631
Total Program	41,090	9,361

GAO Reports

Question. A recent GAO report indicated that metal and non-metal health and safety research has been underfunded for many years. That concern was addressed by a congressional add-on in the FY 1978 budget which you are maintaining in FY 1979. How much did you seek from OMB for metal and non-metal health and safety research.

Answer. The Bureau submitted ZBB packages totaling $10,071,000 for metal/nonmetal health and safety research. The budget request includes a total of $9,361,000 for such research.

Question. Do you feel the proposed funding for metal and non-metal health and safety research is adequate to combat the past years of underfunding?

Answer. The Bureau requested $710,000 more than actually approved in the budget request for fiscal year 1979. In order for the President's budget vigorous economy, many proposals had to go unfunded or receive less funds than proposed. The funding is adequate given the constraints on Federal spending.

Question. That GAO report also concluded that the results of safety research were not being made available to interested parties, and that coordination with the Mine Health and Safety Administration was lacking. What has been done to correct this situation?

Answer. Under a Memorandum of Understanding established between the Bureau of Mines and the Mining Enforcement and Safety Administration effected in February 1976, a formal committee has been established to coordinate technology transfer activities. Representatives of MESA (now the Mine Safety and Health Administration) and the Bureau meet regularly to discuss and evaluate research accomplishments and to determine ways to accelerate their adoption by the mining industry. Representatives of MSHA also assist the Bureau in planning and implementing technology transfer seminars and briefings. Since the day-to-day contact of the mine inspector with the mining industry represents one of the most effective ways of advising the industry of research results, all MSHA inspectors are being placed on the mailing list for Technology News, a Bureau publication that describes new technology developed by safety research that can impact the industry.

Question. Is there a written agreement which clearly defines your role in dissemination of research results as opposed to the role of MSHA?

Answer. Under the Memorandum of Understanding of February 6, 1976, the Bureau has the lead role in disseminating research results. The joint Bureau/MSHA Committee on Technology Transfer has agreed that (1) The Bureau will coordinate technology transfer activities on research results and (2) MSHA will assist in dissemination of research results through the efforts of mine inspectors and technical support specialists.

Coordination with DOE

Question. Now that the coal mining technology function has transferred to DOE, how will you coordinate DOE's work with your health and safety concerns?

Answer. The Bureau of Mines has agreements with DOE which provide cooperative participation in continuing those programs initiated prior to the creation of DOE. The purpose of these agreements is to insure that both the productivity-oriented projects now under DOE jurisdiction and the Bureau of Mines health and safety programs are not hampered by

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the reassignment of personnel to the separate agencies. There are several mechanisms used by the Bureau to assure that the health and safety aspects of DOE projects for improving mining techniques are properly addressed. New projects prepared by the Bureau of Mines for DOE require that all Federal, State, and local health and safety regulations are met. Also, the Bureau of Mines participates with DOE through cooperative management of their projects to assure that hardware designed and manufactured meets these regulations. Projects are written for DOE such that safety and productivity goals are of equal weight. In many cases the Bureau of Mines implements separate projects to improve the health and safety aspects of particular DOE projects, and anticipates jointly funding projects of mutual concern. Finally, the Bureau and DOE cooperatively present briefings and seminars of projects with both production and health and safety considerations, thus ensuring proper balance.

Question. One of your health and safety programs concerns methane control. Is this coordinated with DOE's program?

Answer. The Bureau's methane control program is coordinated with DOE's methane program. In general terms, the Bureau work addresses all aspects of methane control that serve to reduce the liberation of methane during the mining cycle and hence reduce the probability of methane ignitions. Such activities are, by necessity, directed at mining operations that are active or are planned for development and operation within a few years. In contrast, the DOE methane program is directed at economic techniques of removing methane from coalbeds for energy utilization. Such activities need not be tied to specific mining plans or operations and can be applied to coalbeds for which there are no current exploitation plans.

For a number of years the Bureau of Mines has been urging companies mining in gassy coalbeds to institute methane drainage programs which include plans to market the methane if economically feasible. This resulted in 1974 in the first case wherein methane, being removed from coalbeds to make mining safer, was recovered and distributed through a commercial gas pipeline. In current demonstration projects and where applicable in test projects, our cooperative agreements with coal mining companies require the company to use its best efforts to capture and market the methane if it is liberated in sufficient quantity to market it commercially.

Inquiries that we receive concerning commercialization of coalbed methane as a source of natural gas are being referred to Resource Applications, Department of Energy for their consideration.

Program Accomplishments

Question. What have your recent successes in the health and safety area been? Could you briefly tell us about programs or devices that you have instituted?

Answer. Recent successes in the health and safety program are detailed below:

Respirable Dust

- Dust control system composed of water seals and sprays for auger mining equipment was successfully tested and is now available for mining operations.
- Instrumentation for detection and measurement of airborne fibrous particulates has been developed under a joint Bureau/NIOSH project.

- A seven-fold reduction in respirable silica dust concentration was achieved by Bureau-developed techniques for bagging silica minerals in a field processing mill demonstration conducted in cooperation with the National Industrial Sand Association.

Radiation Hazards

- Several improved radon gas control techniques have been field-tested.
- Methods were developed to increase the accuracy of techniques used for calculating radon daughter concentrations in uranium mine environments.

Noise

- Bureau techniques for noise abatement have been field-tested in a coal preparation facility. These methods enabled the plant to meet noise requirements of the Federal Mine Safety and Health Amendments Act of 1977.
- Effective noise control modifications for retrofitting auger type continuous miners have been field installed.
- Noise control treatment were developed for load-haul-dump machines used in metal and nonmetal mines. Allowable operating time was increased by a factor of 2.7.
- Acoustic enclosures have been designed for secondary crushers in taconite iron ore processing plants.

Ventilation

- A new parachute-type stopping for controlling mine air flow was developed and shown to be applicable for emergency use.
- Tests of uniquely joined brattice cloth panels for controlling air flow demonstrated the ability to withstand daily blasting in situations where conventional brattices would be destroyed.

Industrial Hygiene

- A prototype carbon dioxide monitoring instrument has been developed for use on underground diesel equipment.

Fire and Explosions

- Bureau developed fire detection and suppression systems for large surface mining vehicles have been widely accepted by the mining community.
- Hybrid fire supressants have been developed for extinguishing methane explosions and other fire sources.
- Bureau research facilities and personnel are made available to assist Mine Safety and Health Administration's recovery activity following mine disasters. Such support was provided after the Scotia Mine disaster.

Methane Control

- Facilities have been completed for a full-scale mine demonstration of methane diversion techniques designed to remove methane from the coal seam in advance of mining.
- Laboratory and in-mine tests demonstrated the effective use of an air curtain to separate fresh air from contaminated exhaust air at the mining face.
- Methods were developed to enable mine designers to estimate methane production rates and ventilation requirements when measurements or samples are unavailable.

Ground Control

- Bureau developed and tested roof fall warning systems representing a significant advancement in miner protection.
- A grouted roof bolt system was developed and licensed for industrial production.
- An automated entry support system was developed and tested to reduce hazards in longwall mining operations.
- An electrokinetic method for consolidating coal sludge was developed to improve safety and stability of waste piles.
- A high-rise work platform was developed to protect miners from roof fall hazards during rebolting.
- A major new theory of the mechanics of rock failure was developed and used to establish mine design criteria and control rock bursts.

Industrial Hazards

- Results of Bureau studies were used in preparation of MSHA mandatory training regulations.
- A study of braking systems on rubber-tired mining equipment has aided industry compliance with improved performance requirements.
- Several improved illumination systems have been developed for scoops, continuous miners, and drilling machines (jumbos).
- A computer program was developed for calculating the illumination of mine surfaces by machine mounted lights. This program will reduce the cost of illumination testing.
- A reliable and cost effective mine-wide system has been successfully tested in an operating mine to monitor, analyze and record the mine environment. Remotely controlled ventilation is an added function currently under development.

Post Disaster

- Self-contained, oxygen self-rescuers have been developed and successfully tested.

Programs and Devices

The Bureau has been very successful in the improvement and development of devices that have a pronounced impact on the health and safety of miners. In addition, Bureau research has developed the basis for new standards which have advanced the safety of equipment design. Examples of Bureau developed safety equipment include:

- Conveyor-belt fire protection
- Fire control system for mobile equipment
- Improved methane monitors for face equipment
- Non mechanical anemometers
- Hand-held indicating CO, NO and NO_2 direct reading instruments
- Passive samplers for NO_2
- Descriminating circuit breaker for trolley lines
- Improved grounding conductor continuity monitors
- "Panic bars" for electric face equipment
- Optimized operator compartments for equipment
- Oxygen - supplying self-rescuer
- Borehole probes for locating trapped miners
- Nonclogging water system for more reliable water sprays
- Through-the-auger water sprays for auger miners
- Canopy air curtain to reduce respirable dust exposure
- Roof bolt load cells
- Microseismic roof fall and coal outburst warning devices

- Roof-bolt bender/inserter
- Longer-than-seam height drills for roof bolting
- Bolting machine output torque control units
- Inorganic cement-grouted roof bolts
- Infrared scanner to locate hazards and trapped miners
- Positive indicator for track switch point
- Automatic remote control coupler for mine cars
- Deep cutting ripper continuous miners
- Secondary ventilation to reduce respirable dust - double drum shearer
- Wetted fiber bed dust collector for respirable dust

Complete descriptions of these and other devices are found in the June, 1977 publication entitled "Impact of Coal Mine Health and Safety Research" and the December, 1977 publication "Impact of Metal and Nonmetal Mine Health and Safety Research." Both publications are readily available to the Committee, the mining community and the public.

Question. Noise abatement regulations are making your research in that area critical. What accomplishments have been made, and what do you hope to achieve in FY 1979?

Answer. In order to meet the stringent noise regulations, a balanced program involving both short-term retrofit noise control treatments and long-term redesign techniques is being pursued. Program accomplishments have closely followed the objectives of the noise control program. These objectives are:

- Determine the major noise sources of mining equipment and processes.
- Provide more accurate measurement and instrumentation of the noise environment.
- Demonstrate retrofit noise control treatments.
- Develop redesign techniques to reduce noise.

Some significant and successful accomplishments have included the identification of major noise sources in coal cleaning and preparation plants and demonstration of retrofit noise control techniques; identification of the noise sources in iron ore, taconite processing plants and development of noise control techniques for the secondary crushers; development and fabrication of a Bureau-designed, personal portable time-resolved audio dosimeter to evaluate the noise environment and miner's exposure to noise; procedures have been established for predicting operating underground noise levels from above ground noise measurements of machinery; a census survey was completed of all the major machine types employed in surface mining and their operating times and contribution to the noise environment; retrofit methods have been developed to attenuate the noise of a personnel carrier and a load-haul-dump machine so that their allowable operating times under current noise regulations have increased by nearly a factor of 3; application of retrofit noise control modifications to an auger-type continuous mining machine and bridge conveyor that resulted in reduced operator noise exposure; and design concepts have been developed and demonstrated for percussive rock drills that have greatly reduced the noise levels with very little effect in drilling performance. The percussive drills have been identified as the most severe machinery noise problem.

During FY 1979 the noise control program will place increased emphasis on demonstration projects, noise abatement techniques by redesign, and expansion of the program in the area of metal and nonmetal mines. New projects will be undertaken in the areas of longwall mining systems, rock-quarry mining techniques that have been identified as hazardous, and in defining the noise levels generated from the physical cutting and extraction of coal. Demonstration projects are essential to prove that

the noise control concepts developed are feasible so that the stringent noise regulation can be enforced. Specific areas to be addressed are bulldozers, mantrips, front-end loaders, and continuous mining machines. Major redesign will be undertaken in the area of jumbo rock drills. This effort will be based on the earlier successful percussive, rock drill efforts. In the metal and nonmetal area, work will investigate and quantify the noise exposure impact of the industry to identify the primary noise sources. Projects will be undertaken to quiet the ore processing methods which are typical of the entire industry.

Question. You state in the justification (p. 55) that in establishing research priorities a cost/benefit analysis is not applicable, since human lives are involved. How then do you establish priorities? Is it solely based on fatality statistics?

Answer. Allocation of resources between major areas of research is made mainly on the basis of statistics of accidents and fatalities. Less tangible factors, such as the apprehension felt by miners and the public and government attitudes as a result of major mine disasters, must also be considered in establishment of research and development priorities. Within research areas, priorities are established by joint Bureau/MSHA committees using a mutually developed selection methodology that examines and rates the need for research, utilization of research results, and project cost using 12 explicit evaluation criteria.

Question. Your justification also states that you are striving to increase cooperative agreements and cost-sharing to achieve broader acceptance of research efforts. What kind of problems are you experiencing with acceptance of the Bureau's research work?

Answer. Whenever the Bureau, through its own efforts, without cooperation from industry, undertakes a new technology development in mining, it faces the problem of advising and gaining support and acceptance of the new technology by industry. To address this problem, the Bureau has an extensive technology transfer program which serves the mining industry by informing MSHA, mining personnel, manufacturers, educators and others of the results of Bureau-funded research. This dissemination of information is accomplished through open industry briefings, seminars, exhibits, demonstrations, and special publications, such as Mining Technology Research, an annual booklet that scans mining research programs; Mining Research Review, an annual booklet that briefly describes selected mining research programs; and Technology News, information sheets on research nearing commercial application.

When research develops a procedure, technique, or device to the point of indicating a good possibility of technical success, cooperative agreements often serve to test the concept under actual mining conditions and hasten the acceptance of the technology. The Bureau is accelerating its involvement of industry in research projects from project inception. Early industry involvement in cooperative research has demonstrated that this technique speeds technology transfer through joint participation in solving problems.

Question. What kind of agreements and cost sharing mechanisms are now in place? What government agencies are involved?

Answer. Since January 1, 1970, 69 cooperators participated in 85 cooperative agreements with the Bureau. Fifty-five mining companies participated in 69 cooperative agreements; the balance of the cooperative agreements, 16, were with one manufacturer, five government agencies, one university and nine private research companies.

Since January 1, 1970, 42 contractors have participated in 51 cost-sharing contracts which amounted to $86,263,588. The contractor's share amounted to 47% of this total. Individual contractors participation ranged up to 78% of the project cost. Contractors participating included 14 mining companies in 15 contracts, 14 universities in 21 contracts, 7 manufacturers in 8 contracts, 4 private research companies in 4 contracts and 3 government agencies in 3 contracts.

The Bureau has entered into 32 interagency agreements with 11 Federal agencies since July 1, 1969. Total funding amounted to $5,338,108. The participating agencies are:

1. Office of Telecommunications - Department of Commerce
2. National Aeronautics and Space Administration
3. Mining Safety and Health Administration
4. Department of the Army
5. National Institute for Occupational Safety and Health
6. Geological Survey
7. National Bureau of Standards
8. Department of Agriculture
9. Energy Research and Development Administration
10. Department of the Air Force
11. Defense Nuclear Agency

Question. Mine ventilation is another category under health and safety research where mine operators are having problems. What exactly is the Bureau doing to improve the situation with regard to ventilation.

Answer. Mine ventilation problems are becoming increasingly significant as the production rates and mining workforce increase. Mines are becoming larger and deeper to accommodate increases in production. Ventilation systems and techniques have to be developed to maintain a safe and healthful atmosphere conducive to efficient work output.

The primary effort of the Bureau is in the development of more effective methods of maintaining adequate flows of fresh air in underground workings. An essential factor has been the development of a tracer gas technique in which sulfur hexafluoride (SF_6) gas has been used successfully to measure low-velocity air flows in large cross sections and air recirculation due to cooling plants and leaky bulkheads, to trace lost intake air, to study working-face ventilation and to determine air transit flows.

Very significant progress in the control of air flow patterns and reduction of air leakage has been made through the development of several new types of stoppings developed by the Bureau. These include inflatable-type stoppings for emergency and production use, parachute-type stoppings for rapid air control, and two types of blast-yielding stoppings for use where regular production blasting causes heavy damage to conventional models. Evaluating the quality of the seal provided by a stopping is important, but difficult. For this purpose, the Bureau has developed a simple procedure, known as the brattice window method, for measuring leakage through stoppings rapidly and reliably. Finally, new concepts of secondary ventilation are being investigated. The most promising of these concepts is the development of water sprays which direct and increase the air flow to critical areas.

In support of this ventilation research, extensive data have been and are being collected and processed to obtain information on hazardous and/or noxious gases in underground metal and nonmetal mines, and on ventilation practices and problems of such mines. Surveys of deep, underground metal mine heat levels including comprehensive reviews of literature and in mine assessments of the thermal environment are being conducted.

Metal and Non-Metal Technology

Question. Under your metal and non-metal mining technology activity you mention that greater emphasis is being placed on underground mining because there is inadequate private sector research. What efforts are underway to encourage industry cost-sharing?

Answer. A typical sequence in the development of new equipment or new mining methods is to begin with a feasibility study, then proceed through a design phase and fabrication phase followed by in-mine testing and demonstration. The manufacturer is encouraged to cost-share during the fabrication stage and mining companies are encouraged to cost-share during the in-mine testing and demonstration phase by bearing the installation and operating costs of the new equipment or method with the Bureau paying those costs that are over and above normal operating costs because of the experimental nature of the project. A limited amount of success has been attained with equipment manufacturers and fairly good cooperation has been achieved with the mining companies.

Question. You have been working on a continuous drilling technique and longwall mining systems for several years now. When can we expect to see commercial acceptance of these techniques?

Answer. Continuous drill and blast systems have been underway in the Bureau for the last few years. Successes have been achieved in remote detonation of explosives and remote automated drilling but other components of the system still need considerable developmental research. A full-scale continuous drill and blast prototype system is still several years away and commercial application sometime after that.

Commercial acceptance of longwall mining has been achieved in the coal mining industry, due in large part to the extensive Bureau of Mines research and demonstration efforts in fiscal years 1975-1977 prior to the establishment of the Department of Energy. Continuing research responsibilities for longwall mining of coal now reside with the new agency. Longwall mining research for non-coal application has been conducted on a very limited scale, primarily looking at possible schemes for rock fragmentation. A contract study is presently underway to examine and evaluate the feasibility and potential applicability of longwall mining in U.S. hardrock desposits, the available technology, the economics and technological deficiencies that inhibit longwall acceptance. The results of this study will define future research levels and direction. It is not possible to predict when commercial acceptance might be expected because it is not clear yet what technological or other impediments exist. It will probably not occur on a wide-scale basis within the next five years.

In-Situ

Question. The only budget increase under metal and non-metal mining technology is $300,000 for acceleration of in-situ methods. What is the total budget for this program?

Answer. The total in-situ mining budget for FY 1979, including the $300,000 increase, is $1,499,000.

Question. Is the research directed to any specific minerals, or is it applicable to all?

Answer. Present emphasis is on recovery of copper and uranium. In-situ mining is potentially applicable to other minerals also. The Bureau's research, except for that on leach solution chemistry which is mineral-

specific, is applicable to all mineral desposits that are minable by in-situ methods. Examples are research on fluid-flow characteristics, permeability enhancement, well pattern optimization, well completion techniques, and solution containment and monitoring.

Question. Do you have industry cost-sharing in the in-situ program? To what extent?

Answer. All of the Bureau's field experimentation and field data collection is done through cooperative agreements with industry. In a typical agreement, the Bureau and the mining company agree to conduct an experimental program beneficial to each. The mining company will generally provide the site, geologic information and hydrology of the site, the injection and recovery wells, and will inject and recover the leach solution. The Bureau will provide observation wells, collect and analyze samples, monitor the experiment parameters, and conduct experimental research under actual field conditions. Mining company costs generally far exceed government costs and in that sense the extent of cost-sharing is very large. While this has proved to be an effective means of conducting field experimentation at minimal cost to the government, there are disadvantages in that research activities have to be fitted into company schedules and production-oriented goals. The research-oriented goals of the Bureau are not always completely compatible with these company goals from a operational standpoint and continuity of the experiment can be interrupted by changes in company policy.

Question. Is there any coordination with DOE on your in-situ efforts?

Answer. Yes, on the hydraulic borehole mining tool research we have had close coordination with DOE. On the in-situ leaching research, there has not been formal coordination, but DOE has been informed and kept abreast of the Bureau's research efforts and progress.

Mining Environmental Research

Question. Let's go back to your new mining environmental research activity. The request totals $14.6 million. Under the environmental engineering subactivity you propose $3 million for baseline studies. What does the Bureau do in this program that is not covered in EIS?

Answer. We perform a variety of functions in this subactivity that concern research and development and that do not appear in the spectrum of EIS activities. The functions have as their objective the use of R&D results to generate recommendations aimed at resolving controversies about the amount and type of premining data needed to predict environmental damage from mining. The recommendations, in turn, serve as guides to minimize the time and expense for decisionmaking organizations such as State agencies, which with limited budgets must quickly access large expanses of land and decide whether or not to permit mining, and aid in developing environmentally compatible premine planning rationale.

More particularly, the functions involve, for example, examination of existing technology for monitoring environmental disturbances due to mining, in order to find ways to better use the technology, to modify it or to create new technological devices to improve measurements and provide more reliable baseline data. We also develop geotechnical baseline data and look for ways to improve geotechnical equipment and methods, as an aid in designing environmentally safe mining systems.

Question. How does the Bureau's effort differ from that of BLM or GS? Do you collect different data?

Answer. We are concerned with the rationale and methodologies of mining and mineral processing in an environmentally compatible and economical manner, rather than assessment of mineral resources, or the management of the land they occupy, or associated land leasing functions. Our work is complementary to these functions in that the Bureau implements a technological program involving research, development and demonstration. In the program, we develop procedures, methods and technology to minimize damage or disturbance to the environment from all phases of mining, viz., preliminary discovery through ultimate return of the land to alternative usage.

Question. You have a program called innovative mining systems which serves to develop equipment in compliance with environmental standards while maintaining productivity and health and safety conditions. How is this any different from your health and safety research and mining technology activities?

Answer. Our health and safety research efforts are concerned with abating or eliminating hazards to the working environment of the miner. As such, they are oriented primarily at the interaction of mine workers with their occupational surroundings. In contrast, our efforts in innovative mining systems in our Mining Environmental Program recognize that improvements must be made to existing mining systems, and totally new systems and techniques must be developed that reduce or eliminate adverse environmental impacts and that enable industry to comply with increasingly stringent environmental constraints. These efforts are oriented primarily at the interaction of equipment/techniques with the environment, and hence they complement the Health and Safety Research efforts.

Question. Under your environmental control technology subactivity you propose a $400,000 increase for surface effect studies. Who will be doing this work, since the full amount is for contracting?

Answer. The $400,000 will be spent on an individual basis for a number of research projects. Since no additional positions were provided to the Bureau, the work will have to be done by contract or by removing Bureau employees from on-going in-house research projects. Contract studies for surface effect research will be obtained in accordance with competitive procedures set forth in Federal Procurement Regulations.

Question. Will the Office of Surface Mining or DOE be doing this kind of research?

Answer. We are not aware of any planned efforts by the Office of Surface Mining to do this kind of research. With respect to the DOE, it would appear that this work would be outside their mission based on Section 302 of Public Law 95-91 which assigned mineral fuel productivity research to the new agency.

Question. Give us a better and more specific justification for the $1.3 million increase for expanded research under environmental control technology. Why is this expansion needed? What are the base amounts? How did you calculate the $400,000 and $900,000 increases? What will this work accomplish specifically?

Answer. We are requesting an additonal $1.3 million to expand our field of environmental control technology because existing and future government rules and regulations are and will become more rigid and demanding upon the mining community. Part of the mission of the Bureau of Mines is to assist industry in protecting the environment during operations by developing more efficient and less expensive ways for mining companies to comply with these regulations.

The base amount for surface and subsidence effects is $1,793,000, while the base amount for noise, vibration, water and other mine source impacts is $516,000.

The $400,000 increase for surface and subsidence effects will be used in various research projects which are aimed at the following objectives: development of methods to predict mine subsidence including an early warning system; determination of the geotechnical factors affecting structural damage from subsidence; development of empirical means for predicting or preventing subsidence that will serve until technology is further advanced; publication in detail of the implementation of subsidence regulations and programs that have been very effective; development of a good general index of geologic and environmental factors associated with coal deposits that are essential for long-range predicting or preventing damage to water resources and surface features; establishment of methods or standards that can ensure the safeguarding of water resources and evaluation of cemented backfill for use in active underground coal mines.

The $900,000 increase for mine source impacts will be used in various research projects which are aimed at the following objectives; determine blasting effects on structures and ground water supply; determine human response and social and economic impact of mine blasting; develop improved blast initiation and blasting effect measuring techniques; develop noise control methods for surface mine operations, noise abatement procedures for mining equipment, crushers, transfer points and surface fans; develop alternate designs and maintenance procedures to reduce equipment noise and develop effective dust control methods for haul roads, overburden removal, reclamation operations and taconite tailings.

This work will help meet environmental goals and regulations at an acceptable cost while extracting mineral values from ore bodies of constantly dwindling grade.

Question. Your mine source impact program would go from just over $500,000 to $1.4 million. Part of the increase is for mine water studies and groundwater effect research. Isn't this duplicative work being done by GS and OWRT?

Answer. The Bureau's research seeks to prevent or abate environmental problems from operating mines such as erosion of sediment from haul roads, acid mine seepage from open strip areas of an active mine and water pollution from various unit operations in the mine. The G.S.'s and OWRT's work in hydrology is usually conducted on a broad, state, regional or nationwide basis and is related to geological parameters rather than specific mining environmental problems.

Question. Under the mined land reclamation technology subactivity, which we discussed earlier, you say you are seeking a $560,000 increase for new studies. The general description, however, sounds like more of the same. What new is being studied?

Answer. The major new area to be investigated is postmining land use selection. While Bureau research has addressed this area in FY 1978 and prior years, it is our intent to focus a series of studies and demonstrations into the definitive evaluation of ultimate land use such that mined land is returned to beneficial use. These studies will develop procedures for determining most desirable (optimum) land use based on the social needs of the area residents, the economic potential of the land, and the technical and cost considerations in reclamation. The planning technique of land suitability will be the framework and supporting data

on past land use; area social and economic needs; physical, hydrologic, geologic setting; and community desires will be developed to complete the data base.

Question. Justify the $560,000 estimate. On what factors was it calculated? And why is it needed?

Answer. A cooperative study is planned for FY 1979 for a rural Great Plains situation where the technique of land suitability planning will be assessed in a mining situation. The $560,000 increase will be partially used for this study. Other studies will assess the transfer of this technique from an urban setting to a mine and the development of a systems approach to defining an optimum postmining land use. The latter two studies will be general in nature so that the techniques can be applied in the semi-arid West or the humid East without redefining the procedures.

This series of land use planning studies is needed to assist in the decisions concerning which mining and reclamation methods are to be used to protect our land resource while using the mineral resource. The development of these procedures will yield a technique for making rationale acceptable decisions before the advent of mining in order to help insure a beneficial long-term use of the land after mining.

Question. Identify the $1.2 million in contractual studies you are dropping to fund the shift in 42 positions to mined land reclamation technology and explain why they are being dropped.

Answer. In the decision process on the FY 1979 budget, all funds for reclamation work on abandoned mine lands were provided to the Office of Surface Mining (OSM) The Department of the Interior through the Assistant Secretary Energy and Minerals has directed OSM to utilize the Bureau's technical expertise in this work and to provide the Bureau with the appropriate pass through funds. Since the extent of available pass through funds for FY 1979 could not be identified by the OSM staff, all 42 positions have been listed under the Bureau's Mined Land Reclamation Technology Program (MLRT) until funding becomes available through OSM.

Such a program realignment in MLRT would require the abandonment of the land suitability technique in FY 1979 (see response to previous question) and planned investigations into new technique for rehabilitation of closed mine shafts. The effort in other study areas would be curtailed, namely in assessing/forecasting water quality/quantity effects via long-term monitoring and computer modeling of surface and ground waters, and in development of new equipment to support revegetation efforts. These studies were planned to support the postmining land use investigations.

The Bureau anticipates that the pass through funds will be provided by the Office of Surface Mining so that the research studies can be conducted as planned. If pass through funds are available, then the 42 positions and their financing will be shifted to the Bureau's Consolidated Working Fund. Should pass through funding not be available, then reduction in the contractual research program will occur in order to support these positions.

Question. As an accomplishement under your mining environmental research program you mention a study on surface mining on the Alaska North Slope. What are the results of this study?

Answer. This study made by an outside contractor, Kaiser Engineers, concluded that the reserve base and economics were not favorable enough to consider mining of coal on the north slope of Alaska at this time. The study also considered the social and environmental problems associated with potential coal mining and the constraints these presented on coal extraction.

Question. Are you planning any follow-up to this study, or will OSM take over the effort?

Answer. Additional studies of this kind are not planned by the Bureau. Since the emphasis of this work was mainly on the economics of coal extraction, any continuation of this study is more properly in the domain of the DOE at this time. Since the study was completed prior to the creation of the DOE and it also contained data on environmental and social constraints, it was cited as an accomplishment under the Bureau's Environmental program.

DATA COLLECTION AND ANALYSIS

Question. The only change in your data collection and analysis activity is a reduction of 5 positions and an increase of $115,000 in contracting. Why is this desirable?

Answer. The reduction of 5 positons is in keeping with the Administration's effort to decrease Federal employment levels while not affecting program impact. The Bureau feels that by increasing the contract level of the program and redistributing in-house functions to personnel with related responsibilities that this goal can be achieved.

Question. One of the problems in this area is the timeliness of reports. What has been done to improve efforts on the Minerals Yearbook? Volume I for 1976 is currently in the process of being published. Can't the situation be improved?

Answer. A new automated publication system will improve the publication timeliness of the 1978 edition of the Minerals Yearbook (Volume I) by 16 months over the 1975 edition. In a further effort to provide data on a more timely basis, three new publications have been initiated. In May 1977, the first issue of "Mineral Commodity Profiles" was published. Following the format of "Mineral Facts and Problems," these profiles update the information of this 5-year cycle publication on an annual basis. Thus far, 10 profiles have been published with 12 scheduled for FY 1979, and plans for over 20 in FY 1980. In FY 1977, the publication, "Mineral Perspectives," which provides up-to-date mineral information on an international geographical basis, was initiated. Using preliminary estimates, these perspectives improve the timeliness of information currently found in Volume III of the Minerals Yearbook. A third publication, "State Mineral Profiles," with a format patterned after "Mineral Perspectives" but emphasizing mineral information at the state level, was begun this month (April). Thus far, two have been published and 48 are planned between now and the end of the year.

Question. Under data collection and analysis you prepare reports on mineral availability and location. How does this differ from the resource information systems of the Geological Survey?

Answer. The Bureau of Mines represents a continuum of effort beyond the Geological Survey in the governmental assessment of minerals and our national needs. The USGS makes scientific investigations of the resources nature has provided, while the Bureau of Mines makes engineering and economic evaluations of the commercial recovery and use of the identified mineral wealth.

Question. Why are these separate systems necessary? Why can't the efforts be tied together under one agency?

Answer. Implementing a joint program to gather resource/reserve data for these systems for an overall minerals information program would require major restructuring in both agencies with consequent loss of present momentum. Substantially different data are required when one moves from potential resources to known reserves. Data can be shared between information systems and this is done frequently. Independent efforts in the data gathering area, particularly in the development engineering and cost information based upon site-specific deposits, are needed by the Bureau to provide accurate, complete, and timely information on U.S. reserves.

MINERAL LAND ASSESSMENTS

Question. Under mineral land assessments you have $2.5 million for wilderness investigations. How are these evaluations coordinated with the GS?

Answer. The Bureau of Mines, the Geological Survey, and the Forest Service hold annual meetings to schedule studies for the upcoming field season. These schedules are designed to meet legislative deadlines and national Forest Service priorities. In addition, specific problems in coordinating individual projects are discussed and consensus solutions reached. Next year, because of the growth of the program, semi-annual meetings will be held, a spring meeting to establish priorities a year in advance and a fall meeting to review the status of all projects for fiscal year reporting. Communications in the form of telephone calls, memoranda, and face-to-face meetings are made during the year on a "as needed" basis. After the field work, the Bureau and the Geological Survey project leader interpret all the data and analyses and jointly decide the mineral potential of a particular area. The final product is a consolidated publication.

Question. What does the Bureau do that cannot be handled by the GS? Why shouldn't the budget for these assessments be in one agency, with a reimbursable program to cover utilization of personnel from other agencies?

Answer. Geological Survey expertise lies in geologic mapping, geophysical work, and geochemical sampling. The Bureau of Mines appraises the engineering and economic aspects of mineral lands primarily in the area of reserves and subeconomic resources. The Bureau's responsibility is to identify, sample, and evaluate mines, prospects, and associated mineralization; to document past and ongoing production; and from these data to appraise reserves and estimate identified subeconomic resources. The Bureau collects and evaluates exploration and metallurgical data from past and ongoing work of private industry, samples potential new mineral deposits including those identified by the Geological Survey, and conducts minability and metallurgical studies. Mineral resource appraisals are difficult at best, and we have found that the combined professional judgments, both from the engineering outlook of the Bureau and the geologic outlook of the Survey, have consistently contributed to the best analysis.

The value of the Bureau and Survey working jointly but looking at an area from a different perspective--the emphasis of the Bureau centered primarily on the potential economic value of individual mineral occurrences--is clearly pointed out in the ongoing study of Glacier Bay National Monument, the report of which is to be released in August 1978. In this study, Bureau engineers, concentrating on individual areas, made two new and potentially significant mineral discoveries of deposits that, if outside the monument, would be prime targets for exploration.

For example, in its 1966 study of Glacier Bay National Monument, the Geological Survey investigated a series of spectacular iron-stained zones along the north side of Johns Hopkins Inlet but did not find any significant metallic mineralization. A followup mapping and sampling investigation by Bureau of Mines engineers in 1976-77 resulted in the discovery of potentially large and important high-grade zinc-copper-silver-gold deposits. The Bureau's study also indicated that the deposit was of the important volcanogenic class indicating a potential for a clustering of additional deposits in the area. Similarly, the Geological Survey in 1966 reported finding copper-bearing rock float below and iron-stained cliff in the Rendu Glacier area of the monument. From this float, Bureau engineers discovered a high-grade tungsten-copper-silver-gold deposit and similar mineralization extending intermittently for 2½ miles. A magnetometric survey, sampling, and mapping of the deposit by the Bureau indicated that mineralization may be extensive, and that it is a high temperature skarn-class of deposit, the main source of nationally critical and strategic tungsten. Also in the monument, a better evaluation was made of a known molybdenum deposit when Bureau engineers were able to compile the results of previously unavailable information of past drilling which showed that potentially higher grade mineralization may be found with additional drilling.

The down-to-earth approach taken by the Bureau of Mines in the joint Survey/Bureau studies contributes materially, we believe, to the usefulness of the findings and judgments of an area's mineral potential. We have found that the interchange of ideas and concepts between field men, even if they initially differ, is a healthy approach toward a common judgment of potential subsurface values. We further believe that Congress understands the general distinction in the types of effort of the two agencies, and since the initiation of wilderness assessments in 1965 (P.L. 88-577) both agencies have been funded separately. While it is true that the level of effort for each agency varies somewhat from area to area depending upon existing knowledge and mineral character of an area, the joint aim and management of the progarm has been well coordinated in large part because long-range scheduling was possible under budget planning of the individual agencies. Good coordination of wilderness budget has given continuity to the program on the part of the Bureau by being able to rely on a workforce of competent engineers. Mining engineers, especially those experienced in mineral property evaluation, are in high demand by industry and the Bureau of Mines program could not function on a year-to-year basis if budget control were to lie with another agency. Dependence upon another agency could result, we believe, in serious shortcomings in these joint studies. For these reasons, the Bureau believes the funding process should continue as it is.

Question. Your justification points up this problem. You mention that BLM's budget contains funding for mineral assessments of BLM lands to be distributed to both GS and the Bureau of Mines. Why shouldn't that be the case with other agencies?

Answer. The budget justification does not point up a problem with BLM passthrough funding to complete assessments of BLM wilderness candidate areas, but realistically there are problems when laying out several years of work under a directive of Congress when funding is part of another agency's budget. For instance in FY 1978, with no positions available, we had to shift personnel from national forest wilderness studies into BLM primitive and natural areas to assist BLM in meeting its 1980 deadline. Fifteen positions will be available for this work in FY 1979, but the search for qualified mining engineers cannot start until after the fiscal year and understandably a lag will occur before we have personnel on board. As we explained in our answer to the preceding question, mining engineers with experience in assessing mineral deposits are in demand.

While we don't anticipate major problems ahead with this budgeting process, there will be scheduling problems. Scheduling by the Bureau of Mines and Geological Survey must look ahead to a minimum of 1 year and if possible up to 3 years, but what actually can be done will lie with BLM's yearly budgets. Overall, the passthrough process in the case of the BLM lands with the three agencies in one department should be much easier to manage than if the land management agency were in another department.

Question. Under public land assessments you are proposing a decrease of $268,000 and 5 positions due to completion of a study on the Overthrust Belt in the western states. Why are you reducing the number of positions? Won't they be necessary for other area studies?

Answer. The 5 positions were specifically identified for the Overthrust Belt study and hence were eliminated due to the completion of the study. If the Bureau were able to retain the positions, the manpower could be used in other area studies.

MISCELLANEOUS ACCOUNTS

Common Program Services

Question. With the transfer of programs you must have been able to achieve savings in your common program services account. How much transferred to DOE with the program transfer?

Answer. While the transfer involved only direct program funds, savings were achieved in the common program services category. Of the $67.7 million transferred to DOE, approximately $3.0 million would have been used to meet Bureau of Mines administrative and research support costs if these activities had remained with the Bureau. Of the 376 full-time permanent personnel transferred, 35 were transferred from administrative and research support offices funded under the common program services category.

Question. Although you show a $556,000 decrease in research support services, the justification indicates that none of the decrease is due to program transfers. Couldn't you achieve savings in this area beyond those indicated?

Answer. The entire budget justification including the section on research support services and other elements of common program services displays only those funds remaining with the Bureau after the DOE transfer. Therefore, savings from the transfer itself are not displayed in the justification, though these savings have been estimated in answer to the previous question. The reduction of $556,000 represents a reduction in research support services from funds available to the Bureau after the DOE transfer.

Drainage of Anthracite Mines

Question. You estimate that you will have an unobligated balance of $3.3 million at the end of FY 1979 in the drainage of anthracite mines account. Is this account still necessary now that we have OSM involved in reclamation?

Answer. There has been some activity in this appropriation just recently. Approximately $200,000 has been obligated in FY 1978 for backfilling and sealing work in Lackawanna and Luzerne counties. In formulating the FY 1980 budget, a process which is now underway, we will make a recommendation on whether to continue the appropriation or not. Should the State of Pennsylvania wish

to provide the matching fund requirements of 50 percent, these appropriated funds would need to be available. We anticipate, however, that direct funding from the Office of Surface Mining will be a more attractive alternative to the matching fund arrangement.

Consolidated Working Fund

Question. Please detail the source of funding for the consolidated working fund. Which agencies are the major contributors?

Answer. The source and amount of funding of the consolidated working fund is determined by the contributing agency. Below is an estimate based on actual FY 1978 and information available at this time.

CONSOLIDATED WORKING FUNDS
FY 1979
(Dollars in Thousands)

Department of the Interior	
Geological Survey:	
Resource studies on various projects	$ 50
Indian Affairs:	
Mineral studies of certain Indian Reservations	1,000
Land Management:	
Wilderness review	1,000
ADP payroll services	70
Office of the Secretary:	
Level B studies	10
Office of Surface Mining:	
Administrative support	350
Outdoor Recreation:	
ADP payroll and personnel services	10
Reclamation:	
Resource studies on various projects	10
ADP payroll and personnel services	150
Sport Fish and Wildlife:	
ADP payroll and personnel services	150
Department of Energy:	
Materials for coal conversion processes	650
Pitts/Bruceton and administrative services	1,800
Mine Safety and Health Administration	
Space and factility services	500
Various Agencies	
Boiler water services	450
	$6,200

Question. How much of this fund is available for mineral assessments of Indian lands? Would you describe the work of the Bureau in this area?

Answer. The Bureau anticipates $1 million from the Bureau of Indian Affairs for wilderness-type evaluations conducted jointly by the Bureau and the Geological Survey on Indian Lands. These consist of three phases: a literature search and summaries of mineral potential by reservations (Phase I); field investigations of mineral occurrences where basic data are inconclusive as to potential (Phase II); and studies related to mineral development, including quantification of occurrences, and recovery and marketing potential (Phase III). Fiscal Year 1978 is the first year in which Phase III activities will be conducted.

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Question. Why is your consolidated working fund now entirely contractual services?

Answer. The program and financing schedules for the Consolidated Working Fund reports the object class for FY 1979 as other services per OMB instructions. The actual object class distributions for Consolidated Working Fund are reported in the reimbursable section of the Mines and Minerals program and financing schedules.

Question. What happened to the 135 personnel available in FY 1978?

Answer. Consolidated Working Fund personnel for FY 1979 are shown on the Mines and Minerals personnel summary under the reimbursable section per OMB instructions.

MINERALS AVAILABILITY SYSTEM

Question. A recent press article described how ERDA developed price-supply relationships under the MOPPS program. Can you briefly explain how the Bureau's MAS program gets into these relationships, and who is utilizing the results?

Answer. The Minerals Availability System approach to developing price-supply relationships is through the engineering, cost, and financial considerations of supply availability, and the development of supply curves that show the materials available from producing mines, developing properties, and explored prospects. The supply curves display quantities available at current prices and what could be forthcoming at higher prices. This information is used internally in the Bureau of Mines for reserve classification and supply analysis, and it serves other analysts within Interior, other government agencies, research institutions, and commercial firms. However, MOPPS dealt with fuels and the Bureau's fuel data activity was separate from MAS and was transferred to the DOE in October 1977.

Question. Is the Department going to identify the future importance of MAS in its nonfuel mineral policy study? Is there any better way to keep track, on a national level, of mineral reserves and the related economics of potential development?

Answer. The Bureau of Mines data and processes, including the Minerals Availability System, have been indicated by the Department of the Interior to be important to their Nonfuels Mineral Policy study. We do not know of a better approach to the assessment of reserves than that presently under development for the Minerals Availability System. It is based upon sound engineering, cost, and financial analysis principles, and it is being supported by current state-of-the-art computer technology.

QUESTIONS SUBMITTED BY SENATOR ROBERT C. BYRD

West Virginia has many problems caused by past mining practices that have not yet been addressed by the new Office of Surface Mining. The Bureau has past experience in mined land reclamation, however, that might be applied if there is authority and capability. I will cite several reclamation needs.

Question. An area in Tucker County has an unreclaimed strip mine adjacent to Blackwater Falls State Park, that also detracts from the beauty of the Mononogahela National Forest. Does the Bureau of Mines have authority to reclaim this area? How many acres could

be reclaimed in the first year? What additional funding would be needed for this work?

Answer. Under its Organic Act, the Bureau has authority to conduct such work. About 3/4 of the area in question lies in the National Forest where the Bureau has authority to perform reclamation work. The Bureau could contract for reclamation of 150 acres in the National Forest. Additionally, some remaining 50 acres would need to be reclaimed, so all the environmental problems would be solved. A preliminary estimate indicates that a seal could be erected at each under ground mine opening and the 150 acres reclaimed in the National Forest for approximately $825,000.

Question. Another problem is burning abandoned coal refuse banks. I understand that near Albright and Arthurdale there are refuse banks which are burning and causing air pollution. Can the Bureau of Mines under demonstration authority carry out a program to extinguish and remove these environmental hazards? At what cost?

Answer. Under its Organic Act, the Bureau has the authority to develop and demonstrate methods for extinguishing coal waste bank fires, such as near Albright and Arthurdale, where the health and safety of the community is adversely affected. Without the benefit of detailed engineering plans, a preliminary estimate would indicate that these two fires could be extinguished or controlled at a cost of about $1,600,000.

Question. In the Marion Meadows and Mileground neighborhoods near the Morgantown Airport there has been some subsidence damage due to past mining. Can the Bureau in FY 1979 do some exploratory drilling and develop a control methodology for this area. What additional amount would be needed for this type of project?

Answer. The Bureau could conduct an exploratory dirlling program and develop a control methodology for the two sites at an estimated cost of $550,000. Without the benefits of an detailed engineering evaluation, a preliminary estimate for the cost to stablize the two areas would be about $2.75 million.

Question. I understand that Lost Creek and Browns Creek in Harrison County are experiencing acid mine water drainage. Could the Bureau of Mines perform an initial demonstration to seal and/or treat this mine drainage at a minimal cost? How much funding would be needed for this demonstration project?

Answer. Acid drainage in the Lost Creek and Browns Creek watersheds originates from abandoned mines and abandoned coal mine waste piles; such a combination of acid water sources complicates a remedial action program. The Bureau could conduct a phase I or exploratory project at a minimal cost to obtain data and information that would be necessary to make a cost estimate for a full scale demonstration project. An estimate of a phase I type project would be $350,000 for the two watersheds.

SUBCOMMITTEE RECESS

Senator HATFIELD. This subcommittee will be in recess until 10 a.m. tomorrow when we will hear the budget request of the Geological Survey.

[Whereupon, at 12:10 p.m., Tuesday, April 25, the subcommittee was recessed, to reconvene at 10 a.m., Wednesday, April 26.]

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1979

WEDNESDAY, APRIL 26, 1978

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:10 a.m., in room 1114, Everett McKinley Dirksen Office Building, Hon. Ted Stevens presiding.

Present: Senators Stevens, DeConcini, and Young.

DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

STATEMENTS OF:

JOAN DAVENPORT, ASSISTANT SECRETARY, ENERGY AND MINERALS

H. WILLIAM MENARD, DIRECTOR, GEOLOGICAL SURVEY

ACCOMPANIED BY:

WILLIAM A. RADLINSKI, ASSOCIATE DIRECTOR

JAMES R. BALSLEY, ASSISTANT DIRECTOR, LAND RESOURCES

HENRY W. COULTER, ASSISTANT DIRECTOR, ENVIRONMENTAL CONSERVATION

DALE D. BAJEMA, ASSISTANT DIRECTOR, PROGRAM ANALYSIS

EDMUND J. GRANT, ASSISTANT DIRECTOR, ADMINISTRATION

THOMAS O. FRIZ, DEPUTY ASSISTANT DIRECTOR, ENERGY AND MINERAL RESOURCES (COAL PROGRAMS)

JOSEPH S. CRAGWALL, CHIEF HYDROLOGIST

RUPERT B. SOUTHARD, ACTING CHIEF, TOPOGRAPHIC DIVISION

DALLAS L. PECK, CHIEF GEOLOGIST

JOHN DULETSKY, ACTING ASSOCIATE CHIEF, CONSERVATION DIVISION

ROBERT M. HAMILTON, CHIEF, OFFICE OF EARTHQUAKE STUDIES

GEORGE D. DEBUCHANANNE, CHIEF, OFFICE OF RADIOHYDROLOGY

ACCOMPANIED BY—Continued

GEORGE E. BECRAFT, CHIEF, OFFICE OF MINERAL RESOURCES

ROBERT L. RIOUX, ASSISTANT DIVISION CHIEF, RESOURCE EVALUATION

JACK J. STASSI, BUDGET OFFICER

FRANCIS M. WILES, DIRECTOR OF BUDGET, OFFICE OF THE SECRETARY

OPENING REMARKS

Senator DECONCINI. The Subcommittee on Interior Appropriations will come to order.

This is the time scheduled to hear the fiscal 1979 budget estimate of the Geological Survey. This request totals $583.9 million, an increase of $10.8 million over appropriations to date for fiscal 1978. These estimates are made up of two appropriation accounts.

The Survey's principal operating account, surveys, investigations and research, carries a 1979 request of $398.3 million. This is an increase of $34.8 million over appropriations to date.

The second account, exploration of the National Petroleum Reserve in Alaska, totals $185.5 million, and this is a reduction of nearly $24 million over appropriations to date for fiscal 1978. The justifications have been included in the hearing record.

PREPARED STATEMENTS

Secretary Davenport and Director Menard, welcome before the committee. Your prepared statements will be printed in full in the record at this point.

[The statements follow:]

PREPARED STATEMENT OF DR. MENARD, DIRECTOR
U.S. GEOLOGICAL SURVEY

Mr. Chairman and Members of the Committee:

The Geological Survey's FY 1978 budget request involves two appropriations: (1) Surveys, Investigations, and Research for those programs which provide basic scientific information about the Nation's land, water and mineral resources, and for mineral evaluation and lease management activities on Federal and Indian Lands; and (2) Exploration of the National Petroleum Reserve in Alaska, which covers the Survey's activities related to the exploration and assessment of the National Petroleum Reserve in Alaska, the Barrow Gas Operations, and environmental restoration of the Reserve. The FY 1979 Budget request for Surveys, Investigations, and Research is $398.4 million, an increase of $21.3 million over FY 1978.

For programs under the appropriation National Petroleum Reserve in Alaska, the Survey is requesting $185.5 million, a decrease of $24.0 million from the FY 1978 base. The decrease in the request reflects the phasing-out of the Exploration Program and the postponement of the development of the Barrow Gas Fields.

USGS PROGRAMS: A PROGRESS REPORT

Before getting into the details of the Survey's current budget request, it may be useful to highlight some of the activities for which the Survey has been funded in the past.

The national concern over energy has focused strong attention on the Federal lands as actual and potential sources of energy minerals. Of these, by far the greatest source of energy has been the Outer Continental Shelf, where leasing and drilling activity has expanded sharply since 1972. During the past 5 years, more than 7.5 million acres have been leased, about one-half the total acreage leased since the beginning of the program in 1954. During this period, the OCS Leasing Program has returned almost $25.0 billion to the Federal Treasury--more than $2.3 billion in 1977 alone. Last year, the OCS accounted for 11% of the Nation's oil production and 18% of its gas production. This was the energy equivalent of a billion barrels of oil which would have cost the Nation about $14.0 billion if it had been imported from the OPEC countries.

Last year, at the direction of Secretary Andrus, the Survey initiated programs to conduct an inventory of the oil and gas reserves on the OCS in the Gulf of Mexico and to assure that the oil producers operating there were conforming to the requirements in their leases for due diligence in developing and producing their properties. While work has not been fully completed on the inventory, the indications are that about two-thirds of the known reserves in the Gulf of Mexico OCS have already been produced. This fact only emphasizes the importance of our ongoing programs in the relatively unexplored portions of the OCS off the Atlantic, Pacific, and Alaskan coasts. Much of

the Survey's activities in the past 2 years has been directed toward assuring that petroleum activity in these offshore areas, when it does begin in earnest, will be conducted in an environmentally safe manner.

Coal is an immense resource of largely unrealized potential, and in the last few years the Survey has concentrated on preparing and developing information that will be required upon resumption of Federal coal leasing activities. The Survey has now identified 31 areas containing an estimated 9 million acres of Federal coal lands as Known Recoverable Coal Resource Areas (KRCRA's), from within which tracts would be selected for future competitive leasing. Eighty-nine Coal Resource Occurrence (CRO) and Coal Development Potential (CDP) maps have been prepared for use by the Bureau of Land Management in their detailed land-use planning for the leasing of western coal. In addition, the Survey's regulatory activities on existing leases have been stepped up to assure diligent development of leased coal resources and protection of the environment surrounding the mines.

The demand for information about the Nation's energy-producing potential has had a direct effect on the Survey's topographic mapping programs. The goals of increasing domestic energy production require a vast logistical effort such as, opening mines, building power plants, drilling wells, laying pipelines, building roads and utilities, developing water supplies, and in fact, establishing whole new communities where none existed before. All of these activities have expanded the demand for accurate, up-to-date topographic base maps. In response to these and other demands, the Survey has produced 4,570 new 7-1/2 minute quadrangle maps and revised 3,050 others over the past 3 years. Emphasis is being placed on the modernization of our National Mapping Program to enable the Geological Survey to efficiently produce basic map products, while at the same time beginning a comprehensive program of digital map data production. Because of the speed with which it can be adapted to special purposes, digital map data will allow users to make decisions on land management more expeditiously and efficiently than ever before.

Within the Geology and Mineral Resources Programs, a great deal of effort in the last few years has been focused on natural hazards studies. The primary emphasis has been on earthquake prediction and hazard assessment; the Geological Survey has also studied volcanic activity and mud and rock slides with the aim of obtaining a better understanding of where, when, and under what conditions all of these phenomena might occur. The work on earthquake hazard assessment is focused on the urban areas located in zones of high seismicity. These include San Francisco, Los Angeles, Seattle, Anchorage, Salt Lake City, St. Louis, Memphis, Charleston, and Boston. While reliable predictions on the occurrence of earthquakes are not now generally possible, successful predictions have been made. Intensive efforts should be continued to establish a reliable capability.

Mineral assessments mandated under the Wilderness Act and other land withdrawal legislation have greatly enlarged the Survey's resource appraisal responsibilities. It is estimated that some 42.5 million acres are required to be assessed in response to the Wilderness Act. The Geological Survey has completed work on only 18.5 million acres.

In addition, tens of millions of acres of BLM lands are being reviewed for wilderness suitability or other types of withdrawal. To respond to this increase in Survey assessment responsibilities, programs have been devised to systematically survey the mineral potential of selected 1:250,000-scale quadrangles chosen to cover regions with mineral potential which also include large tracts of Federal lands. The first of these programs, the Alaska Mineral Resources Appraisal Program (AMRAP), was started in 1975, and by the end of FY 1978, 15 quadrangles approximating 40.0 million acres will have been completed. The second effort, the Conterminous U.S. Mineral Resource Appraisal Program is a lower 48 adaptation of the AMRAP and is just getting underway. Quadrangles are selected for study on the basis of their mineral potential and because they contain significant tracts of Federal lands.

Although recent rainfall has been above normal, the severe drought in the far West and Plains States over the past few years is an example of the Nation's growing problems with water supply and water quality and serves to underscore the value of the Survey's longstanding effort to increase the coverage of its water data systems. Over the last 5 years, the number of stations in the National Stream Quality Accounting Network has increased from 50 to 445 and the Geological Survey is requesting funds in FY 1979 to expand the network to its objective of 525 stations. The cooperative program with the States has played an important part in development of data on the Nation's water resources, and the number of cooperators has increased from 511 to 580 over the past 5 years. A new feature of the water resource studies is the Regional Aquifer Program, just begun this year at the suggestion of and with the support of this Committee, to provide better information on the ground water resources of the United States and the effect of increased utilization of these resources on water quality and supply.

A significant effort was completed to collect and synthesize information on the onshore impacts of oil and gas development on the Outer Continental Shelves. The results of this effort were transferred to planners and decisionmakers at six formal regional workshops in which more than 500 key State and local officials participated. Also, a major state-of-the-art digital image processing system is being installed at the EROS Data Center in Sioux Falls, South Dakota, which, when integrated, will parallel complementary developments by NASA, and will provide highly improved LANDSAT satellite data to a wide range of public and private users throughout the world.

The accomplishments which have just been mentioned are only highlights, and are highly selective in this short review of the Survey's past activities. Returning now to the Fiscal Year 1979 proposal, the major program changes are listed in Exhibit 1, with discussion following the tabular summary.

EXHIBIT I

SUMMARY OF U.S. GEOLOGICAL SURVEY INCREASES AND

DECREASES IN THE FY 1979 BUDGET REQUEST

SURVEYS, INVESTIGATIONS, AND RESEARCH

Topographic Surveys and Mapping	Increases & Decreases
Digital Data Production	+ $ 2.0 Million
Modernization of Mapping Techniques	- $ 0.5 Million
Small Scale and Special Mapping	- $ 0.2 Million
Geologic and Mineral Resource Surveys & Mapping	
Geomagnetism	+ $ 1.1 Million
Earthquake Hazards Reduction	+ $ 0.7 Million
Climatic Change	+ $ 1.0 Million
Mineral Lands Assessment	+ $ 1.0 Million
Minerals Commodities Assessment	- $ 0.2 Million
Coal Exploratory Program	- $ 0.8 Million
Uranium Investigations	+ $ 1.0 Million
Geothermal Investigations	+ $ 2.0 Million
Water Resources Investigations	
Data Collection and Analysis	+ $ 1.7 Million
National Water Data Exchange (NAWDEX)	+ $ 0.5 Million
Regional Aquifer Systems Analysis	+ $ 3.0 Million
Core Program Hydrologic Research	- $ 2.3 Million
Oil Shale Hydrology	- $ 1.3 Million
Nuclear Energy Hydrology	+ $ 5.1 Million
Underground Heat Storage	- $ 0.1 Million
Federal/State Cooperative Program (water use)	+ $ 0.8 Million

Conservation of Lands and Minerals	Increases & Decreases
OCS Lands (regulation of oil and gas operations)	+ $ 1.0 Million
Tract Selection and Evaluation	+ $ 2.7 Million
Reserve Inventory of Oil and Gas Fields	- $ 2.3 Million
Platform Verification	+ $ 1.0 Million
Regulation of Operation on Federal and Indian Oil and Gas Leases	+ $ 1.6 Million
Regulation of Operation on Federal and Indian Energy Mineral Leases	+ $ 0.6 Million
Coal Land Classification and Evaluation	- $ 0.9 Million
Federal Coal Reserve Inventory	+ $ 1.0 Million
Oil Shale Classification and Evaluation	- $ 0.2 Million
Regulation of Operations on Non-Energy Mineral Leases	+ $ 0.2 Million
Classification and Evaluation of Non-Energy Mineral Lands and Resources	+ $ 0.5 Million
Land Information and Analysis	
Environmental Impact Analysis	+ $ 1.4 Million
Geography	+ $ 0.8 Million
Resource and Land Investigations	- $ 0.1 Million
Earth Science Applications	- $ 0.1 Million
*TOTAL	+ $21.3 Million

PETROLEUM RESERVES

National Petroleum Reserve in Alaska	
Evaluation and Assessment of NPRA	- $ 11.3 Million
Barrow Area Gas Operation	- $ 13.0 Million
Environmental Restoration	+ $ 0.4 Million
*TOTAL	- $ 24.0 Million

*Figures do not add down due to rounding.

SURVEYS, INVESTIGATIONS, AND RESEARCH

The USGS proposals in the FY 1979 Budget are being requested to meet a wide range of national needs. Additional funds are being requested to enable the Survey to assist in implementing the Secretary of the Interior's OCS leasing schedule and to improve the regulation of the OCS and Coal Programs and Non-Energy Minerals Program. Increases are also proposed to make Survey data more useful for making management and planning decisions affecting land and mineral resources. Other increases are needed to continue programs begun in past years that meet high-priority national needs. Highlights of the proposed FY 1979 Budget and the areas of increase are as follows:

Topographic Surveys and Mapping

The FY 1979 Budget request for Topographic Surveys is $61.0 million with a net programmatic increase of $1.3 million over FY 1978. The increase will provide $2.0 million to initiate a Digital Data Production Program and is being partially offset by decreases in Modernization of Mapping Techniques and Small-Scale and Special Mapping, two programs which are being slowed down to permit a speeding up of the digital program. The increase is requested to initiate a program which will produce map data in digital form for use by computer-based environmental and resource management and modeling systems in Federal and State agencies. Resource managers are increasingly relying on computer-based modeling procedures to solve complex problems quickly and to analyze options prior to making decisions. Digital cartographic data has been identified by many users as the best form for these computer-based modeling procedures because such data can be manipulated faster and more efficiently than map data in printed, graphic form. By producing the basic digital cartographic data used by Federal agencies, the U.S. Geological Survey obviates the need for other agencies to develop duplicate capabilities to produce the same data. Reliable multi-purpose data in standard formats from one source are more effective and less costly to the Federal Government than special-purpose, non-standard data from many sources. In FY 1978, the Geological Survey initiated a number of pilot projects to meet the most urgent requirements of eight Federal Agencies and three States for digital data and to validate production procedures. The FY 1979 program will expand the 1978 activities and permit the preparation of additional digital cartographic data to support various programs of Federal and State agencies.

Geologic and Mineral Resource Surveys and Mapping

The FY 1979 Budget request for Geologic and Mineral Resource Surveys and Mapping is $130.2 million, a net programmatic increase of $5.8 million. The request provides a program increase of $1.1 million for the Geomagnetism Program, $0.7 million for the Earthquake Hazards Reduction Program, $1.0 million for a new program to study climatic change, $1.0 million for expansion of the Conterminous Mapping Program, $1.0 million for expansion of the Uranium Assessment Program, and $2.0 million for expansion of the Geothermal Resources Investigations Program. These programmatic increases are being offset by reductions in the Baseline Coal Resource Investigation

Program of $0.8 million and a reduction of $0.2 million in the Mineral Commodities Assessment Program. The funds from the Coal Resources Investigations are being redirected to support the Coal Reserve Inventory Program which is of higher priority.

The increase for the Geomagnetism Program is needed to re-establish two geomagnetic observatories, to improve the instrumentation at existing facilities, and to participate in the compilation of magnetic anomaly maps. The two observatories to be re-established are needed because currently active observatories do not provide adequate coverage of the midwestern and southwestern United States. Geomagnetic information is widely used in navigational charts and for a variety of scientific research efforts.

The increase in the Earthquake Program is needed to augment hazard studies in regions of high-seismic risk and to plan and develop instrumentation for precisely determining the nationwide distribution characteristics of earthquakes.

The requested increase for a Climate Program is needed to fund the Survey's portion of a national climate study which will focus on problems of climate change and its impacts on Man. Extremes of weather in the recent past have adversely affected the Nation's food production, energy supplies, and regional water availability. These extremes may indicate a change in climate patterns. The increase in FY 1979 is needed to enhance the understanding of the rates, frequencies, and magnitude of climate changes in the past and to ascertain the response of land and water resources to these changes.

The increase for the Mineral Assessment Program of the conterminous States is needed to meet increasing demands for resource data. The assessments conducted under this program provide basic data for evaluating domestic mineral resources and for a variety of land management and planning activities, such as assessing the mineral resources of areas nominated for dedication to wilderness status. The additional funding will permit an increase from 12 to 15 in the number of 1:250,000-scale quadrangles being studied within the conterminous United States.

The increase for the Uranium Resource Investigations Program is needed to expand knowledge on the origin and distribution of both domestic and foreign uranium deposits. Research will focus on the detection of concealed deposits in advance of expensive exploration drilling by industry through detecting radioactive halo effects around ore bodies, characterizing terrain of known ore bodies including significant uranium occurrences elsewhere in the world, and the use of isotope geochemistry. These additional research efforts will assist the uranium development programs conducted by the Department of Energy and will also be of value to the mining industry in its search for new domestic uranium ore deposits.

The increase for Geothermal Resource Investigations is needed to expand current studies of geopressurized zones and hot dry-rock areas. Recent results from the Department of Energy's Geothermal Research and Development Program have greatly improved prospects for tapping the large energy potential of these two types of resources.

The Survey's geothermal assessments will result in more accurate regional and national assessment of the location and energy content of these areas and will form a valid basis upon which to predict the successful application of various utilization technologies.

Water Resource Investigations

The FY 1979 Budget request for Water Resource Investigations is $88.8 million, a net programmatic increase of $7.3 million. The request includes $1.7 million for Data Collection and Analysis, $0.5 million for the National Water Data Exchange, and $3.0 million for the Regional Aquifer Systems Analysis, plus $0.8 million for the Water Use Cooperative Program, and $5.1 million for Nuclear Energy Hydrology. These increases are offset by decreases of $2.3 million in the Core Hydrological Research Program, $1.3 million in Oil-Shale Hydrology, and $0.1 million in Underground Heat Storage.

The increase in the Data Collection and Analysis Program is needed to complete the National Stream Quality Accounting Network to its full design size of 525 stations, to improve its operations, and to initiate 3 new River Quality Assessments. River Quality Assessments have already been completed for the Willamette River, the upper Chattahoochee River Basin, and the Yampa River Basin. The General Accounting Office has estimated that the Willamette study could result in the savings of tens of millions of dollars in Federal, State, and local funds.

The increase for the National Water Data Exchange is needed to improve data availability to users through increased access to the expanded information. This will be accomplished by increasing the quality of the data being indexed and the number of contributing organizations. The demand for NAWDEX services is continually increasing. This increase in funds will help meet this demand and thereby provide additional and better service in information products to all sectors of the water data community.

The increase for the Water Use Cooperative Program is needed to expand the Federal/State Water Cooperative Program to assess the use of the Nation's fresh and saline waters. This program was begun in FY 1978 and currently has 15 States participating. In FY 1979, 8 States will be added bringing the total to 23.

The request for Nuclear Energy Hydrology includes an increase of $4.9 million needed to conduct research on the hydrologic and geologic problems in the storage of high-level nuclear waste in rock. Safe storage requires detailed knowledge of hydrologic systems, waste/rock interaction, geologic structures, and dynamic geologic processes that might cause a breach in the repository. In many potential storage areas, either the data are not available or the methods for acquiring the data have not yet been fully developed. The Department of Energy (DOE) has a program to demonstrate the operation of a repository by mid-1980. It is focused on a demonstration of the feasibility of specific sites in the near term. The Geological Survey's program will provide complementary research for additional media which will be needed in the near future and which are not now being emphasized, and will be fully coordinated with DOE and other Federal agencies

by appropriate interagency committees. The Survey program will also focus on longer-term geologic and hydrologic problems associated with the development of waste repositories over the next few decades.

An increase of $0.2 million is included for low-level nuclear waste investigations. The requested increase will be used for hydrologic observations at NRC licensed, State-owned, privately-owned, solid, low-level waste depository sites that involve drilling of test wells under contract by private contractors.

Conservation of Lands and Minerals

The FY 1979 Budget request for this activity is $82.8 million, a net program increase of $5.3 million over the FY 1978 level. The request provides for a $1.0 million increase for regulation of oil and gas operations on the OCS, an increase of $2.7 million for Tract Selection and Evaluation on the OCS, a $1.0 million increase for Platform Verification on the OCS, a $1.6 million increase for Regulation and Operations on Federal and Indian Oil and Gas Leases, $0.6 million for Regulation of Operations on Federal and Indian Energy Mineral Leases, $1.0 million for a Federal Coal Reserve Inventory, $0.2 million for Regulation of Operations on Non-Energy Mineral Leases, plus $0.5 million for Non-Energy Classification and Evaluation. These increases are partially offset by decreases of $2.3 million in Reserve Inventory of Oil and Gas Fields, $0.9 million in Coal Land Classification and Evaluation, and a $0.2 million in Oil Shale Classification and Evaluation.

Within the OCS Land subactivity, the increase for Regulation of Oil and Gas Operations is needed to accommodate the expanded Lease Regulatory Program and to assure proper royalty accounting and collection in response to increased workload for well approvals, wells drilled, active leases, and rig inspections.

The increase for Tract Selection and Evaluation is required for the purchase of high-resolution geophysical data needed for selection, in conjunction with BLM, of OCS lease tracts for sale in predetermined areas based on an analysis of individual tract petroleum potential.

The increase for Platform Verification is needed to initiate a new program to help assure that OCS structures will survive when exposed to the forces of nature and that their construction and installation will be conducted in a safe and pollution-free manner. For the Regulation of Oil and Gas Operations Program, the increase is needed to meet increasing demand for applications for permits to drill and to prepare related environmental analyses. With such an increase in drilling activity, it will also be necessary to perform more inspections and to increase Survey's auditing and accounting capability to assure that royalties are properly accounted for.

The increase for Regulation of Operation on Federal and Indian Energy Mineral Leases is needed for increased activities for regulating lessee coal mining operations. Workload increases result from an increased number of mining and exploratory plans submitted for review and approval, preparation of environmental analyses, and inspections of exploration and mining operations. In addition, new departmental

regulations relating to the development and continued operation of coal lease holds will be implemented.

The increase for the Federal Coal Reserve Inventory is needed to establish a permanent program for estimating coal reserves on leased Federal lands. Roughly 30% of the outstanding leases will be reviewed and reserves estimated by the end of FY 1979. Highest priority will be given to ascertaining the amount of reserves recoverable by underground mining from lands determined by the Office of Surface Mining to be unsuitable for surface mining. Priority will also be given to leases having multiple beds and/or leases for which recovery factors are sensitive to coal prices and the ability of users to take high sulfur coal. All leases outstanding would have reserves estimated by the end of 1983.

The increase for Regulation of Operations on Non-Energy Mineral Leases is needed to insure that the environmental integrity of the leased lands will be maintained while operations proceed and that sufficient appropriate expertise to supervise the mining activities on non-energy mineral leases can be developed.

The increase for Classification and Evaluation of Non-Energy Mineral Lands and Resources is needed to respond to the accelerated demand for non-energy minerals on Federal lands such as, potash, lead, sodium, and phosphate. There is an increased need to acquire more basic geological data to meet requirements of increased industry activity and for multiuse planning by land management agencies.

Land Information and Analysis

The FY 1979 Budget Request for this activity is $20.0 million, a net programmatic increase of $1.9 million over FY 1978. The increase of $1.4 million for Environmental Impact Analysis is needed to prepare an estimated three OCS Development EIS's that result from lease sales and exploration for oil and gas on the OCS and to support the preparation of an estimated eight oil spill trajectory analyses for inclusion in both lease sale and development EIS's.

The increase in the Geography Program of $0.8 million will permit the Survey to accept additional cooperative agreements with States and local agencies for land-use compilation and digital data production and will supply much needed technical assistance to cooperating agencies who need to incorporate land-use data for land-resource planning and management activities. These increases are partially offset by decreases in the Land Resource Data Applications Program.

Exploration of National Petroleum Reserve in Alaska (NPRA)

The total request for the NPRA is $185.5 million, a decrease of $24.0 million over FY 1978. This overall decrease is composed of a decrease of $11.3 million for Exploration and Assessment of the NPRA, plus a decrease of $13.0 million for the Exploration and Development of the Barrow Gas Field, partially offset by an increase of $0.4 million for Environmental Restoration. The requested funds for the Exploratory Drilling Program will provide for constructing sites, drilling three medium depth wells to completion, beginning and

completing drilling of one deep well at the site constructed in FY 1978, and constructing sites and drilling of two deep wells.

The Department has carefully reviewed the exploratory drilling program as established by the Navy and transferred to this Department on June 1, 1977. That program called for the drilling of 26 wells through FY 1980. The evaluation concluded that an acceptable basic sampling strategy to test the major petroleum plays on NPRA would necessitate approximately 20 wells.

The President's proposed FY 1979 Budget calls for an additional six wells, all scheduled for completion in 1979, bringing the total to 19. Because of the required completion date of January 1, 1980, for the 105(b) study of alternatives for development, production, transportation, and distribution of petroleum resources from the Reserve, data developed from the Reserve after the completion of the 1979 drilling program will be of little value in formulating the recommendations and proposed legislation to be submitted to this Committee. The Exploration Program Plan for FY 1980 would provide for "follow-up" and "confirmation" wells based on leads developed in earlier drilling. Drilling completed through this past year, unfortunately, does not provide any such leads that, at this time, provide targets for followup or confirmation wells in FY 1980.

Consequently, unless significant discoveries or favorable indications of major hydrocarbon resources are revealed by the 1978 and 1979 drilling, the Survey plans to terminate the drilling at the conclusion of the 1979 program. This decision is based on current knowledge of NPRA and will be subject to periodic review as drilling results become available.

Budgetary requests for developing and bringing on line of the East Barrow Gas Field are being held in abeyance pending a resolution of the means for funding the needed upgrading of the gas distribution system in Barrow Village. The Department is pursuing negotiations to determine what arrangements might be appropriate to achieve this objective.

This concludes the opening statement.

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Prepared Statement of Joan M. Davenport
Assistant Secretary of the Interior

I welcome this opportunity to be here to discuss with you the Geological Survey's proposed FY 1979 budget. I have been involved in many phases of the preparation and review of this request. At the outset, I want to acknowledge that this proposed budget reflects a number of difficult decisions and trade-offs in order to meet the President's fiscal objectives. It is adequate for the broad range of Geological Survey programs which support the national resource and environmental objectives.

The Geological Survey budget contains a number of program increases and a few offsetting decreases, and I would like to summarize briefly what I consider to be the key items.

National Petroleum Reserve - Alaska. Perhaps the most difficult budget decision -- one which involved careful consideration by the President -- was the proposal for the National Petroleum Reserve in Alaska. We are recommending a decrease for the program of the National Petroleum Reserve in Alaska. In addition, a decrease is requested for Barrow gas field operations.

The Navy drilled two wells in the Barrow gas field in FY 1977. No. 13 well was nonproducing, while No. 14, 10 miles east of Barrow, was a producing well. During FY 1978, the Geological Survey will drill two wells in the east Barrow gas field, in addition to an exploratory well outside the known Barrow gas fields at a cost of $13.5 million. The proposed 1979 program of $35.9 million was postponed until commitments have been explored for non-Federal funding of replacement of the present dangerous gas distribution system in Barrow. Because of the probable delay in funding for development of the east Barrow field, contingency plans to improve reliability and deliverability of the south Barrow field are being developed.

The original Navy program for Pet-4 called for a total of 26 exploratory wells. During FY 1978, six wells will be drilled and 2,000 miles will be surveyed by seismic techniques at a cost of $176 million, bringing the total to 13 wells. As part of preparation of the FY 1979 budget, we prepared an evaluation of the exploratory program. This evaluation concluded that a minimum sampling strategy for an initial resource estimate would require at least one well in each major undrilled area, or "play," of the Reserve believed to have significant petroleum potential. It was determined that approximately 19 wells would be needed under such a strategy.

As a result, the Presidential budget for FY 1979 calls for the drilling of six additional wells in untested targets in the Reserve, in addition to seismic work, at a total cost of $181.4 million. Unless significant discoveries or exceptionally favorable indications of major hydrocarbon resources which warrant follow-up tests are revealed in the 1978 and 1979 drilling, the program will be phased out in FY 1980.

Outer Continental Shelf Oil and Gas Development. Geological Survey's request contains increases necessary to execute the Secretary's leasing policy. Additional funds are requested to handle the increased regulatory workload due to sales in preceding years. Additional funds are also necessary to provide the high-resolution geophysical data to identify potential environment hazards in contemplated leasing areas. This helps assure that lease sale contracts are selected which can be developed in a sound manner. Another initiative proposed in this budget is the preparation of Environmental Impact Statements for frontier areas in connection with developmental activities. That is, after exploration is undertaken and discoveries are made, but before development occurs,

environmental evaluations will be undertaken. This activity is very important to the coastal States because, taken with other activities, it will help provide them with the information needed to plan for orderly onshore activities associated with offshore development.

Coal. We are requesting the same total amount of funding for coal programs as we requested in FY 1978. However, the emphasis in our Coal Program has been shifted from the gathering of data on coal resources to gaining more accurate data on the reserves currently under lease. This will provide a better basis for assuring diligent development and will aid in planning for future lease sales. At the same time, the request provides adequate funds to develop coal resource data for the Bureau of Land Management to accomplish the land-use planning for areas that may be offered for future leases.

Geologic and Hydrologic Hazards. An increase in funding is requested for the Earthquake Program. This will be directed at improving understanding of the delineation of areas of potential earthquake hazards and increasing our capacity to predict earthquakes in these regions.

In addition, this budget contains a major new thrust to involve the Geological Survey in the investigation of geologic problems which might be encountered in potential repository sites for high-level nuclear waste. Information and analysis obtained from this research will be essential to the Department of Energy and the Nuclear Regulatory Commission in the selection and licensing of repositories. The ability to select environmentally safe sites for nuclear disposal is critical both to the protection of our environment and to successful, long-term development of nuclear power as an energy alternative.

Digital Data Production. The Geological Survey's National Mapping Program has developed a worldwide reputation for the production of accurate and useful products on a variety of scales portraying the topographic relief of the United States in map form. Presently, however, many users of topographic data are relying on computer-based planning systems to make management decisions on the use of the land. These users require, in addition to the traditional map products, the development of digital data in a format that they can utilize in their computerized systems. Digitized mapping also provides greater flexibility than other mapping systems. The budget request contains a request for funds to begin development of such computerized data.

Water Resource Investigations. At a time when many of the regions of the United States are facing severe problems relating to the availability of water, the Nation will likely place increasing reliance on the use of underground water systems. We are proposing additional efforts and funds in Regional Aquifer Systems Analysis. Regional Aquifer Systems Analysis, which was added to our budget by Congress in 1978, is becoming increasingly important as a part of the Nation's total Water Resource Management Program.

Mineral and Energy Resource Surveys and Mapping. The ability of this country to meet the future needs for minerals and energy will depend to a large extent on our present ability to assess this Nation's domestic undiscovered resources. The budget for FY 1979 contains increases for stepping up the level of effort on the Nation's mineral lands assessment and for increased effort in uranium investigations and geothermal investigations.

BIOGRAPHICAL SKETCHES

Senator DeConcini. Since this is the Director's first appearance before the subcommittee, we will also include his biographical sketch along with those of other witnesses who have not previously testified before this committee.

Biographical Sketch of Dr. Henry William Menard, Jr.

Dr. H. William Menard was born in Fresno, California, December 10, 1920. He received his B.S. in Geology (1942) and M.S. (1947) from the California Institute of Technology, and his Ph.D. in Geology from Harvard University in 1949. During World War II, he served with the U.S. Navy as a photo interpreter and air intelligence officer in the South Pacific. Wounded in action, he received a bronze star medal, an individual Navy commendation ribbon, seven other ribbons, and six combat stars.

From 1949 to 1955, Dr. Menard was employed as a marine geologist by the Navy Electronics Laboratory (NEL), San Diego, Calif. He joined the Scripps Institution of Oceanography, San Diego, as a Professor of Geology, a position held until he was nominated as Director of the U.S. Geological Survey in February 1978. At NEL and Scripps, from 1949 to 1977, Dr. Menard participated in 20 deep sea oceanographic expeditions in many areas of the Pacific and across the Atlantic. During 1953-56, involved in underwater mapping off the coast of California, he made more than 1,000 logged aqua-lung dives for geological purposes. His scientific studies resulted in nearly 100 scientific papers, including four books.

In 1965-66, Dr. Menard served as a Technical Advisor in the Office of Science and Technology, Executive Office of the President, responsible for marine science and much of the atmospheric and solid earth science.

In 1969, he participated in a National Academy of Sciences (NAS) study on the environmental impact of a proposed Everglades Jetport and also in a similar study in 1970 related to a proposed extension of Kennedy International Airport. He also served on a White House panel to study the Santa Barbara oil spill. He has been a member of the NAS Committee on Science and Public Policy and the NAS Commission on Natural Resources. In 1974, he served as chairman of an NAS Committee to advise the Council on Environmental Quality on the probable impact of developing offshore oil.

Honors include: election to the National Academy of Sciences, American Academy of Arts and Sciences, and the California Academy of Sciences; a Guggenheim Fellowship; an Overseas Fellowship from Churchill College, Cambridge University; the Shepard Medal of the Society of Economic Paleontologists and Mineralogists; and invitations to lecture at more than 20 universities in the United States and abroad.

Dr. Menard's professional affiliations include: Geological Society of America; American Geophysical Union; and American Association of Petroleum Geologists. He is a Registered Geologist, State of California.

He was married in 1946 to Gifford Merrill. They have a son, Andrew, and two daughters, Elizabeth and Dorothy.

Biographical Sketch of Dallas Lynn Peck

Born: Cheney, Washington, March 28, 1929

Education: Primary and secondary schools, Cheney and Spokane, Washington, and Missoula, Montana; California Institute of Technology, B.S. in geology with honors, 1951; M.S. in geology (concentration in mining geology), 1953; Harvard University, Ph.D. in geology (concentration in mining geology),1960.

Professional Employment: Geologic field assistant, U.S. Geological Survey, part-time, 1951-53; Geologist, U.S. Geological Survey, 1954-present.

Professional Experience: Geology of Western Oregon, and volcanic rocks of the Western Cascade Range, 1954-59. Geology of the central Sierra Nevada, California and granitic rocks of the Sierra Nevada Batholith, 1959-63, 1972-1977. Hawaiian Volcano Observatory (activity of Kilauea Volcano and coding processes in lava lakes), 1963-66. Assistant Chief Geologist for Experimental Geology (later, Geochemistry and Geophysics), 1967-72. Adviser to the National Science Foundation (Earth Sciences Advisory Committee, 1969-1972); National Research Council, Fullbright-Hays Program, Advisory Screening Committee for Earth Sciences, 1974-1977. National Research Council, Advisory Board to the Office of Earth Sciences, 1975, Sandia Laboratories (Magma Energy Project, 1975-1976); Los Alamos Scientific Laboratories (Geosciences Advisory Panel, 1975-1977); and the Harvard University (Visiting Committee of the Board of Overseers to the Department of Earth Sciences, 1972-1977). Representative to the Third General Meeting of the US-Japan Cooperative Science Program (Japan), 1965; to the Symposium of the International Association of Volcanology (New Zealand), 1965; to the Surtsey Research Conference (Iceland), 1967; to the Symposium on Geothermal Power (Italy), 1970; to the International School of Earth Sciences (Erice, Italy), 1973; and to the US-Japan Scientific Cooperative Conference on Volcano Energy (Hawaii), 1974. Delegate to Moscow (USSR) as a member of the US/USSR Joint Commission on Scientific and Technical Cooperation--Energy Working Group, 1972; U.S. delegate to the assembly in Durham (England) of the International Association of Volcanology and Chemistry of the Earth's Interior, 1977.

Scientific and Professional Societies: American Association for the Advancement of Science; American Geophysical Union (President, Section on Volcanology, Geochemistry, and Petrology); Geological Society of America (Fellow); Geological Society of Washington (Past-President); Mineralogical Society of America; Peninsular Geological Society; and the Society of Economic Geologists.

Honors: Department of the Interior Meritorious Award, 1970.

Biographical Sketch of Rupert Barron Southard

Born: St. Johnsbury, Vermont, April 8, 1923

Education: Primary and secondary education, St. Johnsbury, Vermont, Bachelor of Civil Engineering, Syracuse University, 1949, Federal Executive Institute, 1971.

Professional Employment: Topographic Engineer, U.S. Geological Survey, 1949-55; Washington Staff, U.S. Geological Survey, 1955-present.

Military Experience: Served as an artillery officer in U.S. Marine Corps, 1943-46; and a second tour of duty as a Survey Officer, 1950-52.

Professional Experience: Field Topographic Surveys and Photogrammetric compilation, 1949-52; Photogrammetric research and instrument development, 1955-65; Assistant Chief Topographic Engineer for Plans and Program Development with responsibility for planning, programming, and budgeting for the National Topographic Program, international activities, and conduct of the Map Information of the Geological

Survey, 1965-70; Associate Chief Topographic Engineer, 1970-present. Since June 1977 has been assigned as Acting Chief of the Topographic Division of the Geological Survey.

Scientific and Professional Societies: Member, American Society of Photogrammetry, National Membership Chairman, 1956; Chairman, International Liaison Committee, 1962-65; Board of Directors, 1961-64; Member, American Congress on Surveying & Mapping; Former Chairman, Convention Policy Committee; Deputy Director, Director, and Advisor, Multi-year Sequence of Joint Conventions of ASP and ACSM. Committees and Task Force Assignments: Member National Academy of Sciences; National Research Committee on Polar Research and Chairman on Panel on Geodesy and Cartography; U.S. Representative, Working Group on Geodesy, International Scientific Committee on Antarctic Research; Department of the Interior Member of the Federal Mapping Task Force, Office of Management and Budget, Executive Office of the President; U.S. Alternate Member Pan American Institute of Geography and History (PAIGH), 1977.

Honors: Department of the Interior Meritorious Award, 1973; Department of the Interior Distinguished Service Award, 1976.

Biographical Sketch of George Earle Becraft

Born: Sedro-Woolley, Washington, October 11, 1922.

Education: Primary and secondary schools, Sedro-Woolley, Washington, University of Alaska, Washington State University, B.S. 1949, M.S. 1950, University of Washington, Ph.D. in geology 1959.

Professional Employment: State of Washington, Geologic Field Assistant, summer 1948. Instructor, Washington State University, summer 1949. Teaching Assistant, Washington State University, 1949-1950. Instructor in Geology, Vassar College, Poughkeepsie, New York, 1950-1951. Instructor (night school) Washington State University, 1952. Geologist, U.S. Geological Survey, 1951-present.

Professional Experience: Geology and mineral resources of the Boulder batholith, Montana, 1951-1956. Geology and mineral resources, Turtle Lake area, northeastern Washington, 1956-1958. Staff Geologist, Office of the Chief Geologist, 1959-1961. Geology and mineral resources, northeastern Washington, 1961-1965. Geology and mineral resources, Spanish Peaks Primitive Area, Montana, 1965. Chief, Office of Scientific Publications, 1966-1977. Chief, Office of Mineral Resources, 1977-present.

Scientific and Professional Societies: Geological Society of America (Fellow). Society of Economic Geologists (Councillor and Member, Executive Committee, 1973-present). Association of Earth Science Editors (Board of Directors, 1974-1976; President, 1975). Economic Geology Publishing Company (President, 1973-present). American Geological Institute (Board of Governors, 1975-1976; Secretary-Treasurer, 1976). American Association for the Advancement of Science.

Honors: Department of the Interior Meritorious Service Award, 1972.

Biographical Sketch of Thomas Otto Friz

Born: Milwaukee, Wisconsin, November 3, 1938

Education: Primary and secondary schools, Menomonee Falls, Wisconsin; University of Wisconsin, B.S. in Mining Engineering, 1963; M.S. in Mining Engineering, 1966; Ph.D. in Mining Engineering, 1970.

Professional Employment: Mining engineer and field geologist with industry (part time), 1960-1963; Instructor of Mining Engineering, University of Wisconsin, 1965-1967; Mining Engineer, U.S. Bureau of Mines, 1969-1973; Mining Engineer, U.S. Geological Survey, 1973-present.

Professional Experience: Uranium mine engineering in Wyoming, 1960; Junior Engineer, underground copper mine in Michigan, 1962; geologic mapping of iron deposit, Canada, 1963; geologic mapping of Michigan Goldfields area, 1964; lectured on mining systems, rock mechanics, and mines design, 1965-1967; mineral resource and river-basin research in Midwest with Bureau of Mines Minneapolis Office, 1969-1971; assigned to Department of the Interior Geothermal Task Force, 1971-1973; Mining Engineer on U.S. Geological Survey Conservation Division Staff, 1973-1974; Chief, Environmental Analysis Section, Conservation Division, 1974-1976; intraagency and interagency coal program coordination for U.S. Geological Survey, 1977-present.

Scientific and Professional Societies: Sigma Xi Research Society; Professional Engineer State of Wisconsin.

Honors: Department of the Interior Superior Service Award, 1977.

Biographical Sketch of Robert L. Rioux

Born: Natick, Massachusetts, June 11, 1927

Education: University of New Hampshire, B.A. Geology, 1953; University of Illinois, M.S. Geology, 1955; University of Illinois, Ph.D. Geology (Minor in Mining Engineering), 1958.

Professional Employment: Conservation Division, U.S. Geological Survey: Geologist, 1955-63 (Denver); Administrative Geologist, 1963-72 (Washington, D.C.); Assistant Division Chief-Resource Evaluation, 1972-present (Reston, Va.).

Professional Experience: Geologic field investigations and mapping projects in Colorado, Wyoming, and Idaho, 1955-59; Assistant Regional Geologist (Denver) involved in planning and direction of long-range mapping program to classify Federal lands for leasable mineral values in oil and gas, coal, and phosphate, 1959-63; Assistant Chief, Branch of Mineral Evaluation - evaluated, planned, and directed programs for mineral land classification and evaluation of leasable minerals on Federal lands and Outer Continental Shelf, 1963-72; Assistant Division Chief, Resource Evaluation - principal advisor to Chief, Conservation Division, in development, management and coordination of national programs for geological and geophysical data acquisition, mapping interpretation and dissemination for mineral land classification, evaluation of Fair Market Value and leasable minerals on Federal and Outer Continental Shelf lands.

Scientific and Professional Societies: Geologic Society of America, American Association of Petroleum Geologists, Geologic Society of Washington, D.C., Association of Professional Geological Scientists, Certified Professional Geologist.

Honors: Phi Beta Kappa; Sigma Xi Research Society; University of Illinois Research Fellow; Shell Oil Company Fellow; Department of the Interior Meritorious Service Award, 1968; U.S.G.S. Special Achievement Award, 1971; U.S.G.S. Outstanding Performance Rating and Quality Increase Awards, 1976.

SUMMARY OF OPENING STATEMENT

Senator DECONCINI. Since we have a large and complex budget to hear in a short amount of time, we'll ask you both to keep your summary remarks as brief as possible. Please hit only the major highlights so that we can move on to some questions.

Please proceed.

Ms. DAVENPORT. Thank you, Mr. Chairman.

First of all, I would like to introduce Dr. Bill Menard, Director of the U.S. Geological Survey. As you know, Dr. Menard has not been before this committee before. We at the Interior Department are delighted to have Dr. Menard as one of us, and I'm sure that you will see him many times in the future appearing before this committee.

NATIONAL PETROLEUM RESERVE IN ALASKA

I will simply and very briefly sketch several of the more controversial, and interesting changes in this budget. The first area which perhaps was the most difficult budget decision to make within the Geological Survey relates to the exploration of the National Petroleum Reserve in Alaska. We are recommending a decrease for the program in this area. In addition, a decrease is requested for development of the Barrow gasfield.

The Navy drilled two wells in the Barrow area in fiscal 1977. Well No. 13, in the south Barrow field, was nonproducing, while No. 14, 10 miles east of Barrow, was a producing well. During fiscal 1978, the Geological Survey will drill two wells in the east Barrow field, in addition to an exploratory well outside the known Barrow gasfields. The proposed 1979 program of $35.9 million has been postponed until commitments relating to the upgrading of the Barrow gas distribution system are made.

The Department is actively investigating the ways and means to achieve the upgrading of that gas distribution system. The original Navy program for Pet-4 called for 26 exploratory wells. During fiscal 1978, 6 wells will be drilled and 2,000 miles will be surveyed by seismic techniques at a cost of $176 million, bringing the total to 13 wells.

As part of the preparation of the fiscal year 1979 budget, we prepared an evaluation of the exploratory program. This evaluation concluded that a minimum sampling strategy of the reserve would require at least one well in each major undrilled play, or area, of the reserve believed to have significant potential for hydrocarbons. It was determined that approximately 19 wells were needed to carry forth this strategy. It is this 19-well program which is reflected in the budget.

I would like to make one additional statement, however. Although we are not planning to continue this program into fiscal 1980, should any of our activities in the reserve yield results promising enough to have followup wells or to have confirmation wells, then we will be back to request additional funds in 1980 to undertake additional drillings.

OUTER CONTINENTAL SHELF

In another area, the Outer Continental Shelf oil and gas development, the USGS request contains increases necessary to execute the Secretary's leasing policy. Additional funds are requested to handle the increased regulatory workload for the sales in preceding years. Additional funds are also necessary to provide the high resolution geophysical data to identify potential environmental hazards in contemplated leasing areas. This sort of data is absolutely necessary so that adequate decisions can be made, both for tract selection and also for safety precautions after leases are given out.

COAL PROGRAMS

In the area of coal, we are requesting the same total amount of funding as we requested in fiscal 1978. However, there is a major change. The emphasis in our coal program has been shifted from gathering general data on coal resources to gaining more accurate data on the reserves currently under lease.

Those reserves are more or less 17 billion tons of coal in the Western part of the United States. This shift of emphasis will provide a better basis for assuring diligent development and will aid in planning for future lease sales. At the same time, the request does provide adequate funds to develop coal resource data for the Bureau of Land Management to accomplish its land use planning goals.

GEOLOGIC AND HYDROLOGIC HAZARDS

In the area of geological and hydrologic hazards, an increase in funding is requested for the earthquake program. This will basically be directed at identifying those areas of potential earthquake hazards and increasing our capacity to predict earthquakes in those areas.

EARTHQUAKE HAZARDS

The portion of the Geological Survey program that relates to earthquakes is closely coordinated with programs in NSF, which also deal with earthquake hazards.

I think at this point I will end my statement. I'd appreciate having the full statement entered into the record.

Senator DECONCINI. Ms. Davenport, the full statement will appear in the record, and we thank you for highlighting it. We'll direct some questions to you after we hear from Dr. Menard.

STATEMENT OF DR. MENARD

Dr. MENARD. Mr. Chairman, it's a pleasure to appear before this committee to present and defend our 1979 fiscal year budget.

I have not been a member of the Survey for more than a few weeks, and I find the budget rather overwhelming. The NPRA is a

relatively simple matter, although very expensive. But the Survey's investigations and research are extremely complex and diverse and require detailed examination.

I carefully reviewed this previously prepared budget and I support it. It's a budget which will present or permit the Survey to carry out its allotted tasks with appropriate speed. However, as I become more familiar with some of the details in the course of this coming year, I may want to shift minor aspects of the budget.

I have a prepared statement, as you are aware, and I would like to have it included in the record.

Senator DECONCINI. Without objection, it will appear in the record.

Dr. MENARD. At this time, I'll be happy to respond to any questions on policy and major budget questions. With regard to the detailed matters, with your permission, I will call on Associate Director Radlinski, who can answer since he's led in the development of this entire budget.

ADEQUACY OF BUDGET REQUEST

Senator DECONCINI. Thank you very much, Dr. Menard and Secretary Davenport. We appreciate your testimony.

Your total request for "Surveys, Investigations, and Research" is an increase of $21.6 million over the adjusted 1978 base. That 5-percent increase is hardly enough to keep up with inflation. Is this budget really adequate, particularly for the essential energy programs that are included in it?

Dr. MENARD. We believe that the budget is adequate. One of the major items in this Survey budget is for salaries, and we customarily receive supplementals to cover the cost of living increase for the remainder of the budget. Therefore, 5 percent is somewhat larger than it looks as far as the remainder of the budget.

To the extent that inflation continues to increase in fiscal year 1979, we may have to curtail portions of some of the programs. But the budget was developed taking inflation into account and we believe it to be adequate.

Some of the budget is for activities we will carry out and terminate during the year. The major portion of the Survey's activities, on the other hand, are continuing in nature and will require additional support in future years, such as the geothermal program to determine the resource base and OCS regulation, to insure diligence, and to adhere to the environmental and safety programs.

PROGRAM REDUCTIONS

Senator DECONCINI. What programs will be finished this year?

Dr. MENARD. The surveys, for example, for individual leasing on the Continental Shelf. We carried out a definite program and that's over with.

Senator DECONCINI. That will be over with in fiscal 1978?

Mr. RADLINSKI. Mr. Chairman, that is a continuing process. Certain activities terminate, but the total program itself will have to continue. But there are other activities that we are reducing in this budget.

I can provide a list.

Senator DECONCINI. Would you please provide a list for us of what activities you are reducing?

I'm certainly not critical of the reduction. I compliment you for budgeting in that manner, but we would like to know where those reductions are.

Mr. RADLINSKI. There are a couple of programs within our topographic mapping activity that are being reduced. These include the low priority mapping programs, and a program for modernizing our mapping instruments. The latter is being reduced because many of the instruments already have been purchased, and several others that we can provide a list on.

Senator DECONCINI. Are the programs that you're talking about being reduced because you feel that you have sufficient information, or are they being reduced just with the intent of shifting your expenditures into other areas?

Mr. RADLINSKI. It's more the latter, Mr. Chairman, because of higher priority activities. These would be our lower priority activities that we're reducing.

Dr. MENARD. There are a wide range of reasons for reducing. One of them is an item of $2.3 million we're reducing in connection with preparing an inventory of offshore oil and gas. That is simply because we had a large backlog and we've caught up with the backlog.

[The information follows:]

U.S. GEOLOGICAL SURVEY
Program Reductions in the FY 1979 President's Budget
(Dollars in thousands)

Activity/Program	FY 1979 Base	Amount Reduced	FY 1979 Request
SURVEYS, INVESTIGATIONS, AND RESEARCH			
Alaska Pipeline Related Investigations	$ 331	$ -331	$ --
Topographic Surveys and Mapping:			
Modernization of mapping techniques	6,020	-500	5,520
Small-scale and special mapping ----	7,907	-175	7,732
Geologic and Mineral Resource Surveys and Mapping:			
Mineral commodities assessments ----	2,322	-246	2,076
Coal resource assessments ----------	4,973	-781	4,192
Water Resources Investigations:			
Core program hydrologic research ---	7,794	-2,316	5,478
Oil shale hydrology ----------	2,474	-1,300	1,174
Underground heat storage ----------	106	-106	--
Conservation of Lands and Minerals:			
Reserve inventory of OCS oil and gas fields ----------	3,728	-2,300	1,428
Coal land classification & evaluation	7,954	-850	7,104
Oil shale classification & evaluation	311	-200	111
Land Information and Analysis:			
Resource and land investigations ---	1,053	-125	928
Earth science applications ---------	1,505	-125	1,380
Total, SIR Reductions ----------		-9,355	
NATIONAL PETROLEUM RESERVE IN ALASKA			
Evaluation & Assessment of NPRA:			
Exploratory drilling ----------	166,355	-12,160	154,195
Geophysical exploration ----------	23,437	-272	23,165
Barrow Area Gas Operation:			
Operation and maintenance ----------	3,302	-1,913	1,389
Exploration & development ----------	11,497	-11,115	382
Total, NPRA Reductions ----------		-25,460	
GRAND TOTAL, Geological Survey --------		-34,815	

PERMANENT EMPLOYMENT

Senator DECONCINI. Although there is some program expansion, there's hardly any increase at all in permanent positions, and yet we have a substantial increase in average paid employment. Why are you relying so heavily on temporary personnel for your program needs?

Dr. MENARD. I think there are two principal reasons, Mr. Chairman. One is the general constraint on expanding permanent employment in the Federal Government.

The other is that more than a decade ago very careful studies were made within the President's Science Advisory Committee and the National Academy of Sciences, of the Government scientific agencies, notably the Geological Survey. Recommendations were made at that time that the Survey try to diversify its means of accomplishing its objectives by going to contract and by going to part-time help.

EFFECTS OF PERSONNEL SHIFTING

Senator DECONCINI. There is also considerable shifting of positions within your budget to avoid any net increase. What effect does this shifting of personnel have on your ongoing programs?

Mr. RADLINSKI. Although there is no net increase in permanent positions in the fiscal year 1979 budget, the Survey was able to shift permanent positions from programs being decreased to provide positions to those programs reflecting increases. In addition to this shifting, wherever possible, we will be substituting other-than-permanent employees for permanent positions. This substitution would be made in support service occupations to minimize adverse technical impact on program accomplishments. As attrition frees a permanent support position, that vacancy would be filled by an other-than-permanent position. The permanent positions would then be moved to accommodate a new fiscal year 1979 permanent requirement. To the extent that the attrition rate does not meet our requirements, permanent positions from other programs will be shifted to programs where the use of a permanent positions is mandatory. By these actions, we believe that the objectives of ongoing programs can be achieved with minimal adverse impact.

INCREASE IN CONTRACTING

Senator DECONCINI. Your budget also indicates nearly $90 million for contracting. That's up $10 million, or about 12 percent. Contractual services now represent about 22 percent of your total operating budget. Why are you continuing to rely so heavily on contracting?

Dr. MENARD. As I suggested, there are recommendations that Government scientific agencies try to do that to diversify the input they are getting and to increase their capacity with a relatively small permanent work force.

To accomplish the work we're asked to do—contracting poses difficulties for us because it requires that we shift our contracting staff. It imposes difficulties for us because it means that the scientists within the Survey might have done the work themselves had

they been able to, and are required to spend a part of their time supervising the outside work.

We would not under any circumstances enter the contracts where we didn't have the capacity to monitor carefully the quality and the expense of the work.

Senator DECONCINI. What is the length of some of those contracts?

Mr. RADLINSKI. They will vary, Mr. Chairman, but for the most part they're 1-year contracts. We have 1-year money, so we have to obligate the money in the same year it is appropriated.

Senator DECONCINI. Are some of them planned for longer than that?

Mr. RADLINSKI. Yes. Some of them will carry on for 3 or 4 years, and they're made subject to availability of funds that would be provided by the Congress.

For example, one of the reasons for using contractual help is that it allows you to take care of a fluctuating workload. An outstanding example, with which Senator Young is very familiar, is the Sioux Falls data center for providing satellite data. The data are collected by NASA. We provide it for the general public. There's a fluctuating workload there, and that operation is run principally by contract. Although we fund that on a 1-year basis, the contract, I think, runs for a period of about 3 years.

Senator DECONCINI. Do you make an analysis of these long-term contractual needs and then evaluate what you could handle in-house?

Mr. RADLINSKI. Yes, sir, we have done that in the past, and at the present time, because of the pressures that are on us to conduct increased program activities without additional permanent personnel, we are making an intensive study of the opportunities for contracting within our total program activity in the Geological Survey.

Senator DECONCINI. Senator Young, do you have some questions?

EROS PROGRAM

Senator YOUNG. Thank you, Mr. Chairman.

While we're on the EROS program, would you give us a little more information on what you're doing and expect to do in the future under the EROS program.

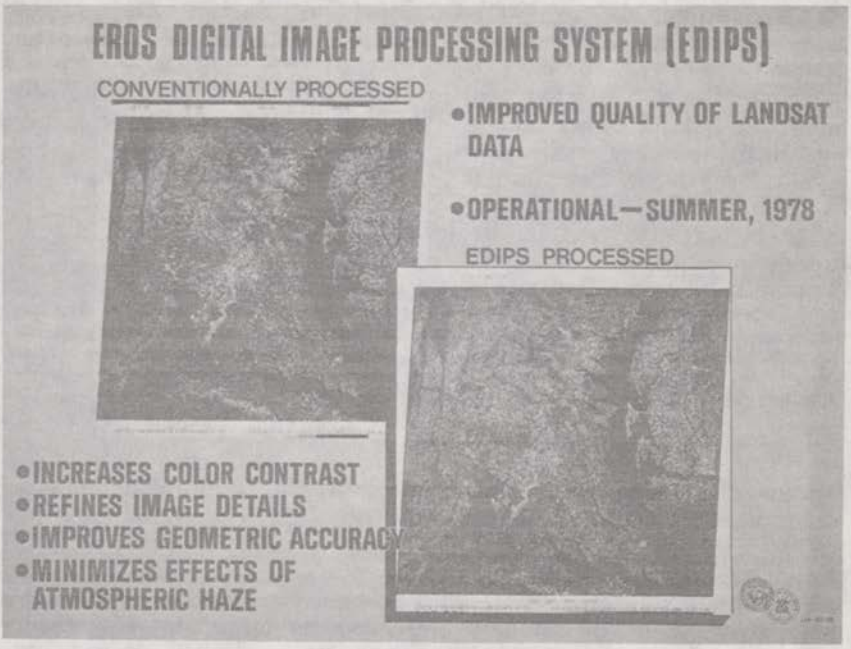
Mr. RADLINSKI. Yes, sir.

Senator YOUNG. You mentioned that I was involved in that. I was involved in the center at one time.

Mr. RADLINSKI. Well, Senator, we're modernizing our equipment there to accommodate the new technology that's been developed by NASA. As you know, they successfully launched Landsat C, and have plans to launch Landsat D, which will have a new instrument on it called the thematic mapper, which will require different ground data processing equipment.

But to increase our efficiency and improve the quality of the product there at Sioux Falls, we are in the process of installing a new system that we call EDIPS as shown on this chart—"EROS digital image processing system"—which will improve the quality

of our product considerably, and that particular system should be operational probably in the fall.



This chart illustrates the superior image obtained by digital processing with that of standard processing. Using the higher quality image, land resource decision-makers can detect better detail for: irrigated lands, saline deposits, water depths, topography, and roadways.

SATELLITE PHOTO OF WASHINGTON, D.C., AREA

Senator YOUNG. Is that a picture from a satellite?

Mr. RADLINSKI. Yes, sir. That's a picture of the Washington area. There are two pictures of the Washington area. The one on the top is the one that's conventionally processed. The one on the bottom is processed by the new system.

From that distance you probably can't see that there is a considerable improvement in quality.

Senator YOUNG. Are you able to forecast the crop conditions?

Mr. RADLINSKI. Sir, that is a very active project that is being conducted jointly by the Department of Agriculture and NASA. We are not involved in that particular project.

UTILIZATION OF EROS FUNDING

Senator YOUNG. Your $9.7 million request for an Earth Resources Observation System does not involve any change in the total program level. However, we understand that the funding shift within the total will result in the deterioration of all the systems through State and local agencies and further delay the use of the Landsat data.

What is the situation?

Mr. RADLINSKI. Sir, at the present time, under the leadership of the President's science adviser, Dr. Press, there have been studies conducted to define the various user agencies' role in the total Earth resources program. That study is still ongoing. But recommendations from that study will probably surface in the very near future.

And in the meantime, since Interior's role is not clearly defined on an actual basis, we considered it prudent not to ask for any significant increase until that particular role is defined.

Senator YOUNG. Did you ask for more money than you received in the budget?

Mr. RADLINSKI. Yes, sir. We asked for an additional half a million dollars.

Senator YOUNG. What would you have done with that?

Mr. RADLINSKI. This half a million dollars was principally to accommodate the increased cost in operating the processing system and to set up a user facility in Denver to provide technological assistance to users of the data.

DIGITAL PROCESSING SYSTEM

Senator YOUNG. The justification states that a digital data processing system would be placed in service this year. What funding will be necessary to support that system in fiscal 1979, and what is the increase for fiscal 1978?

You've partially answered that, I think.

Mr. RADLINSKI. The money to purchase the equipment was essentially provided to us, and that's the equipment, EDIPS, that I was just talking about, Senator. It will be operational in the fall, and part of the funds to operate that in 1978 would come from the sale of products.

FUNDS NEEDED TO ASSIST STATE AND LOCAL GOVERNMENTS

Senator YOUNG. How much money would be needed to maintain assistance to the State and local agencies? How much more money would you need?

Mr. RADLINSKI. Sir, I think that would be the half a million dollars that I spoke of, where we were trying to provide additional assistance in an area where we have a great number of users—in Denver. The mineral extraction industry is one of the great customers of this data.

DEMAND FOR PRODUCTS

Senator YOUNG. Your pictures are in demand worldwide, aren't they?

Mr. RADLINSKI. Yes, sir. Senator, you probably know, the funds that we receive from the sales of these products—we are able to convert into program funds, and we use them for operating the center.

Senator YOUNG. I think that's all the questions I have.

Off the record, Mr. Chairman.

[Discussion off the record.]

CHANGES IN PERMANENT AND TEMPORARY EMPLOYMENT

Senator DECONCINI. Dr. Menard, returning to the questions I was talking about on contracting, will you please supply for the record a comprehensive summary of your employment budget, and we'd like you to include all the increases and decreases and permanent positions and temporary positions by activity, including related changes in reimbursable amounts. We don't seem to have that.

Dr. MENARD. We can do that, sir.

[The information follows:]

U.S. GEOLOGICAL SURVEY
Distribution of Funds and Positions
FY 1977 - FY 1979
(Dollars in thousands)

Fund	FY 1977 Positions	FY 1977 Amount	FY 1978 Positions	FY 1978 Amounts	FY 1979 Positions	FY 1979 Amount	Change FY 1979 Over FY 1978 Positions	Change FY 1979 Over FY 1978 Amount
Direct Appropriation:								
Surveys, Investigations, and Research	7,508	$319,443	7,690	$376,749 a/	7,702	$398,363	+12	$+21,614
National Petroleum Reserve	--	--	32	209,541	32	185,548	--	-23,993
Direct Subtotal	7,508	319,443	7,722	586,290	7,734	583,911	+12	-2,379
No Year Funds	--	16	--	14	--	--	--	-14
Reimbursements	1,382	76,669	1,353	86,683	1,341	92,333	-12	+5,650
Working Funds	480	29,866	464	33,849	464	33,070	--	-779
Allocation Accounts:								
Funds Appropriated to the President (NPRA)	--	7,064	--	106	--	--	--	-106
Department of State	11	345	11	370	11	413	--	+43
Allocation Subtotal	11	7,410	11	476	11	413	--	-63
TOTAL (Ceiling)	9,381	433,403	9,550	707,312	9,550	709,727	--	+2,415
Positions lapsed in Budget	-48							
End of year employment in Budget	9,333							

a/ Includes Beaufort Sea Supplemental.

U.S. GEOLOGICAL SURVEY
Change in Permanent Positions
FY 1979 Budget Request

Division	Increases Program	Positions	Decreases Program	Positions
Topographic	Digital Data Production	+5	New Quadrangle Mapping	-5
Geologic	Climate Change	+4	Alaska Pipeline	-4
	Conterminous U.S.	+4	Critical Commodities	-4
	Geophysical & Geomagnetic	+2	OFA Positions - Geology	-2
Water Resources	Regional Acquifer Analysis	+6	Data Collection and Analysis	-6
	High Level Nuclear Waste	+26	Core Program Hydrologic Research	-4
			Oil Shale Hydrology	-11
			Underground Heat Storage	-1
			Transfer OFA Positions From Geology	-10
Conservation	Platform Verification	+16	Reserve Inventory of OCS Oil & Gas Fields	-16
	Regulation of Operations - Energy Minerals	+21	Reserve Inventory of OCS Oil & Gas Fields	-3
			Coal Land Classification	-16
			Oil Shale Classification and Evaluation Program	-2
	Subtotal	+84		-84
Potential needs for Conservation Increases		+155		-155
	TOTAL	+239		-239

U.S. GEOLOGICAL SURVEY
Change in Other-than-Permanent Employment
FY 1978 - 1979

Activity	Ceiling FY 1978	FY 1977	Change
Topographic	275	285	+10
Geologic	961	977	+16
Water Resources	1,283	1,427	+144
Conservation	193	234	+41
LIA	91	126	+35
Gen. Admin./Facilities	38	38	--
Miscellaneous Services	3	3	--
Total SIR	2,844	3,090	+246
NPRA	6	6	--
Grand Total	2,850	3,096	+246

COAL PROGRAMS

Senator DECONCINI. Let's turn to coal—more specifically, to the coal budget.

Both your regulatory and land classification and evaluation programs do not seem to be geared to any coal leasing increase of any magnitude. Can you tell us how the recent proposed settlement of *NRDC* v. *Hughes* will affect your budget plans?

Dr. MENARD. If the question is: Are we putting in for a supplemental, we are. I would ask Associate Director Radlinski to answer that.

Mr. RADLINSKI. When this budget was prepared the Department, as a matter of policy, put a hold on all leasing activity because of the court actions that were pending at that time.

As you know, recently there was a resolution of the court action—it's commonly referred to as the Judge Pratt decision. It was an action the Natural Resources Defense Council took against the Department of the Interior. The settlement provides that the Secretary be allowed to issue 16 leases involving bypass coal, 12 leases to insure continued employment, and 7 leases to applicants who have clearly demonstrated hardship. The data collection and interpretation and reserve calculations that are necessary on the part of the Geological Survey to do this work, will probably require additional resources.

How we're going to go about getting those additional resources is currently a matter of discussion within the Department. We may move forward with a request for a manpower supplemental, or we may have to reprogram funds, in which case we would still come back to the committee for approval.

Since the Pratt decision was recent, we're just now considering what additional resources we might need.

IMPLEMENTATION OF A NATIONAL COAL POLICY

Senator DECONCINI. The Secretary told us at an earlier hearing that he was still looking toward the implementation of the national coal policy by mid-1980. How well does your budget respond to that goal?

Mr. RADLINSKI. Not knowing what the coal policy is, I can't say that it is or isn't responsive to it.

Ms. DAVENPORT. The reason we are reviewing the whole coal leasing policy is basically because of court actions. We are under an obligation to produce a programmatic environmental impact statement which will cover the several options available to the Department for establishing a new coal leasing policy. We may conclude that a new coal leasing policy is required. Until we get a little further along in that analysis, it's very difficult to try to conform the Department's budget to an unknown outcome.

Senator DECONCINI. Are you telling me, Ms. Davenport, that you're not involved in this process of a national coal policy that is supposed to come forward in 1980 as it relates to this Department and to the Geological Survey?

Ms. DAVENPORT. No, Senator. What I'm saying is we are moving ahead with that process as quickly as possible. However, at this point——

Senator DECONCINI. This budget doesn't reflect any of that.

Ms. DAVENPORT. This budget reflects a judgment which looks forward to that decision, and that is in the area of coal. We have increased emphasis on looking at what is already under lease. Knowledge of what is under lease and what is producible is important to establishment of a national coal policy.

Senator DECONCINI. If the Secretary comes forward with his plan for a national coal policy, I still am not satisfied that you have demonstrated to me, or maybe it's in your justification, just what preparation the Geological Survey is doing in that area. What specifically is budgeted here to meet this national coal policy that is projected to come sometime in the mid-1980's?

Mr. RADLINSKI. One of the principal responsibilities of the Geological Survey is to collect basic data that will allow the Secretary to make the decisions with respect to coal. For example what are the resources of coal and what are the hydrologic implications?

Senator DECONCINI. Do you already have that, or are still gathering it?

Mr. RADLINSKI. We are gathering it. So that could certainly be used in the formulation of a national coal policy.

Senator DECONCINI. To your knowledge, has that been sought by the Secretary or whoever is in charge?

Mr. RADLINSKI. One of the Secretary's goals was to increase the quality and the amount of basic data that's required. But I'll repeat: I can't say specifically that what we have in this budget will be responsive to the policy until we know the magnitude of what would be proposed.

Senator YOUNG. Off the record.

[Discussion off the record.]

IMPACT OF ESTABLISHMENT OF OFFICE OF SURFACE MINING

Senator DECONCINI. What impact, if any, has the establishment of the Office of Surface Mining had on your responsibilities for regulating coal mining on Federal lands?

Mr. RADLINSKI. Sir, we think considerable impact. We are currently in the process of developing the requirements that would be imposed on the Geological Survey as a result of resolving problems with the Office of Surface Mining. As recently as the last 2 weeks, I have personally held two meetings with the head of the Office of Surface Mining to go over the areas of interface.

Now, we haven't resolved all of those problems, by any means, but we've resolved great numbers of them. For example, who will be responsible for the approval of surface mining plans and who will be responsible as a point of contact with the lessee?

There are many, many details of that nature. The law requires that certain hydrologic work be done and that certain maps be provided. We have not resolved these problems as yet as to how much money, how many maps, and when. But we are currently in the process of doing that.

GAO COAL RESERVES DATA RECOMMENDATIONS

Senator DECONCINI. You are starting a new $1 million program called the Federal coal reserves inventory. How effectively does

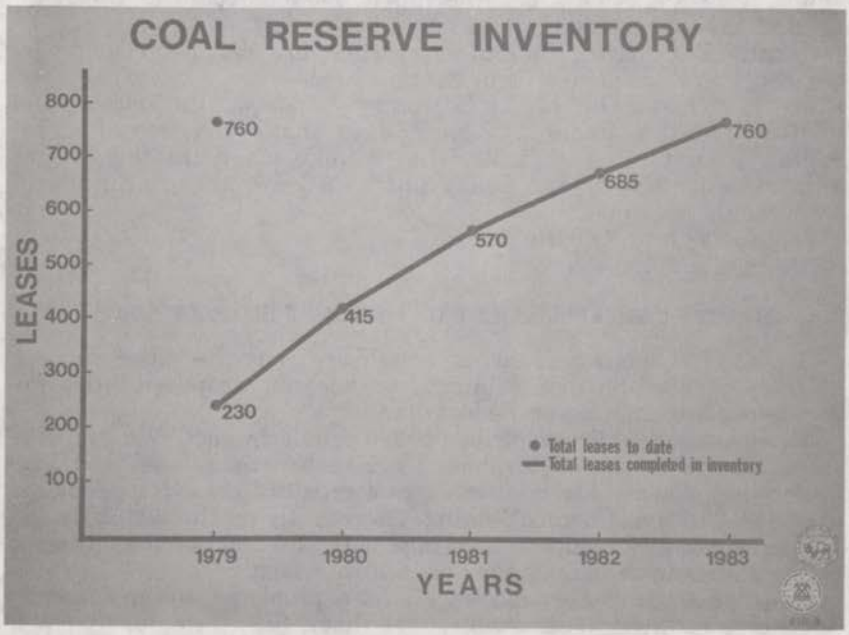
this budget request answer the recent General Accounting Office report criticizing the validity of your coal reserves data?

Mr. RADLINSKI. Sir, the General Accounting Office made four recommendations, essentially, and one of them is to publish the methodology regulations. And this we've already issued. I believed we've put a draft of those methodology regulations in the Federal Register. I'd have to check that, but that's the process that's being done.

Another is that we are to obtain from leaseholders reserve costs and estimates and the requirements to do that have been issued through our proposed General Coal Mining Order No. 1.

Still another is requiring computer capability to provide for more effective and timely determination of reserve estimates, and we believe that we have that. But the fourth recommendation is one that we're still working on. It is that we review and update all the reserve estimates on existing leases and that's why we're asking for an additional $1 million in increases for our current program.

So we're in the process of doing that as shown on this chart.



The planned effort to systematically and continually reevaluate the amount of coal contained in Federal coal leases, is shown on this graphic.

RESERVE ESTIMATE SYSTEM

Mr. RADLINSKI. So I think that I can say essentially that three of the four recommendations are either completed or in the process of being completed. And the fourth recommendation is part of our budget request here.

Senator DECONCINI. Why has there been no reserve estimate system established before this?

Mr. RADLINSKI. We have made estimates of reserves, but not on an organized, systematic manner. That's principally because we never had the resources to do that. We're now approaching this from a systematic standpoint. I think we'll get the answers that are necessary for the formulation.

Dr. MENARD. If I may interject something, Senator—I think, in part, it's because the Nation believed it knew about its coal resources, because that was the subject of great investigation by the Geological Survey in the 19th century. It looked like the amount of coal was almost limitless. It's only when recent utilization of coal has become so important that it's caused us to reevaluate the quality of the information we have.

REDUCTION IN COAL RESOURCE SURVEYS

Senator DECONCINI. How does the proposed reduction in coal resource surveys jibe with the coal priorities of the Carter administration, and what will be the impact of that production on the planned resumption of coal leasing in 1980?

Mr. RADLINSKI. I think I can respond to that. There is a reduction of about $750,000 in our coal exploratory program, this is a program involving drilling and mapping at 1 to 100,000 scale of coal basins, and it's aimed at defining the coal resources for future leasing programs, for leasing programs far beyond 1980. So it's a long-range program.

Senator DECONCINI. Did you reduce your coal resource survey program?

Mr. PECK. It will be reduced in fiscal year 1979.

Senator DECONCINI. It will be. OK, how does that—I find that a little difficult to correlate with the priorities of the administration. What would be the impact of the reduction on the planned resumption of coal leasing?

It seems to be a little bit——

Ms. DAVENPORT. Mr. Chairman, let me attempt to set a framework for a very complex subject.

During the 1960's, a very large amount of coal was leased by the Federal Government in the Western part of the United States. That is basically the 17 billion tons which we hear discussed so often. And that 17 billion tons is a rough estimate. If the outcome of the analysis indicates the need for resumption of coal leasing in 1980, and we are under a court ordered requirement to not make that decision until a full environmental impact statement is done, if that indicates that more coal is needed, we have actually two sources to look at.

We are producing about 50 million tons a year from Federal lands at this time.

That 50 million tons must be viewed in the light that we have 17 billion tons of coal out there under lease. So the Department will have to both look at how much of what is under lease currently is producible and also, what new leasing may be required.

By changing the emphasis for 1979 to more in-depth examination of what already is under lease, that will enable us to make some critical decisions in 1980 and 1981 as to what more needs to be leased.

Senator DECONCINI. I think I understand. You're not there yet. Is that right?

Ms. DAVENPORT. May I say a few things off the record?

Senator DECONCINI. Please, off the record.

[Discussion off the record.]

Senator DECONCINI. Back on the record.

I appreciate that information. I still don't understand how a reduction in your coal resource survey program fits into that. It would just seem to me not the proper place to reduce in light of what you told us off the record.

Mr. RADLINSKI. Mr. Chairman, that reduction was to allow us to conduct what was considered to be by the administration higher priority programs in other areas within the total coal program. We had to reduce this program in order to be able to conduct other coal activities.

Now the effect that it will have——

Senator DECONCINI. Why did you have to do that? Why couldn't you ask for additional——

Mr. RADLINSKI. Quite frankly, it's part of the give and take process in the development of the budget.

Senator DECONCINI. So it's purely monetary that you had to reduce your coal resource survey program.

Mr. RADLINSKI. It was not a technical judgment decision, Mr. Chairman. It is necessary that the work be done, but the determination of when and whether it has a higher priority than other coal activities is a matter of policy.

Senator DECONCINI. Who made that decision—the Geological Survey or OMB?

Mr. RADLINSKI. OMB.

Senator DECONCINI. How much did they reduce it?

Mr. RADLINSKI. $781,000.

Senator DECONCINI. That's your coal resource survey program?

Mr. RADLINSKI. Yes, but that was only in that activity, the $781,000. But those funds weren't taken away from us. We were allowed to use those funds to conduct the reserve inventories that we talked about.

Senator DECONCINI. Yes, but, in essence, they're being taken away from your resource survey program, because you put them some place else.

Mr. RADLINSKI. Yes, sir.

Senator DECONCINI. Did OMB realize that that's what you were going to do?

Mr. RADLINSKI. Yes, sir.

COAL HYDROLOGY

Senator DECONCINI. OK. Isn't water a key environmental element to the coal leasing program? If so, why aren't you budgeting an increase in coal hydrology under your water resources activities?

Ms. DAVENPORT. We are reviewing currently, as Director Menard indicated, what additional resources the USGS will need in order to meet the *NRDC* v. *Hughes* settlement.

Now, there is a specific new requirement which is contained in the surface mining bill which indicates that general hydrological information must be made available to an applicant for a mining permit from either a Federal agency or a State agency, so that that applicant can do an assessment of the probable hydrologic consequences of the mining. That is currently what is under review in the Department.

Senator DECONCINI. It's currently under review——

Ms. DAVENPORT. Within the Department, we undoubtedly will need more money. We need to look at the initial 35 leases which are included in the settlement, because some of the data, quite frankly, may be already in the U.S. Geological Survey or in the State surveys. But we can't make the assumption it's all there.

So we are doing that analysis and we'll be coming forward, I'm sure, either with a request for reprograming or a supplemental.

Mr. RADLINSKI. The reason the accounts aren't in this particular budget is that Public Law 95–87, which requires this hydrologic data was not passed at the time that our budget was prepared. So we will be providing the Assistant Secretary's report with an additional budget request in the very near future.

LAND USE PLANS

Senator DECONCINI. Under the Coal Leasing Amendments of 1975, a coal exploration program is expected to provide sufficient information for developing land use plans, increasing competition, and determining the value of public resources at your current levels. How effectively can you meet those goals and over what period of time do you think you can meet them?

Mr. RADLINSKI. If I understand the question correctly, you're asking about our capability to provide land use maps. That falls in the same category of negotiating the requirements or at least developing an understanding of the requirements of the Office of Surface Mining.

We do have a budget for the preparation of land use maps and we do have the option of determining where the priorities of our mapping will be—in which geographic areas we have the greatest priority. So it will be possible to make some adjustments within the basic program.

Senator DECONCINI. Over what period of time will that development take place?

Mr. RADLINSKI. For developing the summer staff for OSM?

Senator DECONCINI. Yes.

Mr. RADLINSKI. The need is imminent and the activity is current. When that will be resolved, I would say, would be in a matter of a month or so.

OUTER CONTINENTAL SHELF PROGRAM

Senator DECONCINI. Let's turn to your Outer Continental Shelf program for a few questions.

You've budgeted more than $65 million in all. That involves an increase totaling $4.3 million. How does this increased OCS program tie to the reduction level budgeted by the Bureau of Land Management?

Mr. RADLINSKI. Well, sir, there is no direct relationship between the Bureau of Land Management's reduction and our increase. From our understanding of the Bureau of Land Management's budget, their reduction is principally in their baseline studies. They've variously been called environmental baseline studies or benchmark studies.

The determination was made that sufficient environmental baseline data has been gathered to establish a base upon which to gage the effects of oil and gas. That's the principal reason for their reduction. But the reason for the increase in our project is because of our different responsibilities with respect to the OCS leasing program.

For example, as a result of the leasing of tracts in the Atlantic, we're required to supervise those leases through approved plans. So we need funds to establish district offices and to acquire the personnel to do the lease management supervision in the Atlantic.

The cost of acquiring geophysical data to evaluate the worth of a particular tract is increasing. Furthermore, policy changes in recent years require us to acquire certain data on an exclusive basis which is more expensive, rather than data that we buy that industry acquires on speculation.

So we need more money to acquire geophysical data, in support of the leasing process in frontier areas such as the Gulf of Alaska, Cook Inlet, and the Beaufort Sea. We also consider the Atlantic a frontier area because there's never been any oil and gas brought in there.

We need to take extra precautions with respect to the design and siting of platforms. So there's $1 million in this budget for establishing what we call a platform verification program. Such a program is common practice in the North Sea, and we're benefiting from their experience there.

The Secretary has made a promise that he will require an environmental impact statement to be prepared for the first development plan in a given frontier area. We anticipate that we will be receiving three such development plans requiring preparation of an additional three environmental impact statements which are part of the post-leasing process.

And then, there's an additional requirement that's been imposed on the Geological Survey to prepare oil spill trajectory models as part of the environmental impact statement process. In 1979, we estimate that we'll have to prepare eight such trajectory models with an additional cost of $400,000. So our requirements for an increase are not directly related to BLM's budget.

COORDINATION OF USGS/BLM OCS PROGRAMS

Senator DECONCINI. Can you give us an explanation of how the USGS and BLM programs operate and how they are coordinated? Exactly where does your responsibility end and BLM's begin, or vice versa?

Mr. RADLINSKI. Yes, sir, I can do that.

Principally, BLM's responsibilities are preleasing and the Geological Survey's are post-leasing, but nothing in life is all that simple.

We do support the BLM's preleasing by acquiring the geological and geophysical data to make the determination of the value of the tract and also, to identify prospective areas for leasing and to identify the geologic hazards that may exist in a particular area.

When such hazards are identified, then stipulations are provided in the lease instrument to notify the lessee of certain additional requirements over our standard regulations that will be imposed upon him. But after the lease is issued, the Geological Survey has the principal responsibility for regulating the lessee.

We approve all the plans—the exploration plans, the development plans. We prepare what we call the OCS orders, and these are specific regulations for a particular offshore area that tells the lessee what the requirements are that will be imposed on him. We do the inspecting and we enforce the regulations or the OCS orders that we promulgate. And any environmental impact statements that are required in the post-leasing process, of course, we would have to prepare.

Oh, I didn't answer the second part of the question: the coordinating mechanism. I'm sorry.

We have for a number of years, Mr. Chairman, had a program coordinating committee with the Bureau of Land Management. This committee meets monthly and is cochaired by the Associate Director of the Bureau of Land Management and the Associate Director of the Geological Survey, that's myself. We never send a substitute to those meetings. We are always there ourselves. We consider all problem areas and matters of interface that come to our attention from month to month at those meetings and take steps to resolve them.

Senator DECONCINI. Who else is at the meetings?

Mr. RADLINSKI. Several of our specialists. The coordinating committee consists of three or four people at the policy level. But then we form subcommittees at the technical level and these are cochaired by specialists. For example, we have one on mapping, we have one on the Coastal Zone, we have one on the OCS, we have one on onshore leasing, and one on coal.

These people report to us at these monthly meetings. It's a very effective coordinating committee.

Senator DECONCINI. You find it effective?

Mr. RADLINKSI. Yes, sir.

OCS LEASING SCHEDULE

Senator DECONCINI. How current is your leasing schedule displayed on page 109 of your justification? Have any significant changes occurred since you prepared that justification?

Mr. RADLINSKI. Sir, there are two changes from the lease schedule that's on page 109. One is, and I'm sure that you are aware of this, that sale No. 42 in the North Atlantic has been enjoined. In other words, we did all of the work up to the point of the sale, but the sale was never held. And it's held up in the courts at the present time. I think a resolution of that problem is probably imminent. There was a 90-day injunction.

Second, the Secretary just issued a press release saying that he' going to eliminate sale 54. That's the sale in the South Atlantic we call the Blake Plateau.

There are two principal reasons for eliminating that. One, there seems to be a lack of interest on the part of industry, because it's not prospectively too good an area, apparently. Second, NASA was objecting because it was an area, I think, where they drop their boosters and they would have to change their plans for launching satellites out of Cape Kennedy.

But I think the principal reason was the lack of interest on the part of industry. That doesn't mean that our workload has been reduced, because the Secretary at the same time announced that he was substituting a sale in the Gulf of Mexico.

So those are the two changes—the North Atlantic sale, which is being held up by a court injunction, and the substitution of a Gulf of Mexico sale for the Blake Plateau sale.

Senator DECONCINI. If your North Atlantic sale is bogged down, do you anticipate a reduction in your budget as a result of that?

Mr. RADLINSKI. As I said, I think that that problem will be resolved very shortly. But our budget is not designed to be responsive only to the activity that's going to take place during that particular budget year with respect to conducting a sale.

What I want to point out is that while there are five sales planned for fiscal year 1979, only about 9 percent of the money that we have in the 1979 budget is directly responsive to those five sales in 1979. The remaining money is used for presale activities, for sales that are going to be held in 1980 and beyond. And then an additional part of those funds is used for regulating sales that were held prior to 1979.

So we have a workload to anticipate sales beyond 1979, and we have a workload that's imposed on us by sales that were held prior to 1979.

ENVIRONMENTAL EVALUATION

Senator DECONCINI. Your OCS land justification consistently refers to environmental evaluation as part of your regulatory effort. Why is it also necessary to budget $1.4 million under the separate environmental impact analysis subactivity?

Mr. RADLINSKI. Sir, in the early years, the funds required for the preparation of environmental impact statements were in other activity funds, as a result of which it was difficult to identify how much money was being applied out of our budget for the preparation of environmental impact statements. So, we have separated out the requirement for environmental impact statements into a separate organizational activity and a separate budget item.

So that particular budget item is strictly for preparation of the EIS. At the same time, however, our project people have the responsibility for preparing environmental assessments. That's under the items of the OCS, the coal, or whatever the activity is.

Now, as I mentioned before, the $1.4 million increase is for the three development EIS's that the Secretary has promised that he would require in the frontier areas.

RESERVOIR SHUT-IN DILIGENCE PROGRAM

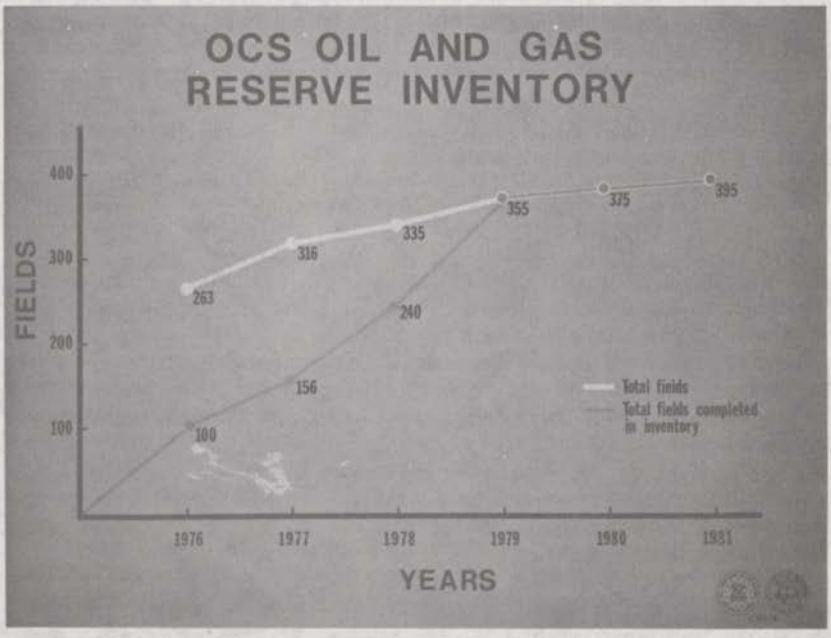
Senator DECONCINI. What about your reservoir shut-in and diligence program which you continue at the $3.6 million level? Since less than one-half of the reservoirs have been reviewed, is that adequate?

Mr. RADLINSKI. Are you talking about the OCS, Mr. Chairman?

Senator DECONCINI. Yes. I would like to know what is included in the reservoir shut-in and diligence program.

Mr. RADLINSKI. In any given time on the OCS we will have several hundred of what we call our well completion shut-in for various reasons. It might be that they're having some trouble with the reservoir; they might be having some trouble with the equipment; it might be that the field is depleted to the point where it's no longer economic. We have a requirement to see to it that the requests for shut-ins that are made to us by the lessee are valid requests. So the workload involved is first, evaluating what the proposal is, to go forward with the shut-in; second, to inspect to see that those conditions actually exist.

Now with respect to the diligence program we're doing reserve studies of some 300 producing fields in the Gulf of Mexico, and the progress that's being made on that particular study is shown by this chart, Mr. Chairman [indicating].



The program to analyze and determine accurate, dependable estimates of oil and gas reserves in developed and developing fields on the Outer Continental Shelf is described by this graphic.

INVENTORY OF FIELDS

We anticipate that by the end of 1979 we will have made an inventory of these 355 fields that will be in the Gulf of Mexico and other OCS areas at that particular time. And then the workload beyond that is for updating and to take care of the additional fields that will come on line as a result of additional leasing.

So having a handle on the reserves that are out there under lease will allow us, then, to make a determination of what the capability of the lessee is to produce. So this particular program is a requirement.

GAS RESERVES ON THE OCS

At the same time, the Secretary has called upon the National Academy of Sciences to make some studies of the gas reserves on the OCS.

Dr. MENARD. Those studies, Mr. Chairman, illustrate the difficulties in determining reserves because the various oil companies that held the leases on the OCS, opened up all their records to an independent consulting firm, which then made its own evaluations. And in one of the five fields, it turned out that there was a substantial amount of additional gas—about 20 percent more could be produced if they wanted to go to the expense of drilling additional holes.

But it also developed that the independent consultant's estimates of the gas in place were systematically, for most of the fields, lower than the oil companies' estimates. And that certainly raised the question of whether the estimates we obtained from the oil companies are entirely reliable. They just don't keep them up to date themselves, so that their own estimates—the ones that we accept from them—may be out of date.

ADEQUACY OF FUNDING

Senator DECONCINI. Going back to my original question, on your reservoir shut-in and diligence program which you continue at a $3.6 million level: Since less than half of the reservoirs have been reviewed, is this an adequate amount?

Mr. RADLINSKI. I think it is, sir. As illustrated by this chart, we will have sufficient funds to complete the work. We may slip a little—I said "late in 1979," but we think we have the resources to conduct this reserve inventory.

Senator DECONCINI. That's an inventory chart?

Mr. RADLINSKI. Yes—are you asking whether we have enough resources to insure the diligence?

Senator DECONCINI. Yes.

Mr. RADLINSKI. We have an increase in this budget in our regulatory program because the insurance of diligence is partly the responsibility of the people who are regulating the oil and gas operations. And we have an increase in the budget of $1 million for them.

Senator DECONCINI. Where does that show up?

Mr. RADLINSKI. That's "Regulation of oil and gas." That is on page 110.

There are two aspects to the program. One is acquiring the basic data that is necessary in order to realistically enforce the shut-in program, such as the "Reserve inventory" that I was talking about. Second, we need to insure that requests for shut-ins are valid; and that is done through the inspection, of course.

But let me ask Mr. Duletsky, if you will, who is in charge of this operation, to amplify on that.

Mr. DULETSKY. Mr. Chairman, the reserve inventory is necessary to find out how much of the commodity you have in place—basically, oil and gas. Then, as a spinoff from the regulatory functions we perform, we will be verifying the number of wells that are shut in and the reasons for the shut-ins.

ADEQUACY OF PLANS FOR DEVELOPMENT AND PRODUCTION

We will also be performing field studies to see whether or not the fields have been adequately developed by drilling a sufficient number of wells. We will also be reviewing the plans for exploration, the plans for development and production, with a little more scrutiny to make sure that they indeed are performing the diligence requirements.

We will continue from there. Operators and lesees do submit suspensions-of-production requests to the Secretary. These are reviewed and schedules are established. We do have a program established in the Secretary's office whereby these are reviewed, schedules are made for the operators to actually meet these deadlines for when they will drill wells, when they will get their equipment ordered, et cetera.

So most of the other parts of the program are covered under the regulatory aspects.

Senator DECONCINI. With no increase in the diligence area, you can keep up with your reserve inventory programs? Is that correct? Or, with the diligence program?

Mr. DULETSKY. The reserve inventory is one segment; the diligence program is another. Now some of the functions have been performed in the past, sir, but they have not been of a high magnitude. This will allow us to do additional work and increase our activities in the area. We feel it is adequate.

Senator DECONCINI. You will be increasing your activities in the diligence program?

Mr. DULETSKY. Yes, sir.

Senator DECONCINI. I see. And that is reflected up here in the regulation of oil and gas operation? But that doesn't increase.

Mr. DULETSKY. No, sir. Part of the funding will result in additional inspectors, additional people to look at shut-ins——

Senator DECONCINI. The shut-ins?

Mr. DULETSKY. Yes, sir; but those are ongoing programs. They'll just be intensified.

Senator DECONCINI. I would appreciate it if you would supply the committee with a justification, or an explanation of that.

Mr. DULETSKY. The diligence program as it ties into our current activities and the increases? Yes, sir, we will do that.

Senator DECONCINI. Good.

[The information follows:]

ACTIVITIES UNDER THE DILIGENCE PROGRAM

The diligence program provides for the examination and verification of the status of shut-in wells on the OCS; the examination of high priority producing leases and leases not yet in production which are capable of producing oil and gas in economic quantities, the determination as to whether and where additional development might result in an increase in production; and the identification of potential reservoirs under lease where exploratory wells should be drilled to determine the feasibility of development. Based on the findings of these examinations and verifications, lessees may be required to produce shut-in wells or drill additional production wells.

The diligence program relates to current activities in several ongoing programs. These include reserve studies and field studies to determine any areas where increased production could be obtained. This parallels the ongoing reservoir evaluation work. In addition to this there are: Studies for verification of shut-in well status; review of exploration and development and production plans; review of suspension of production requests and recommendations made to the Department for approval or disapproval; field studies for possible enhanced recovery operation; continual review of MER's and MPR's; and monitoring of controls on gas flaring.

ACCOMPLISHMENTS UNDER DILIGENCE PROGRAM

Senator DECONCINI. Can you give us some of the accomplishments under the diligence program?

Mr. DULETSKY. Yes, sir.

The diligence program is just being put into effect during fiscal year 1978. The program is just starting.

Senator DECONCINI. Didn't we give an add-on to that program last year?

Mr. DULETSKY. Yes, sir, prior to that, the program had been very limited in scope, but we have had results from some of the activities relating to suspensions of production and requirements to review their shut-ins, and asking operators to go on production in certain areas.

Mr. RADLINSKI. Mr. Chairman, if it is a quantification of these various activities that you are looking for, I can provide some of those to you.

Senator DECONCINI. Would you?

Mr. RADLINSKI. For example, verification of shut-in wells that I spoke of: We anticipate, with this budget, that we will be able to verify about 1,000 of those requests in 1979, where in 1978 we expect to verify about 400, so there will be a significant increase there.

The field studies that Mr. Duletsky talked about in 1978, we had 8 of those; we anticipate about 14 of those in 1979. I can go on with this list, but if you like I could provide it for the record.

Senator DECONCINI. Would you provide it for the record? Thank you.

[The information follows:]

ACCOMPLISHMENTS UNDER THE DILIGENCE PROGRAM

Program activity	Fiscal year— 1978	1979
Verification of shut-in wells	400	1,000
Field studies	[1] 8	[2] 14
Review of plans of exploration and development/production	200	400
Suspension of production	75	100
Enhanced recovery operations (reservoirs)	40	150
MER's-MPR's	9,000	12,000
Gas flaring	230	300

[1] 600 reservoirs.
[2] 1,050 reservoirs.

HIGH-RESOLUTION GEOPHYSICAL DATA

Senator DECONCINI. You budgeted a $2.7 million increase for the purchase of "high-resolution geophysical data." What is the total funding budgeted for this purpose?

Mr. RADLINSKI. For the procurement of geophysical data, it's $10.7 million.

Senator DECONCINI. Thank you.

The justification says that the data will be used for "tract selection." Aren't high-resolution geophysical data useful only for identifying environmental hazards, and not resource potential?

Mr. RADLINSKI. That is correct. But we need two kinds of data. The principal use of the high-resolution geophysical data is to identify hazards. The deep geophysical data we acquire as a result of our regulations which require a permittee to make his processed data available to the Government at the lowest cost are made available to any industrial buyer.

Dr. Rioux, who is in charge of this program, can amplify on it, if you would like, Mr. Chairman.

Senator DECONCINI. I would like to have an amplification, but what additional data are needed to determine resource potentials?

Dr. RIOUX. In addition to the high-resolution data which is for the geological hazards assessment primarily, we purchase or acquire under the regulations—primarily now under regulations—common depth point, or deep focus seismic data. We use that, in addition to any drill-hole data available, to determine the extent of the geological structures and make assessments as to potential tracts for oil and gas.

OCS RESOURCE APPRAISAL

Senator DECONCINI. Thank you.

The GAO has recommended development of a systematic appraisal program to make the OCS leasing program more effective and to insure the Government a full return on oil and gas resources. What is the extent of your resource appraisal program, and what are the total funds budgeted for fiscal 1978 and fiscal 1979?

Mr. RADLINSKI. I would like to ask Dr. Peck, who is our chief geologist—the resources appraisal program falls under our marine geology program—to respond to that question, if I may, Mr. Chairman.

Senator DECONCINI. Would you like me to give you the question, again?

Mr. PECK. My understanding is you wanted to know what funds were budgeted for resource appraisal. On page 71 of the budget, the funds are listed under our "Offshore oil and gas resources program." It is listed as $9.295 million in fiscal 1978, and $9.589 million in fiscal 1979.

Senator DECONCINI. Explain your resource appraisal program; exactly what is it?

Mr. PECK. It consists of oceanographic traverses—rather widely spaced traverses—during which we conduct common depth point deep seismic soundings to determine the regional structure and, by inference, from the acoustical traverses and a few wells like the cost wells, what the petroleum potential is, in a reasonable sort of way.

GAO RECOMMENDATIONS

Senator DECONCINI. Does your program comply with the recommendation of the GAO?

Mr. RADLINSKI. Sir, I don't think we know what specific GAO requirements you're referring to. I'm afraid that we'd have to get that and respond for the record.

Senator DECONCINI. If you would do so. We're under the assumption here that the GAO has recommended development of a systematic appraisal program to make the OCS leasing program more effective to insure the Government a full return on oil and gas resources.

We will give you a copy of that report, if you like, and if you want to respond to it.

Mr. PECK. I think that this is aimed at our tract appraisal, and would be under the Conservation Division.

Mr. RADLINSKI. OK. We seem to be zeroing in on it, we get studied so much by GAO——

Senator DECONCINI. We can get you a copy of that. We have one back here.

Dr. MENARD. Excuse me, Mr. Chairman. We carry out two functions, then: One is the broad resource assessment done by the Geologic Division; the other is the detailed estimate of the value of the tracts in connection with the leasing process. That's done by the Conservation Division.

Dr. RIOUX. I'm not sure exactly what the question is with regard to the GAO report.

Senator DECONCINI. We're under the impression that the GAO has recommended development of a systematic appraisal program to make the OCS leasing program more effective and to insure the Government a full return on oil and gas resources. What I want to know is has that been implemented? Are you doing anything about that recommendation?

First of all, do you know about the recommendation?

Dr. RIOUX. Yes, in a general way. They've made similar recommendations following essentially each OCS lease sale. We have, however, a rather systematic approach to this and have had for some years. And, as we mentioned, we purchase or gain through regulations deep focus geophysical data to make tract selection and

tract evaluation judgments. We purchase through contract high resolution data to make geologic hazards assessments.

We supplement that with what in-house capability we have. We utilize the entire data base of wells drilled where we are provided the information through regulation.

Senator DECONCINI. Wait just a minute. Are you suggesting that the GAO recommendation was not necessary, that you're already doing it.

Dr. RIOUX. With one exception, sir. This is what I was trying to approach. Their chief recommendation was that additional drill hole data be obtained prelease, and that's the essential——

Senator DECONCINI. Give me that again, please.

Dr. RIOUX. That additional drill hole data be obtained prelease.

Senator DECONCINI. Are you doing that now?

Dr. RIOUX. We allow through regulations for permits for offstructure, deep stratigraphic tests.

Senator DECONCINI. Which is an addition as a result of this recommendation?

Dr. RIOUX. That's not specifically addressing that recommendation, no, sir. Prelease offstructure drilling has been in effect for several years.

PRELEASE ONSTRUCTURE DRILLING

Mr. RADLINSKI. I think, Mr. Chairman, we're finally zeroing in on the report. I think it's a recommendation of GAO that the Government adopt the policy of prelease, onstructure drilling. That's a matter of policy that has to be determined by the Secretary. Probably Dr. Menard would like to speak to that. We are not doing it.

Dr. MENARD. As it happens, I have, before becoming Director, recommended the very thing that you're talking about. So I'm generally familiar with it.

What we acquire now with our present system is general information about the geologic characteristics of the sale area. We acquire, in addition, the structures that are under the sea bottom. Therefore, we have a good idea of where the oil is apt to be collected if there is oil.

The one thing that we do not acquire, and that's what the GAO proposal addresses itself to, is we don't acquire direct information on whether there is or is not oil. We don't know and the oil companies don't know.

Senator DECONCINI. So there's no way to comply with that recommendation without onstructure drilling.

Dr. MENARD. We have, I believe, the authority to drill. It just is going to cost more money, and we need a different system.

OCS LANDS AMENDMENTS ACT

Ms. DAVENPORT. Mr. Chairman, we have this whole question under review, and it has been under review for many months at the Department, both within the USGS and within my office. However, the Outer Continental Shelf Lands Act, which will go into conference soon, I believe, starting this week or next week, has that topic. First, if the Government should undertake prelease onstructure drilling, and if so, how much.

We are very hopeful that the Outer Continental Shelf Lands Act amendments will be rapidly agreed upon by the House and the Senate and will be enacted into law soon. As those requirements are defined, we will get into a much more active program of evaluating, the GAO recommendation that the Government should do onstructure drilling to obtain information.

REVIEW OF DEVELOPMENT PLANS

Senator DECONCINI. OK. Thank you very much.

Last January, the Secretary announced new regulations for OCS activities that appear to place considerably more responsibility on the Geological Survey. Among other things, there are requirements now for development plan reviews and for more State involvement in OCS planning. How does your budget respond to these new responsibilities?

Mr. RADLINSKI. Sir, it doesn't respond at all. The budget was prepared before the regulations were promulgated on January 27. It does, indeed, impose a promise of an additional workload and we're costing that out as we're talking.

Senator DECONCINI. When are you going to have that out?

Mr. RADLINSKI. I would say in a week. Within a couple of weeks, sir, we'll have it, because we are in the process of preparing that now.

Senator DECONCINI. Will you supply the cost to us at that time?

Mr. RADLINSKI. Yes, sir.

[The information follows:]

COST OF REVIEWING DEVELOPMENT PLANS

The Geological Survey will incur costs of $2,825,000 and 61 man-years of effort in fiscal year 1979 to respond to the new 30 CFR 250.34 and 30 CFR 252 regulations which became effective in January 1978.

30 CFR 252 requires the preparation of an index of relevant OCS information and a summary report to assist States in planning of offshore impacts of OCS development. The 250.34's require that industry submit an environmental report for each exploration and development plan, that an environmental analysis be prepared for each plan, and that the environmental analysis be sent to the States for review and comment. Once the index and summary reports are designed in consultation with the States, additional costs may be incurred to provide the necessary information.

REVISED OCS REGULATIONS

Ms. DAVENPORT. Mr. Chairman, the regulations which were promulgated in January also contemplate the passage of the OCS Land Act amendments. We have a broader effort ongoing to try to analyze the total impact of the increased responsibilities that those amendments will place upon us. We are ahead with these new regulations, although those regulations potentially may have to undergo some change if the Congress changes the act significantly in conference.

Senator DECONCINI. Along with that breakdown, I presume you'll give us what you anticipate the additional budget requests will be.

Mr. RADLINSKI. I don't know that I can give that to you. I can give you what the Geological Survey thinks is necessary, and, of course, the Department and Ms. Davenport's office will act on that and make the final decision.

NEW OCS BIDDING SYSTEM

Senator DECONCINI. Thank you. What about the new bidding system that involves a royalty rate based on the value of oil and gas production? Will that mean additional expense for you, and is it budgeted?

Mr. RADLINSKI. It has to this point imposed a considerable workload on us, principally on our computers. But we've been able to cope with that particular workload, and I don't think—well, let me ask my colleagues here, will we need additional funds?

Dr. RIOUX. Not yet. We've done a number of experimental runs, but with the Department of Energy, as well as the Department of the Interior together planning for more of these experiments, the workload may increase significantly in the future, and we may have to consider adding additional capability in that area. To date, we've been able to handle the additional workload.

Mr. RADLINSKI. I think we'll be able to answer that question more definitely when we see what the OCS Act amendments says in this regard.

NUCLEAR WASTE STUDIES

Senator DECONCINI. OK. Turning to nuclear waste, under your water resource programs, you have budgeted a $5.1 million increase in nuclear hydrology, most of it for high-level nuclear waste studies. Why are you budgeting directly for a program that is DOE's responsibility?

Mr. RADLINSKI. Because of the differing responsibilities between our two organizations. I'll preface my remarks by saying that our budget has been coordinated with the Department of Energy. We meet with them continuously. And the approach that we take is that we're interested in the long range, broad area of geological effects of nuclear waste disposal. We are interested in identifying the geologic media that are the safe places to deposit high-level nuclear waste, and, providing the kind of basic data that's needed for the formulation of a national policy in this regard for nuclear energy. The Department of Energy's interests are short term and site specific. They're concerned if a proposal is made for a particular site, and they're interested in that site. Our interest is everywhere in determining which are the best geologic media for the storage of high-level nuclear waste.

A breakdown of these various responsibilities, Mr. Chairman, is shown on this chart.

The U.S. high-level waste program involves four different Government agencies. The DOE is responsible for selecting and construction of a high-level waste repository. NRC is responsible for licensing the repository. EPA is responsible for monitoring the operation and safety of the repository. The Geological Survey is responsible for assisting these three agencies by developing hydrogeologic methods and technology that can be used to help them in the execution of their responsibilities.

GEOLOGIC DATA AND METHODS

Mr. RADLINSKI. Our principal expertise is in the development of geologic data and methods, and we do that on a broad-scale basis. The Department of Energy also does that, but they do it on a site-specific basis.

Senator DECONCINI. Aren't there duplications?

Mr. RADLINSKI. No, sir, because the programs are very well coordinated.

Senator DECONCINI. How are they coordinated?

Mr. RADLINSKI. They are coordinated on a 1-to-1 basis at the working level. However, with this particular program, we actually met with the Department of Energy in the offices of OMB with the science adviser's representative there.

In other words, the matter was actually debated between the Geological Survey and the Department of Energy, debate not in a negative way, but to bring out the problems with OMB with the science adviser's office umpiring.

The decision was made that there's a national need for the Geological Survey to perform this kind of work. Our position in this whole matter is spelled out in a recent document, which we call Geological Survey Circular 779.

Senator DECONCINI. Has that been submitted to us?

Mr. RADLINSKI. No, sir.

Senator DECONCINI. If you would submit that to us, we may want to take a look at that.

[The document is held in the committee files.]

Senator DECONCINI. So in your debate process, OMB arrived at concurrence for this funding, as well as DOE.

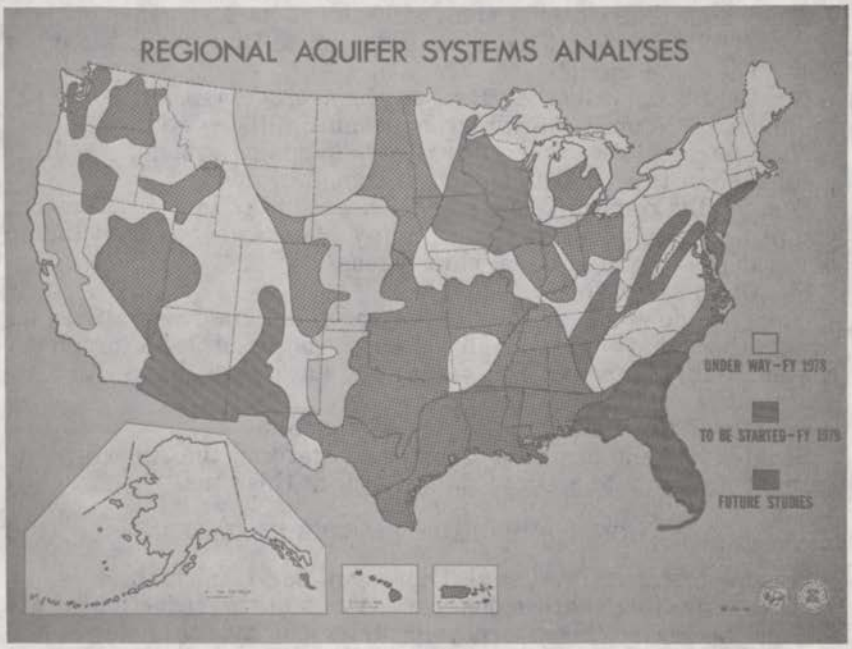
Mr. RADLINSKI. Yes, sir.

REGIONAL AQUIFER STUDIES

Senator DECONCINI. Let's turn to regional aquifers. Elsewhere, under water resources, you are requesting a $3 million increase for regional aquifer studies. That's a 53-percent increase in a program that was just expanded by Congress in the current year.

Why is another increase needed at this time?

Mr. RADLINSKI. Sir, that would be for the study of additional areas and for the areas that we're working in. And areas that we're close to working in are identified on this chart.



A significant area of the United States will be studied under the regional aquifer-system analyses program. Studies presently underway cover the northern Great Plains, the High Plains, and the Central Valley of California. During fiscal year 1979, studies covering the northern Midwest aquifers, Southwest alluvial valleys, and the Southeast limestone aquifers will be started.

NEW STUDIES INITIATED

Mr. RADLINSKI. The Chief Hydrologist, Mr. Joseph Cragwall, is sitting next to it, and I'll ask him to explain it.

Senator DECONCINI. Please.

Mr. CRAGWALL. Mr. Chairman, as you've already recognized, we have started three areas this current fiscal year with a startup

plan—the northern Great Plains, the High Plains, and the Central Valley of California.

We propose with the increased funds to start an additional three studies next year—this upper Midwest area, for which ground water is very important to the Chicago-Great Lakes area and Minneapolis; the Florida-Georgia area, which relies upon major limestone systems, and there are many problems associated with it; and the alluvial valleys region of New Mexico and Arizona which for many years, as you well know, have depended largely on ground water.

We feel that these are three very high-priority areas for study, and the new money will go to these three areas.

Senator DECONCINI. When will the studies that are now underway be completed?

Mr. CRAGWALL. All of these studies are being laid out, funded and manned, to cover an average of 4 years each. There are a few of these that we will do in 3 years; there are a few that will take 5. But on the average, each system will take about 4 years.

Senator DECONCINI. That's the green ones. How about the other ones? The same thing?

Mr. CRAGWALL. About 4 years, on the average, yes, sir. So we are talking about a multiyear program of multimillion-dollar cost.

Now, incidentally, there are about 25 major systems we have delineated at this point in time that should be done.

Senator DECONCINI. When you do those studies in the Southwest, you're not prohibited, are you, by any boundaries vis-a-vis Indian reservations or any national parks areas?

Mr. CRAGWALL. No, sir.

Now, we do work in ground water on Indian reservations for which there have occasionally been, because of legal problems, confidentiality imposed. But we do not anticipate that in this regional scale study.

Senator DECONCINI. Thank you very much.

Senator Stevens has some questions regarding the Alaska petroleum reserves, and I yield to the Senator at this time.

NATIONAL PETROLEUM RESERVE IN ALASKA

Senator STEVENS [presiding]. Thank you, Mr. Chairman.

First, regarding the petroleum reserve and the reduction of $24 million. Secretary Davenport, your statement says that this is perhaps the most difficult budget decision, but why was it necessary to reduce the exploration program on the reserve?

Ms. DAVENPORT. Senator Stevens, shortly after the program came under the auspices of the Department of the Interior, we conducted our own analysis of what would be a minimum sampling strategy of each geological play within the petroleum reserve. We have a chart here showing the reserve.

This chart displays the current status of the Geological Survey's petroleum evaluation and assessment program planned through fiscal year 1980.

HYDROCARBON POTENTIAL

Ms. DAVENPORT. The result of that analysis, in essence, was that a full program of 19 wells was the minimum necessary to sample each play determined to have hydrocarbon potential.

Our program has two goals. One is to accumulate enough information to make estimates of hydrocarbon potentials within the reserve. The other purpose is, where we are sinking the wells, to maximize the chance of actually discovering hydrocarbons. We haven't totally closed the door to more wells in the National Petroleum Reserve. What we have said is, if our drilling indicates a need for or a prudent decision that more wells should be drilled, we will make those judgments as we evaluate the results of current drilling, and if that should be necessary, we will come forward and ask for more funds.

ARCTIC WILDLIFE RANGE

Senator STEVENS. This is one reason we oppose the suggestion from the House that the Arctic wildlife range be explored by the Federal Government.

This is 25 million acres that's been set aside for almost 50 years for oil and gas exploration, and it appears it's going to be condemned on the basis of drilling 19 dry holes.

Senator Jackson and I started this program of gathering information for the naval petroleum reserve under the Navy contract. It was for the purpose of studying the area and developing the information which might lead to decisions as to whether the area should be leased and how it should be leased. Is that still the

objective of the Interior Department, to determine whether any of this area should be leased as part of concerns for further exploration?

Ms. DAVENPORT. Yes, Senator.

Under the NPRA legislation which in essence, directs the undertaking of the drilling program, we also are undertaking two other studies. One is an overall land-use study, and the second is a study of how resources could be allocated for development, should that be the indicated result of the drilling program and land-use study.

CURTAILMENT OF NPRA EXPLORATION PROGRAM

Senator STEVENS. But if you're going to curtail the exploration program and not consider the full exploration program originally contemplated by the Navy—incidentally, you know, in a longer time frame there's a conflict with the Navy—how are we going to have any rational decision as to whether there should be development permitted within this area?

Ms. DAVENPORT. The analysis which we undertook—and I will allow one of the geologists here to describe it more fully—did identify each significant play within the reserve. While we believe that will give us ample information to make an overall estimate of the reserve, it is a minimum-sampling strategy.

Senator STEVENS. I understand that your long leadtime for procurement of materials has been deleted in this budget reduction. It appears that exploration will be phased out in 1980. And yet the leadtime materials that will be necessary if there is a significant discovery have been deleted by this reduction. Why was that? It doesn't appear to be rational in terms of the deletion of these leadtime materials.

Ms. DAVENPORT. Well, one, we are required to report to the Congress in early 1980, so drilling undertaken in fiscal 1980 would not be part of that report to Congress.

I believe you are correct that we would have slight delay should we find a very promising area that we feel should be developed in 1980, because of the leadtime for getting supplies. But as soon as we have information in any one of these major plays, that it is a highly prospective area, we will come down and ask for a supplement to go ahead and drill whatever more wells the Geological Survey and their consultants feel are necessary.

Senator STEVENS. I have every hope that the Native corporations in the northlands are going to ask for the right to be involved in the exploration program, and to really explore this area as it ought to be explored. That hasn't occurred yet, because I think they're waiting for the results of this preliminary study, which, in my opinion, was not designed to drill 19 wildcat wells; it was designed to get us basic information upon which we could reach a decision as to whether exploration in the normal sense should be permitted by private enterprise.

And I'm worried about this reduction, because it looks to me like an area that's 20 times the size of the Powder River basin can be condemned on the basis that you're really going at this thing from the point of view of wildcat wells. I'm led to believe that there are

far more wildcat wells drilled in the Powder River basin that are all dry than you intend to drill here in 25 million acres.

Dr. MENARD. Senator Stevens, certain directors of the oil companies have drilled hundreds of holes with the best information they had; just by having the wrong idea about where the oil is, put them all in the wrong places. They almost did that in Venezuela.

Senator STEVENS. Don't you think you're subject to the same fallibility?

Dr. MENARD. Absolutely.

Senator STEVENS. I hope you realize that.

Dr. MENARD. We are as fallible as they are. We have in this case an opportunity—it's equivalent to obtaining an exploration lease from the entire Indonesian nation or something equivalent to that. To say that we would learn everything that needs to be known with any reasonable number of holes cannot be correct.

We couldn't possibly test every structure. But we have a program which is perfectly capable of carrying out all the drilling that was originally proposed—all we are doing is saying that we believe that it may not be reasonable to carry out the additional holes, depending upon what we find in these 19. We are not just making wildcat holes. We're simultaneously testing the plays and putting the stratigraphic tests, if you want to call them that, on structures. So that if there is oil there, these are the places where it would be concentrated.

CONCERN OF ENERGY AND NATURAL RESOURCES COMMITTEE

Senator STEVENS. You know, I'm not alone in this. Senator Jackson and I continue to agree about the reductions. I'd like to insert in the record at this point a copy of a letter that he's provided me in his capacity as chairman of the Energy and Natural Resources Committee.

[The letter follows:]

LETTER FROM SENATOR HENRY M. JACKSON

March 2, 1978

Honorable Robert C. Byrd
Chairman
Subcommittee on Interior
Appropriations Committee
U.S. Senate
Washington, D.C. 20510

Dear Senator Byrd:

The purpose of this letter is to request the assistance of your Subcommittee in augmenting the proposed fiscal year 1979 budget request of the U.S. Geological Survey in order to assure a continuation of the exploratory program on the National Petroleum Reserve in Alaska and an alternative source of natural gas for the village community of Barrow, Alaska.

As you know, on June 1, 1977, the Secretary of the Interior assumed jurisdiction over the National Petroleum Reserve in Alaska pursuant to Public Law 94-258 (The Naval Petroleum Reserves Production Act of 1976). Section 104 of that statute directs the continuation of the 26-well exploratory program originally initiated by the Navy to assess the potential oil and gas resources of that huge arctic Federal reserve.

Secretary Andrus advised this Committee by letter on January 25, 1978, that the on-going exploratory program is proposed to be modified by a reduction in the number of test wells to be drilled. Instead of pursuing the original goal, the Secretary desires to drill only 19 wells on the 23,680,000 acres which comprise the Reserve. His letter also indicated that unless significant discoveries or favorable indications of major hydrocarbon resources are revealed by the exploratory drilling in 1978 and 1979, the Department plans to terminate exploration at the conclusion of the fiscal year 1979 program.

Section 104(d)(2) of Public Law 94-258 requires that any proposed substantial amendment of the existing exploratory plan for the Reserve be submitted to the Committee on Interior and Insular Affairs of the House of Representatives and the Senate Committee on Energy and Natural Resources. Any such amendment is not to be implemented until 60 days after such submission to those Committees.

I have written to Secretary Andrus, on behalf of this Committee, expressing our opposition to the proposed termination of the exploratory effort on the Reserve and to the proposed reduction in the scope of the drilling program. My letter requested that he modify his proposals in light of the Committee's opposition.

Six exploratory wells are now in the process of being drilled and in January, 1979, another set of six wells will be commenced. In spite of the assurance given by Secretary Andrus, when he testified before this Committee on February 1, 1978, that additional wells would be drilled in 1980, if they would appear to be warranted on the basis of information to be derived from the drilling in 1978 and 1979, I believe that the proposed funding for fiscal year 1979 is inadequate to implement this drilling.

The original USGS budget request for FY 1979 was $211,900,000 for exploration of the Reserve. That request was reduced by $30.5 million on the ground that the Department intends to terminate the exploratory program at the conclusion of the 1979 drilling season. The funds cut from the USGS request would have allowed the advance purchase and transportation to the arctic north slope of essential oil field drilling equipment, materials, fuel, etc., which will be needed in order to proceed with drilling in 1980.

The long lead-time associated with logistical support problems facing oil and gas exploration on the Reserve are such that necessary equipment and materials must be procured in advance of the fiscal year in which the work is to be performed. If there is to be any exploratory drilling in fiscal year 1980, it is imperative that the USGS budget for FY 1979 be increased by $30.5 million (for a total of $211,900,000 in the Evaluation and Assessment category of the budget request).

Another matter of concern arising from the proposed USGS fiscal year 1979 budget request is the reduction in the funding for exploration and development of Barrow area gas fields. The original USGS request of $37,723,000 for this category was reduced to $1,771,000 in the President's proposed budget. Such a level of funding would provide only for routine operation and maintenance of existing wells in the South Barrow gas field.

Section 104 of Public Law 94-258 requires the Secretary of the Interior to take such actions as may be necessary to continue to supply natural gas to the native village of Barrow and other communities and installations at or near Pt. Barrow, Alaska.

The USGS proposal for exploration and development of Barrow area gas fields is postponed by the FY 1979 budget request until agreement is reached with non-Federal agencies for the funding and installation of a modern gas distribution system at Barrow.

Natural gas is currently supplied to users in the area from the South Barrow gas field. This field is threatened by a water encroachment problem which weakens the reliability of the existing production. One well in the field produces almost 60 percent of the gas and if it were to "water-out", emergency measures would be required to provide alternative sources of fuel for the civilian community. USGS had planned to explore and develop adjoining gas structures in order to increase the margin of safety for natural gas supply.

Postponing the exploration and development of new sources of natural gas appears to risk the safety of a remote arctic community. There is some reason to believe that the Federal government is legally responsible for providing a modern, safe gas distribution system in the Barrow area. The Bureau of Indian Affairs has requested a Solicitor's opinion on this question and if legal responsibility is acknowledged, the delay of alternative gas field development becomes meaningless. The statute requires the Secretary to provide natural gas to the native community irrespective of the installation of a modern distribution system.

The assistance of your Subcommittee is therefore requested in providing USGS with its original request of $37,723,000 for the exploration and development of Barrow area gas fields.

Sincerely yours,

Henry M. Jackson
Chairman

USE OF ADDITIONAL FUNDING

Senator STEVENS. He has expressed concern about the cutback in the exploration program and also in the gasfield program, and is recommending an increase of $30.5 million for the evaluation and assessment activity and $35.9 million for exploration and development of the Barrow gasfield. That's an increase of nearly $66.5 million.

You're familiar with that recommendation?

Dr. MENARD. Yes, sir.

Senator STEVENS. Could you use that kind of additional funding in this fiscal year?

I'm not asking if you asked for it; could you use it if it's available?

Dr. MENARD. I believe you're talking about logistics now, whether we could use it.

Senator STEVENS. If we make it available, can you effectively use that kind of funding?

Dr. MENARD. Yes.

Senator STEVENS. What would have been the estimate of the funding that would have been required to maintain the original NPRA exploration program and the Barrow gasfield?

Senator Jackson has given us these figures. Could you give us a justification of estimates and an object-class breakdown and supporting information—not of his request, but what would have been the request under the original exploration program of both NPRA and the Barrow gasfield development?

Could you do that for the record? You don't have it right here now, I'm sure.

Dr. MENARD. We have the information which we could give to you.

Senator STEVENS. It was well below the original estimate.

Mr. RADLINSKI. The total request that we made to the Department for continuing this program was $252 million, Senator Stevens.

Senator STEVENS. And what request do you have here now as the total? We need the justification for the record.

We also need to know whether Senator Jackson's figures are, in fact, the figures that would correspond with the original Navy program that we thought you were taking over; not what you asked for, but what was the original estimate for this phase under the Navy's program, started by the Navy at Senator Jackson's request and mine.

Mr. COULTER. Senator Jackson's figures were the same as the figures we originally proposed to the Department, so our costing-out would come up with that $30.5 million and $35.95 million.

Senator STEVENS. All right. Now we are asking something else—you realize that. That is, what would have been the Navy's request if it had maintained its original program for this fiscal year?

Mr. RADLINSKI. We think that would be $252 million. Our present budget, Senator Stevens, that we're here defending today, is $185.6 million.

Mr. COULTER. Sir, I think the well figures would be the same as the Navy's program, but the dollar figures would be different be-

cause of the cost escalation between the time the final Navy figures were formulated and these figures came in.

NUMBER OF WELLS

Senator STEVENS. I think that's right.

I think that your well figures are reduced, although your dollar figures are up. You've reduced the numbers of wells you're going to drill.

Mr. COULTER. Originally proposed well figures were in phase with the Navy's original program. We would have ended up the program with 26 wells as would the Navy, at the present rate of drilling.

Senator STEVENS. When you took it over, didn't you contemplate stretching out that period? It's my memory that you wanted to slide an extra year on the schedule.

Mr. COULTER. No, sir, they have been going at the rate of six to seven wells a year.

And we're also moving into the deep basin. They were drilling primarily intermediate depth wells. We're going into the deep ones.

Senator STEVENS. Then my understanding would be that Senator Jackson's request on the original program, and your original request to the Department would have been approximately the same.

Mr. COULTER. Yes.

Senator STEVENS. If that's the case, then what I'm asking you for is for the documents that would be necessary for justification in the record and an object class breakdown and supporting information for that program.

Mr. COULTER. Yes, sir.

[The information follows:]

National Petroleum Reserve in Alaska

Summary of Requirements by Object Class
Request to Department
(Dollar amounts in thousands)

Object Class		
11	Personnel Compensation	
11.1	Permanent positions	$814
11.3	Positions other than perm.	65
11.5	Other personnel comp.	2
	Total personnel comp.	881
12.1	Personnel benefits	206
21.0	Travel & Trans. of persons	160
22.0	Transportation of things	35
23.1	SLUC	55
23.2	Comm., Util. & other rents	8
24.0	Printing & reproduction	12
25.0	Other services	250,568
26.0	Supplies & materials	50
31.0	Equipment	25
	Total requirements	$252,000

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U.S. GEOLOGICAL SURVEY
NATIONAL PETROLEUM RESERVE IN ALASKA
FY 1979 PROGRAM SUMMARY

	Evaluation And Assessment Of NPRA	Barrow Area Gas Exploration And Development	Environmental Restoration	Total
A. Direct Costs - Husky				
1. Construction	$ 40,411,040	$21,456,659	$ --	$ 61,867,699
2. Air Support	26,585,696	1,514,808	--	28,100,504
3. Ground Support	35,155,453	4,209,885	--	39,365,338
4. Communications	1,981,853	203,426		2,185,279
5. Lateral Barge	1,978,014	516,713	--	2,494,727
6. Drilling	39,659,035	4,671,225	--	44,330,260
7. Future Purchases	5,947,231	531,300	--	6,478,531
8. Field Facilities	6,114,058	361,905	--	6,475,963
9. Seismic Surveys	26,914,534		--	26,914,534
10. Clean-up Program			2,109,385	2,109,385
Subtotal	$184,746,914	$33,465,921	$2,109,385	$220,322,220
B. Indirect Costs - Husky				
1. Fee	$ 5,542,410	$ 1,011,598	$ 65,203	$ 6,619,211
2. Management	3,705,764	674,086	43,612	4,423,462
Subtotal	$ 9,248,174	$ 1,685,684	$ 108,815	$ 11,042,673
C. Other Direct Costs				
1. Fuel	$ 7,233,936	$ 620,356	$ 80,584	$ 7,934,876
2. COOL Barge	3,105,000	345,000	64,000	3,514,000
3. Field and Lab Studies	4,007,750	--	--	4,007,750
4. Gas Field Operations	--	1,380,000	--	1,380,000
5. Purchase Seismic Data	2,300,000	--	--	2,300,000
Subtotal	$ 16,646,686	$ 2,345,356	$ 144,584	19,136,626
D. Other Direct Costs				
1. ONPRA	$ 1,260,282	$ 224,097	$ 14,102	$ 1,498,481
TOTAL PROGRAM	$211,902,056	$37,721,058	$2,376,886	$252,000,000

U.S. GEOLOGICAL SURVEY
NATIONAL PETROLEUM RESERVE IN ALASKA
FISCAL YEAR 1979
EVALUATION & ASSESSMENT PROGRAM

	Construction	Air Support	Ground Support	Communi-cations	Sea Lift	Drilling	Fuel	Other Direct	ONPRA	Husky Mgt. and Fee	Total
Inigok	103,500	2,812,256	5,132,353	217,005	335,975	89,356	863,552		59,788	435,031	10,048,816
Tunalik	103,500	3,102,608	5,914,871	240,465	372,296	99,015	956,909		67,520	492,214	11,349,398
Foot Hills # 1	13,800,000	3,964,855	4,820,396	185,725	242,144	7,831,195	806,265		198,063	1,544,023	33,392,666
Foot Hills # 2	13,800,000	3,964,855	4,820,396	185,725	242,144	7,831,195	806,265		198,063	1,544,023	33,392,666
Ikpikpuk	103,500	1,941,200	3,819,800	146,625	227,010	7,130,615	583,481		87,310	669,221	14,708,762
Maguriak East	103,500	1,941,200	3,877,300	146,625	227,010	7,089,353	583,481		87,412	670,034	14,725,915
Simpson	2,467,871	2,802,148	3,229,359	122,188	143,773	5,410,468	461,481		91,598	709,621	15,438,507
Inaru River	2,467,871	2,427,110	2,720,308	91,885	96,858	4,177,838	340,895		77,113	599,797	12,999,675
FY 80 Site # 1	2,467,871	399,798	149,860	29,325	45,402	--	91,943		19,926	154,795	3,358,920
FY 80 Site # 2	2,467,871	399,798	149,860	29,325	45,402	--	91,943		19,926	154,795	3,358,920
Geophysical Field & Lab Studies	--	--	--	146,625	--	--	552,000	29,214,534	187,190	1,354,643	31,454,992
FY 80 Program	--	--	--	--	--	--	--	4,007,750	25,079	--	4,032,829
Camp Lonely	432,556	1,140,893	--	87,975	3,105,000	--	154,424	5,947,231	68,011	380,879	11,316,969
	2,093,000	1,688,975	520,950	352,360	--	--	941,297	6,114,058	73,283	539,098	12,323,021
TOTAL	40,411,040	26,585,696	35,155,453	1,981,853	5,083,014	39,659,035	7,233,936	45,283,573	1,260,282	9,248,174	211,902,056

U.S. GEOLOGICAL SURVEY
NATIONAL PETROLEUM RESERVE IN ALASKA
FISCAL YEAR 1979
BARROW AREA PROGRAM

	Construction	Air Support	Ground Support	Communi-cations	Sea Lift	Drilling	Fuel	Other Direct	ONPRA	Husky Mgt. and Fee	Total
Barrow # 18	1,316,750	449,818	1,087,733	48,875	90,192	1,557,075	137,362	--	29,335	227,789	4,944,929
Barrow # 19	1,316,750	449,818	1,087,733	48,875	90,192	1,557,075	137,362	--	29,335	227,789	4,944,929
Barrow # 20	1,316,750	449,818	1,087,733	48,875	90,192	1,557,075	137,362	--	29,335	227,789	4,944,929
FY 80 Program	144,186	51,750	--	--	345,000	531,300	--	--	6,711	36,404	1,115,351
Barrow Camp	--	--	--	--	--	--	--	361,905	2,264	18,116	382,285
Field Operation	--	--	--	--	--	--	--	1,380,000	8,635	--	1,388,635
Access Road	6,944,890	45,442	378,674	22,720	98,455	--	83,308	--	47,393	379,118	8,000,000
Pipeline	3,472,445	22,721	189,337	11,360	49,227	--	41,654	--	23,696	189,560	4,000,000
Production Station	1,345,572	8,804	73,368	4,402	19,076	--	16,141	--	9,182	73,455	1,550,000
Connecting Roads	4,166,933	27,265	227,205	13,632	59,073	--	49,985	--	28,436	227,471	4,800,000
Gathering Lines	1,432,383	9,372	78,102	4,687	20,306	--	17,182	--	9,775	78,193	1,650,000
TOTAL	21,456,659	1,514,808	4,209,885	203,426	861,713	5,202,525	620,356	1,741,905	224,097	1,685,684	37,721,058

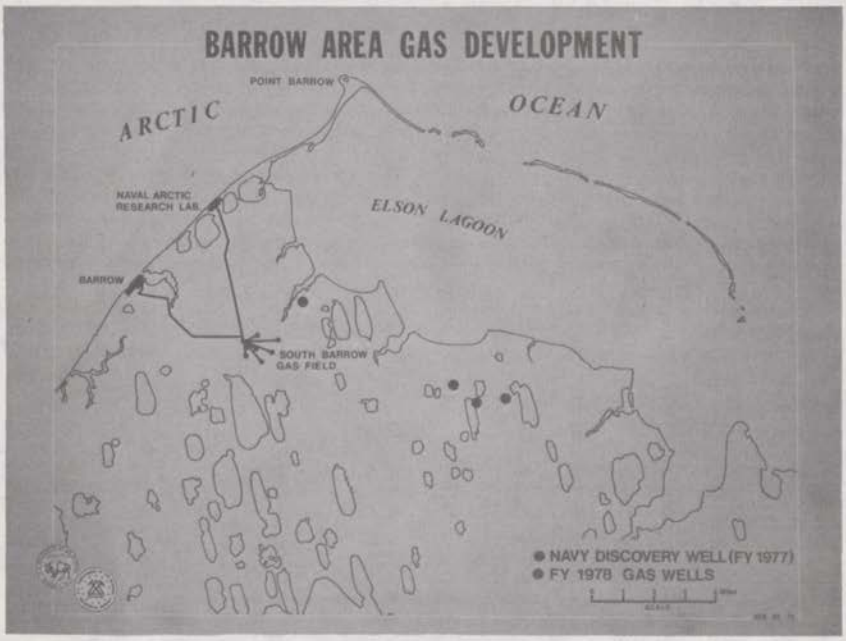
ENVIRONMENTAL RESTORATION PROGRAM

	Construction	Air Support	Ground Support	Communi-cations	Sea Lift	Drilling	Fuel	Clean-Up Crews	ONPRA	Husky Mgt. and Fee	Total
Clean-up Program	--	--	--	--	64,000	--	80,584	2,109,385	14,102	108,815	2,376,886

BARROW GASFIELD

Senator STEVENS. The delay in the Barrow gasfield is another difficulty. I'm told your statement, as I understand it—the Department's statement—is that time is needed to find non-Federal financing for the Barrow gas distribution pipeline improvements; we discussed that once before. Is that still the policy of the Department?

Ms. DAVENPORT. Senator, our development funds for the East Barrow gasfield are being held up, postponed, until the problem of the gas distribution system into the village of Barrow is solved. That problem falls basically under the jurisdiction of the Assistant Secretary for Indian Affairs. We have a chart showing the field here.



This chart displays current status of national gas development in the Barrow area.

BARROW GAS DISTRIBUTION UPGRADING

Ms. DAVENPORT. We have recently had some clarification as to the Department's responsibility, in a solicitor's opinion, which I think you've been provided a copy. With that opinion, the question of resolution of the Barrow gas distribution upgrading is now actively under consideration in the Department.

Senator STEVENS. USGS is involved in this now. We did have considerable testimony from the BIA earlier when Secretary Gerard was here. It's my understanding that the USGS was involved in the production level and in determining recoverable gas reserves. Is that right?

Ms. DAVENPORT. We're responsible for the development of the east Barrow gasfield. We also may have to drill an additional well in the south Barrow gasfield if the producing wells there—and one of them is having some difficulty—appear to be nonreliable for an interim period.

Senator STEVENS. I'd like to have a lot of time, but I have to go, and you probably have to go, too.

Could I give you a series of questions concerning that as far as the USGS's role? I'm concerned about the production levels and the control of the current production, whether there's any backup capability of this production system and, really, the reliability of the system and whether we're not exposing the Federal Government to some considerable liability if there is a failure of the south field and the east field is not developed under the status of existing law.

CLEANUP PROGRAM

I do know about the Solicitor's decision. There is another Solicitor's decision that I've got a question here concerning, about the cleanup program on the old naval petroleum reserve and the national reserve.

Now it's my understanding that the Department has taken the position that there is some doubt that Congress intended the Interior Department to continue the program that the Navy had in cleaning up the debris from Navy activity on the petroleum reserve. Is that so?

Mr. COULTER. Yes, Senator Stevens. In the original Navy cleanup program, there were two sites; one at Gubic outside the reserve and one at Grandstand, south of the boundary of the reserve. When we asked the Solicitor's Office about this, their opinion was that the appropriations language restricts expenditure of these funds within the reserve. We had those two areas programed and can reinstitute them into the cleanup program at any time the language is clarified to insure that we may spend appropriated funds on those particular areas outside the reserve.

Senator STEVENS. All right. Well, will you give us some language to meet that problem? The Navy was originally scheduled to do that cleanup, even though it was outside the reserve because it was the result of activity that had been stimulated primarily by the Navy. I don't think we should be in a worse position having transferred control to the Department that had jurisdiction over those public lands to start with. And I have a question here as to the adequacy of the request to cover that cleanup, even though it's outside the petroleum reserve.

Mr. COULTER. It's purely the appropriations language that's involved.

Senator STEVENS. Is the budget request sufficient to complete the program if you have that authority?

Mr. COULTER. Yes.

Senator STEVENS. Then I would like to have the language, if I could.

[The information follows:]

STATEMENT RELATIVE TO CLEAN-UP OF DEBRIS AT GUBIC AND GRANDSTAND

The cleanup program, as planned by the Navy, included Gubic and Grandstand, two drilling sites from the 1944–53 exploration program, which are adjacent to the reserve. Because the litter and debris at these two sites are the result of Federal actions, these areas are to be included in the cleanup program being conducted by the Department of the Interior. Both sites are located on lands that have been selected and conveyed to the Arctic Slope Regional Corp. Permission will be required from Arctic Slope Regional Corp. prior to beginning cleanup operations in these two sites. Appropriation bill language follows:

EXPLORATION OF NATIONAL PETROLEUM RESERVE IN ALASKA

For necessary expenses in carrying out the provisions of section 104 of Public Law 94–258, $ ————————, to remain available until expended; provided that the environmental restoration activities included within this appropriation shall encompass both the Gubic and Grandstand drilling sites which are adjacent to the reserve.

SUBMITTED QUESTIONS

Senator STEVENS. The staff will submit the balance of the questions that Senator DeConcini had and that he did not have an opportunity to finish. We have to go out on the floor. I'll submit these questions.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

SUBMITTED QUESTIONS

Energy Resources

Question. Under the coal leasing amendments of 1975, a coal exploration program is expected to provide sufficient information for developing land use plans, increasing competition and determining the value of public resources. At current funding levels, how effectively can you meet those goals, and over what period of time?

Answer. The coal leasing program consists of the following elements: Coal Resource Assessment; CRO/CDP mapping; and KCRA determination. The latter two are progressing satisfactorily, however, at the current level of funding, it would require at least 15 years to obtain and compile, at a scale of 1:100,000, the coal resource and geologic environmental information needed to develop land use plans and to determine the value of resources on Federal coal lands. This level of funding for the Federal coal exploration program is predicated on no near-term resumption of Federal coal leasing activity; it also does not take into account the needs of State regulatory agencies for resource and environmental information in connection with their enforcement of Public Law 95-87 (Surface Mining Reclamation Enforcement Act of 1977).

Barrow

Question. What are you ready to do immediately if there is an interruption in Barrow's gas supply? Are you ready to handle that emergency?

Answer. The Barrow gas supply could be interrupted by failures of different magnitudes which would require remedial measures ranging from repairs that can be accomplished in a few hours by personnel and materials available through the maintenance and operations contract, currently with ITT, or ranging to extreme measures requiring emergency airlift of materials in, and evacuation of civilians out, to Anchorage or Fairbanks.

The gas delivery system consists of three major components: (1) the seven producing wells, (2) the transmission pipelines to the village and to NARL, and (3) the collection-pressure reducing station and pressure-regulating stations at NARL and at the village of Barrow. A failure of one of the wells could reduce the volume of gas available, but would not shut off the supply completely and would not create a survival crisis. Some temporary adjustments would have to be made such as cutting back on electrical power and/or cutting in deisel fueling for electrical generation. Dual-fired generators have been installed at NARL, the Dew Station and one at the village. Reserves of deisel fuel are available at all facilities, but may range in quantity from a few days supply to several weeks depending on the season and time of resupply. Emergency supplies of deisel can be flown in by air-tankers.

At present, South Barrow gas well No. 6 is showing some signs that may lead to loss of production. To meet this possibility we are preparing to "workover" that well in October-November of this year before the period of heaviest demand. A drilling rig will be moved to well No. 6 in the next two weeks and could perform the workover at any time, but not without some additional environmental disturbance during the summer months. Failures in any of the other wells could require similar "workovers."

A pipeline failure by explosion or fire, the most likely catastrophic event, could be repaired in a matter of a few days or possibly a few hours depending on the extent of damage. Materials and personnel are on hand either through the maintenance-operations contractor or the drilling contractor. Temporary gas delivery interruptions may require rerouting of gas supplies through a "delta-tie" now being designed or through temporary pipelines. The "delta-tie" which would link the village and NARL is now being designed by the village in cooperation with BIA and NARL.

A failure at one of the regulation stations or the main collection station would require either a bypass through the "delta-tie" or a temporary bypass built to meet that particular situation. Emergency deisel supplies may have to be used during the period of repair.

A major catastrophic failure of more than one of the above components at one time (a remote possibility) could require drastic emergency mobilization of Air Force, National Guard, and/or State Emergency Office facilities. The Air Force demonstrated an outstanding capability to respond to such major events by their actions after the 1964 Alaska earthquake. Such drastic measures would probably involve airlift evacuation of some of the Barrow residents and airlift to Barrow of emergency energy supplies. The possibility of such an event is considered very remote and no greater at Barrow than many other outlying Alaskan communities.

NUCLEAR WASTE

Question. We understand DOE has more than $52 million budgeted for geological studies of nuclear waste disposal, $8 million of it going to the Geological Survey. Why do you also need to budget for essentially the same kind of work?

Answer. The program proposed by the USGS is supplementary to the DOE program and does not duplicate it. The DOE program, in order to demonstrate operation of a repository by mid 1980, necessarily emphasizes short-term operational and site specific problems. The Geological Survey's program will provide complementary research that is not now being emphasized and will be fully coordinated with DOE and other Federal agencies by appropriate interagency committees. The Survey program also focuses on longer term problems associated with the development of waste repositories over the next few decades.

Action agencies, such as DOE, NRC, and EPA, are concerned primarily with research and development related to the locating, licensing, operating, and licensing compliance of specific disposal sites where wastes are buried in the earth materials. However, the USGS is concerned with the development of geologic and hydrologic data and scientific information for the safe burial of radioactive wastes.

The objective of the Survey program is to obtain the needed scientific data through field, laboratory, and theoretical research that could be used by the action agencies to define criteria and methods of safe disposing of high-level radioactive waste in various geologic materials.

The Geological Survey will conduct research on the hydrologic and geologic problems of storage of nuclear wastes in rock. Long term safe storage requires detailed knowledge of hydrologic systems, of waste/rock interactions, of geologic structure, and of dynamic geologic processes that might cause a breach in the repository.

OMB has sponsored several meetings between DOE and DOI (Geological Survey) to coordinate the two programs and assure the maximum utilization of manpower and funding.

REGIONAL AQUIFERS

Question. How long will it be before preliminary information will be available from the aquifer study program to assist water management goals?

Answer. The Survey's Regional Aquifer Systems Analysis program consists of studies which range from 3 to 5 years in project duration. The program, however, will provide interim progress reports on significant findings and data acquisition to be made available as advance information for water-supply development and water resource management. In addition, a final comprehensive report on each study will be published upon its completion.

Thus, for the initial three studies now under way, a series of progress reports on results of the work will be forthcoming during the next three years with concluding comprehensive reports summarizing all significant findings. Likewise, early information will be released from project studies initiated in subsequent years.

Question. The increasing emphasis on ground water studies brings up policy questions on the extent of the Federal role in ground water management. Should the Federal government become more active? If so, what kind of a role should it play?

Answer. This topic is being considered by the Federal Policy Committee and the President's staff as a part of the overall posture of government on the Federal role in total water management. The position and contents with respect to this subject are not yet known to us. We have provided input to the several task forces assembled to help develop Federal Water Policy.

The Geological Survey is not directly involved in policy issues related to ground-water management. The Survey's authority is limited to fact-finding, not only for the ground-water resource, but the total water resources. Products of Survey investigations, however, do serve as a firm data base for design of effective management practice and for establishment of national, regional, and local policy.

Question. How many Federal agencies are now involved in ground-water studies and management? Also, what is the total Federal funding involved? Do you have that information or could you supply it?

Answer. The principal Federal agencies involved in ground-water studies include the Geological Survey, the Office of Water Research and Technology (OWRT), and the Environmental Protection Agency. The Geological Survey is by far the largest investigating agency, with funds allocated to ground water estimated to be approximately $60 million, about 25 percent of which is derived from State and local agencies. The present OWRT funding for similar work is only on the order of $500 thousand; and, for EPA $1.3 million for research sponsored by its Kerr Laboratory, in Ada, Oklahoma. The EPA amount does not include certain other ground-water data collection operations sponsored by other divisions of EPA, for which information is not readily available. Other Federal agencies are involved in specific mission-oriented studies, such as the Bureau of Reclamation, Department of Agriculture, and the Department of Energy. The sum total of all Federal efforts in ground-water studies and research in their broadest definition is difficult to assess, but is estimated to be on the order of $75 million or more.

Management of ground-water by Federal agencies is limited to the several agencies with developmental and operational functions, primarily in the western states, including the Corps of Engineers, Bureau of Reclamation, and Department of Agriculture in relation to certain of their projects. A determination of funding for these mission-oriented management efforts is not readily available to us.

Laser Profiler

While we are in the water resources activity, let's see if we can get up to date on the additional funding that Congress provided in the current year for development of a laser system for flood mapping. At the committee's request, GS provided a status statement last month, and we will include that in the record at this point.

(The status statement follows:)

U.S. GEOLOGICAL SURVEY
Status of Flood Insurance Rate Mapping System
March 10, 1978

During the FY 1978 budget cycle the Congress added $2.173 million to the Geological Survey budget to continue development of an inertial measurement unit, laser tracker, and laser profiler by the Charles Stark Draper Laboratory. The intent was for this instrument package to be provided to NASA for integration into a flood-plain mapping system.

Congress also added $6 million in FY 1978 to the budget of the Flood Insurance Administration (FIA) to initiate a project with NASA to construct a flood plain mapping system. The NASA-FIA project would develop other components, including a laser scanner, which would be meshed with components of the Geological Survey's instrument package to produce a mapping system called the "Flood Insurance Rate Mapping System" (FIRMS).

The Geological Survey has obligated $1.09 million of the FY 1978 Congressional add-on appropriation to continue the Draper Laboratory work. FIA has not obligated any of its FY 1978 $6 million add-on. The Geological Survey understands that FIA is considering initiating formal rescission proceedings relative to the FY 1978 $6 million add-on, although they are considering proposals from NASA regarding the need for additional preliminary studies. At this point the Geological Survey has the following options:

(1) Terminate the Draper Laboratory effort at the end of the current design and confirmation phase, and initiate proceedings to rescind approximately $1 million of the FY 1978 add-on.

(2) With additional funding as explained below, continue with the Draper Laboratory effort to develop and flight test the instrument package, and conduct or otherwise support the following parallel studies:

(a) Conduct a detailed sensitivity analysis of the pertinent hydrologic modeling methods to determine the improvements that may be realizable by various degrees of refinement in detail of elevation data, channel roughness factors, and other parameters that affect flood risk evaluation.

(b) Conduct flight tests over typical flood plain test sites using existing laser scanner devices to evaluate problems such as vegetation penetration, permissible scan angle, accuracy, and to obtain parameters that are needed to assess data processing methods and costs.

(c) Obtain technical support from NASA to conduct systems engineering studies to arrive at technical tradeoffs and recommendations for future improvements in instrumentation related to flood plain mapping and associated activities.

If the Survey's project currently being developed by the Draper Laboratory is successful, and preliminary work indicates a very high probability of success, this instrument package would provide a cost effective tool that would be very useful in such areas as flood plain mapping, surveying of control for gravity stations, secondary control for mapping, and quantitative elevation measurements over strip mined areas. Moreover, components of the instrument package could be integrated with and be of vital importance to a FIRMS type system if one is developed. Accordingly, the Geological Survey favors proceeding with option 2. However, funds available to the Survey in FY 1978 are not sufficient to complete the work of the Draper Laboratory through the flight testing phase and to conduct the needed parallel studies.

In order to proceed with option 2 above, an additional $6 million is needed. These funds could be made available in FY 1978 through a reprogramming action by the HUD-FIA; and the subsequent transfer of the funds to the Survey through a reimbursable agreement. With these additional FY 1978 funds the instrument package can be completed and flight tested, and the technology made available by 1981 or 1982 to the many Federal agencies who can apply it in their programs (Departments of Housing and Urban Development, Transportation, Commerce, Energy, Defense, etc.).

Question. Has anything developed since that statement was prepared to change the situation with regard to the position of the Flood Insurance Administration? Has FIA decided whether to propose rescission of its $6 million share of the project?

Answer. We understand that FIA has decided not to propose rescission of its $6 million share of FY 1978's intended joint (NASA/FIA/USGS) instrument development project. On April 19, 1978, FIA advised the Survey orally that it was initiating a reprogramming request for the $6 million to be used for its own activities (other than for the development of a flood insurance rate mapping system).

Question. USGS has obligated about half of its $2.2 million appropriation to continue work on your laser profiler. Have you developed any firm recommendations for the use of the balance of funding available?

Answer. The Geological Survey does not have firm recommendations at this time concerning the unobligated portion of the $2.2 million appropriation (approximately $1 million remains unobligated). Recommendations for use or rescission of the unobligated funds will be formulated as soon as a decision is made concerning disposition of FIA funds. In the meantime, work will continue toward completion of the design verification phase by the Draper Laboratory, but the construction phase will not be initiated. Assuming the project will not be undertaken in FY 1979 there will be additional costs in FY 1978 associated with terminating the project.

Question. How much money has been spent to date on your laser profiler, or the Draper project - as it's called?

Answer. Geological Survey funding for the laser profiler, to date, is as follows:

Fiscal Year	Funds (thousand of dollars)
1974	$ 75
1975	658
1976	812
1977	800
Subtotal	$2,345
1978	1,090
TOTAL	$3,435

Question. How could the Survey get so deeply involved in a research and development project of this kind without any specific budget request? Are there any other projects being initiated in this manner without the Committee's knowledge?

Answer. Interest in laser profiling technology dates back at least a decade when Survey personnel participated in experiements with the application of laser devices. Such technology was recognized as having possible application to the solution of problems in geology, geomorphology, hydrology and mapping. The basic research was begun to extend this technology in the Survey in these several areas. It is a type of basic research that, on an appropriate scale, has been and should continue to be undertaken by the Survey.

The Survey, in the base description of the FY 1979 Budget Justification, identifies those research projects that might be considered of possible interest to the Congress. However, with a basic and applied research program estimated at over $174 million for FY 1979, providing detailed explanations of all projects doesn't seem practical because of the amount of space it would consume in the budget document. Scientific publications, prepared by the Geological Survey, could be made available to the Congress to further explain ongoing research projects.

Question. If this is such a worthwhile project, why were you unable to secure budget approval for continuing support for it in fiscal year 1979?

Answer. The decision not to request additional funding in FY 1979 was in part based upon uncertainty about the relation between the Geological Survey's system and the proposed NASA/FIA system. The need to fund higher priority Geological Survey programs was also a major factor.

Question. Since the fiscal 1978 funding to GS and FIA was provided specifically for the so-called flood insurance mapping system, shouldn't all funding be rescinded if the program is not to proceed?

Answer. The Survey's program which was designed specifically to meet Geological Survey mission needs, (and probably could have met some key FIA needs for this type of instrumentation) began in June 1974 before the proposed NASA/FIA/USGS instrumentation development proposal was made. The FY 1978 funding to USGS expedited the Survey's continuing program. About half the funds made available in FY 1978 have already been obligated. Of the remaining funds some will have to be used to cover the cost for terminating the project and the balance would be rescinded or allowed to lapse.

Question. What would be the impact on your laser profiler program if work is terminated at this stage and the balance of funding rescinded?

Answer. If the balance of funding is rescinded, work on the USGS laser profiler program will terminate before the end of fiscal year 1978. The Survey will have received a set of design plans that are not sufficiently detailed so that a flyable prototype instrument system could be built at some future date.

Question. Do you have any idea whether the appropriations subcommittee for FIA and HUD would support reprogramming available funds so that your project could continue?

Answer. We have no information regarding possible FIA discussions with its Appropriations Subcommittee. We infer that inasmuch as FIA has advised that it is initiating a reprogramming request of its $6 million of FY 1978 funds into other areas of it's own activity, it is or would be doing so with the full knowledge and sanction of its Subcommittee. The Geological Survey part of the project could continue separate from the NASA/FIA project if resources were available.

Question. Please detail and justify for the record how you would utilize the $6 million in FIA funding and the balance of your own appropriation to continue this project. Include your best estimates on the cost saving potential of this system if it is successful.

Answer. The estimated funds required to complete the Survey's project amounts to $6.5 million, which would be needed to build and flight test a prototype laser profiler. The funds would be obligated as a single phase contract for the period FY 1978 through 1981.

As noted previously, approximately $1 million of unobligated USGS funds are available for FY 1978. Accordingly, $5.5 million of FIA funding would be required to complete the Survey's laser profiler.

It is estimated that development of one instrument package (the prototype) would save the Geological Survey $2.5 million and 50 man years per year for programs anticipated for the 1980's. Savings throughout the Federal Government that would be achieved by purchasing and using additional instruments would be many times greater.

COLUMBIA GLACIER

Question. Although you are budgeting a $1.6 million increase in water data collection and analysis, you are reducing special studies by $407,000 and curtailing studies of the Columbia Glacier in Alaska. The curtailment is blamed on higher budget priorities elsewhere. We understood the Columbia Glacier has a high priority. Please explain what has happened?

Answer. The Columbia Glacier is the only tidal glacier of 27 on the West Coast of North America that has not drastically retreated from its present position during the last 1,000 years. Observations indicate that it may be on the verge of beginning retreat, which could produce thousands of large icebergs over a period of 20 to 30 years. Such iceberg formation may begin in a matter of years or decades and once a drastic retreat is started would pose a direct threat to oil and tanker traffic in Prince William Sound.

The goals of this project are to develop a sufficient understanding of the glacier dynamics to produce quantitative, predictive statements, as soon as possible, about future iceberg production.

In general, the first season (summer 1977) of field work went according to schedule. Plans for the 1978 field season in many cases are extensions of 1977 activities, but in all cases the activities are designed to acquire the minimum data needed to achieve the stated goals, which include:

- Measurement of ice thickness using a newly developed (contract and in-house) first time available, airborne radio-echo sounder.
- Measurement of changes in ice thickness.
- Determination of net ice mass balance.
- Measurement of the rate of ice flow.
- Determination of the rate of ice calving.
- Measurement of the shape and structure of moraine shoal.
- Determination of the size, trajectory, and melt rate of icebergs.

- o Reconnaissance measurements of other glaciers to develop calving law.

Most evidence points toward the conclusion that Columbia Glacier will not remain much longer as such a large and impressive feature of the landscape. The ice is thinning rapidly near the terminus, huge embayments form, and preliminary dynamic modeling suggests that it is out of equilibrium for the present climate.

The reduction in funding is a matter of priority for use of manpower and funding in 1979. Field work will be completed in 1978 and sufficient effort will be carried out in 1979 to complete a computer model for predicting the timing and amount of ice discharge from the glacier.

These studies are being done in close cooperation with the Coast Guard. They are actively studying the movement of ice in Prince William Sound; as well as studying the feasibility of a $31 million net which would be utilized to hold icebergs near the mouth of the Glacier until they melt, as described in the attached abstract from U.S. Coast Guard Report, entitled, "A Design Feasibility Study for the Containment of Icebergs within the Waters of Columbia Bay, Alaska".

The situation will be observed closely and as developments occur over the next few years, additional studies may be necessary.

A DESIGN FEASIBILITY STUDY FOR THE CONTAINMENT
OF ICEBERGS WITHIN THE WATERS OF COLUMBIA BAY, ALASKA

Abstract*

The vessel traffic lanes through Prince William Sound, Alaska, which are transited by oil tankers servicing the Alaskan pipeline terminal at Valdez, will possibly be hazarded by drifting icebergs. Columbia Glacier, 10 miles from Valdez, presently produces icebergs during the summer, some of which drift into the tanker lanes. Columbia Glacier is the only Alaskan tidewater glacier which has not suffered a drastic retreat during the last 70 years. It remains in its extended position since it was first discovered by Captain VANCOUVER in 1789.

The U.S. Geological Survey has made predictions that a drastic retreat of Columbia Glacier is probable. The resulting icebergs pose a serious retreat to the tanker traffic in Valdez Arm. A study was carried out to explore the possibility of erecting a barrier to confine the icebergs to a region west of the tanker lanes.

It is concluded that an iceberg containment barrier in the event of drastic retreat is feasible from an engineering standpoint. A floating extensible barrier made up of thirteen, 10-inch nylon cables across a 5 km water passage can be constructed at a cost of approximately $31.1 million. The barrier will prevent the iceberg population, as stipulated by the most probable case design criteria, from drifting into the Valdez Arm tanker lanes.

* U.S. Coast Guard, Washington, D.C. Final Report, dated December 1977.

Question. Last year we were told there was an urgent need to accelerate Columbia Glacier studies because of the ice floe's proximity to the Alaska pipeline port facilities. There was even talk of reprogramming. Is there no longer any concern about the movement of this Glacier?

Answer. Yes, there is still concern about the movement of the glacier but inasmuch as exact predictions of the time and size of iceberg formation is not possible -- and with the assurance that the Coast Guard can cope with the existing and near future situation as heretofore explained -- the Geological Survey will continue a modest observation of conditions and change; and be prepared to initiate a stepped up program if iceberg production and danger to marine shipping increases.

WATER RESOURCES INVESTIGATIONS

Question. You are also reducing basic data collection and analysis by $332,000 to help offset increases totaling $2.4 million for stream and river quality assessment work. Please explain the policy behind these program funding emphases.

Answer. We continually evaluate our gaging network to insure that National needs for essential baseline hydrologic data are met. The results of these network analyses not uncommonly reveal that it is possible to discontinue operation of specific stations because the length and quality of records already accumulated allows us to generate additional information as needed by statistical techniques. We also find in some instances that it is desirable for the sake of efficiency to convert stations from continuous operation to partial-record status. By this means, manpower requirements and operational costs are reduced although the needed level of hydrologic information--particularly on extreme events--continues to be collected. Even though efforts are being reduced, there continues to be collection of high priority basic data.

As the needs of the Nation for water information become even more critical and new problems emerge, it will become necessary to request additional funds for data collection and analysis in those areas.

The request for an increase of $2,400,000 ($1,400,000 to complete the National Stream Quality Accounting Network (NASQAN) and $1,000,000 to conduct River Quality Assessments) is to meet such a need for water quality information. The completion of the NASQAN network will provide for a uniform data base to describe the quality of river waters and to detect the changes and trends in river quality. The river quality assessments will provide the scientific methods and technology to determine the best alternatives for areawide waste treatment.

Question. How much in total is budgeted for the National Stream Quality Accounting Network in fiscal 1979? What will be the ongoing cost in future years?

Answer. The following table summarizes costs for NASQAN, including estimated costs for improving and operating the complete network.

Activity	Dollars in thousands for fiscal years 1977	1978	1979	1980	Beyond 1980
Operation of network with 345 stations	$2,720				
Operation of network with 445 stations		$3,841			
Operation of completed network (525 stations)			a/ $5,241	$5,241	$5,241

a/ The increase for FY 1979 of $1,400,000 is for addition of the final 80 stations; to improve network operations including more careful review of field operations; speedup and automation of several steps in the review of data and the production of reports; and preparation of more detailed reports on national patterns in water quality and the factors that affect quality.

Question. What are the three river assessments for which you are requesting a $1 million increase?

Answer. The three basins for river-quality assessment have not been selected; however, activities are underway to do so. A site selection committee was formed to review the attributes of eighty basins nominated by offices of the Geological Survey, by other Federal, state, and local agencies, and by the Advisory Committee on Water Data for Public Use. The selection committee has recently submitted it's recommendation and we expect that a final decision will be made before June 1, 1978.

EARTHQUAKE HAZARDS REDUCTION

Question. You have budgeted $31 5 million for earthquake hazards reduction, which is an increase of $746,000 over the 1978 base. Congress just boosted this program by $2.3 million in the current fiscal year. Why is another increase needed now?

Answer. A phased expansion of the Earthquake Hazards Reduction Program was begun in FY 1978 and was to have continued through FY 1980. Under the Earthquake Hazards Reduction Act of 1977, the authorization for the USGS increases to $35,000,000 in FY 1979 and to $40,000,000 in FY 1980. Under the Newmark Report at the Option B level, the increases are to $37,800,000 in FY 1979 and to $46,100,000 in FY 1980.

The increase of $746,000 will be used to:

- o Augment hazards studies in regions of high seismic risk. (+500,000).
  - Intensified hazards studies in the Seattle-Puget Sound region and reconnaissance studies in the Buffalo-St. Lawrence Valley seismic zones.
  - Accelerated studies of the causes of past earthquakes in selected regions of the eastern U.S.
  - Prototype development and testing of seismic instrumentation for nationwide coverage of seismicity for seismic risk assessment.

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- Develop techniques for analysis of digital seismic data (+246,000).

Question. Specifically what are you accomplishing with the increased program we funded in the current fiscal year? Have you been able to enhance your ability in the area of earthquake prediction?

Answer. The increased program in FY 1978 permitted a major expansion in each of the major study areas: prediction, hazards assessment, induced seismicity, and global seismology. Some highlights are:

- Releveling of the southern California uplift area.
- Drilling of holes into fault zones to measure stresses and sample materials.
- Expansion of mapping studies in several urban areas in regions of high seismic risk.
- Monitoring of reservoirs that have caused earthquakes.
- Operation of the Worldwide Standardized Seismograph Network.

The USGS publication Circular 780 gives a complete listing of the program activities.

The installation of many new instruments for monitoring earthquakes has greatly improved the observational capability for earthquake prediction. A magnitude 6.5 earthquake observed at Adak, Alaska, provided important data on the nature of foreshocks. An earthquake in Japan in January 1978 showed precursors in volumetric strain, radon, ground deformation, foreshocks and water level. Microearthquake activity was observed in the area of the southern California uplift. These data help to build the observational basis that is needed for predictions. As noted in the Newmark Report, at least ten years of such observations will probably be required.

Question. To what extent does your budget request address the mandates of the Earthquakes Hazards Reduction Act of 1977?

Answer. The scope and balance of our budget request is consistent with the Act. Our funding request is $31,512,000 in contrast with the authorized level of $35,000,000 in the Act for FY 1979.

The items that would not be undertaken are:

- Expanded studies of earthquake precursors for prediction (+500,000)
- Expand studies of earthquake recurrence, strong ground shaking, ground failure, and surface faulting (+350,000)
- Establish a Nationwide Seismograph instrumentation system for hazards assessment (+1,300,000)
- Upgrade capability to analyze and interpret precursors (+300,000)
- Expand regional hazards assessment studies (+400,000)
- Improve capabilities of the National Earthquake Information Service (+300,000)

- o Drill shallow holes into fault zones to determine properties (+338,000)

Question. How much is programmed in 1978 and 1979 for your studies on the role of reservoirs in causing earthquakes? What has been accomplished to date?

Answer. For FY 1978 and FY 1979, $1,200,000 is programmed for such studies during each year.

Accomplishments to date include:

- o A review of reservoirs that have and have not caused earthquakes to determine criteria for safe siting.
- o Monitoring of two very large reservoirs in the USSR.
- o Preparation for drilling of a hole in South Carolina to measure stress near a reservoir that is causing earthquakes.

Question. Last year the GAO recommended that the Federal role in an effective earthquake hazard reduction program should be clearly defined. What has the Survey been doing in this respect?

Answer. The GAO recommendations were, in effect, incorporated in the provisions of the Earthquake Hazards Reduction Act of 1977. The USGS has been assisting the Office of Science and Technology Policy in developing an implementation plan for the Act. The plan will be sent to Congress by the President shortly.

Question. GAO went on to say that each agency's responsibility should be defined and that a lead agency should be designated to coordinate the earthquake hazard reduction program. Goals, priorities, and target dates should be established. GAO said, and criteria should be developed for judging the effectiveness of the Federal program. Tell us what has been done in response to these recommendations.

Answer. The implementation plan to be sent to the Congress by the President shortly will detail the establishment of the National Earthquake Hazards Reduction Program as called for in the Act. Responsibilities for Federal agencies and suggested appropriate roles for State and local governments and the private sector will be included. Goals, priorities, and target dates will also be included.

ONSHORE MINERAL RESOURCES

Question. Your budget request for onshore energy and (non-energy) minerals program totals $34.3 million, an increase of $2.8 million over the adjusted 1978 base. Generally, what is the mineral leasing situation on Federal and Indian lands? Is it increasing or declining?

Answer. The number of leases being issued annually for various minerals on Federal and Indian lands has remained fairly constant over the last several years. The number of oil and gas leases in effect on Federal and Indian lands has increased by 1,286 during the past 2 years, whereas the number of mining leases in effect has decreased by 177. Thus, the net increase in all Federal and Indian leases over the past 2 years is 1,109. However, it is not the number of outstanding leases which predicates the need for the budgetary increase, but the increased level of industry activity on existing leases. Examples of this increased activity is reflected in the following workload figures:

Workload Item	Estimate FY 1978	Estimate FY 1979	Percentage Increase
Inspections of active coal leases	1,973	2,565	+30%
Exploration and mine plan approvals processed	306	428	+40%
Coal environmental analyses completed	146	190	+30%
Non-energy lease inspections	560	800	+43%
Inspections of oil and gas operations	40,000	52,227	+33%
Oil and gas lease accounts audited	8,182	13,500	+65%

Question. How effectively does your budget request meet the regulatory and resource evaluation responsibilities you have for Federal and Indian lands?

Answer. Except for funds and personnel needed to resume Federal coal leasing, which were not included in the FY 1979 Budget Request due to the NRDC vs Hughes Court case, the FY 1979 budget request provides adequate funds to meet all other regulatory and resource evaluation responsibilities for Federal and Indian lands. However, because of personnel constraints, the accomplishment of program responsibilities requires an enlarged contracting program for those functions and services which can be successfully performed by the private sector. The funds and personnel requirements for resumption of Federal Coal Leasing are being reviewed and decisions concerning additional needs will be made shortly.

Question. Both GAO and Interior's Office of Audit and Investigation (OA&I) have been critical of abuses in the non-competitive onshore oil and gas leasing system. Specifically, how does your budget address these shortcomings pointed out by the studies?

Answer. The non-competitive onshore oil and gas leasing system, or the simultaneous filing system, is administered by the Bureau of Land Management (BLM) with minimal involvement on the part of the Geological Survey. We may recommend that certain tracts be withheld from non-competitive leasing because it would create a conflict with other mineral extraction activities and we also make a final check before BLM issues any non-competitive lease to insure that the lands have not become ineligible for leasing by this procedure, i.e., that the lands are not within the limits of the known geologic structure of a producing oil and gas field. These activities are not among those criticized by GAO and OA&I and, therefore, our budget does not address the identified shortcomings in the non-competitive oil and gas leasing system.

Question. In your regulation of oil and gas leasing (operations), what level of funding is devoted to enforcement of diligence standards? How much for environmental analyses?

Answer. The total FY 1979 budget for the regulation of onshore oil and gas operations is $15,219,000. While there is no systematic and

comprehensive diligence program for onshore oil and gas development as has been developed for the OCS, diligent development is included in the annual review process of all producible leases (12,200) and for the preparation of environmental analyses for all proposed operations (3,600) which will result in surface disturbance. We estimate the following level of funding during FY 1979:

Item	Man-Years	Amount
Review of 12,200 producible leases for diligent development --------	25	$750,000
Preparation of 3,600 environmental analyses ----------	24	$880,000

Question. What is the total funding requested for identification of known geologic structures for lands that can be leased competitively?

Answer. The fiscal year 1979 budget includes a request for $352 thousand for Federal and Indian lands, Oil and Gas Tract Selection and Evaluation. Of this amount $117 thousand is currently planned for the identification of Known Geologic Structures (KGS) suitable for leasing.

INDIAN LANDS

Question. It is difficult to determine from your justification just how much funding for Federal and Indian lands is directed to general leasing activities on Indian lands. Could you tell us what the Indian-related funding total is for FY 1979?

Answer. The budget for general leasing activities on Federal and Indian lands for fiscal years 1977, 1978, and 1979 is shown below:

(Dollars in thousands)

	FY 1977 Actual	FY 1978 Estimate	FY 1979 Estimate
Federal lands -------	$27,795	$29,398	$31,500
Indian lands --------	1,474	2,000	2,804
Total ----------	$29,269	$31,398	$34,304

Question. Is there adequate funding in your 1979 budget request to operate an Indian mineral leasing program that meets the standards recommended by GAO?

Answer. The budget requested is adequate to meet those operational standards which are the responsibility of the Geological Survey.

Question. Please supply specific responses to each of the GAO recommendations in its March 31, 1976, report. Clearly indicate any shortfalls that may exist in the Indian leasing program.

Answer. A synopsis of GAO's recommendations and the actions taken by the Geological Survey is as follows:

GAO Recommendation

Establish a penalty fee for late payment of royalties and enforce such requirements as necessary.

Survey Action

Title 30 CFR 221 is being revised to provide meaningful liquidated damages for late reports and payments and for an interest charge on late payments.

GAO Recommendation

Instruct lessees to submit reports required by regulations and lease terms when due and require purchasers of Indian mineral resources to submit reports on products purchased.

Survey Action

Notice to lessees - 1A which prescribes the requirements of the Geological Survey with respect to the timely submittal of reports and payments was issued to all lessees and operators effective April 1, 1977.

GAO Recommendation

Establish procedures to coordinate reclamation activities among various Agencies involved in this activity on the various Reservations.

Survey Action

This is not a Geological Survey responsibility. We are not a surface management agency and do not employ personnel having the necessary expertise in this area. However, we do incorporate, as a condition of our approval of all plans of operations involving Indian lands, the surface protection and rehabilitation requirements of the Bureau of Indian Affairs (BIA). Moreover, we do not approve the final abandonment of any operational site on Indian lands until we are apprised by BIA that it is satisfied with the reclamation work performed.

GAO Recommendation

Determine the level of staffing necessary to perform its oil and gas responsibilities on Indian lands and take the steps necessary to obtain such staffing.

Survey Action

Our needs for personnel are set forth in each annual budget presentation. Prior to the completion of the GAO report, we were authorized an additional 45 accounting positions which have been filled. It is expected that the addition of these personnel, together with the other actions enumerated here, will result in an improvement in our royalty accounting capability.

GAO Recommendation

Require that oil and gas wells reported as being shutdown be verified by random inspections.

Survey Action

The Geological Survey always have and will continue to verify the status of all wells by random field inspections.

GAO Recommendation

Perform all required oil and gas site inspections.

Survey Action

There is nothing in the applicable laws, regulations, or lease terms which require that inspections be made. However, the Geological Survey is authorized to conduct such inspections and we recognize the necessity of inspecting operations in order to assure ourselves, the Indian lessors, and the public that these operations are being carried out in compliance with all requirements. As in the past, we will continue, to the extent of our available resources, to inspect the various types of operations for compliance with applicable laws, regulations, lease terms, and the conditions imposed by the approved operating plan.

GAO Recommendation

Post audit all Indian oil and gas lease accounts.

Survey Action

A chapter in the Survey Manual (CDM 647.15E) has been issued which provides our accounting personnel with uniform guidelines and techniques for conducting audits and reconciliations of lease accounts. As with our inspection activities, we will perform as many post audits of lease accounts as are possible with our available resources.

ONSHORE OIL AND GAS LEASE REGULATION

Question. Your $1.6 million increase requested for regulation of oil and gas operations is based on increasing demands for drilling permits and related environmental analyses. In what area is this increased activity located?

Answer. Drilling activity on Federal and Indian lands increased substantially in early 1974 following the oil embargo. After declining slightly in 1975 and early 1976, drilling activity increased well above the 1974 level and has continued to increase slightly since that time. We now project that some 3,500 applications for a permit to drill will be received in 1979. While a significant amount of development drilling is occurring in California, the majority of new wells being proposed are located in Colorado, Montana, New Mexico, Utah, and Wyoming. An environmental analyses is prepared on each proposed well. Thus, our additional workload in this respect is related to the increased drilling activity. This increase is also related to an effort to increase the number of inspections conducted and the number of lease accounts audited.

Question. All of your oil and gas workload elements are increasing in fiscal 1979. Does this reflect an actual increase in oil and gas leasing?

Answer. No. The number of new oil and gas leases being issued annually has remained fairly constant for several years, i.e., 10,000 to 14,000 noncompetitive leases and 300 to 400 competitive leases. However, the number of leases in effect has increased slightly in recent years. What the increaes in workload reflect is more drilling activity to be approved; more producing leases and producing wells to be inspected; and more lease accounts to be maintained and audited.

OIL SHALE

Question. Why can't you reduce your $605,000 program for regulating oil shale leases? Isn't this activity at a virtual standstill now?

Answer. The workload for regulatory oil shale leases is continuing. Some examples of continuing workload are as follows:

a. Detailed development plans have been reviewed and approved for tracts Ca and Cb in Colorado. We are now approving and inspecting operations for the sinking of shafts and the construction of surface facilities, access routes, and utilities.

b. We are continuing our work in relation to the required collection of baseline data related to air quality, flora, and fauna so as to be able to monitor the effects of mining on these resources. In that regard, we are approving the lessees' plans and reviewing their collection of data.

c. The leases provide for credit offsets to the fourth and fifth year bonus payments. The offsets are credits given against the original loan payments and are allowed for certain development costs as specified in the leases. These cost data are submitted monthly and must be reviewed and audited to determine whether said costs should be allowed as an offset.

The present level of funding must be maintained in order not to delay the development of oil shale on Federal lands.

Question. Part of your oil shale regulation program is based on leases progressing into development and production phases. What chance is there of this occurring in fiscal 1979?

Answer. The development of present oil shale leases is already in progress. Several shafts to recover the oil as well as the construction of surface facilities is underway.

Production from these leases on a small scale, at 5,000 barrels per day, is expected to begin in 1980. It is anticipated that this could increase to 50,000 barrels per day in 1983, and 100,000 to 150,000 barrels per day in 1987.

Question. Why do you need to hold 298 interagency meetings for a largely inactive oil shale leasing program?

Answer. Oil shale operations require 78 different permits from Federal, State, and local agencies. Involved are 10 State agencies, 3 county agencies, the Bureau of Land Management, Department of Energy, and the Environmental Protection Agency. Each agency has distinct responsibilities. The Geological Survey must meet with these agencies in order to coordinate its approval of the oil shale activities.

GEOTHERMAL

Question. You have a total of $14 million budgeted for geothermal resources, most of it for resource surveys. Aside from technology R&D, do you know if the Department of Energy is budgeting for any funding in this area?

Answer. Yes, the Department of Energy is budgeting for funding in the general area of "resource surveys'; however, the focus differs as follows: (a) the USGS program emphasizes the assessment of

geothermal resources of large regions (e.g., the Snake River Plain in southern Idaho) with the purpose of (1) identifying broad areas within which specific sites most favorable for detailed exploration by others may exist and (2) periodically updating an inventory of geothermal resources on a national basis. (b) The DOE program emphasizes the assessment of geothermal resources at specific sites (e.g., Roosevelt Hot Springs in Utah) with the purpose of (1) selecting locations for drill holes to confirm and evaluate individual reservoirs and (2) estimating producibility and usable lifetime of such reservoirs.

Both programs contribute to a reduction in the uncertainties of the estimates of geothermal potential but at a different scale--DOE's for site-specific resource estimates and USGS's for regional and national resource estimates.

DOE uses the USGS regional assessment for making decisions on site-specific studies to confirm and evaluate reservoirs and as a guide to develop growth scenarios at a number of sites for establishment of national goals to utilize geothermal energy. USGS uses the DOE site-specific studies to improve the methodology for making resource assessments and to contribute detailed data for a more accurate modeling of characteristic parameters of geothermal systems. The programs are planned and implemented jointly in order to complement each other. A number of procedures and activities have been established to insure this coordination.

Question. Is the $2 million increase requested for geopressured zones and hot-dry rock areas a response to the Department of Energy's research needs?

Answer. Yes, the requested increases for geopressured and hot-dry rock resource studies are a response to the Department of Energy's research needs. In the case of geopressured resources, recent DOE efforts to obtain data from wells into these zones and laboratory measurements of the solubility of methane in fluids of geopressured zones have established a more reliable basis to believe that the estimates of rather large geopressured resources may be valid. In the case of hot dry rock resources, DOE efforts of the past two years, principally at Los Alamos Scientific Laboratory, have demonstrated a technology that would utilize hot dry rocks as a geothermal resource. In both cases, a next logical step is for the USGS to assess, on a nationwide scale, the extent and distribution of these two resource types and to characterize, on a generic scale, the geological features of each of these two resource types.

Question. Where do you stand in your geothermal resource surveys? Now that the program is approaching the $12 million level, we are wondering when this program will achieve its major goals.

Answer. Several major goals have already been achieved. Perhaps the most significant of these is the preparation of the first comprehensive assessment of our Nation's geothermal resources during 1975, published as USGS Circular 726. This national inventory has provided the basis for establishment by the Federal geothermal program of national goals to utilize geothermal energy and for planning R&D projects within the Federal geothermal program to assess the energy potential of both broad regions and specific sites, to develop exploration and utilization technology, and to identify the more promising prospects for exploration. Several of these projects within the USGS program have achieved major goals since the 1975 assessment. These include (a) compilation of the first comprehensive case history of a high temperature hydrothermal convection system at Long Valley, CA (which

now needs to be tested by drilling), (b) vast improvements in our original set of geothermometers to estimate subsurface temperatures from constituents of geoghermal waters by developing mixing models to take into account the mixing of waters of various temperatures as they flow to the surface before being sampled, (c) demonstration of the usefulness of several seismic techniques for the exploration of geothermal resources, (d) large scale operations in several broad regions (e.g., the Snake River Plain in southern Idaho) to gather high quality geophysical and geochemical data to significantly improve our assessment methdology, and (e) geological analyses for the Department of Energy's Division of Geothermal Energy which resulted in selection of successful drilling locations to obtain subsurface data at geothermal sites at Raft River, Idaho.

Concerning the status of our geothermal resource surveys, we have recently undertaken a follow-on national assessment, since the 1975 assessment was necessarily based on very scanty data and untested methodology that were available at that time. Since then, considerable surface data from geophysical, geochemical, geological, and hydrological surveys, but only a disappointingly small amount of subsurface data from drilling, have become available. The refined assessment, to be published in January 1979, will be based on this new data. In addition, several longer-term regional assessments being carried out as two-to-three year projects will be continued.

Question. Where do we stand with geothermal leasing? How many leases are there, and how many of these leases are in commercial production?

Answer. As of March 1, 1978, there were 1,122 Federal geothermal leases in effect embracing 1,909,322 acres. These leases are in 11 western States with the majority in Nevada (427), Utah (236), Idaho (152), Oregon (135), and New Mexico (85). There were 2 geothermal leases on Indian lands at that time covering 600 acres in California. Eight Federal leases have so far been proven as capable of producing geothermal resources in paying quantities; however, no actual production has yet occurred pending the construction of the necessary facilities for the beneficial use of these resources. It is anticipated that the first production from a Federal lease, in the Geysers area of California, will occur prior to the end of calendar year 1978.

Question. Why do you anticipate workload increases in the geothermal regulation program? Is there really much new leasing activity or well drilling?

Answer. Since the first geothermal lease sale in January of 1974, the number of geothermal leases in effect has steadily increased. In FY 1977, the net increase in the number of leases in effect was 189. An increase in the number of leases in effect fosters an increase in the number of exploration and development plans filed for our approval. In FY 1977, 24 temperature gradient wells were drilled bringing the total to 155 such wells since the Federal geothermal program was initiated. Twenty-four of these holes have been completed as observation wells. Also during FY 1977, 18 wells were drilled in an effort to discover geothermal resources which could be beneficially utilized, bringing the total of such wells to 60 since drilling was first initiated on leased Federal lands. Of these, 31 are considered to be capable of producing hot water and/or steam in paying quantities and another 10 have been completed as observation wells.

The geothermal program on Federal lands is now reaching the stage where the resources discovered make it economically feasible to

construct the necessary facilities for the beneficial utilization of the resources. The advent of utilization facilities on Federal lands will necessarily entail more developmental drilling in support of said facilities and is also expected to lend impetus to exploratory activities.

MINERAL SURVEYS

Question. Let's go to your mineral resource surveys subactivity for which you are budgeting $27.6 million, an increase of $754,000. First, tell us how the mineral assessment program is operated in conjunction with the Bureau of Mines. How are the responsibilities divided up?

Answer. The areas of responsibility of the Geological Survey and the Bureau of Mines in mineral assessment activities are defined in a Memorandum of Understanding between the two agencies. In summary, the Geological Survey is responsible for assessing and analyzing the geologic availability of resources of all mineral commodities with emphasis on the undiscovered categories and on assessing the mineral potential of land areas. The Bureau of Mines is primarily concerned with reserves, that is those resources that can be developed under present economic conditions. Identified subeconomic resources are the joint responsibility of both agencies with the Geological Survey responsible for assessing geologic factors and the Bureau of Mines responsible for appraising engineering and economic factors. The programs of the two agencies are coordinated through a formal coordinating committee that meets once a month in the Washington, D.C.

Question. Why is the Survey getting into a mineral information system and resource analysis, as identified on page 54 of the justification? Isn't this the kind of work that falls within the Bureau of Mines'jurisdiction? Isn't this what the Bureau of Mines' minerals availability system has been doing for six years?

Answer. The Geological Survey has conducted mineral resource assessment and analysis work since its inception almost 100 years ago. As stated in the Memorandum of Understanding between the Geological Survey and the Bureau of Mines, the Geological Survey is responsible for the assessment and analysis of resources whereas the Bureau of Mines is primarily concerned with reserves. In keeping with these differing missions, the minerals information systems set up by the two agencies are significantly different. The Geological Survey maintains resource data files that are oriented primarily toward the geologic characteristics of the total resource base, whereas the Bureau of Mines system is oriented primarily toward the economic availability and engineering characteristics of identified resources, particularly reserves.

Question. You are budgeting a level, $4.6 million program for mineral resource surveys in Alaska, and your justification states that work has been completed on an assessment of all D-2 lands. Does that mean you have finished your job with respect to D-2 lands?

What other work, either by your agency or the Bureau of Mines, needs to be done to have a thorough and complete mineral assessment of D-2 lands?

Answer. The resource assessment of Alaska that was completed in January 1978 was conducted at a scale of 1:1,000,000 (1 inch equals approximately 16 miles). For this assessment, the State was divided into four broad regions--the Brooks Range, Seward Peninsula, Central Alaska, and Southern Alaska--and reports were prepared on each of

these regions. These reports cover all of the proposed D-2 lands in the State. This assessment was prepared at this time so that the Congress would have the Survey's most up-to-date information for its deliberations on the D-2 lands. This assessment was based on the existing geoscience and resource data base which for much of Alaska is incomplete. In the Geological Survey's continuing mineral resource program in Alaska, the mineral resources of 1:250,000-scale (1 inch equals approximately 4 miles) quadrangles are being assessed in order to fill the gaps in Alaska's resource data base. This work will provide an assessment of the mineral resource potential of the State at a level of precision significantly above the one completed last January, but a "thorough and complete" assessment is attainable only after an area has been extensively explored by drilling, test-pitting, trenching, etc.

Question. Your Alaska mineral resource survey request shows a drop in program output. Why then can't the funding be reduced?

Answer. At the current level of funding, the Geological Survey can conduct work in about seven quadrangles simultaneously and complete an average of three to four quadrangles per year. The unusually large number of quadrangles scheduled for completion in FY 1978 results from a backlog of quadrangles that developed when people were diverted to work on the 1:1,000,000-scale regional resource assessment. Now that the assessment has been completed, maximum effort is being concentrated on completing the final report for this backlog of quadrangles. To date, reports covering 6 of the 12 quadrangles have already been completed and are either published or in the process of being prepared for publication later this year.

Question. No program increase is budgeted for the $2.7 million wilderness mineral surveys program. At this funding level, how long will it take you to complete the more than 18 million additional acres of Forest Service wilderness you have identified for study?

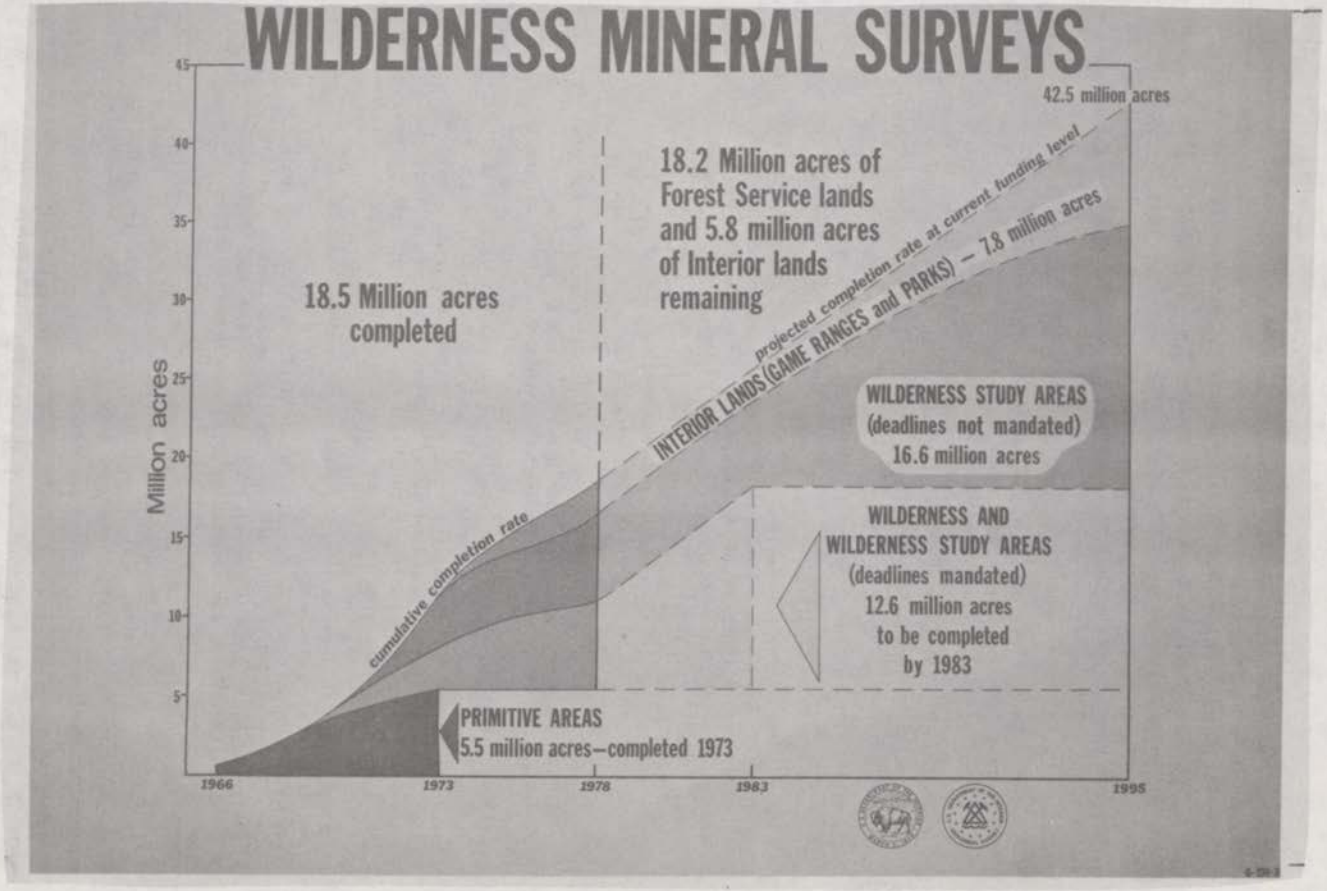
Answer. The following chart gives the present and projected status of Geological Survey wilderness mineral surveys.

a. At the current level of funding, all Forest Service wilderness and wilderness study areas with mandated deadlines of 1983 or before will be completed on time.

b. If no Interior game ranges and parks are studied before all of the currently identified Forest Service areas are completed, these Forest Service study areas will be completed by about 1990.

c. In any case all of the currently identified Forest Service wilderness and wilderness study areas and Interior game ranges and parks will be completed by 1995 at the current funding level.

(The chart follows:)


WILDERNESS MINERAL SURVEYS
Million acres
45
40
35
30
25
20
15
10
5
1966
1973
1978
1983
1995
42.5 million acres
18.2 Million acres of Forest Service lands and 5.8 million acres of Interior lands remaining
18.5 Million acres completed
projected completion rate at current funding level
INTERIOR LANDS (GAME RANGES and PARKS) — 7.8 million acres
WILDERNESS STUDY AREAS (deadlines not mandated) 16.6 million acres
cumulative completion rate
WILDERNESS AND WILDERNESS STUDY AREAS (deadlines mandated) 12.6 million acres to be completed by 1983
PRIMITIVE AREAS 5.5 million acres—completed 1973

Question. Have you had any participation to date in the roadless area review and evaluation study being conducted by the Forest Service?

Answer. The Geological Survey held meetings with Forest Service Officials at Survey's regional centers in Menlo Park, California; Denver, Colorado; and Reston, Virginia, in November and early December 1977. At these meetings Geological Survey regional mineral resource specialists discussed the status of knowledge of the resource potential of the individual areas being reviewed by the Forest Service. As a follow-up to these meetings, the Geological Survey has provided the Forest Service maps and reports on some of the areas.

Question. What additional workload do you anticipate will be created by RARE II, and at what cost?

Answer. The workload will certainly increase, but until the Forest Service completes its RARE II review later this year, the additional workload and cost for the Geological Survey is difficult to estimate with any precision.

Question. Since most of your wilderness studies are directed at Forest Service lands, are you reimbursed for any of that work?

Answer. One year after passage of the Wilderness Act of 1964, the Geological Survey received direct appropriations for mineral surveys of primitive, wilderness and wilderness study areas. These appropriations have continued with some increases to the present time. Therefore, the Survey does not receive reimbursement from the Forest Service for this work.

DIGITAL DATA PRODUCTION

Question. You are asking for $2 million and 15 personnel to establish a ditigal data production program under quadrangle mapping and revision. Why is this program needed at this time? How urgent is it?

Answer. It is important that the Geological Survey provide the basic digital cartographic data in standard formats for multipurpose use since it is required by many agencies. If the Geological Survey does not provide this standard data, Federal and State agencies will be forced to develop their own capability leading to single-purpose data, acquired at a greater accumulated expense to the government.

Digital data is used in computer management systems to aid in solving complex problems quickly and to analyze options prior to making decisions. An example is our National Coal Resources Data System (NCRDS) which combines digital elevations of the land surface with information pertaining to subsurface coal deposits. This combination of information in computer compatible form enables automatic analysis of overburden, evaluation of economic development potential and other environmental assessments of the coal resource. NCRDS requirements for the next 6 months include 264 7.5-minute quadrangles. An additional 689 quadrangles are needed within a year and a total of 8,000 quadrangles are needed within 4 years.

The Forest Service also has requirements for digital elevation data in the National Forests, about 16,000 quadrangles. The Bureau of the Census has requested digital data for the 1980 census which involves digitizing county boundaries for every county in the U.S. The Department of Energy needs digital data over the next three years involving 25 western States for Geothermal Resource Studies.

If the requirements of other agencies, such as BLM, for data on public lands are included, data for a total of over 20,000 quadrangles will be required within 5 years.

The Topographic Division has developed limited technical capability to produce digital data for specific pilot projects. Program funding and personnel are required to begin producing these data on a production basis.

Question. The justification states that several pilot projects have been initiated this year for digital data production. How much funding was invested in those projects, and where did it come from?

Answer. Approximately $200,000 is invested in the pilot projects. The money came from the funds allocated for modernization and technology development. The projects are to develop capabilities and techniques and verify data formats and are being done cooperatively with other Federal agencies. These agencies have provided some money and are using their personnel to evaluate the usefulness of the data and develop procedures for using the data.

Question. Is digital data production to be an ongoing program? If so, why is two-thirds of the employment made up of temporary positions?

Answer. Production of digital data will be an ongoing program. The use of temporary positions in both technical and administrative support is necessary, at least at this time, because of the personnel ceiling constraints imposed on us.

Question. Most of the digital data program - $1.7 million - is for contractual services. Why? Please describe the work that will be contracted out.

Answer. Personnel ceilings at this time prevent the hiring of additional full-time employees, restricting the amount of in-house work that can be done. The work which will be contracted will be the digitizing of selected categories of data, including roads, boundaries, public land survey lines, and hydrography from existing map sources. Preparation of textual information will also be contracted. The contractor will use digitizing equipment designed for hand tracing or automatic scanning of map materials to collect the graphic data in digital form. The data collected will be edited by electronic controlled equipment. Textual information will be added to the graphic data during the editing process to satisfy geographic and statistical user requirements. Data processing will be accomplished to arrange the information in standard formats and for entering into the national data bank for subsequent retrieval by the many users. Survey personnel will monitor the contracts, inspect and edit the contractor's work.

EROS

Question. The justification states that a digital image processing system is being placed in service this year. What funding will be necessary to support the system in Fiscal year 1979, and what is the increase over Fiscal 1978?

Answer. Funding support required in FY 1979 will be about $1 million. This will constitute an increase of about $750 thousand over FY 1978.

Question. Supply a breakdown of the EROS Program funding so that the proposed shifts in funding can be observed. Include FY 1977-1979 funding numbers.

	FY 1977	FY 1978	FY 1979
Program management	$ 675	$ 775	$ 800
Research	1,000	945	400
Technology transfer	1,492	1,250	730
Data processing & reproduction	3,600	4,045	4,930
Facility, computer, and administrative costs	5,629	6,113	6,540
Total costs	$12,396	$13,128	$13,400
Receipts			
Training	215	250	260
Data sales	2,636	3,143	3,400
Total receipts	2,851	3,393 1/	3,660 1/
Appropriation	9,545	9,735	9,740

1/ Estimated

Question. We understand the Survey has a demonstration project with COMSAT using satellites to relay water resource data from remote monitoring sites to collection centers. What kind of funding is involved, and what is the amount of cost sharing? (Details for record.)

Answer. The Survey is conducting a joint demonstration of hydrologic data collection, using a commercial satellite, with the COMSAT General Corporation at a cost to the Survey of $250,000. We understand the cost to COMSAT General for their part in this demonstration is approximately $750,000.

Question. What benefits are expected to be derived from this demonstration project?

Answer. This demonstration is being conducted concurrently with a similar test the Survey is conducting, using the NOAA GOES satellites. Although there are several technical differences between the commercially based system and the NOAA system, both hold the promise of permitting us to automatically collect hydrologic data in real time from the Survey's network of hydrologic sensors. There are two principal benefits to the operational implementation of this technology. One is that we would be able to reduce the manpower necessary to conduct our present labor-intensive field operations. We would monitor our network and service our sensors only when maintenance or hydrologic conditions warrant such servicing rather than visiting the sensors on a fixed time basis as we presently do. If we can use a commercial system, the manpower savings may be very substantial, because we expect to be able to procure a lease service, whereby the entire communications system would be the responsibility of the vendor. The second benefit would be the provision of real-time hydrologic data, which are in increasing demand by the water resources management community.

Budget Development

The committee has received a copy of the Survey's budget request history for fiscal 1979, we will include a copy of that statement in the record at this point.

U.S. GEOLOGICAL SURVEY
Budget Request History - FY 1979
(Dollars in thousands)

Appropriation/Activity	Request to Department	Request To OMB	Request to Congress
Surveys, Investigations, and Research:			
Topographic Surveys and Mapping	$68,624	$59,969	$61,052
Geologic and Mineral Resource Surveys and Mapping	159,723	124,661	130,153
Water Resources Investigations	86,773	91,308	88,795
Conservation of Lands and Minerals	87,025	80,198	82,824
Land Information and Analysis	28,864	20,053	20,078
General Administration	3,587	3,562	3,696
Facilities	11,720	11,720	11,765
Total Surveys, Investigations, and Research	446,316	a/ 391,471	b/ 398,363 c/
Exploration of National Petroleum Reserve in Alaska:			
Evaluation and Assessment of NPRA	211,376	211,376	181,400
Barrow Area Gas Operation, Exploration and Development	38,186	38,186	1,771
Environmental Restroation	2,438	2,438	2,377
Total NPRA	252,000	252,000	185,548
TOTAL, USGS	698,316	643,471	583,911

a/ The request to Department excludes the changes ($+7,925 thousand) made to the FY 1978 President's Budget by the Congress. Also excluded is the amount related to the October 1977 pay cost ($+13,483 thousand).
b/ The request to OMB excludes the amount related to the October 1977 pay cost ($+13,483 thousand).
c/ The request to Congress includes the changes made to the FY 1978 President's Budget by the Congress ($+7,925 thousand) and the amount related to the October 1977 pay cost ($+13,483 thousand).

Question. Please supply for the record the details of the program funding that was not allowed by OMB. As is the normal situation, your initial request to the Department was also reduced. Please summarize the principal program requests that were not allowed by the Department.

Appropriation/Activity	(Dollars in thousands) Request to Department	Request to OMB	Request to Congress
Surveys, Investigations, and Research:			
Topographic Surveys and Mapping	$68,549	$62,627	$61,052
Geologic and Mineral Resource Surveys and Mapping	164,667	128,919	130,153
Water Resources Investigations	99,650	94,545	88,795
Conservation of Lands and Minerals	90,343	82,824	82,824
Land Information and Analysis	29,056	20,578	20,078
General Administration	3,696	3,696	3,696
Facilities	11,765	11,765	11,765
Total Surveys, Investigations, and Research	467,726 a/	404,954 a/	398,363
Exploration of National Petroleum Reserve in Alaska:			
Evaluation and Assessment of NPRA	211,376	211,376	181,400
Barrow Area Gas Operation, Exploration and Development	38,186	38,186	1,771
Environmental Restoration	2,438	2,438	2,377
Total NPRA	252,000	252,000	185,548
TOTAL, USGS	719,726	656,954	583,911

a/ Adjusted for pay cost increase and Congressional add-on to FY 1978 budget request.

REIMBURSABLE PROGRAM

Question. It now appears that fully one quarter of the Survey's total funding is now available from outside sources, mainly through reimbursable programs. Nearly half your water resources program is funded that way. Is there any problem in obtaining commitments of such outside funds early enough so that sufficient planning and programming can take place.

Answer. Most reimbursable funds associated with work done for other agencies are known far enough in advance or are of a continuing nature which permits adequate planning and programming. Outside work is agreed to only after thorough discussions with the requesting agency to ascertain their needs and the Survey's capability to perform the work.

There is no problem with respect to advance commitments within the Federal-State Cooperative Water Resources Program as State and local needs have exceeded the availability of matching Federal funds in recent years. Planning of the program in each State is a mutual decision process with the Survey representing high priority national needs and the cooperating agencies representing State and local interests. Programs are jointly adjusted and redirected as requirements develop for additional and new kinds of water information. As manpower resources are redirected to other programs, increasing emphasis is being given to the accomplishment of work through utilizing direct State services and contracting with the private sector.

Question. Tell us about the work you are doing for the Kingdom of Saudi Arabia, which is supplying more than $10 million to the Survey.

Answer. The Geological Survey's program in Saudi Arabia was started in 1963 under a reimbursable agreement with the Saudi Ministry of Petroleum and Mineral Resources, approved by the Department of State, and authorized by the Agency for International Development under Section 607 of the Foreign Assistance Act. This program was a follow-up of previous assistance projects which extended over a 20-year period and culminated in the publication of a series of geographic and geologic maps of the Arabian Peninsula. At the request of the Ministry, the agreement for the 1963-66 period has been extended in a series of 3-year increments; the draft for the Fifth Extension Agreement is now being reviewed and, if approved, will become effective when the present extension ends in June 1978. All costs are paid by the Ministry.

The objectives of the program are to help the Ministry develop staff, facilities, and procedures for geologic and resources investigations; map the geology and investigate the mineral potential of specified areas of Saudi Arabia in accordance with the Saudi development program; compile, evaluate, and publish geologic and mineral resource information for use in development programs; and test the applicability of selected geological, geochemical, and geophysical methods in identifying and assessing the mineral resources of Saudi Arabia.

In accordance with these objectives, the Survey has been helping the Ministry carry out systematic geological mapping and appraisal of mineral resources in the ancient rocks exposed in the western part of Saudi Arabia, supplemented by geophysical, geochemical, and remote sensing surveys, while concurrently establishing facilities and data systems in the Ministry, developing a publications capability, and training the staff of the Ministry in all aspects of the work. Under the present extension agreement a total of 102 Survey personnel have been assigned in Saudi Arabia for periods of a few weeks to several years, and 34 Ministry personnel have been trained in the U.S. About 220 maps and reports have been issued as a result of the program and these have been used extensively to plan exploration and development activity. Important resources of phosphate, base metals, and gold have been discovered in the course of the program. The Geological Survey has been able to develop, test, and refine many geological techniques and concepts using the opportunity provided by the program.

In addition to the Geological Survey program with the Saudi Ministry of Petroleum and Mineral Resources described above, the Survey also participates in the program of the joint US/Saudi Economic Commission, which is managed by the Department of the Treasury. Under this program, which is concerned mainly with agricultural, hydrologic, and land use problems, the Survey provided four full-time professionals to advise and assist the Saudi Water Resources Development Department

(WRDD) and the Ministry of Agriculture and Water. The USGS specialists supervised or reviewed some aspects of consulting services being provided to WPDD for test drilling and ground-water investigations and developed specifications for extensions of this work. Considerable progress was made in planning for the computerization of storage, retrieval and processing of hydrologic data acquired in previous investigations throughout the Kingdom and of the data continually accumulating. A compilation and evaluation of water-quality data was undertaken, with particular emphasis on radio-chemical data and its application to definition of certian aquifer characteristics. A review of surface-water data and data needs in relation to stream-gaging operations has accented the necessity for development of new operational network concepts and for development of alternative means of determining some stream-flow characteristics.

In the course of providing advice and assistance, the four-man team also works with Saudi counterparts to develop local capabilities to plan programs, conduct investigations, maintain monitoring-station networks, and interpret research results, and in general to develop infrastructural strength in anticipation of the time when the Saudis will be able to conduct their water resources programs without outside assistance.

In addition, several experts have been sent on short-term investigations of the prospects for increasing pumpage from the Wasis well field southeast of Khurais as a means of augmenting the Riyadh water supply. A previously developed digital computer ground-water simulation model of the area was rerun to determine the effect of incrementally increasing the pumpage. Additional observation wells were proposed to monitor pumping effects and to provide a basis for refining aquifer parameters.

Question. A Congressional Research Service analysis points out there are many direct and indirect benefits from services performed for foreign countries. It suggests this Country would profit from an expansion of your international efforts, particularly in energy, minerals, water and land problems. What is your view?

Answer. The Geological Survey has been continuously involved in international activities in support of other Federal agencies and programs for about 35 years. This involvement began with an investigation of sources of strategic minerals in South America during World War II, and has subsequently included such diverse activities as topographic, geologic, and geophysical mapping of Liberia; studies of earthquake effects and hazard risk in Guatemala; evaluation of salinity and waterlogging problems in Pakistan; topographic and geologic mapping in Antarctica; geologic, hydrologic, and land-use studies of the new Federal Capital Area in Nigeria; development and maintenance of the Worldwide Network of Standard Seismographs; compilation of sea bed resource information for the negotiations on the Law of the Sea; establishing a national remote sensing program in Thailand; and studies of resources along disputed international boundaries.

During these years the largest and most continuous activities have been technical assistance projects, carried out in more than 70 countries on behalf of, or authorized by, the Agency for International Development (AID) or its predecessor agencies under the Foreign Assistance Act, using funds provided by AID, by host governments, or by international organizations. We believe that many of these, such as the Survey's 15-year old project in Saudi Arabia and its former long-range projects in Indonesia and Brazil, have contributed significantly toward international understanding and foreign-policy

interests of the U.S., served as important channels of communication with host country agencies, and concurrently provided a mechanism for foreign research and experience by USGS staff.

Recently the Geological Survey has become involved also in studies of energy resources in selected countries in support of the Department of Energy under the Nuclear Non-Proliferation Act of 1978, and in earthquake prediction studies for several international organizations which are carried out with the approval of the Department of State, with the authorization of AID under the Foreign Assistance Act as appropriate, and with the cooperation of host country agencies.

We agree that an expansion of the Survey's international activities might provide greater support for other U.S. agencies and programs, and could also provide more information about world resources and environmental problems that are of concern to the U.S. We believe that increased Geological Survey activity might be especially helpful in the following:

1. Technical assistance in developing better programs, methods, and institutions for the identification, appraisal, and management of energy, mineral, water, and land resources so as to increase the effectiveness of aid to developing countries.

2. Assessment of world energy and mineral resources to provide information for defining U.S. policies related to other countries and regions, and to identify future sources of raw materials.

3. Studies of worldwide geological and hydrological phenomena that affect U.S. environmental programs and concerns.

4. Studies of geologic hazards and mechanisms for their mitigation to help understand the problems in the U.S.

5. Research on new techniques and methods for identifying and evaluating resources in arid and tropical environments to help U.S. assistance and investment in developing countries.

6. Increasing the support for the Resources Attache and Reporting Program in cooperation with the Department of State and Bureau of Mines to improve the flow of information from abroad and U.S. representation in other countries.

Question. Twelve of the new positions requested for Surveys, Investigations, and Research are from your reimbursable accounts. From what programs would these reimbursable positions be taken?

Answer. These positions have been reduced from several programs carried on for other agencies in which the work can be accomplished with less of an investment of staff, or in which the programs are decreasing such as the work being done for NASA, BLM, and the State of Kentucky.

BARROW GAS PIPELINE

Question. Is production in the South Barrow Field declining?

Answer. No; production figures for the past five years have shown a progressive increase.

Gas production from the South Barrow Gas Field

Fiscal Year	Million Cubic Feet
1973	694,239.1
1974	727,042.0
1975	775,537.8
1976	828,951.8
Transition Quarter (July - September 1976)	146,027.2
1977	877,602.0

Question. What do you project to be the recoverable gas reserves for the South Barrow Field?

Answer. The Reserve figures as of July 1, 1976, are as follows:

32 billion cu. ft. in place originally

25 billion cu. ft. ultimately recoverable

10 billion cu. ft. produced as of July 1, 1976

15 billion cu. ft. reserve recoverable as of July 1, 1976

Annual consumption is approximately 1 billion cu. ft. per year with an estimated 12% annual increase.

Question. How long should that last at projected rates of use?

Answer. The most recent estimates indicate that this gas reserve and the estimated delivery capacity will meet the projected requirements through 1986.

Question. Is the production system manually controlled?

Answer. Yes, the South Barrow Gas field production system is manually controlled.

Question. Does the production system require 24 hour attendance?

Answer. Yes, it requires 24 hour attendance by operating personnel.

Question. Is there any backup capability for the production system?

Answer. No, there is no backup capability for the production system.

Question. How reliable is the gas production system in the winter?

Answer. Although there are operational difficulties for the South Barrow facilities, as there are for all other installations due to

the severe winter conditions, the system has supplied gas to installations in the Barrow area since 1950 with only one minor interruption.

Question. Do you have to blow down those wells more often in the winter?

Answer. The frequency of "blow down" operations is contingent in some degree upon the rate of production, consequently the frequency is higher during the winter peak demand period.

Question. Explain the process of "blowing down" and why it has to be done more often in NPRA, especially in the winter?

Answer. Water vapor is produced along with gas from the South Barrow field. Because the production tubing runs up through the permafrost, this water vapor condenses and forms concentrations of ice in the well bore. Consequently, it is necessary periodically to inject alcohol into the well to melt the ice and then vent the well through a surface valve to blow the accumulated moisture, alcohol, and some gas out of the system.

Question. Do those wells need working over this year? Do you have enough funds budgeted to cover "working them over" during the upcoming year so that they will be safe next winter?

Answer. One well, #6, has recently developed tubing problems and should be worked over next fall before the peak demand season. The FY 1979 budget request does not include the $1.2 million necessary to work over the #6 well before next winter. This is the only workover contemplated until after the new East Barrow field is on line.

Question. What is involved in "working over" a well?

Answer. The well must be killed with weighted mud, reentered, and the damaged or broken casing or tubing cleaned out and replaced.

Question. How many producing wells do you have in the South Field?

Answer. There are seven producing wells in the South Barrow field.

Question. Is well number 6 still your most productive well?

Answer. Until the tubing problem occurred in well number 6, the two most productive wells in the field, wells 6 and 10, were approximately equal in production. Because of the problem, production has been cut back on number 6, and number 10 is now the most productive well.

Question. How does well number 17 look?

Answer. Production tests on well number 17 in the East Barrow field give indications of productive capability approximately equal to the best wells in the South Barrow field.

Question. Is that your latest producing well?

Answer. Yes. However, this well is not yet in production status as no production pipeline facilities have been constructed in the East Barrow field.

THE EAST FIELD

Question. How long will it take to bring the East Field into production?

Answer. Given sufficient lead time on receipt of appropriations, the East Barrow field can be brought on line in one year.

Question. When will it need to be in operation in order to avoid any interruption in service?

Answer. Under present reserve and consumption estimates, the East Field must be in operation by 1986 at the latest.

Question. Isn't any delay in the funding of development activities for the East Field jeopardizing the gas supply and therefore endangering the health and safety of the residents of the North Slope?

Answer. Given the extreme operating conditions and the harsh climate, the sooner increased deliverability and a redundant supply system are available the better will be the guarantee of an uninterrupted supply.

Question. Is there any money at all in the current budget for developing the East Field?

Answer. The current FY 1978 and the requested FY 1979 budget does not have funds for developing the East Field.

Quadrangle Mapping and Revision

Question: Under quadrangle mapping you have shifted 5 positions from new mapping to digital data production. Why is there no corresponding reduction in funds for personnel compensation under new quadrangle mapping?

Answer. Although not shown in the budget document, there is a corresponding reduction in funds specifically for personal compensation as it relates to new quadrangle mapping. These corresponding funds are being used for contracts to prepare new 7.5-minute maps.

Question. What effect will the five-position reduction have on new quadrangle mapping?

Answer. We expect a temporary reduction in our capacity for producing new quadrangle maps, as initially, we do not expect that contracting will be as efficient as the use of in-house personnel.

Question. About 86,000 square miles of new mapping are projected for both 1978 and 1979 fiscal years. At this rate, how long will it take you to complete unmapped areas under the 7.5-minute program?

Answer. At the stated rate, we estimate completion of once-over coverage of the conterminous U.S. and Hawaii by about 1987.

Question. How adequate is the $30.1 million level for new mapping to meet high national interest mapping needs?

Answer. The current level of funding will permit us to meet the most urgent mapping requirements for areas of high national interest. Where we might fall short in meeting high national interest mapping needs, in the time frame desired, is in the coastal zone and some public lands. These two locations involve considerable areas unmapped at the 7.5-minute series.

Question. You are revising 1,500 maps under your $7.5 million revision program, but apparently the revision backlog is increasing at a faster rate. What effect will this increasing backlog have?

How long will it be before you have to address this backlog with the greater levels?

Answer: The effect of the increasing backlog will result in not being able to fulfill all of the requests across the country for more current up-to-date maps. We would hope to address this backlog with greater levels in future years.

Question. How many orthophotoquad maps will be prepared under your level, $5 million program in fiscal 1979? How does that number relate to agency demands?

Answer. About 4,500 orthophotoquads will be prepared in FY 1979. This effort will essentially meet the identified demands of the Federal and State agencies.

Question. How will the proposed $500,000 reduction in your program of modernizing mapping techniques affect the 5-year program begun in the current fiscal year?

Answer. The reduction will delay the implementation of a new map inventory control system and the improvement of our distribution facilities by at least one year.

Question. After spending $500,000 for a new map inventory control and ordering system, why do you now need to review inventory procedures before deciding on any future improvements?

Answer. In FY 1978, an analysis will be made of the current distribution system and recommendations for design options will be prepared. Based on these analyses and recommendations, a decision will be made during FY 1979 as to future implementation. It is possible to begin implementation of the system in FY 1979, but a decision was made to defer it at least one year because of the need for program adjustment to address higher priority programs.

Small Scale and Special Mapping

Question. Is the $175,000 reduction in your small scale and special mapping program simply an offsetting cut, or is there a program reason for this reduction?

Answer. It is a matter of program priorities. Although the program activities which will be reduced are important, this reduction is necessary to begin programs which are considered to be more important at this time.

Question. What will be the impact of reducing special mapping, a program that warranted a $3 million increase in fiscal year 1978?

Answer. This reduction will reduce some small scale and special mapping activities such as the revision of the International Map of the World series. However, the increase of $3 million was specifically for the intermediate-scale mapping program which is of a higher priority and will not be impacted by the reduction.

Question. Why is revision of the International Map of the World being dropped? How much has been spent to date on this revision project, and how much would be needed to complete it?

Answer. Revision of the International Map of the World is being deferred in order to accommodate higher priority programs.

Preparation and revision of the IMW series at 1:1,000,000 scale is an international program to attain worldwide map coverage at a uniform scale, format, and content. USGS responsibility and objectives have been to complete the coverage of the U.S. and to revise existing maps as necessary. We have met the first of these objectives and are now in the revision mode. The program became quite active about 1962 and since that time, about $1.3 million has been spent. There is no completion date for the program because it was primarily a continuing revision effort.

National Cartographic Information Center

Question. You are budgeting a $3 million level for the National Cartographic Information Center. What is the extent of private use of this Center?

Answer. We estimate that about 80 percent of the 160,000 inquiries processed in FY 1977 were from private users. These inquiries are processed through a HQ facility, four GS Mapping Center NCIC Offices and ten State affiliated offices. The long-range plan is to establish an NCIC State affiliate office in each of the 50 States.

Question. Are user fees charged for the Center's information? If so, what is the revenue? If not, why not?

Answer. We do charge fees to recover the cost of reproducing cartographic materials and postage costs. This amounted to about $600,000 in FY 1977. We do not charge for providing information with respect to what materials are available which is the primary NCIC function. There is a great deal of existing cartographic data (photographs, maps and geodetic control data) available in various Federal and State agencies as well as several private companies. There is sufficient Federal need for these data to more than justify the service. Because this information is available, we feel it is proper and in accordance with Federal practice, to provide the same informational services to private users without charge.

Land Resource Surveys

Question: What spending and manpower were invested in the 20-year program of detailed geological mapping of Kentucky? What results of the program have justified the Federal investment?

Answer: Funds and manpower invested in the geologic mapping of Kentucky area follows:

Total Federal

1961-1978 Federal expenditures	$10,901,700
Total State-Federal	$20,927,500

Total Federal man years invested in 1961-1978: 661

Map Sales Statistics

The chief impetus behind this program was the stimulus the results would provide to the economic development of the state of Kentucky. Sales of geologic maps are included here to indicate the wide use of the maps produced by the study. Selected examples of economic benefits follow sales statistics. Sales of geologic maps produced under the cooperative program by the Kentucky Geological Survey and Kentucky

Department of Commerce are listed below. The U.S. Geological Survey does not keep records of sales of the geologic quadrangles of the state of Kentucky, thus these figures are less than actual total sales.

Copies of Geologic Maps Sold

Calendar Years	Ky. Geological Survey	Ky. Department of Commerce	Total Number of maps sold
1972	4,519	(1)	
1973	6,319	(1)	
1974	10,109	5,000	15,109
1975	14,062	5,207	19,269
1976	13,220	6,011 (2)	19,231
1977	14,688	(1)	20,000 (3)

(1) Information not available
(2) Does not includes sales for October, November, December
(3) Estimate

Orders for maps are greatest for the area of the Eastern Kentucky coal field, Western Kentucky coal field, and Western Kentucky fluorspar district. Specific quadrangles are in demand for reactional purposes (Monmoth Cave), student use (Morehead quadrangle), and land-use planning (landslide problems in the Lawrenceburg quadrangle).

Coal Production

Coal production in the Eastern Kentucky coal field has continued to increase, whereas production in adjacent states has remained constant or declined; up to date detailed geologic maps are not available for those adjacent areas. Geologic quadrangle maps are used to block out coal properties for leasing, and to plan drilling for evaluation.

Industry has indicated that exploration is deferred until geologic maps are available. Geologic mapping has led to exploration-development of steam and coking coal beds--previously not known. Geologic maps are directly used in evaluation of coal beds over wide areas. Industry has indicated that exploration-development plans were changed by availability of particular geologic maps.

In excess of one-half million tons of coal were recovered in the Western Kentucky coal field from areas unknown to coal companies prior to the existence of geologic maps published for the areas. The Kentucky Geological Survey indicated that recognition of several million tons of previously unrecognized high-grade coal were a direct result of the Federal-State program. An Industry source indicated that a coal field (gross value 1974 price, $1,127,000,000) was located by use of geologic maps of the cooperative program. (It should be noted that at the 1974 price of $22 per tons f.o.b. mines, the value of only 1,000,000 tons, or 556 acre-feet of coal, would equal the entire cost of the cooperative program). Geologic maps of the program were used in part to discover the limits of the East Gradywill oil and gas field, Somerset, Ky.; to define the trend and extent of an oil-bearing beds in south-central Kentucky, and directly responsible for discovery of a new oil field in southern Logan County, Kentucky.

Fluorspar

Fluorspar - mapping of the Salem quadrangle resulted in discovery of a fluorspar deposit valued in excess of $900,000.

Clay

Clay - development of kaolinite clay deposits suitable for ceramic use has apparently followed as a direct result of the publication of geologic quadrangle maps by the cooperative program.

Transportation Routes

Unsuitable road bed conditions and landslides (potential and actual) impact locations of transportation routes in the state. Savings, according to the Kentucky Department of Highways, by use of geological maps for routing of major highways, was, in one project, $21,500,000. Cost of relocation segments of the same highway from original route would, according to Kentucky Department of Highways, have been an additional 3 to 4 million dollars. Construction of State Highway 119 was redesigned and relocated on the basis of a study under the cooperative program. Destruction of one stretch of this highway had cost $4,000,000 prior to rerouting. An industry source estimates geologic maps save the State approximately 10 percent of the cost of the highway investigations yearly.

Urban Area Studies

Engineering-geologic studies in major urban areas (Paducah) are dependent on geologic maps from the program. These maps are also used by various federal agencies including: (1) the Soil Conservation Service in land-use planning (Lexington), (2) Corps of Engineers mining permit applications, (3) U.S. Forest Service management of Beaver Creek Wilderness Area, and (4) National Park Service in determining land and mines values in the Big Smith Fork Public Reservations.

Value of Mineral Deposit and Surveys

The U.S. Geological Survey and the Kentucky Geological Survey estimate the value of mineral deposits discovered and savings made through use of geologic maps produced by this program to be in excess of $1,150,000,000; this is nearly 51 times the cost of the total federal-state financial investment.

Question. Why was it necessary to prepare new geologic maps of Arkansas, Colorado, and Wyoming? Can't the states handle this work?

Answer. Acquisition of new data and advances in earth sciences make any geologic map obsolete in 30-50 years. Maps are interpretive and reflect "state of the art" in geology; a 50-year old map is useful but much less so than a map made recently with up-to-date concepts and new emphases built in. Geologic maps for Arkansas, Colorado and Wyoming were published in 1928, 1935, and 1955 respectively and are considerably out of date; they were compiled before very much of the states were mapped at larger scales (for example at 1:24,000). Even in Wyoming, 70 percent of the State has been remapped by the USGS and academic scientists at larger scales since 1955.

State Geological Surveys cannot pursue geologic mapping of large areas or compilation, because staffs are small and are commonly assigned to commodity work and responding to taxpayers. Commonly the compilation work is done co-operatively by scientists in both State and Federal surveys (Arkansas and Wyoming) with major input by the Federal Survey, maps are published by the USGS, which is skilled in processing large, complex maps for publication. In Colorado, there was no State Survey when the compilation of the new map was begun. Programs of the new Colorado State Survey are geared to address geologic hazards and mineral commodities, not to regional geologic mapping.

Question. Another accomplishment cited under geologic framework is the increased understanding of the geologic evolution of New England. What was the cost of the recent summary studies, and what are the benefits of this increased understanding?

Answer. Costs both for the summary studies and for preceeding 10 years of data collection studies for States of Connecticut, New Hampshire, and Massachusetts are noted below:

	Costs (in thousands of dollars)	
State	10 years Quad. Mapping	Summary Studies
Connecticut	$ 1,783.0	$ 228.2
New Hampshire	$ 322.5	$ 44.2
Massachusetts	$ 3,226.1	$ 1,370.6

Summary geologic studies in New England have produced bedrock and surficial geologic maps. The surficial maps outline and distinguish the various types of unconsolidated materials overlying hard bedrock including such materials as sand, gravel, peat, and till. One immediate result of the detailed surficial mapping in the three states noted is the location, delineation, and documentation of at least 43 billion cubic yards of sand and gravel, critical to construction and road-building in New England. The present market value of these sand and gravel resources in New England is approximately $150 billion. Bedrock mapping has greatly increased our knowledge and understanding of the potential for metallic and non-metallic minerals in these States as well as the potential for fossil fuels, particularly coal in southeastern Massachusetts.

A recently completed study by the U.S. Geological Survey of a 5,000 square mile area in central Connecticut and Massachusetts built upon the detailed USGS geologic maps of the area, and produced a suite of detailed and regional scale derivative maps designed to present geologic data in a form suitable for use by planners and engineers. These maps have been widely used, particularly in Connecticut, by both local and regional planners.

The USGS geologic map data outside this 5,000 square mile area can be and is being broken down and re-formatted for use by planners in a similar fashion.

Quadrangle mapping is the basis for ongoing detailed studies of history of fault movement in eastern Massachusetts. The safe siting of nuclear power reactors, etc., requires our understanding of causes of east Massachusetts earthquakes. This understanding will derive from such a geologic study.

Geomagnetism

Question. You have budgeted $1.1 million increase for geomagnetism, most of it to reopen two of four observatories that were closed. When were the observatories closed and why?

Answer. The geomagnetic observatories which were closed were the Byrd (1972) and South Pole Station (1973) in Antarctica; Dallas, Texas (1974); and Castle Rock, California (1976). The Antarctic stations were closed when the National Science Foundation (NSF) support for these observa-

tories was terminated. Fund support was sought from NSF in FY 1974 and FY 1977 through formal and informal means to reestablish the South Pole station, but the proposals were not approved. That is, the Antarctic stations were already closed when the geomagnetism program was transferred to the USGS from NOAA in 1973. The Dallas observatory was closed in 1974 because of budget constraints and the Castle Rock observatory was closed in 1976 because of budget and technical reasons.

A ten percent reduction in the budget for FY 1977 forced the decision to close another station. Castle Rock was chosen because it had been in operation the shortest period and because instability of the soil under the station was causing maintenance problems.

An extensive reassessment of the program and the nation's needs for magnetic data was conducted following the FY 1977 cut in budget. A major data user conference of scientists and managers from many government agencies, private industry, and the university research community was held. The reassessment indicated that many of the government agencies could not adequately carry out their legislated directives if the USGS program continued to erode, and that some agencies cannot now do an adequate job without some improvements in the USGS program. The university and private industry representatives expressed similar concerns about many research and industrial needs for more and better data to support non-legislated, but necessary and important programs. The alarm expressed by many users at reductions in the USGS program reinforced the Bureau decision to seek increased funding for FY 1979.

Question. Why do you recommend reopening these observatories in fiscal year 1979? Is this a temporary or a permanent program increase?

Answer. The decision to seek increased funding for reopening two observatories in FY 1978 was based on a reassessment of the program in early FY 1977 that showed that the geomagnetism program had decreased in scope to the point that it no longer met the needs of the user agencies. FY 1979 was the earliest year in which an increase could be requested. From a technical standpoint it is very unfortunate that the Dallas and Castle Rock observatories were not relocated with minimum interruption of operations.

FY 1979 increase would be permanent, subject to continuing review of program needs. The funding needed for new physical facilities and equipment will be much less in FY 1980 and subsequent years than in FY 1979. However, this decrease will be balanced by the need in FY 1980 and 1981 to improve the reliability of operation at old observatories and to help reestablish the South Pole Observatory and Antarctic repeat survey measurement program. Also, the USGS anticipates increased effort during the early 1980's in the MAGSAT program to prepare improved magnetic charts based on the new data being collected.

Question. Please justify the $676,000 increase for contractual services under geomagnetism.

Answer. A detailed breakdown of the $676 K increase for "contractual services" is as follows:

Physical facilities for the new observatories including buildings, fences, right-of-way, roads, and security precautions.....$140,000

Renovation of physical facilities at existing observatories... 45,000

Contract for automated electronic instrumentation at two new observatories and at the Fredericksburg Observatory..... 180,000

Contract for back-up recording equipment and auxiliary power supplies at four observatories to bring reliability up to an acceptable level	86,000
Contract for special ADP equipment for transcription and routine processing of observatory and MAGSAT data	100,000
Costs for use of large, high-speed computers	45,000
Contract for digitization of existing total field magnetic data for National Magnetic Anomaly Map	30,000
Contract for processing airborne vector magnetic data	35,000
Contract for maintenance services at new observatories	15,000
	$676,000

Question. Why do you need a $33,000 travel increase for geomagnetism? That's more than $5,000 for each of the personnel involved.

Answer. Approximately $18,000 of the increase needed for travel is for field surveys to select sites, meetings with other agencies for land use permits, and planning and monitoring construction of the piers, small buildings, and other physical facilities at the new sites. The remainder, $15,000, is needed to keep two field parties in almost full time travel status to complete all of the spot or repeat survey measurements which are needed for the magnetic charting program.

Hazards Assessment

Question. Please breakdown the funding allocation for earthquake hazards among the four program elements. Supply fiscal 1977 and 1978 numbers for comparison.

Answer.

($ in thousands)

Program Elements	FY 1977	FY 1978	FY 1979
Fundamental Studies-Global Seismology	$ 1,794	$ 2,739	$ 2,986
Prediction	5,266	15,989	15,994
Hazards Assessment	4,633	10,816	11,322
Induced Seismicity	0	1,210	1,210
Totals	$11,693	$30,754	$31,512

Question. Under your $1 million volcano hazards program, how much funding is for Hawaii, the Pacific Northwest, and elsewhere?

Answer. The active volcanoes of the U.S. are located in Hawaii, the Cascade Range (Washington, Oregon, and northern California), and the Aleutian-Alaska Range. In FY 1979, approximately $850,000 will support the continuing intensive monitoring and study of Hawaii's two presently active volcanoes, Mauna Loa and Kilauea. Funding for studies of the Cascade volcanoes in the Pacific Northwest will be increased to approximately $120,000 and remaining funds, $39,000, will initiate some preliminary studies of the Alaska Range volcanoes.

Environmental Aspects of Energy

Question. Under you $7.8 million environmental aspects of energy program why is the Survey studing mine waste banks? Aren't the Bureau of Mines, the Office of Surface Mining, DOE and others already into this?

Answer. The Survey is not studying refuse banks per se. Survey studies concern the geological and topographical data needed in siting and design of saprolite banks. The studies cover slope stability, foundation conditions, availability of borrow materials, and hydrology.

The need for these data goes back to 1966 after the Aberfan disaster in Wales. At that time the Survey was requested to aid the Bureau of Mines in evaluating the safety of waste banks. The Survey made the technical evaluations and the Bureau of Mines performed the administrative judgements to utilize the evaluations. Since then the Survey has developed the required technical data by field investigation of the geologic factors involved and has also played a leading role in furnishing technical support for investigations of failures of coal waste banks such as the Buffalo Creek Disaster (1972). Between 1967 and 1972 the Survey carried this work on alone as part of its program in the Appalachians since little interst was shown by other agencies. The present program is designed to fill the needs for technical data for coal waste disposition and strip mine development. The use of these studies extends well beyond mining. The data has been utilized by planning commissions (Appalachian Regional Commission and other), highway departments, (Penn., West Virginia, Ohio), engineers, and various consultants.

USGS, EPA, BuM, and OSM are involved in mine waste bank studies. Because of the impact of the Buffalo Creek Disaster (1972), interest in, and money for investigation of mine waste banks increased. As other agencies became active in this field, the Survey was able to concentrate its attention on the geologic and topographic factors involved in safe waste bank siting and development, and to eliminate most of the effort devoted to evaluation of specific waste banks. At present, most of the other agencies interested in the safety of coal waste banks and siting of strip mines are applying the technical data gathered by the Survey and expanding on the engineering geology principles established by the Survey concerning safe coal refuse banks.

Question. How are mine waste banks studies coordinated?

Answer. The Survey has coordinated its work directly with the Bureau of Mines, EPA, and OSM. This has been done through meetings and exchange of data. The three agencies have been furnished samples of the Survey's products, the schedule of production, and direct lines of communication for contacts for obtaining technical data. This coordination has also been extended to State agencies via State geological surveys and the Appalachian Regional Commission.

In addition to direct coordination, the Survey has cooperated with EPA, the Bureau of Mines, and OSM in adjusting its program to release basic technical data to contractors of the three agencies cited in accord with schedules set up for these contractors.

Question. Please supply a breakdown of how the $7.8 million for environmental aspects of energy is allocated among the three subelements listed on page 44 of the justification. Supply figures for fiscal 1977 through 1979.

Answer. Fiscal breakdown of Federal funds allocated for each of the three subelements in the Environmental Aspects of Energy element are as follows.

Environmental Aspects of Energy	Fiscal Year 77	78	79
	(dollars in thousands)		
Energy Lands	$3,443	$3,619	$3,623
Reactor Hazards	3,141	3,793	3,796
Arctic Environmental Studies	414	432	433
TOTAL.....	$6,998	$7,844	$7,852

Question. How is the energy lands subelement helping solve the environmental problems involved in coal and oil shale production?

Answer. The Energy Lands subelement is helping solve the environmental problems involved in coal and oil shale production by assisting in the planning for the safe, orderly, and efficient development of the Nation's energy resources with the minimum impact on the environment. This is accomplished by study of the environmental geologic aspects of resource development and production of solid fossil fuels (coal and oil shale), with the objective of evaluating and minimizing hazards and adverse impacts of extraction, processing, conversion, and transportation of energy resources, and urbanization related to energy resource development.

Studies emphasize regional environmental analysis, especially active geologic processes and various kinds of geologic mapping. Types of studies include bedrock and surficial geologic mapping, engineering geologic investigations, geochemistry of surface materials and plants, climate conditions as they influence the rehabilitation potential of mined lands, and feasibility of surface or underground mining, among others.

Climate Change

Question. You are proposing a new $1 million Climate Change Program. Why do you need to establish this program at this particular time?

Answer. The Geological Survey Climate Change Program was initiated in response to:

- Recommendations of the Domestic Council (1974) and the National Academy of Sciences that a Climate Program by the Federal government be initiated.

- Passage of House Bill HR 6669, and the Senate Bill (using the House number) HR 6669. Both Bills emphasize the need for additional knowledge as to causes of climate change and impacts of climate.

- OMB memorandum soliciting information as to ongoing climate--related work and plans for future climate studies. (OMB Memorandum of August 17, 1977).

The Survey Climate Change Program is an integral part of the U.S. Climate Program. The Survey Program will be the unique source of information constraining, from an historical point of view, modeling of past climate studies. Expertise held within the Survey presents an unparalleled opportunity to integrate and refine knowledge of the effects of climate and the records of climate in the geologic record, so as to assess the potential impacts of future climate changes on the Nation's land and water resources.

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Question. Will the Climate Change Program be a permanent one? Tell us where this program is headed exactly.

Answer. The Climate Change Program is presently scheduled to continue through fiscal year 1985. Funding is expected to peak in fiscal years 1981-1983, with FY 1984 and FY 1985 being funded at lower levels to allow completion of laboratory studies, assimilation of data, and completion of reports.

The program will utilize Geological Survey expertise primarily, but grants and contracts will also be awarded to universities, States, and other institutions for highly specialized programs. Contracts for deep drilling and extensive trenching, relatively expensive but necessary efforts, will mostly be awarded during fiscal years 1981-1982.

Geological Survey Circular 776-C indicates five major areas to be addressed in the Survey Climate Change Program. These are:

1. Impacts of climate variation on land and water resources.
2. Recurrence of climate variations that affect land and water resources.
3. Understanding climate change through study of factors that may cause climate change.
4. Research related to monitoring climate.
5. Data management.

The Survey Climate Change Program is designed to complement and support the U.S. Climate Program.

Question. Please explain the $55,000 listed for grants under the Climate Change Program.

Answer. Grants to be awarded in FY 1979 in connection with the Climate Change Program will be for research by palynologists and botanists on pollen, seeds, and plant fragments indicative of past climates. Some expertise needed for an optimum research program will have to be obtained by means of grants because members of the Geological Survey staff having those capabilities are now assigned to other programs that also have high priorities.

Question. This Climate Change Program is said to be part of a national program. Whose?

Answer. The Geological Survey Climate Change Program is an integral part of the multiagency U.S. Climate Program proposed by the Administration to begin in 1979. The program is based on a U.S. Climate Program published by the Interdepartmental Committee for Atmospheric Sciences, Committee on Atmosphere and Oceans, Federal Coordinating Council for Science, Engineering, and Technology.

Mineral Resource Surveys

Question. It would appear that most of $1 million increase requested for mineral surveys in the Conterminous States responds to requests from other agencies. Why aren't these studies reimbursable?

Answer. The program is the systematic appraisal of the mineral resource potential of selected 1:250,000-scale quadrangles in the Conterminuous States. Although the needs of other Federal agencies are an important factor in establishing priorities for quadrangles to be studied under the program, the program is not designed to respond to individual requests from other agencies for resource information on specific tracts of land. In addition to providing information for land utili-

zation decisions on Federal lands, the program also provides information on other lands which will be of interest to State and local Governments and to the private sector. The program addresses both land-use issues and long-range mineral supply problems in that it provides basic data for planning the development of mineral resources and for a comprehensive appraisal of the Nation's mineral endowment.

Question. How much have you spent to date on RARE II, and how much of that was reimbursible? What is the fiscal 1979 estimate on RARE II?

Answer. The Geological Survey's participation in RARE II process to date has consisted of making available to the Forest Service the status of our knowledge of the resources of particular areas through a series of meetings between Geological Survey regional resource specialists and Forest Service officials. These meetings were held at the three Geological Survey Centers in Menlo Park, California; Denver, Colorado; and Reston, Virginia; in November and December, 1977. Preparation for and participation in these meetings required a couple of hours to a few days of time by 65 Geological Survey regional resource experts. This was done on a non-reimbursable basis. As part of its responsibility as the Federal Government's principal resource agency, the Geological Survey provides consultation of this type to other Federal agencies on a non-reimbursable basis. If the information needs of the other agency require the gathering of additional data or elaborate syntheses of existing data, this is done on a reimbursable basis or with appropriated funds as is the case with wilderness mineral surveys on Forest Service lands.

The resource information needs for RARE II in FY 1979 cannot be reliably estimated at this time because the RARE II process will not be completed until December 1978. However, based upon the following assumptions, an estimation can be made. 1) According to the Forest Service, a maximum of 28 million acres will require further planning and study; 2) the planning and study is to be completed by 1983 according to Forest Service schedules; 3) probably no more than 20 million acres will require detailed onsite minerals investigations; and 4) the required mineral investigations now cost approximately $1.80 per acre. The total cost for 20,000,000 acres would amount to $36,000,000 over the 5-year span for the studies. Annual costs would average $7,200,000 and would require 96 additional positions. Since RARE II studies cannot start before the recommendations are made in December 1978, FY 1979 costs will be approximately one-half the annual rate, or $3,600,000 and 48 man years (96 full-time positions for one-half year)

Question. Please explain the $49,800 increase for grants under this program.

Answer. The increase for grants will permit the Geological Survey to utilize expertise on particular geographic regions that resides mainly in universities for special studies that will contribute to the objectives of the program

Question. Why do you need $98,000 in equipment and supplies for this program when you are contracting out $500,000 of the work?

Answer. A $98,000 expenditure for equipment and supplies for a program increase of $1,000,000 (even though $500,000 of this will be contracted out) is not unusual considering the type of work that is conducted under the CUSMAP program. Most of the $98,000 will be spent on equipping and supplying mobile field geochemical laboratories that are essential for the efficient conduct of the program.

Question. Your $246,000 reduction in the mineral commodities assessment program involves discontinuing the monitoring of bulk commodities and construction materials. If this program has such a low priority why wasn't it discontinued long ago?

Answer. This is not a low priority program, and it is a key element in meeting our objective of providing information on the resources of mineral raw materials that will supply the future needs of the U.S. But in weighing priorities during the development of our FY 1979 budget, we concluded that a modest curtailment of activities in this area would have a minimal impact and would enable us to expand activities in other, higher priority areas.

Question. Your resource processes and resource techniques programs involve more than $10.5 million and 288 positions. How cost effective are these programs? How do you measure their value?

Answer. These are scientific research programs whose products improve the resource search and evaluation activities both inside and outside of Government. As such, they form an essential part of the overall Mineral Resource Surveys Program of the Geological Survey. The Resource Processes and Resource Techniques program elements make significant contributions to the successful conduct of the other programs in the Mineral Resource Surveys subactivity through the development of practical, new scientific concepts and techniques. As with other scientific research programs, neither these contributions nor the benefits to other resource programs inside and outside of Government can be quantified. However, the following are some examples of benefits derived from the programs: (1) the development of rapid methods for the analyses of geochemical sampels in the field tailored to individual regions is reducing analytical and field sampling costs in the Conterminous States, Alaska, and Wilderness mineral appraisal programs; (2) refinements in concepts on the origin of volcanogenic and other stratabound ore deposits lead to increased precision in outlining areas with mineral resource potential in the recently completed 1:000,000 scale regional resource assessment of Alaska for decisions on the d-2 lands; (3) increased knowledge of the geologic and geochemical environment in which porphyry copper deposits occur is resulting in a more accurate assessment of the copper potential of the southwest and of the Conterminous States mineral assessment program quadrangles in that region; and (4) understanding of the nature of the ultramafic rocks in which chromite occurs formed the basis for an analyses of world chromite resources and future United States sources of supply. The value of the resource processes techniques is monitored by program managers and through frequent contacts with peer groups and users inside and outside of Government.

Question. Why shouldn't industry conduct this kind of research?

Answer. This research forms a critical part of the Geological Survey's Mineral Resource Surveys Program and the results of the research are used extensively in meeting the objectives of a variety of Survey mineral resource functions. Industry represents only one "consumer" for the products of the Resource Processes and Resource Techniques programs; others include other Geological Survey programs, other Federal agencies requiring resource information, State resource agencies, and the geoscience community in general. Furthermore, should industry conduct the research, many of the results would become proprietary and thus unavailable to other "consumers.

Question. One accomplishment listed under resource techniques is the identification by geobotanical studies of "several easily recognized

plant species that can be used as guides to copper mineralization." Hasn't this kind of information been available for a decade or more?

Answer. Geobotanical techniques have been utilized for the identification of potential resources for many years. Because these techniques have proved to be useful and the potential for further improvements in technology in this area are great, the Geological Survey has continued to conduct research into methods for further improvement of geobotanical techniques. The accomplishment mentioned refers to a new advancement in this field.

Question. With no new loans or any new activity involved, why can't the cost of the mineral discovery loan program be reduced? Do you really need to spend more than a quarter of a million dollars to administer existing contracts?

Answer. Because of the current workload in this program, we feel the expenditures are well justified. The Geological Survey is responsible for monitoring contracts on which work is completed but obligation continues for payment of royalty on production. These responsibilities include: (1) inspecting each project site annually to determine if any unreported activity has occurred since the inspector's previous visit; and (2) requesting each operator annually to report any changes in ownership, lease, or sublease, and to report on production from land subject to the contract. In the event changes in rights to land are reported, amendments to contracts are executed in order to protect the Government's interests. In cases where royalty has not been paid in accordance with contract provisions, collection claims may be made against the operator by the Office of the Solicitor, or, if the amount involved is large, by the Department of Justice. Royalty periods for individual contracts terminate on predetermined dates, and the number of contracts requiring monitoring will decrease each year until all will have been closed by the end of fiscal year 1989. As this workload for this program decreases in the future, the budget for this program element will be decreased accordingly.

Energy Resource Surveys

Question. For coal, how is funding allocated between assessment studies and exploration? How much funding is for the National Coal Resource Data System?

Answer. Of the $4,192,000 requested for coal in FY 1979, $3,476,000 is allocated to coal resource assessment studies and $716,000 to coal exploration related to Federal coal leasing. The sum allocated to coal resource assessment studies includes about $510,000 for support of the National Coal Resources Data System.

Question. Please tell us about the Federal-State cooperative program for assessing oil and gas potential on-shore. What is the cost of this program, and how will the states support it?

Answer. As conceived, the Federal-State cooperative program for assessing oil and gas potential onshore will gather and analyze basic geological and engineering data relative to oil and gas production and undiscovered oil and gas resources on a State-by-State basis, focused initially on the principal oil-producing States. Preliminary discussions already have been held with the State geologists in some of these States. The Geological Survey has developed a methodology for assessing the undiscovered oil and gas resources on a regional basis (one region may include several States), but it has not yet

determined how to modify this methodology to make State-by-State assessments. The principal difficulty is that regional assessments are based on natural geographic units (sedimentary basins), whereas State-by-State assessments involve artifical political boundaries. Because the Federal-State cooperative program is still in the planning stage, no estimate of its cost or specific information as to how the States will support it has been produced.

Question. How much funding is devoted to eastern shale gas and western tight gas sand studies? Why doesn't DOE pay for this?

Answer. None of the FY 1979 funds requested for Onshore Oil and Gas Resource Investigations will be used for direct support of the eastern shale gas and western tight gas sands studies. Under the terms of an MOU, DOE is completely funding these two studies.

Oil Shale

Question. No change is budgeted for the reduced oil shale resource survey program. Is the $724,000 level adequate?

Answer. In view of the current low level of oil shale leasing, the funds requested in FY 1979 for oil shale resource assessment are sufficient to maintain a core research program that provides resource information needed for detailed land evaluations and useful to industry in identifying the most favorable oil shale zones for in situ retorting. This level of funding, however, would not be adequate if oil shale leasing were to be resumed on a large scale.

Question. With no significant oil shale leasing activity, what is the need for your oil shale investigations program?

Answer. Although oil shale leasing activity currently is at a low ebb, the Geological Survey's Oil Shale Resource Investigations program continues to provide resource information needed by the Federal Government and useful to industry. Throughout the oil shale region in Colorado, Utah, and Wyoming there is a checkerboard pattern of publicly and privately owned lands. This requires that the Government make detailed land evaluations, including resource studies in response to industry requests for land trades, which will permit the assembly of reasonable land parcels for oil shale development while protecting Federal ownership rights. This information also helps industry determine which subsurface oil shale zones are best suited for in situ retorting. In addition, resource assessment studies involve long-term geologic field investigations and laboratory research; to be most effective, these studies need to be carried out substantially in advance of a Federal leasing program. The current Oil Shale Resource Investigations program is thus generating resource data that will be required whenever oil shale leasing is resumed.

Question. To what extent is the Survey working on environmental problems, which are the major impediment to oil shale leasing?

Answer. Within the Oil Shale Resource Investigations program some data are being collected that are pertinent to the solution of environmental problems associated with oil shale development. For example, measurements are being made of the percentage of trace elements in various oil shale zones. Because many of these elements can be harmful to the environment if allowed to escape in retort gases or leached from deposits of spent shale, data concerning their concentration in raw shale must be known before a large-scale retorting process is put on line. Other studies on oil shale mineralogy can indicate whether an oil shale processing system will generate mineral salts that can

contaminate surface or ground water. These types of investigations are an integral part of the Survey's oil shale program, which is designed to determine the quality as well as the quantity of the Nation's oil shale resources.

Uranium-Thorium

Question. How is the $6.6 million requested for uranium-thorium studies allocated among the four program elements? Give us the figures for fiscal 1977-79.

Answer. For FY 1979, the allocation of funds for Uranium-Thorium Resource Investigations will be about 58 percent to topical studies, 30 percent to areal studies, 7 percent to resource assessment and 5 percent to data system development. The approximate dollar figures for FY 1977-79 are shown below:

	FY 1977	FY 1978	FY 1979
Topical studies	$3,200,000	$3,200,000	$3,800,000
Areal studies	1,600,000	1,700,000	2,000,000
Resource assessment	436,000	440,000	500,000
Data systems	260,000	263,000	308,000
Total	5,496,000	5,603,000	6,608,000

Question. How much of the request is for the cooperative DOE national uranium resource evaluation program? Why isn't that reimbursable?

Answer. No part of the funds requested in FY 1979 for the Uranium-Thorium Resource Investigations program will be allocated to research activities directly related to the DOE NURE program. All such work performed by the Geological Survey is reimbursed by DOE. The Survey's uranium research program complements the NURE program, however, by providing the scientific knowledge that must be the basis for a reliable and credible national uranium resource assessment. The results of the topical and areal studies conducted by the Survey, for example, will help in the interpretation of raw data collected under the NURE program, and the Survey's research on resource assessment methodology also will be applicable to NURE. The two programs, although complementary and closely coordinated, nevertheless have different objectives and schedules and employ different research tools and techniques. NURE is a short-term (about 5 years) effort to determine the Nation's uranium resources, whereas the Survey's uranium resource investigations represent a long-term ongoing research effort to obtain a better scientific understanding of the nature of uranium deposits and their distribution in time and space.

Question. Please justify the $1 million increase requested for the uranium-thorium program. How was that amount calculated?

Answer. The requested increase of $1 million is to be allocated to work in three program areas: isotopic studies, remote sensing techniques, and studies of selected foreign uranium deposits. Additional research on radioactive isotopes may indicate whether uranium deposits can be found through geochemical analyses of ground waters. Uranium and its daughter products are known to be highly soluble, suggesting that ground water geochemistry may be a useful technique for determining the distribution of uranium ore deposits. The proposed new work in the field of remote sensing will be directed toward the identification of radioactive halos around major uranium deposits and toward the identification from satellite imagery of

geologic terranes favorable for uranium exploration. Studies of selected foreign uranium deposits should help determine whether similar geologic environments in the United States are likely to contain significant concentrations of uranium ores. All these studies are focused on the objectives of improving our knowledge of uranium habitats and thus defining favorable target areas for uranium exploration. The amount of the requested increase reflects anticipated costs for research instrument development contracts ($200 K), core drilling ($200 K), field investigation support ($250 K), employment of WAE personnel ($100 K), and grants ($250 K).

Question. Please explain the $250,000 requested for grants.

Answer. The funds requested for grants in the Uranium-Thorium Resource Investigations program will permit the Geological Survey to enlist the help of outside investigators, primarily from universities, in an expanded research effort on the nature of uranium deposits. New research techniques and sophisticated new tools, such as satellite imagery analysis, are needed to obtain a better understanding of the modes of occurrence of uranium and to identify geologic terranes favorable for uranium exploration. The cooperation in this work of selected university investigators who have imaginative ideas for new research thrusts should enable the Survey to increase the rate of progress toward a more comprehensive knowledge about uranium deposits.

Geothermal

Question. You have a $2 million increase budgeted for geothermal investigations. Is this increase at the request of DOE?

Answer. Yes, this increase is in direct support of the DOE program. The $2 million increase for geothermal investigations is needed to expand studies in geopressured zones and hot dry rocks areas and is part of the Federal geothermal energy research, development and demonstration program. It was coordinated with DOE's Division of Geothermal Energy who concurred with the request as being responsive to their needs as lead agency for Federal geothermal programs and as being appropriate for the USGS Geothermal Research Program to undertake.

Question. How active is the geothermal program in terms of leasing and production, and why is this program given priority for a funding increase?

Answer. There may be some Geothermal production from Federal lands by the end of 1978. Leasing continues with approximately 450 applications to conduct operations on Federal leases projected for FY 1979. There is no funding increase in the FY 1979 budget in the leasing and production areas.

Question. Please detail how funding is allocated among the five program elements for geothermal investigations.

Answer.

Subprogram elements	Requested FY79 Funding
1. Resource Characterization	$ 4,710
2. Exploration Technology	2,000
3. Regional Assessment & National Inventory	3,900
4. Subsurface Environmental Impact	700
5. Subsurface Permeability Control	600
	$11,910

Question. Please justify the requested $500,000 for grants and $1.5 million for contracts that make up the geothermal increase. How were these estimates calculated?

Answer. These estimates were calculated on the basis of the nature of the research to be undertaken. We anticipate spending approximately 25% of the increase on longer range, basic research studies dealing primarily with a generic definition of the characteristic geological and hydrological parameters of geopressured geothermal and hot dry rock resources, hence the $500,000 for grants. We anticipate spending the remaining funds on field surveys to gather geological, hydrological, geophysical, and geochemical data, on laboratory measurements and analyses for properties of rocks and fluids from samples collected in the field, and on development of computer programs to increase the efficiency of processing and analyzing large amounts of data during the preparation of regional assessments of geothermal resources, hence the $1,500,000 for contracts.

Offshore Geological Surveys

Question. No program change is proposed in the $9.6M offshore oil and gas surveys. In fact, this has been a level program since FY 1976. Why is this program level so stable in view of the ups and downs of the offshore leasing program?

Answer. The primary objective of the Offshore Oil and Gas Resources program is to obtain regional geologic data needed to make resource assessments of major sedimentary basins on the Outer Continental Shelf (OCS), as opposed to tract-by-tract analyses. These investigations are conducted well in advance of anticipated lease sales and may be focused on areas not included in the present 5-year lease schedule. The resource information produced by the program is used to help determine which OCS areas should be considered for lease (5 years in advance of sale), to prepare the Pre-Call for Nominations report (2 years in advance), and as background data for an Environmental Impact Statement concerning the proposed lease sale area (at least 1 year in advance). The level of program activity, therefore, is not substantially affected by changes in the timing of specific offshore lease sales.

Question. How much of your offshore oil and gas survey work is contracted to private industry? To research institutions? How much work is performed in-house?

Answer. Geophysical surveys required for resource assessment studies of the Atlantic Outer Continental Shelf have been conducted exclusively through contracts with private industry. The use of industry vessels has been effective in this area because it is close to good shore facilities and has a long working season. However, in remote areas offshore from Alaska, where the seasonal weather window is short or variable and sometimes not available at all, Geological Survey personnel gather the required geological and geophysical data, using a vessel on loan from the Navy. This procedure affords the greatest flexibility in operations and permits the collection of the maximum amount of data at a reasonable cost. The collection of Outer Continental Shelf resource assessment data has not been contracted to private research institutions because most of them are not equipped to undertake offshore exploration services. Their shipboard geophysical instruments are not as sophisticated as those of industry, and they must give first priority to meeting their own research needs.

Question. How long have you been conducting offshore geological and geophysical studies in frontier areas such as Alaska and have costs increased in recent years?

Answer. The Geological Survey has been conducting offshore geological and geophysical studies in frontier Outer Continental Shelf (OCS) areas adjacent to Alaska since FY 1976; consequently, the cost of these operations in recent years has not increased significantly.

National Water Data System

Question. For data collection and analysis, why are you reducing permanent positions by six but increasing temporary personnel by 51?

Answer. The decrease of six permanent positions is related to the following specific decrease and the increase in temporary positions is related to the following specific increases:

Decrease. Data research for Special Studies was reduced by $407,000 and six permanent positions. These positions were transferred to the high priority Regional Aquifer Systems Analysis program.

Increase. Basic Data Collection and Analysis was reduced by $332,000 and five temporary positions, which were transferred to the National Stream Quality Accounting Network (NASQAN). NASQAN was increased by $1,400,000 and 28 temporary positions (23 new positions and 5 transferred from Data Collection and Analysis). River Quality Assessments were increased by $1,000,000 and 28 temporary positions. Hence the increase of 51 temporary positions (23 for NASQAN; 28 for River Quality Assessments).

Question. You have requested a $1.4 million increase for NASQAN. How much in total will that provide?

Answer. The increase will bring the total funding for NASQAN in FY 1979 to $5,241,000; the FY 1978 program totalled $3,841,000.

Question. What is the ongoing cost of NASQAN?

Answer. The following table summarizes costs for NASQAN, including estimated costs for improving and operating the complete network.

	$ in thousands for Fiscal Years				
Activity	1977	1978	1979	1980	Beyond 1980
Operation of network with 345 stations	$2,720				
Operation of network with 445 stations		$3,841			
Operation of completed network (525 stations)			$5,241[a/]	$5,241	$5,241

a/ The increase for FY 1979 of $1,400,000 is for addition of the final 80 stations; to improve network operations including more careful review of field operations; speedup and automation of several steps in the review of data and the production of reports; and preparation of more detailed reports on national patterns in water quality and the factors that affect quality.

Question. Which three river assessments are getting the $1.0 million increase?

Answer. The locations of the three river quality assessments have not been chosen as yet; however, a basin selection committee has recently submitted its recommendations and we expect that a final decision will be made about June 1, 1978.

Question. Why do you need a $1.0 million increase for equipment (river-quality assessments)?

Answer. The $1.0 million increase is for the entire river-quality assessment program. The increase for equipment is only $75,000.

Question. How do you justify the reduction in basic data, and what will be the impact on that program?

Answer. We continually evaluate our gaging network to insure that National needs for essential baseline hydrologic data are met. The results of these network analyses not uncommonly reveal that it is possible to discontinue operation of specific stations because the length and quality of records already accumulated allows us to generate additional information as needed by statistical techniques. We also find in some instances that it is also possible to convert stations from continuous operation to partial-record status. By this means, manpower requirements and operational costs are reduced although the needed level of hydrologic information--particularly on extreme events--continues to be collected. Even though efforts are being reduced, there continues to be collection of high priority basic data.

As the needs of the Nation for water information becomes even more critical and new problems emerge, it will likely become necessary to request additional funds for data collection and analysis in those areas.

Question. How many gaging stations will be discontinued?

Answer. Twenty streamflow stations, two water-quality stations, and five sediment stations will be discontinued. In addition, maintenance will be postponed or reduced at station sites where it will cause the least overall damage and/or increased costs in future years.

Question. Why is the $500,000 increase needed for the National Water Data Exchange at this particular time? What is the priority?

Answer. Although it is operational, the National Water Data Exchange (NAWDEX) is still in a developmental stage requiring extensive systems and software design, development, and implementation and the indexing of large volumes of water data held by its member organizations which have not been previously indexed. An extensive inventory of available water data is necessary in order to provide a viable level of user services.

Priority will be given during FY 1979 to expanding the data indexing activity to all member organizations. Only minimal input of information from these organizations has been possible under prior funding levels. Available water data has currently been indexed for 318 organizations.

Information on data held by over 500 organizations is expected by the end of FY 1979. Priority will also be given to developing and implementing the data storage, retrieval, and indexing systems required for indexing nonpoint-source water data and water-related data such as water-use, meteorological, and land use that are highly relevent to water resources activities.

NAWDEX conducted 31,400 request/response transactions during its first nine months of operation in FY 1977. Over 30,500 transactions have been conducted during the first two quarters of FY 1978. The volume is expected to reach 100,000 by the end of FY 1979. High priority is placed by the Survey on developing the additional capabilities and information resources in NAWDEX to meet this growing demand for services. These services respond to the technical support of the expanding coordination of Federal water-data acquisition and cataloging as directed by OMB Circular A-67 and the growing planning, managing, research, and regulatory environmental compliances of water-data users. These users include Federal and State governmental organizations, county governments, municipalities, flood control districts, metropolitan water districts, departments of public works, universities, private organizations, private citizens, congressional groups, foreign organizations, river-basin commissions, libraries, and the news media. In addition, more usage from related groups such as water-resource councils, planning commissions, individual researchers, and other water management groups are anticipated during FY 1979.

Question. Explain the high $25,000 increase in travel. With four additional temporary positions involved, why is it needed?

Answer. The additional travel funds will be used basically to support present staff associated with the program. NAWDEX currently has 53 Local Assistance Centers located in 45 States and Puerto Rico. Additional offices nationwide will be visited during FY 1979 to appraise their potential as service centers. The volume of service activities in these centers is growing. There needs, therefore, to be a more stringent program of onsite monitoring of these centers to assure a nationwide consistency of services and to provide an increased level of technical and administrative support when needed to implement new centers and to improve existing center capabilities, efficiencies, and cost-effectiveness. In addition, NAWDEX currently has over 100 member organizations nationwide. This number is expected to approach 200 by the end of FY 1979. A more intensive program of personal communication is needed to assure a more viable implementation of NAWDEX at the local and regional levels and to provide managerial, administrative, and technical support to member organizations in integrating NAWDEX into their internal programs.

Question. What user fees, if any, are collected by NAWDEX?

Answer. NAWDEX collects fees which amount to the direct-cost reimbursement of computer services, duplicating services, costs accrued by NAWDEX from other sources in the course of providing services, and materials such as magnetic tapes provided as a medium of data exchange. Extensive personnel time, such as computer programming, required to respond to complex requests are also charged at the rate of the actual, direct hourly cost. Charges for personnel time are, however, minimal.

Fees Collected by NAWDEX

	FY 1977	FY 1978	FY 1979
To date	$13,281	$13,886	--
Estimate of future collections	--	15,000	$40,000
	$13,281	$28,886	$40,000

Question. Nearly half of your $3.0 million increase for regional aquifer studies is for contracting. Please detail that request and justify the dollar estimate.

Answer. The total increase requested is $3.0 million of which $1.4 million is intended for contract services. This increase will fund contracts for test drilling and associated aquifer testing. We expect to increase test drilling expenditures on the Northern Great Plains project by approximately $650,000, and on the Central Valley and High Plains projects by $150,000 each. Likewise, test drilling expenditures on each of the three new projects--the Southwest Alluvial Valley study, the Northern Midwest study, and the Southeast Limestone study--will run about $150,000 for each project.

Unless this test drilling is done, serious deficiencies will be present in hydraulic and chemical data upon which our analyses of these aquifers must be based. Drilling and testing costs vary widely, but in any area or environment a very modest program of test drilling would require an expenditure of at least $150,000. In the Northern Great Plains area the required drilling depths are very great and the costs are therefore higher.

Question. Explain why the expansion of aquifer studies requires 40 additional personnel and some $400,000 in supplies and equipment.

Answer. The expansion in the Regional Aquifer System Analyses program will include the addition of three new studies--the Northern Midwest study, the Southeast Limestone study, and the Southwest Alluvial Valley study. The 40 additional personnel of which 6 are permanent and 34 are other-than-permanent are required to staff these studies, or to replace personnel who are assigned to these studies. The Northern Midwest and Southeast Limestone studies will require at least 15 employees each, while the Southwest Alluvial basin study will require at least 10.

The $400,000 request for supplies and equipment will provide for certain specialized well logging, well testing, and geochemical equipment; and it will provide certain computer hardware required for data processing and analysis.

Question. Why are you reducing the core hydrologic research program by $2.3 million and 4 positions? Doesn't this go hand in hand with data programs?

Answer. A portion of the $2.3 million reduction is in Research for Areal Appraisals (decrease $143,000). For the past several years, these research funds have supported investigations of sediment problems caused by timbering practices near Redwood National Forest, California. In cooperation with the National Park Service, the ongoing study has obtained data that indicates timber cutting practices have had a significant effect on stream quality in the Redwood National Forest. The results to date have received considerable attention from environmentalists and the timbering industry as

attested by the testimony requested from the project chief by the Department of the Interior and Congressional Committees. Our work on this study will be completed in 1978.

The major segment of the reduction accompanies the planned termination of the Airborne Positioning System program (decrease $2,173,000). The decision not to request additional funding in FY 1979 was in part based upon uncertainty about the relation between the Geological Survey's system and the proposed NASA/FIA/USGS system.

Question. How much of your $3.3 million for supportive services is directed to training? Please detail the training funds, including travel.

Answer. The $3.3 million for supportive services includes $616,000 for training. Of this amount, $403,000 (65.3%) is for salaries and $152,000 (24.7%) is to cover travel expenses for Water Resources Division personnel to serve as instructors at the National Training Center, Denver, Colorado and to participate in the Graduate Training Program. An additional $61,000 (10.0%) is for tuition and other fees involved in the Graduate Training Program.

Question. What other training funds are there in the Geological Survey budget?

Answer. Other training funds in the Geological Survey budget amount to approximately $2.8 million. The training program of the Geological Survey is designed to improve the administrative, managerial, and technical skills of its employees, through in-house training programs and the use of Federal, State and private facilities, such as the Civil Service Commission's Executive Seminar Centers and various universities. Administrative operation costs of the National Training Center, at Denver, Colorado are also included. These funds are included in the program funds of each of the activities involved in the training.

Water Use

Question. You have an increase of $800,000 budgeted for water use assessment. What is the need for this program and for the increase? What priorities do the states give to it?

Answer. Competition for the Nation's water resources is increasing, with growing demands for water for domestic, industrial, agriculture, and other uses. Because of this stress, an urgent need for water-use data (how much water is used by whom; for what purposes; and the effect of that use on the water quality) exists to better define the availability of water in many sections of the country. The increase is needed to bring eight more states into the program and continue the gradual development and implementation so that a fully operational program will be accomplished by 1980. The states consider this program one of the most important water data programs being developed at this time.

The following resumé describes the Coop water-use program as submitted in the FY 1979 Budget Justification in December 1977, and as of May 1978. From the FY 1979 Budget Justification, the program for FY 1978 and FY 1979 is as follows:

	No. of states	($ in thousands)
FY 1978	15	$1,035 (FY 1979 base)
FY 1979	8 additional	800 requested increase
	23	1,835

State interest since preparation of the FY 1979 Budget Justification shows:

	No. of states	($ in thousands)
FY 1978	15	$1,523 available state
FY 1979	13 additional	1,212 offerings
	28	2,735

which is an increase in available state offerings for:

FY 1978	$488
FY 1979	412
	900 + 2

It is anticipated that state offerings for FY 1979 are likely to increase beyond the $412 as we enter FY 1979.

Question. Identify the 15 participating states and the 8 new states to be covered by the requested increase for water use assessment.

Answer. The participating and new states covered in the requested increase are as follows:

Participants	New States
Alaska	Arizona
California	Connecticut
Colorado	Georgia
Florida	Illinois
Kansas	Indiana
Michigan	Maryland
North Dakota	Massachusetts
Ohio	Nebraska
Pennsylvania	
Tennessee	
Texas	
Washington	
West Virginia	
Wisconsin	
Utah	

Question. What total funding will the states contribute to this water use assessment program?

Answer. In 1978, the states will contribute $1,000,000 to the program. In 1979, they will contribute $1,835,000. In addition to these funds, many states are contributing costs in the form of program development in anticipation of entering the program in future years.

Question. How were water use data collected, analyzed and disseminated before this program was started in the current fiscal year?

Answer. Most of the water use data were collected sporadically to meet an immediate need, and analyses and dissemination was dependent upon the nature of the problem. The only routine

publication and dissemination was the USGS five-year summary which began in 1950. The data for this publication was gleaned from various state, Federal, and private agencies whose methods of collecting and estimating were varied and whose estimates were not always comparable, often not of the same order of accuracy, and of different time frames.

Federal-State Cooperative Program

Question. Your $36.0 million request for the Federal-State Cooperative program is short of the total estimated state offerings in fiscal year 1979. What funding increase would be needed to match all estimated state offerings?

Answer. Our $36.0 million request for the Federal-State Cooperative program is $6.6 million short of the total estimated state offerings for fiscal year 1979. Funding would need to be increased by this amount to match all of the estimated state offerings

Question. What is behind the sharp increase in the state offerings from Alaska in fiscal 1979? It goes from $570,000 to $1.6 million.

Answer. Since the budget was prepared, in December 1977, the amount of the state offering from Alaska has decreased as of April, 1978. The current revised estimate of state offerings for matching in fiscal year 1979 is $1.0 million, a reduction of $600,000 from the earlier estimate, but an increase of $430,000 over fiscal year 1978.

The revised increase of $430,000 currently estimated for fiscal year 1979 is associated with expanded basic data collection, coal hydrology, water use, and outer continental shelf leasing programs. New Coop programs which contribute to the increase involve water resource investigations connected with the new capital site, coal hydrology, and new agricultural areas.

Critical National Water Problems

Question. What is the status of the Madison Aquifer study? How much has been spent to date and how much more will be needed to complete that study?

Answer. The Madison Aquifer study is now in the third year of a five year effort. Work to date includes completion of two test wells and contract for a third, assimilation of the available geologic and hydrologic data, geochemical sampling of all wells tapping the Madison and development of a hydrologic model. The third test well is located at a site which will allow testing of the geologic and hydrologic hypothesis developed to date.

Funding for the study is as follows:

			Fiscal Year ($ in millions)		
1976	Transition Quarter	1977	1989	1979	1980
$2.0	$0.5	$2.5	$2.5	$2.6	$1.5

Thus $7.5 million has been appropriated to date and an additional $4.1 million will be required to complete the study.

Question. Why do you need a $2.0 million level for water monitoring in coal lease areas? How does this program relate to actual coal production?

Answer. The collection of hydrologic data must continue over a period of years in order for the data to have meaning. This is particularly true in arid regions, where rainfall events are often intense, but erratically distributed over time.

This program is designed to collect background hydrologic information on Federal lands where coal development is anticipated in the future. The program is not designed to monitor existing mines, but to provide the hydrologic data required in order to open possible tracts to leasing by the Bureau of Land Management.

Question. Does the $1.3 reduction in oil shale hydrology reflect the continuing lack of progress in this area? Isn't this program essential to overcoming the water-related environmental problems that have stalled oil shale production? Why isn't a program increase considered?

Answer. Of the six tracts offered for lease by competitive bidding by the Department of Interior, no bids were obtained on the two tracts in Wyoming and bids were made and accepted on the two tracts in Colorado and the two in Utah. The two tracts in Utah are under injunction pending the resolution of legal conflicts with regard to pre-1920 oil shale placer mining claims and the State of Utah's in-lieu land selections. This effectively reduces the number of active lease sites to the two in Colorado. The reduction reflects a much reduced work effort in Utah and Wyoming and continuing work in Colorado.

Water related environmental problems are only one of many problems which must be solved before economically feasible and environmentally safe oil shale production can take place. The program is continuing at a level satisfactory to resolve the water related development problems in Colorado and to provide key monitoring in Utah and Wyoming. When development of the Utah and Wyoming tracts is again in an active phase an increase in funding will be required.

Question. Your $200,000 increase under nuclear hydrology for low-level waste is laid to well drilling costs.

a) Why do you need four additional temporary positions?
b) Are you drilling in-house?
c) How did you calculate the $4.9 million estimate which you propose to launch your high-level nuclear waste investigation?

Answer. a) The four additional temporary positions will be used to collect field data on geology and hydrology generated by the test drilling, conduct hydrologic tests of the test wells, and to collect time-related data from the new sampling and monitoring points over a period of time.

b) The USGS does not do in-house drilling for this program. The test wells will be drilled by private contractors. Each test well must have strict quality control on data collecting techniques. Each well will have to be of special design, and innovated and specially designed data collecting techniques must be employed. This is not a routine type of drilling and sampling.

c) The $4.9 million estimate was obtained by first identifying what the Survey considered to be the outstanding geohydrological problems of high-level waste disposal, which are designing and licensing of a repository by 1985. In a large part the program consists of problems identified by the Survey in their coordinated DOE-funded site-specific studies aimed at locating a suitable

geologic media for a repository. Investigations will include the characterization of host rocks; the interaction of nuclear waste with the host rock; and resulting future National events through predictive models dealing with transport and changes in hydrology properties. The proposed USGS studies are generic in nature rather than site specific.

Question. With a $2.3 million level of contracting, why do you also need 67 personnel for this program?

Answer. The 67 personnel are to apply the data received from the contracting effort. The total program has been divided into three major divisions or elements of work including: (1) characterization of host rock for a repository media including salt, shale, crystalline rocks, etc.; (2) characterization of waste and different host rocks; and (3) prediction of natural events affecting waste isolation including natural, climatic, hydrologic, and geologic events. The contracting effort will supply data that will be applied to the specific elements of work.

Question. Explain the following portions of your high-level request: a) $2.3 million contracting; b) $245,000 travel; c) $300,000 supplies and equipment.

Answer. a) Contracting. The $2.3 million contracting includes: university and national laboratory grants; test drilling and geophysical data acquisitions; design, construction, and purchase of one of a kind drilling tools, sample collectors, and borehole geophysical equipment.

b) Travel. In the initiating of a new major thrust it is necessary to draw upon expertise of those employees who were in FY 1978 engaged in different programs of lower priority and, therefore, will have to be relocated to locations where they will be working on this new work. It was estimated that reassignment of personnel will cost, on an average, $9,000 per move. Of the total of 26 full time personnel who will be reassigned to this program, at least 20 will have to be relocated. In addition, other than full time personnel will also have to be relocated at a similar cost.

c) Supplies and equipment. The figure of $300,000 for equipment and supplies is an estimated figure that was obtained by totaling the shelf cost of geophysical, electronic, and laboratory equipment needed for the types of investigations to be undertaken in this program.

Question. Your $1.2 million ground-water recharge program seems to duplicate other ground water and aquifer studies. How does it differ from these others?

Answer. A necessary requisite to the effective management of aquifer systems is the harvesting of cyclic surpluses of streamflow, especially flood waters, for artificial recharge of ground-water storage. Equally important is the conservation and management of aquifer-intake areas for maintenance of optimum conditions for natural recharge. The ground-water recharge program is directed specifically to the evaluation of the hydrologic and geochemical controls that govern both natural and artificial recharge of ground-water reservoirs, usually a specific area or small section of a large aquifer.

Regional Aquifer System Analyses are conducted to determine the availability and chemical quality of ground water stored in regional aquifer systems, the discharge-recharge characteristics of the principal aquifers, and the hydrogeologic and geochemical controls that govern the response of these aquifer systems to water resource development, utilization, and management. These principal aquifers are large, often involving parts of two or more states.

The principles and techniques developed and used by the ground water recharge program are applicable to and supplement numerous ground water programs, such as the Regional Aquifer System Analyses program and the development of monitoring networks for detection and tracking of incidental recharge from leakage of waste storage and waste disposal systems.

Question. Under estuarine studies, how much funding is allotted to the Potomac estuary?

Answer. Under estuarine studies, $75,000 is being allotted to the Potomac estuary study. In addition, the project is being substantially supported by expertise in the Core Hydrologic Research Program and by the development of instrumentation under Methodology and Technology Advancement.

Question. Aren't NOAA, the Smithsonian Institution, and others conducting estuary studies? Why do you also have to get into this area?

Answer. Yes. The Geological Survey is not only aware of other agencies conducting research studies in the Potomac estuary, but is also aware of what type of studies are being conducted. The Survey's Water Resources Division (WRD), has had meetings with all concerned and solicited comments concerning the WRD study. We are coordinating activities with these groups.

The objective is to improve our understanding of hydrology in the tidal reaches of rivers as a necessary step in improving the water data base in these areas. This is a part of the mission of the Geological Survey. In addition, the Survey carries out the Department of Interior responsibilities under OMB Circular A-67 for coordination of water-data activities and for designing and operating a National Water Data Network, which encompasses estuaries, as well as streams, lakes, reservoirs, and ground waters.

Outer Continental Shelf

Question. How much of your OCS regulatory request of $18.3 million is for environmental analyses?

Answer. For fiscal year 1979, it is projected that $275,000 will be spent on conducting 74 environmental analyses for OCS oil and gas operations. In addition to the above amount, which was included in the FY 1979 Budget, new regulations implemented in January 1978, 30 CFR 250.34 will require that a total of 700 environmental reports prepared by industry need to be reviewed and 700 environmental analyses need to be prepared and reviewed with the States. It is estimated that the cost of this effort will be an additional $1,825,000.

Question. How much of your OCS regulatory request of $18.3 million is for development plan approvals?

Answer. For fiscal year 1979, it was estimated that 220 development plans would be submitted for approval. It was further estimated that 1,926 man-hours would be spent approving these development plans. This equates to .9 man-year at a total cost of $28,200.

Question. You have a $374,000 increase for contracting under regulation of oil and gas. How much in total is for contracting? Also, give us the 1977 and 1978 totals. Exactly what work is contracted out under your regulatory program?

Answer. Total obligations for contracting in 1979 are estimated to be $4,136,000. Estimate obligations amount to $3,762,000 for 1978; with actual obligations for FY 1977 amounting to $3,272,000. The bulk of these obligations are related to helicopter services and project management systems design. The increase in 1979 reflects funding necessary for additional helicopters to monitor increased operations in the Atlantic Outer Continental Shelf.

Question. Please explain how the OCS leasing schedule justifies the requested $2.7 million increase for tract selection and evaluation. With nine sales scheduled in the 1978-1979 period, will the reduced $1.4 million reserve inventory funding level be enough to keep up with developing fields?

Answer. The increase of $2.7 million in the FY 1979 budget is due to increased geophysical needs to meet the OCS leasing schedule. High resolution data contracts, which comprise the bulk of geophysical spending, are issued soon after tract selection. During FY 1978, the total expected geophysical data purchases of $8.0 million includes high resolution data for two sales (58 and 54) as well as $2.0 million worth of geophysical data for the Federal/State Beaufort Sea sale. Tracts will be selected for Sale 53 at the end of FY 1978. Contracts to high resolution data for Sale 53 will be issued in early FY 1979. During FY 1979 tracts will be selected and contracts issued to collect high resolution data for five other sales (55, 62, 52, 60, and 56) to be held in FY 1980 and FY 1981. If funds are not obligated in FY 1979 the high resolution data necessary for determining environmental hazards will not be available to the Secretary for final tract selection for the sales to be held as scheduled. Total geophysical spending for FY 1979 is estimated to be $10.7 million.

The $1.4 million funding for the OCS oil and gas reserves inventory program will be sufficient for FY 1979. The tracts leased in nine sales scheduled in the 1978-1979 period are not expected to have an appreciable amount of reserves discovered until at least 1980. Some new discoveries may be made in the Mid Atlantic, North Atlantic or Cook Inlet during 1978 and 1979, but these should not necessitate an increase in the program in FY 1979.

Question. How useful has this inventory been to date? What's being done with the information?

Answer. The inventory has been extremely useful. Maps developed in the course of deriving reserve information are used in formulating various regulatory decisions, especially concerning development plans and unitization. The information developed has also been useful in assuring diligent development and verifying data submitted for Maximum Efficient Rate determination. Knowledge of remaining reserves is necessary in determining leasing policy. The public is informed in an annual report of the remaining reserves in the Federal OCS.

Question. With whom do you contract for reserve inventory data?

Answer. We do not contract for data. Well logs and production data are provided by lease operators in accordance with existing regulations. During 1978 we contracted for six field studies with the National Research Council. The actual technical interpretation was done by the consulting firm of Atwater, Carter, Miller and Heffner. Requests for proposals are now out for contracts to estimate reserves in an additional 64 fields. Oil and gas consulting firms are expected to be awarded the contracts later this year.

Question. Nearly $600,000 of your new $1 million Platform Verification Program is for contracts. What will you be contracting for and with whom?

Answer. The portion of the fiscal year 1979 budget for the Platform Verification Program identified as contractual work is associated with the Environmental Data and Information Management System, and with extension of the program to incorporate the verification of existing platforms.

Approximately $250,000 is identified as the operation and upkeep budget for the Environmental Data and Information Management System. This figure provides for many contracts with computer-oriented companies. In addition, $320,000 is identified for the development of a subprogram for the verification of existing platforms. A major part of this figure will provide for the development of standards for this subprogram. The remainder will incorporate other associated developmental costs. The standards will be developed under contract by a marine-oriented engineering company. The balance of the developmental work will be accomplished utilizing inhouse governmental and quasi-governmental resources, and contractual resources as appropriate.

Question. How many platforms do you expect to review in fiscal year 1979?

Answer. During fiscal year 1979, it is expected that seven major platforms and numerous minor platforms will come under the purview of the Platform Verification Section. This number includes five major platforms on the Gulf of Mexico OCS and two major platforms on the West Coast OCS.

Question. When will the Platform Verification Program become operational?

Answer. The Platform Verification Program may become operational as early as in the second quarter of FY 1979.

Federal and Indian Lands

Question. You have an increase of $1.6 million budgeted for regulation of oil and gas operations to meet increasing demands for drilling and environmental analyses. Where is this increased demand occurring?

Answer. Drilling activity on Federal and Indian lands increased substantially in early 1974 following the Oil Embargo. After declining slightly in 1975 and early 1976, applications to drill new wells has since increased to an all time high (more than 3,200 applications in 1977) and this upward trend is expected to continue in the foreseeable future. We now project that some 3,500 applications for a permit to drill will be received in 1979. While a significant amount of development drilling is occurring in California, the majority of new wells being proposed are situated in

Colorado, Montana, New Mexico, Utah, and Wyoming. An environmental analysis (EA's) is prepared on each proposed well. Thus, our additional workload in this respect (EA's) is related to the increased drilling activity. This increase is also related to an effort to increase the number of inspections conducted and the number of lease accounts audited.

Question. How did you estimate that you will need to conduct 150 additional environmental assessments in fiscal year 1979? Is that the estimated number of new lease operations?

Answer. An environmental analysis (assessment) is made in relation to each proposed new explanatory and development well. The increase in the number of environmental analyses to be prepared in fiscal year 1979 is, therefore, predicated on the basis of the anticipated increase in the number of new well applications, i.e., from 3,350 in FY 1978 to 3,500 in FY 1979, and not on the basis of the number of leases on which operations will occur for the first time. In addition to the environmental analyses (EA's) prepared for new well proposals, approximately 100 other EA's are prepared annually in relation to projects such as gas storage and the underground disposal of produced water.

Question. Please supply the costs of the four program elements listed on page 124 of the justification. Why is the number of inspections of industry operations increasing so rapidly?

Answer. The following costs are estimated in response to the questions:

- For the processing of 3,500 new well applications (1,225 exploratory and 2,275 development wells) and the onsite pre-drilling inspection in each instance - $2,275,000.

- For the preparation of 3,600 environmental analyses - $880,000.

- For the conducting of 52,227 inspections of industry operations - $4,400,000.

- For the performance of 13,500 audits of lease accounts - $1,100,000.

The increase represents a concerted effort to inspect all types of industry operations with greater frequency. However, the scheduled inspections in FY 1979 will result in only 46 percent of the desired number of inspections being performed. In our opinion, it is necessary to inspect (1) all new wells at least once during the course of drilling operations; (2) at least half of all workover operations; (3) all abandonment operations; (4) all producing wells and production facilities at least semi-annually; (5) all abandoned sites to assure proper reclamation; (6) all facilities for pollution prevention purposes on a semi-annual basis; and (7) all production measurement facilities semi-annually.

Question. Why were there no lease audits in fiscal year 1977?

Answer. When the budet was submitted, the actual figures for FY 1977 were not available, therefore, the entry was left blank. There were actually 204 such audits conducted during that fiscal year.

In years past, limited accounting personnel precluded us from performing these audits, except on an occasional basis. In August of 1975, we were authorized an additional 45 accounting positions. After preparing the job descriptions and advertising the jobs,

selections were made in March of 1976. These personnel, including a number of auditors, reported for duty from mid-FY 1976 through early FY 1977. Following a period of training, they began to complete their first audits in late FY 1977.

Energy Minerals

Question. You have listed sharp increases in workload outputs under the regulation of energy minerals leasing program. Please explain these increases, particularly the sharp jump in the number of inspections of active coal leases. Hasn't the coal leasing program been fairly static?

Answer. Even though only a few new coal leases have been issued in the past few years, there are over 570 Federal and Indian coal leases in effect on which exploration activities and production continue to increase. These increasing lease activities are caused by a demand for low sulfur coal and the requirement that coal leases be diligently developed in a specified time. The increased number of active and producing leases require that more inspections and meetings be held. A minimum of four inspections per year are required for active leases, but the number of inspections made are usually in excess of four due to the necessity of keeping well informed of the lessee's activities and to assure compliance with lease terms, regulations, and exploration and mining plans. As royalty accounting becomes more involved due to the ad valorem royalty system, increased auditing inspections are also required. In addition, cooperative agreements with various Western States require occasional joint inspections by the Geological Survey and the State.

Question. To what extent have the number of mining and exploration plans increased for energy mineral leases?

Answer. The number of explorations and mine plans approved for energy minerals was 156 in FY 1975, 203 in 1976, and 185 in 1977. The number of exploration and mining plans submitted for approval is likely to increase in the future because of the demand for more coal and uranium and the increased production necessary for electric power generation. It is also expected that the number of exploration and mining plans submitted will increase so that the leases can comply with diligent development and changes in environmental regulations.

Question. In the justification on page 125 says part of your $631,000 increase for energy minerals leasing regulation is to implement new departmental regulations. What new regulations will be implemented in fiscal 1979, and at what cost?

Answer. The increase of $631,000 is to implement the Department's diligent development and continuous operations regulations; evaluation, approval, and administration of Logical Mining Units (LMU) ($421,000); and to handle the normal increased workload on existing coal leases ($210,000). The Department's regulations require that the more than 530 existing coal leases must achieve diligent development by June 1, 1986, and must continuously operate after achieving diligence. Diligence is defined as a cummulative production of one-fortieth of the lease's or logical mining unit's recoverable reserves. Continuous operations is defined as an annual production of at least 1 percent of the recoverable reserves. This will require calculating the recoverable reserves on existing leases in order to determine when accumulated production meets the diligence

requirements, and to determine if annual coal production meets or exceeds the annual requirements. If the annual production is not met, the amount of advance royalty must be determined.

Question. If you have increased oil and gas leasing activity onshore and your workload increases, why have you not requested an increase for tract selection and evaluation?

Answer. The workload for onshore oil and gas tract selection and evaluation is expected to increase slightly. The budget justification shows an increase from 450 to 750 tracts evaluated between FY 1978 and FY 1979; however, based upon later information we now are estimating that we will again evaluate about 450 tracts, the same as FY 1978.

Geothermal

Question. No change has been budgeted for your $2.1 million geothermal leasing program although the justification anticipates ten lease sales in fiscal year 1979. Where are these lease sales to be held? Give us the details.

Answer. Lease sale schedules are subject to change. At present the sales definitely scheduled for FY 1979 are:

Vulcan, Idaho	10/12/78
Geysers, Knoxville, California	10/31/78
Double Hot Springs and Elks Hot Springs, Nevada	12/12/78
Belknap-Foley Hot Springs, Oregon	1/8/79
Mount Hood, Oregon	1/15/79
Carey Hot Springs and McCredie, Oregon	2/13/79
Indian Heaven, Washington	3/13/79

No sales have yet been scheduled for the second half of FY 1979. If the leasing pace set in the first half of FY 1979 continues, there may be as many as 14 sales. If not, there may be as few as seven for the year.

Question. For geothermal classification and evaluation you have listed fiscal year 1979 outputs. What are comparable figures for 1977 and 1978?

Answer. The workload statistics for this program are as follows:

Item	1977	1978	1979
Lease Sales	18	12	10
Evaluation Reports	93	70	280
Mineral Reports	300	300	320

Question. In view of the limited success of the geothermal leasing program, why can't your regulatory and classification programs be reduced?

Answer. Since the first geothermal lease sale in the January of 1974, the number of geothermal leases in effect has steadily increased. As of April 1, 1978, there were 1,125 outstanding leases embracing more than 2 million acres in 11 western States. Competitive lease sales are expected to continue at the rate of 10 per year necessitating the presale evaluation of some 100 tracts annually.

It will also be necessary that we continue to prepare other numerous evaluation and mineral classification reports.

Since the initiation of leasing, more than 200 temperature gradient, exploratory, and development wells have been drilled on Federal lands. There are now 31 wells which are considered to be capable of producing hot water and/or steam in paying quantities. Thus, the geothermal program has reached the point where it is now practical to construct the facilities necessary to utilize the discovered resources. The advent of these facilities is expected to lend impetus to leasing and to the drilling of additional exploratory and development wells. Therefore, if development of geothermal resources on Federal lands is not to be unduly delayed, our present regulatory and classification capacity must be sustained.

Non-Energy Minerals

Question. How did you estimate the workload increases that you have detailed for regulation of non-energy mineral leases? With very little new leasing activity, why do you need the program increase?

Answer. The increased workload estimates were not based on the expectation of new leasing, but on the increased workload on existing non-energy leases, because exploration activities and production from these leases are expected to increase. The public is becoming more concerned with the environment on Federal leases which has resulted in more detailed exploration and mine plans, more public participation, and coordination with other Federal and State agencies in approval of plans, and the need for more onsite inspections. Additional workload increases have resulted in compliance with NEPA, Antiquities Act, Rare and Endangered Species, and other Acts and regulations of other Federal agencies.

Question. The personnel compensation for the five man-years increase in non-energy mineral regulation works out to about $26,800 for each man-year. Why is this compensation figure so high?

Answer. The increased funding and positions are justified by an increased workload of mine plan approvals, inspections, and environmental analysis. Performance of these functions requires, for the most part, experienced professional engineers or environmental scientists which are in short supply and in high demand by the mining industry. In order to acquire the required services, the Geological Survey must attempt to compete in a job market which commands high salaries.

Question. Your $500,000 increase for classification and evaluation of non-energy minerals nearly triples that program. Please explain the need for this sharp increase.

Answer. The present program for classification and evaluation of non energy minerals is sufficient to produce about 300 mineral reports to other agencies on lands to be disposed of or under consideration for multiple use land management, to inspect tracts prior to issuing prospecting permits and to provide analysis of mineral values for competitive leasing. Due to the small size of the program all work is handled on an ad hoc basis. No systematic review of Federal non energy minerals exists. The Federal Land Management and Policy Act required the Department to inventory all values on all Federal lands. The program will be modified in FY 1979 to inventory the non energy values in a systematic way. The increase is necessary for developing

a series of Leasable Mineral Resource Occurrence and Leasable Mineral Development Potential maps. These will show thickness of ore and overburden, structural configuration of the ore zone, grade and amount of ore and location of all publicly available data. Minerals included will be sodium, phosphate, and potash. This type of mapping will constitute an inventory of unleased non energy minerals on Federal land for the BLM in accordance with the intent of the Federal Land Management and Policy Act.

Question. Why does your land classification and evaluation for water resource development program need to continue at the $520,000 level? Isn't this basically a service for other agencies? Why shouldn't they pay for it?

Answer. The waterpower program serves the basic function of determining what areas of Federal lands are suitable for waterpower or reservoir site development. This function requires a systematic study of major western drainage areas to develop and maintain the data necessary to respond to inquiries from other Federal agencies. The existing level of funding is considered adequate to maintain a very moderate program. It is not considered feasible to conduct studies after applications for various land use actions are filed. This would introduce an unwarranted delay into Federal land management. Arrangement for funding through the various agencies served would fragment the budget justification for a single function between all agencies dealing with Federal lands and may end up with both duplication in areas and gaps in others. This would destroy the ability to conduct a systematic survey of Federal waterpower and reservoir sites and be opposed to the principle of maintaining current inventories of Federal land values as enunciated in the Federal Land Policy and Management Act of 1976.

Environmental Impact Analysis

Question. Detail and explain the base changes involved in your funding shifts for environmental impact analysis. How will the 20 percent cost reduction affect continued EIS preparation and review activities?

Answer. Funding changes are as follows:

$1,500,000 increase: for preparation of an anticipated three OCS development EIS's

$400,000 increase: for preparation of an estimated eight oilspill trajectory analyses to support OCS lease sale and development EIS's

$500,000 decrease: an offsetting decrease in funding for all other EIS preparation and review activities, as described under "Base Program."

$1,400,000 net increase for the subactivity.

The "Base Program" EIS preparation and review activities are expected to continue in FY 1979 at the same levels of output and overall cost as in FY 1978. We plan to reduce the Federal share of this overall cost by securing voluntary cooperative inputs from State and local governments. On this basis the funds requested for these activities are reduced by $500,000 (or approximately 20 percent).

Question. Please supply a breakdown for fiscal 1977-79 for EIS costs for coal, onshore oil and gas, OCS oil and gas, uranium, geothermal, and non-energy minerals.

Answer.

EIS Costs in Millions

	FY 1977	FY 1978	FY 1979
Coal	$0.9	$1.2	$1.2
Onshore Oil & Gas	0.5	0.4	0.3
OCS Oil & Gas	0.0	0.0	1.9
Uranium	0.3	0.2	0.2
Geothermal	0.1	0.1	0.1
Non-energy	0.8	0.6	0.4
EIS Preparation Total	$2.6	$2.5	$4.1
EIS Review	.6	.6	.6
Grand Total	$3.2	$3.1	$4.7

Geography

Question. What is the specific need for the $750,000 increase in cooperative agreements under your geography program?

Answer. In the past, the Geological Survey has been able to earmark only limited funds for cooperative geography programs with Regional, State and local agencies. The Non-Federal requests for cooperation have focused on the preparation of land-use maps and digital data, and technology transfer related to the interpretation and use of the digital data. The Geological Survey has not had the resources to provide the digital data and technology transfer, nor the resources to develop the digital data base at the same rate as the development of land-use maps. Moreover, sufficient resources have not been available to develop the geographic information system needed to support cooperative efforts with State and local governments.

Question. How does the digital data increase under geography relate to a similar increase under quadrangle mapping?

Answer. The two increase items are for different purposes. The Geography Program's geographic information system is used for development, manipulation, and application of a polygonal land use and land cover data base, as well as its transfer to other Federal, Regional, State, and local users. The digital data increase under quadrangle mapping deals with the development and maintainance of a digital cartographic information system related to the base categories of information (topography, hydrography, etc.) appearing on topographic quadrangles. The digital data programs in geography and quadrangle mapping are closely coordinated. Technical advances in such areas as digitizing, data structure, and systems development are exchanged between programs.

Land Resource Data Applications

Question. You have reduced the land resource data applications program by $250,000. Why can't you also reduce personnel in the program?

Answer. Much of the work carried out under this program is conducted under contracts, which will be cut back in amounts or numbers because of the reduction. Existing program management and multi-disciplinary scientific staff are badly needed to carry out the work proposed and to provide adequate monitoring of planned contracts. Prior to the reduction, an inordinately large percentage of the in-house work has been conducted by other than full-time personnel. Although the percentage of other than full-time personnel will be reduced in FY 1979, it will remain high, and the existing allotment of full-time personnel is needed to maintain a balanced work force.

General Administration

Question. Please justify the $1.1 million increase in General Administrative Expenses (GAE).

Answer. Of the $1.1 million increase, $800,000 is earmarked for identified increases in travel, rents, communications, printing, supplies and ADP contractual services needed to meet basic USGS administrative support needs. The remaining $300,000 is to be used to fund such service improvements as: (1) the installation of automated financial management procedures for commercial payments and accounts receivables; (2) the development of specialized administrative services handbooks; and (3) the design, development and implementation of improved financial management operating and control systems for travel advances and transportation requests accountability.

Facilities

Question. What are the "major field centers" covered by your proposed Budget activity request? What is the funding involved?

Answer. The major field centers covered by the Special Building Services are:

Denver, Colorado
Menlo Park, California
Sioux Falls, South Dakota
Metairie, Louisiana
Anchorage, Alaska
Rolla, Missouri
Flagstaff, Arizona

The funding involved in the Facilities Budget that relates to the major field centers is for the purpose of providing for maintenance and alteration projects and for special purpose items not covered in the GSA SLUC for these centers. No major field center SLUC costs are proposed to be included in the funding of the budget activity. SLUC costs as applicable are included in the funds for each program located in the Centers.

Question. What is the cost of the overtime services mentioned in your justification? And how much of this overtime has been carried by your variable work hours at the Reston Center?

Answer. The total cost for overtime services provided by GSA at the National Center complex is $1,807,000. The National Center complex is mostly special purpose space that requires 24 hour utilities and maintenance. The only cost which relates directly to the variable work hours is $20,000 for the cost of providing an elevator mechanic for periods beyond the normal 40 hour, 5 day work week.

Question. Does your fiscal 1979 program include the construction of any new facilities? If so, please detail this construction and the cost attributed to it.

Answer. The facilities activity does not include the construction of any new facilities that are funded from this account. To the extent that any new facilities are constructed, they will either be handled through GSA, under their building funds, or in the case of special purpose facilities, be requested through the regular budget process.

Question. There has been some concern that construction of facilities has not been clearly identified in past Survey budgets. What steps are you taking to insure that this does not recur?

Answer. There has been no construction of facilities with funds from the facilities activity. However, to the extent that new facilities construction is needed, those requests are submitted to the Director through the Assistant Director for Administration. No approval will be given until the necessary clearance and authorizations have been received from the Department, GSA (for general purpose buildings), OMB, and the Congress. At present, with the exception of funds for maintenance and alterations, there are no funds in the Survey budget for construction of new facilities.

Personnel

Question. Why did you have a one-third lapse in fiscal year 1978 for 214 new positions? What was the impact of this substantial lapse?

Answer. Of the 214 new positions for fiscal year 1978, 194 were allocated to the Geological Survey by memorandum dated December 12, 1977. At that time two and one-half months of the fiscal year had already lapsed. In addition to this, our estimate included the time necessary to bring these new employees on board. To compensate for this lapse the Survey utilized contracting to the fullest extent possible to minimize adverse effect on program accomplishments.

Question. Why are you estimating an increase of $2.3 million for permanent positions in fiscal year 1979 when the average number actually declined?

Answer. New permanent positions in FY 1978 (+214) were lapsed at an average rate of $6,600 per position, or approximately 30% of the fiscal year. This lapse in FY 1978 accounts for $1.4 million of the increase shown in permanent position costs for FY 1979. The balance of the increase, $0.9 million, represents the estimate required for within-grade increases during the year and the salary costs for the 12 additional new positions in FY 1979.

Rent

Question. Please explain the large increase budgeted for SLUC, communications and utilities. They go up a total of $2.4 million, but your program and personnel increase does not appear to justify that kind of jump.

Answer. The increase in rents (SLUC) communications and utilities in FY 1979 is attributed to the following items:

1. The Bureau SLUC charges from GSA were increased by $1.8 million, from $20.9 million in FY 1978 to $22.7 million in FY 1979. This increase reflects some up-

grading and increases in laboratory space such as the replacement of the labs that burned in Denver. Most of the increase is the rental rate change from GSA whereby each year 1/3 of our holdings are reappraised and new rates assessed.

2. In addition, the utility charges for the National Center are estimated to increase from $1.5 million in FY 1978 to $1.8 million in FY 1979. The balance, approximately $.3 million is related to communication costs such as telephone, postage and related matters.

Procurement

Question. According to Interior's Office of Audit and Investigation report, "Review of the Procurement Activities of the Geological Survey" dated January 5, 1978, about 30 percent of the Survey's budget is used to purchase goods and services. The study indicated 28 percent of the contracts are awarded after receiving a bid from only one contractor. The study further states that in none of the noncompetitive procurement actions reviewed was the cause directly related to the availability of supply and the study classified the action as avoidable, or at least probably avoidable sole-source procurement actions.

What is being done to assure that maximum competition and resulting savings are being achieved?

Answer. The Geological Survey is developing a comprehensive advance procurement planning system which will be implemented in FY 1979. This system will provide for coordinated planning and scheduling of procurement activities for a coming fiscal year, thereby eliminating time constraints and allowing for development of adequate specifications for competitive procurements. Other actions being taken to reduce the number of non-competitive procurements are: (1) the establishment of a Contracts Liaison Committee comprised of program and procurement personnel to develop and coordinate long-range procurement planning; (2) plans for an annual top management meeting, to review procurement achievements, problems and plans are currently being formulated; (3) through internal management action additional personnel are being assigned to the procurement functions; and, (4) special emphasis is being given to training of technical program and project officers, in procurement planning, specification writing techniques, and the use of competitive procedures.

Question. Survey offices have small purchase authority ranging from $500 to $5,000. According to the January 5 study, the small purchase authority is being flagrantly abused. The Internal Audit Agency found: (a) purchase of specifically restricted items such as tools, calculators, office supplies, furniture and clothing, (b) placement of orders by unauthorized people, (c) purchase of items on mandatory GSA schedules, (d) purchase of items costing more than the limit or splitting of orders to avoid the limits, and (e) failure to seek competition or to justify reasons for not seeking competition.

What actions are being taken to better control these types of purchases?

Answer. The Geological Survey within its Administrative Division, is developing a program to systematically review and evaluate procurement activities in the administrative and program offices and take timely corrective action when required. Blanket Purchase Agreements (BPA's) are being reviewed to eliminate duplicates.

Policy and procedures are being developed to limit the number of offices and callers authorized to use BPA's and to increase inspections of BPA activities. The policy and procedures governing delegation of small purchase authority are being reviewed with the intent to improve control of the process. Revised requirements and procedures for certifying personnel who exercise small purchase authority are being established. Procedures are being implemented to ensure that orders placed by unathorized personnel are not paid. A study has been initiated to identify recurring items which should be procured through requirements-type contracts and to consider the establishment of an industrial products supply activity at the National Center.

As an initial step a number of directives have been issued by top management to focus more attention on the problems with small purchases activities.

Question. Federal Procurement Regulations state there must be a preaward audit to establish that proposed prices are reasonable prior to awarding a contract for goods or services. However, the January 5 report stated that about half of the negotiated contracts reviewed were awarded without benefit of adequate cost or price analysis and about half of the negotiated contracts over $100,000 reviewed were awarded without a valid basis for a waiver.

What steps are being taken to correct this problem?

Answer. Two price analysts have been added to the procurement staff at headquarters as well as one additional price analyst for the field procurement staff. All contracting officers will receive training in costs and price analysis during the next eighteen months. Implementation of an effective advance procurement planning program will significantly reduce the number of requisitions received late in the fiscal year, thereby increasing procurement lead time so that the required preaward audits can be performed. In addition, internal procedures governing cost and price analysis are being strengthened.

Question. Please explain why these conditions were permitted to occur and persist.

Answer. From FY 1970 to FY 1977 the procurement volume of the Geological Survey increased by 600 percent. Even though the procurement staff doubled in the same period, workload volume has continued to pose serious problems relative to available manpower. Concurrently we have been training our program technical personnel to make the adjustment from performing the work to accommodating the requirements of the Federal procurement process and monitoring contractor work effort on highly complex sophisticated procurements. Because of the dramatic increase in volume and complexity of Survey contracting activity, our procurement staff was not always afforded lead time to process the procurements.

The importance of the procurement function and its contribution to the economy, efficiency and effectiveness of the Geological Survey has long been recognized. These considerations were paramount in the decision to allocate additional manpower to procurement operations and to recruit and hire only highly qualified professionals in the field. With this activity having achieved a high degree of success, and with concentrated top management attention, the caliber of procurement operations in terms of compliance and effectiveness will continue to improve.

Barrow Gas Field

Question. Is there any back-up capability for that production system? And yet you are proposing a reduction in the development and exploration for FY 1979 for the Barrow area gas operation of $13,028,000. Why?

Answer. There is no back-up system per se, however there are currently 7 producing wells and we believe the system is capable of producing without risk of disruptions due to field depletion for at least five more years. There has already been substantial exploration of the East Barrow field. Currently there are 3 producible wells, and it will take approximately one year to complete field development and pipelines necessary to hook into the current transmission system. We thus believe there is adequate time to address comprehensively the problems of the distribution system in Barrow, as well as the need for additional capacity.

Question. Is it true that the Administration has declined to request funds for the development of the East Field in order to force the citizens of Barrow to assume the financial obligation to repair the gas transmission system owned by the Federal government?

Answer. The FY 1979 budget decision is an effort to assure that the entire production, transmission and distribution system is safe; and to attempt to attain an equitable sharing of the costs between the Federal Government and the users of the gas.

Question. Who, with the Administration, has made the decision to delay development of the East Field? Why?

Answer. The Department was informed of the budget decision by the Office of Management and Budget.

Question. How do you reconcile any decision to delay development, in view of the requirement in the Naval Petroleum Reserves Act that the Feds supply gas to Barrow and take all action necessary to continue such service?

Answer. As previously indicated, we do not feel the FY 1979 budget decision is inconsistent with our obligation to supply gas to Barrow.

Question. What is going to happen if that system up there fails? What about your liability?

Answer. Given current rates of production and the number of producing wells, we do not feel there is a near term risk of failure.

Phase Out of Exploration

Question. Whose decision was it to phase out exploration in 1980 if no significant discoveries occur? Is that decision supported by both Interior and DOE?

Answer. The decision was made by the President.

ASSESSMENT OF POTENTIAL OF ALASKA

Senator STEVENS. Let me just add, I really believe we've got to have an advocate in the Department for the proper assessment of the potential of Alaska. I just finished an hour interview on national television that accuses us of wanting to develop every inch of Alaska. That's not true. We want to have an inventory of what is the resource potential so that we can make a conscious national decision as to what is the highest priority of utilization of our land.

I don't see total development, but I don't see total preservation, either. And I sense that with the organization of the Department of Energy and the organization of the Department of the Interior, we really don't have as much of a corps of advocates as we've had in the past.

So I hope you're it. I hope you're going to be my advocate down there for total analysis of the resource potential of Alaska. You get us the facts, and I think that we can make a national decision as to whether it's in the national interest to develop that potential. But if we don't get the facts, we could make decisions that would foreclose the development of Alaska.

I'd like to develop a little love affair with you, if you don't mind. Is that all right? [Laughter.]

Ms. DAVENPORT. I'd have to talk to Mr. Daly about that. [Laughter.]

Senator STEVENS. We really need a friend down there now, and I think Alaskans are pleading with you to keep the USGS in the forefront of factual analysis of our resource potential.

Ms. DAVENPORT. I fully understand your concern and your sentiments, Senator. I would assure you, for example, that during the budgetary process and the discussions of the exploration of Pet-4, there was a very strong advocacy for doing that program and doing it correctly.

SUBCOMMITTEE RECESS

Senator STEVENS. Good. Well, I thank you very much. Thank you all very much. We will recess until 10 a.m., tomorrow, when we will hear the budget request for the Office of Surface Mining.

[Whereupon, at 12:05 p.m., Wednesday, April 26, the subcommittee was recessed, to reconvene at 10 a.m., Thursday, April 27.]

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DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1979

THURSDAY, APRIL 27, 1978

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:05 a.m., in room 1114, Everett McKinley Dirksen Office Building, Hon. Patrick J. Leahy presiding.
Present: Senators Leahy, Huddleston, and Young.

DEPARTMENT OF THE INTERIOR

OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT

STATEMENT OF WALTER N. HEINE, DIRECTOR

ACCOMPANIED BY:

PAUL R. REEVES, ASSISTANT DIRECTOR, ABANDONED MINE LANDS
TONEY HEAD, JR., ASSISTANT DIRECTOR, MANAGEMENT AND BUDGET
CARSON W. CULP, JR., CHIEF, DIVISION OF BUDGET AND FINANCIAL MANAGEMENT
RICHARD M. HALL, ASSISTANT DIRECTOR, INSPECTION AND ENFORCEMENT
CARL CLOSE, ACTING ASSISTANT DIRECTOR, STATE AND FEDERAL PROGRAMS
WILLIAM M. EICHBAUM, ASSOCIATE SOLICITOR, DIVISION OF SURFACE MINING, OFFICE OF THE SOLICITOR

DEPARTMENT OF AGRICULTURE

VICTOR H. BARRY, JR., DEPUTY ADMINISTRATOR FOR PROGRAMS
PAUL R. NEWCOMBE, DIRECTOR, BUDGET AND FINANCE DIVISION

OPENING REMARKS

Senator LEAHY. Good morning. The subcommittee will come to order.

I'm Senator Leahy and I'll be starting here, filling in for Senator Byrd, who is to be on the floor this morning. I believe Senator Huddleston and possibly Senator Hatfield will be joining us subse-

quently. I'm going to have to leave for another Appropriations Committee hearing. I understand this one was somewhat truncated because of Senator Huddleston's commitments.

But we're here to resume the budget hearings for the Office of Surface Mining Reclamation and Enforcement. Our first hearing was on March 7.

For the record, the fiscal 1979 budget estimates of OSM total $108.6 million, up about $41 million over the fiscal 1978 appropriations to date.

In our previous hearing, we briefly covered some aspects of the startup program for the current fiscal year, including some effects of the unexpected delay in the agency's initial appropriation. We also discussed funding for the Mineral Institutes and touched on the small operator assistance program. We will pick up where we left off and go back to the progress we're making in the current year toward implementing the Surface Mining Act.

MAY 3 COMPLIANCE DEADLINE

To start off, let's run down a list of the implementation deadlines to see where we stand and where we're going. The next deadline we face is May 3, when interim performance standards are applicable to all existing mines, except for small mine exemptions. And I'd like to know whether you gentlemen believe that that deadline is practical and whether it can be adhered to.

Who wants to go? Director Heine? Or whoever?

Mr. HEINE. Senator Leahy, I am Walter Heine. I'll attempt to respond to that.

On the May 3 date, as you indicated, all coal mining operations will have to be in compliance with the interim performance standards. Our regulations provide some flexibility in that. Those operators who find it impossible to meet that deadline—and the situation has come up in some cases because of the strike and because of the severe weather we've had this winter—have an opportunity to demonstrate to the State regulatory authority that it is impossible to comply by that date. They have until May 3 to supply the State with a schedule of how they will comply.

This schedule, then, must include the beginning of reconstruction of nonconforming structures by June, and achieving compliance of those structures by November. We think this is a very reasonable approach because it allows the company the opportunity to do this work during the summer construction season.

Senator LEAHY. How many companies are you talking about? Is that a fairly significant percentage of the companies that are going to be involved, asking for such extensions?

The reason I ask, going back to my original question, whether these interim performance standards are practical, whether we should put a different deadline instead of May 3——

Mr. HEINE. I don't know exactly how many companies have requested the extension of time. These proposals are made to the States.

Senator LEAHY. Do the States have final say in that?

Mr. HEINE. That's correct. The States have the say on whether or not a company should be granted additional time. We are monitoring the extensions, but, in effect, the States have the final say.

NONCONFORMING STRUCTURE AND SMALL OPERATOR EXEMPTION DEADLINES

Senator LEAHY. Let me go down through a few deadlines that we've set up in the act and just tell me how practical and attainable they are.

On November 3, 1977, we started regulations covering interim regulatory procedures published as final rulemaking on December 13, 1977. We had the date of February 3, 1978, on which newly permitted mines become subject to interim performance standards.

Was that a practical and attainable date? I think that those have already been done.

Let me just take some others. We talked about May 3. Let's go to the June 4, 1978, date, when construction must begin to bring nonconforming sedimentation ponds and related structures into compliance based on February's regs.

Is that a practical, attainable date?

Mr. HEINE. I think it is. The beginning of construction in June is practical—it's the construction season. By then, the operator's plan should have been submitted to the State, and the State determined that the plan is satisfactory. When you're talking about expanding a basin, for example, the technology is not that involved. It does take a detailed and comprehensive review. But I think the States can respond to the applicants and make judgments on those plans. Construction, I think, can get underway by June.

Senator LEAHY. What about November 4, 1978, as the date for reconstruction that must be completed to bring nonconforming sedimentation ponds and other structures into compliance.

November 4—again, a deadline. As I said before, is that a realistic or practical and attainable date?

Mr. HEINE. I think it is in most cases, in an overwhelming number of cases, because this allows a 5-month construction period during the best construction season.

I might add, Senator, that we modified our requirements on upgrading sedimentation basins to add quite a bit of flexibility to the design and tailoring it for each individual site. So I certainly believe that the vast majority will be able to comply before the November date.

Senator LEAHY. Then on January 1, 1979, the small operator exemptions expire. Is that a realistic date for the expiration? Does that give them enough time?

Mr. HEINE. That, of course, is a date in the act, and for some time we have been evaluating applications from small operators who are applying for this exemption. I have established a schedule for responding to those applications and for informing the operators whether they do, in fact, have an exemption or not.

PERMANENT REGULATORY PROGRAM DEADLINES

Senator LEAHY. Now February 3, 1979, State regulatory programs are to be submitted to the Secretary. That's with the usual

6-month extension allowed if the legislature has to act on the requests, when the Secretary has the ability to allow 6 months for that.

But aside from that question, again, is February 3, next year, a practical and attainable date for State regulatory programs to be submitted?

Mr. HEINE. Now that we are funded, Senator, we are increasing our contacts with the States and working with them in the preparation of their program plans.

We do have a problem in preparing our permanent regulations. That's another date. By August 3 of this year, we are to publish our permanent regulations. These permanent regulations will include the guidance to the States in preparing their plans.

We do feel that provided we get our permanent regulations out relatively close to the August date, even within a couple of months of that date, that the States should be able to get their plans in by early to mid-1979. Their legislative sessions will convene in January 1979, and where they must modify the State laws, they will have the opportunity to do it in that session. And they will have some leadtime to prepare the legislation.

Senator LEAHY. You have the August 3 date and the February 3, 1980, date. You have to have the programs within 6 months of the date submitted.

Are those attainable? I'm not quite sure that I understood what you were saying earlier. If you make the August 3 date, is that in itself a practical and attainable date, or am I misunderstanding what you're saying?

Mr. HEINE. The August 3 date for us to promulgate our regulations will probably not be achieved.

Senator LEAHY. How much slippage do you anticipate?

Mr. HEINE. We now anticipate 11 or 12 weeks' slippage on that.

Senator HUDDLESTON. That's about 3 months?

Mr. HEINE. That's correct, Senator.

Senator LEAHY. So, the February 3, 1980, date, do you also anticipate the same amount of slippage?

Mr. HEINE. Our associate solicitor, Mr. Eichbaum, would like to respond to that. It has some legal ramifications which he probably should explain.

Mr. EICHBAUM. The question is whether or not we could give more time to the States to meet that February 3 date to accommodate whatever slippage we might make initially in the permanent regulations. I believe it's whether we could grant, from a legal perspective, the additional amount of time to the States.

The indications seem to be that the courts would support that kind of a reasonable exercise of agency discretion. We would not do that from a practical perspective without close consultation with the staff up here to be sure it was a mutually agreeable slippage, since that date is a congressionally mandated one. But it would apparently be lawful from the perspective of the State action, to give them additional time if we took more time.

Senator LEAHY. That's one reason it raises the question, of course, that if there is going to be slippage, we'd want to know about it as early as possible, and as you quite rightly state, try to reach a mutually agreeable date. It's much easier for us if there'd

be no such slippage, or if we know of such slippage or potential slippage well in advance.

I've been joined by Senator Huddleston and Senator Young, and I'm going to yield to Senator Huddleston, my senior colleague on this subcommittee, who will be chairing the subcommittee, because I'm required to be at another one.

[Discussion off the record.]

POSSIBLE CHANGES IN DEADLINES

Senator HUDDLESTON [presiding]. Just to pursue for a moment these deadlines, I must say that there's some apprehension and confusion out in the field about this matter, since we haven't met any of the deadlines yet. What you're saying this morning is we're not likely to meet any of them that are now set.

What are our people supposed to think as far as developing a uniform and consistent enforcement program during this interim period till we finally do get all the requirements of the bill met from the Federal level? Is it your contention now that it's still necessary to at least officially maintain these deadlines? Do we assume—or pretend, I guess, is a better word—pretend that there's some legitimacy to them and that they're going to be met? What are our people supposed to understand that are trying to live with this bill every day now?

Mr. HEINE. I think there is a great advantage to having specific deadline dates, as are included in the act. It does keep all of our feet to the fire, and without those deadline dates, I really don't believe we'd be anywhere near as far down the road as we are presently.

The fact is that we will slide not more than a few months on each of those dates, which were very hard to meet because of lack of funding and a lot of other reasons, and the whole program may be 3 months or so off schedule. Philosophically, I guess, 3 months isn't that bad in this world, considering all the deadlines we have.

I question seriously what alternatives we have. We certainly have the alternative of legislatively pushing back all the dates. That would involve a great deal of controversy. But more importantly the industry is moving on, it's moving ahead, it is not lying back and waiting to see if deadline dates are going to be pushed forward.

The information I have is that most of the industry is diligently trying to meet those deadlines, and I think with a lot of reasonable enforcement that the whole program will continue to move forward satisfactorily.

STATUS OF FIELD STAFFING

Senator HUDDLESTON. What about the development of your field staff? Is it progressing along on schedule?

Mr. HEINE. The first 28 inspectors whom we hired and trained took the field on Monday. They're all good, experienced men, and they will be going out with State inspectors, getting to know the territory. This also provides a training mechanism in the Federal standards for the State inspectors and will help to get the word to the operators.

We anticipate that, by the end of June, we will have another group of inspectors ready to go out. So, certainly, we're behind schedule because of the lateness of the appropriation. But we are moving ahead rapidly now, and, again, the important thing is, whether the inspectors are there or not, the industry is moving ahead trying to comply. That means that by the end of this summer a lot of things that were done in the field in the past that were environmentally bad will cease being done. I think that's going to show up by the end of the summer.

Senator HUDDLESTON. How many total inspectors do you anticipate you're going to need? You've got 28 already operating?

Mr. HEINE. This is Richard Hall, who is our assistant director for enforcement and inspection.

Mr. HALL. Senator Huddleston, we expect 150 inspectors by the end of this fiscal year and approximately—I don't have the figures in front of me—but 70 more by the end of next fiscal year. That is the staffing. And I believe we will make that by the end of the fiscal year. I believe we'll have our 150 in the field.

Senator HUDDLESTON. Is your pay schedule adequate, or is this causing difficulty?

Mr. HALL. Senator, I think it is adequate, and in fact I think it is good. If there's a problem, it's that in some States there is a disparity between what their peers are making at the State level and what inspectors are making at the Federal level. And I think that is an important gap that has to be addressed in general, to make sure this joint Federal-State effort proceeds properly.

PROGRAM STATUS IN THE STATES

Senator HUDDLESTON. You've indicated several States have been actively participating even though development grants have not been made available to them yet. Which States have been most actively gearing up, and how are they financing their operations?

Mr. HEINE. We made our first grant, by the way, to North Dakota a couple of weeks ago, some $200,000. They have done very well in preparing their staff, gearing up for this initial inspection activity.

Most of the States, certainly the major coal-producing States, have been moving ahead with their legislation and have been gearing up. Now, we have had applications for grants from most of the States.

Senator YOUNG. Mr. Chairman, I just want to compliment Mr. Heine on his good judgment in giving the first grant to North Dakota.

We do have one of the very best laws, don't we, in North Dakota?

Mr. HEINE. Yes, you have a good law.

Senator HUDDLESTON. Inasmuch as Kentucky has an application in, too, I'm wondering if Mr. Heine understands the political balance that exists here. [Laughter.]

Mr. HEINE. I just sent a letter off to Kentucky, saying that their application looks very good, and that based on getting a few more items of information, they will be eligible for something like $2 million. They've taken a very aggressive posture on implementing the act. We're very pleased with that.

Senator YOUNG. I think you'd better work a little harder on that one.

Senator HUDDLESTON. Yes, sir. [Laughter.]

But that is in process?

Mr. HEINE. Yes, it is.

Senator HUDDLESTON. And the money is available to help meet that requirement.

This committee directed, in its report on the 1978 supplemental bill, that State expenses may be covered by Federal grants after August 3, 1977, if not covered by State budgets. Do you have an estimate of the total grant funding needed for this early support?

Mr. HEINE. This is Carl Close, who's our acting assistant director in the State program area, and he'd like to respond.

Mr. CLOSE. Senator, we have applications for something over $11 million over fiscal year 1978. However, those were based on full-year cost estimates that are not being realized in most cases. We're taking a very hard, practical look at the requests. It appears the total needs for fiscal year 1978 will be somewhere around $6 or $7 million. We believe that through the amount appropriated for 1978, which was $3.6 million, and what we hope to have available through reprograming, that we can cover the States' needs for this fiscal year. Most of those needs are from this point forward. The costs incurred between August 3, 1977, and today, in most cases, are fairly low, probably not more than $½ to $1 million out of the total. Some States, such as Kentucky and North Dakota, did have heavy early costs which they have financed by reprograming their own funds. They are anticipating getting some reimbursements for incurring those costs.

PROGRAM DEVELOPMENT GRANTS

Senator HUDDLESTON. You are budgeting for a $1 million reduction in grants for State program development and yet you are acknowledging that development efforts will peak among those States that have the most program work to accomplish. Won't the need be greater instead of less?

Mr. CLOSE. When the budget estimate for program development grants was prepared in the fall, we expected that most States would be receiving program development grants in fiscal year 1978. This would lessen the need for such grants in fiscal year 1979. In addition, if a State started a grant in fiscal year 1978, a portion of the fiscal year 1979 grant would be at the second year 60 percent matching rate instead of the first year matching rate of 80 percent. It now appears that fiscal year 1978 grants will cover less of the overall need than originally anticipated, thus shifting more of the burden to 1979. This appears to be offset by the likelihood that fewer States will request such grants than expected. Some States have indicated that it appears to be advantageous to save the 1 year of 80 percent grant eligibility for a future grant to operate their permanent programs. On the whole, then, the $4 million estimate still appears to be reasonable.

PERMANENT PROGRAMS

Senator HUDDLESTON. Which are the seven States that you expect to have permanent programs ready in fiscal 1979?

Mr. HEINE. That figure of seven States is an estimated figure. It's not really that we identify seven States. It appears that there are maybe 8, 9, or 10 States that are moving ahead very well. So, for budget purposes, we said it appears that about seven will be in. That's really all that that means. In essence, as you might expect, it is generally those States that have had major regulatory programs in the past.

Senator HUDDLESTON. Kentucky, of course, doesn't have a session of its general assembly in 1979, not a regular session. There may be other States that do not meet, either, in 1979. I'm not sure. I just wondered whether there would be others that would probably have to have special sessions in order to bring their State law into conformity. Is that a problem?

Mr. HEINE. The best information we have is that it is not a major problem throughout the country, but there are a few States that will need to have special sessions.

Senator HUDDLESTON. What indication do you have that some of the smaller States or any other States may not be moving toward assumption of the program responsibility but will leave that to Federal implementation? Are there a number of those?

Mr. HEINE. No. We know of one State in particular that does not seem to be terribly aggressive, and we're trying to get them on track. But as I have indicated, in general, all the States are moving ahead very well, and we're talking to them and trying to assist them in pulling their programs together.

Senator HUDDLESTON. What State is that?

Mr. HEINE. Iowa.

Senator HUDDLESTON. I didn't know they were known for coal production out there, anyhow. I thought they produced corn. [Laughter.]

IMPACT OF IMPLEMENTATION DELAYS ON FISCAL YEAR 1978 REQUIREMENTS

Since your 1978 appropriation has been so late in arriving, how much of it do you estimate will not be needed after absorbing the pay cost increase?

Mr. HEINE. This is Mr. Toney Head, our assistant director for management and budget, who will respond to that.

Mr. HEAD. We expect that about $3 or $4 million for Federal regulatory activities will not be needed. However, we plan to reprogram that money in support of the need for state grants, as Mr. Close just mentioned.

Senator HUDDLESTON. You don't intend to let it lapse?

Mr. HEAD. We do not.

Senator HUDDLESTON. Do you believe the total state grant funding available for 1978 will be sufficient?

Mr. HEAD. With the reprograming. Yes, sir, it will.

Senator HUDDLESTON. Given your delayed start, do you think you can achieve the program goals that were inherent in the 1978 appropriation request?

Mr. HEINE. Again, we probably will have some delays. We're moving ahead very rapidly now. During the entire time that the budget was delayed, we were able to do a great number of things with detailed people, particularly a great deal of planning. Once the money became available, we were able to move rapidly ahead.

Senator HUDDLESTON. You indicated that you would fill 850 permanent positions in 1978. To what extent will you be able to do that?

Mr. HEINE. We figure we'll probably be able to do 90 percent of that by the end of the fiscal year.

STATUS OF 1978 RURAL LANDS PROGRAM

Senator HUDDLESTON. How about the Soil Conservation Service? Will it be able to meet its 1978 goals?

Mr. HEINE. Mr. Barry is here from the Soil Conservation Service, if you'd like him to discuss their program.

Mr. BARRY. The goals for fiscal year 1978 were not specific in terms of numbers established by Congress. We are in the process of receiving funds from the Department of the Interior in the amount of $5 million. We expect that to be available at almost any time now.

We have been in the process of planning the program, developing the environmental impact statement, and publishing our proposed rules and regulations. We feel that we will have the final rules and regulations available by about mid-July. We cannot take any action to implement the program until mid-August. This doesn't give very much time to make maximum use of the funds, but we have made sufficient surveys to know that there is interest in the States where the program will apply, and there will be no difficulty in having enough participants on hand to make maximum use of the funds.

We really believe that we can obligate the contracts under the USDA program by the end of the fiscal year.

SMALL OPERATOR ASSISTANCE FUNDING

Senator HUDDLESTON. Mr. Heine, what about the small operators assistance program? What is the status of this?

Mr. HEINE. As you know, the small operator assistance program becomes extremely important near the time when each individual State program is approved because the small operator will need assistance in preparing his application for a permit to the States once the State's program is approved.

As we've discussed previously in other hearings, we are concerned that the funding, and the $10 million authorization, may be insufficient. There are two very mushy variables: First, in the number of small operators. Second, the amount of money that each small operator will need to determine the hydrologic impact of his mine.

I want to make it clear that the small operator does not get the cash; that a lab or consultant that we or the State designate, will carry out the hydrologic study.

Because of those two mushy variables, it is difficult to come up with an exact amount that will be required to adequately fund the

small operators. We do feel, though, that within the next 6 months, we will have a much better handle on this requirement. That will still allow time for us to come back to the committees in order to ask for an increase in the authorization and the appropriation if it is actually necessary.

Senator HUDDLESTON. Senator Ford and I have legislation in to increase that funding. You have no objection to that increase?

Mr. HEINE. Personally, no sir.

NEED FOR ABANDONED LANDS INVENTORIES

Senator HUDDLESTON. The Congress cut in half your 1978 request of $5 million for abandoned lands inventory activities until OSM could get a better handle on the program. What is the additional information you have on this subject mentioned in Ms. Davenport's statement?

Mr. HEINE. Paul Reeves, our assistant director for the abandoned mine lands program, can respond to that.

Mr. REEVES. Senator, we have reviewed a large number of studies that were conducted by States and other agencies and that attempted in a partial way or within small areas to assess what the abandoned lands problem was.

I believe we have a list with us—we should have a list—of the studies that we have reviewed. They're typified in many cases, by being partial, in that they have looked at one specific type of problem. For example, the State of Ohio did a very comprehensive plan which included an inventory of surface mine lands, but they have not looked at the underground mine lands. Some studies represent a relatively small area; for example, a Corps of Engineers mine drainage study which would deal with one basin and one subbasin.

At this time, our staff has just begun to come onboard to scope out the specific strategies that will be necessary to accumulate the more comprehensive type of baseline data that is necessary to manage the program under the system of priorities in the act.

Senator HUDDLESTON. You're estimating that it will take $20 million over several years to get this job done?

Mr. REEVES. Those estimates are 2 to 3 months old at this point and we have not attempted to restructure what the requirement is. The estimates start with some exploratory inventories that the Bureau of Mines has underway in three counties—two in Pennsylvania and one in West Virginia.

The three counties' total, I think, was $150,000, for a very comprehensive inventory. Extending that cost to all the coal counties would result in a cost of somewhere over $20 million. We feel that when we can sort down to the specific data that we need for baseline purposes, it may be something less than that.

On the other hand, we are finding that there are a number of areas where we will have to go in with a more intensive type study, in some ways comparable to the acid drainage studies that the Corps of Engineers has done and some of the subsidence studies that the Bureau of Mines has done in order to specifically identify the hazards.

The $20 million does not go totally out of line, and yet, it is still somewhat soft.

Senator HUDDLESTON. But there is a lot of inventory data that's available. It's a matter of maybe coordinating it, updating it.

Mr. REEVES. There will be many areas where the process will require updating or coordination of the data. In a lot of other areas, the data was collected through what we used to call in the field "one shoot" surveys. That may be short of what's needed to really zero in on the program.

INVENTORY ESTIMATE

Senator HUDDLESTON. Please detail for the record how you arrived at the inventory estimate.

Mr. REEVES. We will be happy to do that.

[The information follows:]

BASIS FOR INVENTORY ESTIMATE

Both the FY 1978 and FY 1979 budget estimates have included lump sum funding for an AML inventory. While a number of issue/option papers have been developed, the only real decision made has been that some type inventory would be developed.

Cost estimates have been based primarily on extrapolation from a current Bureau of Mines contract for intensive inventories in two Pennsylvania and one West Virginia counties. The extrapolated cost per county estimate is $50,000 average ($20 to $100,000 range) for 287 coal counties -- total $14,350,000. Geological Survey has provided cost estimates for an expedited mapping program: aerial extent of surface disturbance -- $1.5 million; include additional detail on hazards -- $3.5 million. Thus, total estimated costs used in previous budget discussions have been $15 to $20 million.

FY 78	Request	$5 million	Allowed $2.5 million
FY 79	Request	$5 million	
FY 80	Projection	$7.5 million	
Maintenance		$ .5 million/year	

Plans: Detailed plans for the inventory are awaiting hiring of AML headquarters staff (Division of Reclamation Planning and Standards). At this time, it is anticipated that the inventory effort will reflect the following characteristics:

Objectives -- 1. Provide a national baseline of land and waters adversely affected by past mining activity, with priority attention to past coal mining;

2. Provide detailed analyses of selected areas where the extent of past mining and the nature of the problems existing require specific assessment of localized conditions to determine the scope and feasibility of reclamation activities needed.

Approach: 1. The scope of the inventory will be designed by OSM to provide program management and evaluation bases for OSM, the States and SCS.

2. Initial data collection efforts will be designed to obtain at least minimum information on all sites (e.g., location, nature of existing problems, etc.).

3. Inventory system design will, to the extent practical, provide for accumulation of essentially all information necessary about specific sites throughout the process (i.e., from initial site identification through reclamation to post reclamation evaluation).

4. Inventory construction will be by, first, compilation of usable data from prior

inventories by States and other Federal agencies and, second, new data collection efforts under contracts with States, other Federal agencies, or private contractors.

5. Priorities for completing the baseline inventory will be (a) coal lands, (b) non-coal lands located in the vicinity of coal lands, and (c) other noncoal lands.

6. A computerized system will be required.

Schedule: 1. OSM will complete scope definitions (initial and total system) in FY 78.

2. FY 78 funds will be used for initial system design, compilation of existing data, and some new data collection for those States expected to come in with programs early. (This is likely to include a start on detailed analysis of selected areas in at least two or three States: acid drainage in Maryland and Pennsylvania; subsidence in Ohio).

3. FY 79 funds will be used for system development and new data collection.

4. A comprehensive aerial photography effort is likely during the late fall, winter, and early spring of 1978-79.

CONTROVERSIAL PERFORMANCE STANDARDS

Senator HUDDLESTON. Mr. Heine, your statement mentions that some performance standards in your interim regulations have been controversial and subject to legal action by some mine operators. What are some of the more controversial standards?

Mr. HEINE. Immediately after promulgation of our regulations, the sedimentation basin design regulations were quite controversial. As a result of that, I and some of our technical people went to West Virginia last winter and looked at some of the work then that had been done in that area.

We concluded that as long as operators carried out some of the good onsite measures that were going on in some of the operations we saw, it was reasonable for us to allow additional flexibility in the design of the sedimentation basins. This is primarily by allowing the operators to take credit for this good work on the operation itself; good work meaning contouring the land rapidly after mining, revegetating properly, promptly putting in erosion structures, dugouts, using mulch, and a lot of good activities such as that.

STATE PARTICIPATION IN INVENTORY

Senator HUDDLESTON. To what extent will the States participate in this inventory, since they should be most familiar with their own reclamation problems?

Mr. REEVES. The degree of State participation will vary depending on the importance the State places on obtaining an approved reclamation plan and the existing capability of the State staff. An

inventory will be required before a reclamation plan is approved for a State. To the extent possible, OSM inventory activity within a State will be designed and timed to support State plan development as well as national program management. Several States have already expressed interest in becoming the primary data collectors for the inventory and we expect to use their capabilities fully.

So we built flexibility into the regulation and they've since been promulgated in that revised fashion. We think that has gone a long way to correcting some problems, particularly in the steep slope mining areas of the country.

Senator HUDDLESTON. How many suits have been filed?

Mr. HEINE. We have over 20 suits. Maybe Mr. Eichbaum should respond to this.

Mr. EICHBAUM. There are about 27 or 28 suits that have been filed. Most of those are by coal operators here in the District of Columbia court. There's one suit in West Virginia, both by the operators and by the State; there's one in Texas by the State addressed to the prime farmland issue; and there's one by the Ohio association in the district court in Ohio, generally challenging the regulations.

AVERAGE GRADE LEVEL AND STAFFING

Senator HUDDLESTON. Looking at your agency's organization, Mr. Heine, you'll recall that this committee expressed some concern over the excessive number of high grade positions estimated for OSM last year. We're also concerned at the concentration of employment in the Washington headquarters. We realize you've been operating under a handicap, but what has been done to date in response to the committee's directive to review your personnel needs and effect reductions commensurate with agencies of comparable size and responsibility?

Mr. HEINE. We looked at that, Senator Huddleston. The average grade level for our organization is something a little over GS-10. Looking at other regulatory agencies, such as—formerly it was called MESA—they are in the area of 9.8, 9.9 average GS level.

The important things to note here are two: First, that they have a much larger organization. So whether you have a bureau of 1,000 people or 2,000 people, you essentially need certain similar senior level positions. Those GS levels are determined by the responsibility that those similar positions have.

So the arithmetic works against us; it's simply that a large organization has more clerks, secretaries and other lower level positions that pull down the GS level.

Second, at the time we were before you for fiscal year 1978, those preliminary GS levels were based upon what we anticipated we might need. As we are reviewing those positions, actually classifying those positions, we're finding that many are being classified lower than we originally anticipated.

So I think you'll see that the average GS level is coming down.

RATIO BETWEEN HEADQUARTERS AND FIELD PERSONNEL

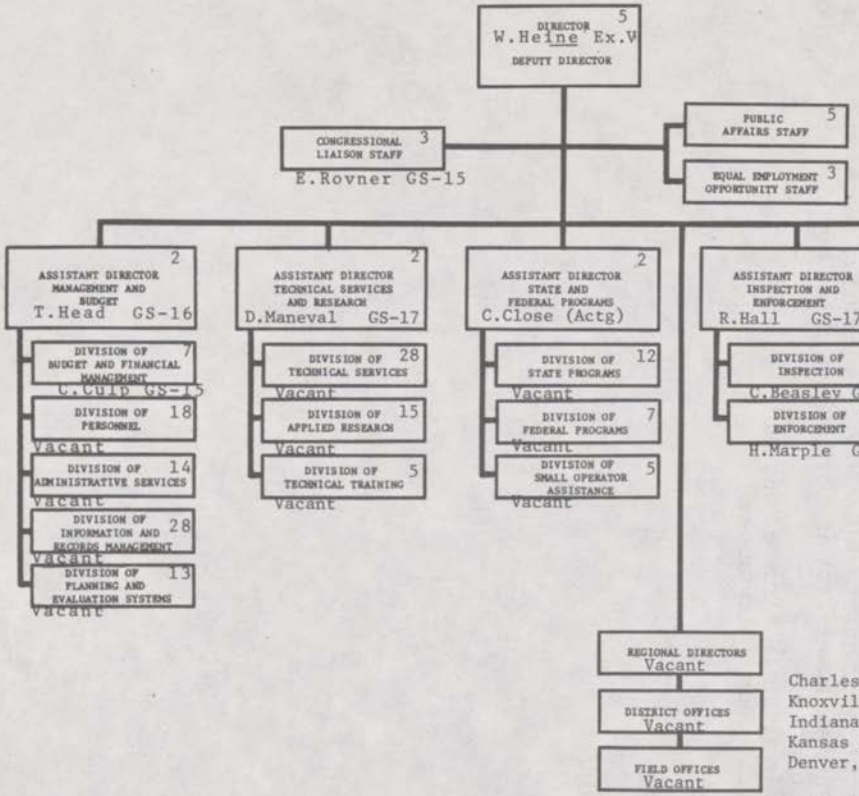
Senator HUDDLESTON. Under your 1978 program and your proposed 1979 budget, what is the ratio between headquarters and field personnel?

Mr. HEINE. We have that here, Senator. In 1978, there are 203 positions in headquarters and 597 in the field. For 1979, it is 232 headquarters compared to 768 in the field. That's a 1-to-4 ratio in 1978 and somewhat less in 1979.

Senator HUDDLESTON. Please supply for the record a copy of your organizational chart as displayed on page 1 of your justification, and include in that chart the names and grades of key personnel and the permanent positions being assigned to those various organizational boxes. Provide a breakdown of the regional, district, and field offices.

Mr. HEINE. We will provide that.

[The information follows:]



REGIONS

	Reg. Ofcs.	Dist. &Field Ofcs.	Total
Charleston, W.Va.	99	159	258
Knoxville, Tenn.	100	107	207
Indianapolis, Ind.	72	38	110
Kansas City, Mo.	75	12	87
Denver, Co.	83	10	93
Total Field	429	326	755

STAFFING KEY MANAGEMENT POSITIONS

Senator HUDDLESTON. Do you have your key personnel selected and onboard?

Mr. HEINE. I have 4 out of 5 of the assistant directors.

DIFFERENCES IN PERMANENT POSITIONS

Senator HUDDLESTON. Why do the total full-time permanent positions identified on page 3 of your justification differ from those in the detail of permanent positions on page 54?

Mr. HEAD. The difference is 50 Soil Conservation Service positions which appear in the table on page 3, but not on page 54 which is strictly the OSM positions. These are the SCS rural lands program people who are funded from the abandoned mine reclamation fund but who are not Interior employees. It's the standard way of showing the personnel in these tables. The deputy director has not yet been identified. We hope that within the next couple of weeks, 4 out of 5 of the regional directors will be named. So, in effect, we are getting most of our top management people in line and should have them onboard soon.

OSM RESEARCH PROGRAM REQUIREMENTS

Senator HUDDLESTON. You changed the name of your enforcement and research appropriation to regulation and technology. Your justification said that research is not a major function of OSM.

What is OSM's research goal and how does it relate to the Bureau of Mine's research?

Mr. HEINE. We feel that our research efforts must focus directly on our real needs in developing regulations, particularly on developing standards that are viable. As technology changes, we'll be amending those regulations through the years. We will continue to utilize other agencies, such as the Bureau of Mines for their research expertise and whatever data they unearth. But some of their research is not specific enough for us. So that's why we have what we feel is a fairly modest request for research, which focuses in on real needs.

ADEQUACY OF 1979 BUDGET

Senator HUDDLESTON. Do you consider that your budget now before us is adequate to meet the mandates of the Surface Mining Act and to achieve goals discussed in the opening statement?

Mr. HEINE. In general, Senator, yes, it is sufficient, except for the anticipated grant shortfall that we discussed. We anticipate now up to a $6 million shortfall in the grants.

Senator HUDDLESTON. Which grants?

Mr. HEINE. This is enforcement program grants to the States.

Senator HUDDLESTON. Enforcement grants?

Mr. HEINE. That's correct, for enforcement.

We had indicated in our budget request a little over $19 million for that area. We now find, through refining our figures and by reviewing the State applications grants, that we will be short.

Senator YOUNG. Mr. Chairman, would you yield at that point?

Senator HUDDLESTON. Yes.

Senator YOUNG. Are any of these grant funds moneys paid in by the States, or are these the funds that come directly out of the Treasury?

Mr. HEINE. These are directly out of the Treasury.

Senator YOUNG. What happens to the money contributed by States, paid in by the States?

Mr. HEINE. The money that comes from the operators goes into the abandoned mine land fund, and that is used for reclaiming the abandoned mine lands. It's not related to grants back to the States for operating their regulatory programs. Once the States' regulatory programs are approved, they also will apply for getting grant money back for the abandoned mine land programs.

So it's really a twofold grant program, if you will. One is the money back from us for the abandoned mine program, and the other grants are for carrying out the regulatory activities. The shortfall is in the regulatory activities.

IMPACT OF THE COAL STRIKE ON RECLAMATION FEE, COLLECTIONS

Senator HUDDLESTON. Did the coal strike affect your fees system? Are they affected?

Mr. HEINE. It certainly will have an effect upon the amount of money coming into the abandoned mine fund.

We have collected, as of the first quarter of the program, which was the last quarter of 1977, some $35 million.

Senator HUDDLESTON. Is that below your estimates?

Mr. HEINE. Well, for this quarter, the first quarter of 1978, it will be below because of the strike, sir. We are right now up to about $35.5 million. I'm informed that we're running $3 or $4 million below what we projected originally for the first quarter.

REQUESTED APPROPRIATION AUTHORIZATION INCREASE

Senator HUDDLESTON. Mr. Heine, in an earlier hearing you mentioned legislation that was proposed to increase the authorization for the interim regulatory program to $19.1 million. We understand that in recent testimony before the legislative committees, that a $25 million level was discussed.

Now, what is the situation with regard to the authorizations? Is the level $19.1 million or $25 million?

Mr. HEINE. The level that is now proposed is $25 million, and on April 21 the House subcommittee unanimously adopted and reported to the full committee a bill to increase that authorization. So we hope we're going to have that.

Senator HUDDLESTON. Is OMB aware and in agreement with this?

Mr. HEINE. Yes, they are.

Senator HUDDLESTON. Are you planning to seek a budget amendment for the annual inspection program appropriation, or will you come back later for the supplemental for this?

Mr. HEINE. We're preparing the supplemental now, Senator. And we'll be coming back.

Senator HUDDLESTON. I believe you said a supplemental?

Mr. HEAD. There will be an amendment, if we can get it through in time, Senator Huddleston.

FEDERAL REGULATORY PROGRAMS BUDGET

Senator HUDDLESTON. Now, on to the Federal regulatory programs for which you're requesting $24.7 million. Considering your late start in fiscal 1978, is that still a good program level for 1979?

Mr. HEINE. Yes, we think it is a good figure, Senator. And we think it's very important for us to continue to program in an effective manner, because we are sort of playing catchup ball. It is a very valid figure. And we continue to hope to get that amount.

ASSISTANCE TO SMALL OPERATORS

Senator HUDDLESTON. How much of your requested funding is for administering assistance to small operators?

Mr. HEINE. That is in the permanent program development subactivity. The requested increase there is $1,061,000 in total, of which about $700,000 would be the extra staff we need for the small operator program. The balance of the increase is basically the State assistance function.

Senator HUDDLESTON. You are estimating one program specialist per State for the assistance program for program development. How did you arrive at that estimate?

Mr. HEINE. We actually expect to provide much more than 1 work year of assistance to each State. These positions will provide coordination of all the types of assistance related to program development as well as direct assistance. The total amount of assistance will vary from State to State, but we believe that we need a coordinator for each. Also, these positions will cover several other functions, including review of State programs when they are submitted for approval and monitoring of approved State programs.

TRAVEL INCREASE FOR PROGRAM DEVELOPMENT

Senator HUDDLESTON. Why do you need such a large travel increase for program development? Based on the number of new positions involved, it is higher than even your request for inspection and enforcement.

Mr. HEAD. Basically it is higher because the State assistance and small operator personnel will be working out of the regional offices and thus in travel status more than the inspection force at the districts particularly in the East. It is about $4,000 each for the permanent and temporary professionals which we feel is actually a rather tight estimate. You must go to the State people, the small operators, and the labs to be effective.

POSITION DETAIL AND OBJECT CLASSIFICATION

Senator HUDDLESTON. Please supply for the record the position detail and object classification for the base program for permanent program development.

[The information follows:]

PERMANENT PROGRAM DEVELOPMENT BASE

Permanent Grade Positions:	*Number*
GS–15	2
GS–14	12
GS–13	27
GS–12	18
GS–11	11
GS–9	5
GS–8	1
GS–7	11
GS–6	3
GS–5	10
GS–4	6
Total	106

Object classes:	*Thousands*
11.1 Permanent salaries	$2,091
11.3 Temporary salaries	82
12.0 Personnel benefits	218
21.0 Travel	246
22.0 Transportation of things	37
23.1 Standard level user charges	87
23.2 Other rent, communications and utilities	73
24.0 Printing and reproduction	11
25.0 Other services	129
26.0 Supplies and materials	54
31.0 Equipment	18
Total	3,046

INSPECTION AND ENFORCEMENT

Senator HUDDLESTON. Your request for inspection and enforcement of $13.6 million involved 101 new positions, all permanent. Since this is basically an interim inspection activity, why are all your positions permanent; and won't your manpower needs actually decline in this subactivity in future years?

Mr. HEINE. In future years there will be a decline, but for 1979 these additional inspectors are needed in order to accomplish the mandated inspection frequency that is in the act, the two inspections for each mining operation. Plus, we calculate an additional inspection based upon citizen complaints or two consecutive violations brought to our attention by State inspectors.

In order for us to meet that requirement, these are the people we anticipate are needed. In fact, we were rather lean on this, because we do hope, and we anticipate that the States will be taking over the main regulatory activity, and ours will continue to be oversight activity.

Senator HUDDLESTON. Do you think you'll need the same number of people for oversight responsibilities? Is that why they are designated as permanent?

Mr. HEINE. Being new to the Federal bureaucracy, I'm finding out now what is a full-time and what is a part-time employee. I understand that if an employee is on the job for 1 year and 1 day, then he is considered a full-time employee. So for budget purposes, we've set it out this way.

I think what you're aiming at, though, is this the required complement of inspectors that still would be needed once the States all take over.

Senator HUDDLESTON. That's right.

Mr. HEINE. My judgment, at this point, would be that it's a little early to tell, because we think we're being somewhat lean here. I'd hate to say that once all the States have permanent programs, we're going to cut 75 percent of our inspectors. I think we're going to have to look very closely at that.

However, I certainly would anticipate that we would have a reduced force of inspectors if all coal States take over the permanent program.

Senator HUDDLESTON. Is it likely that some of these inspectors might transfer over to the State systems once they get tooled up?

Mr. HEINE. That is one possibility; yes, sir.

INSPECTION AND ENFORCEMENT NEEDS

Senator HUDDLESTON. What do you anticipate will be your fiscal year 1980 and 1981 needs for inspection and enforcement?

Mr. HEINE. Well you would still have the interim inspection requirement in most States in the first half of fiscal year 1980. About mid-1980 is when a reduced requirement may generally be feasible. We need to keep in mind, however, that the inspection frequency jumps from 2 per year to 12 per year per mine under a permanent program. Thus we have some possibility of a continued Federal staff requirement at the fiscal year 1979 level, or even above, if some States don't assume the permanent program. It's one of the reasons it's so important for us to encourage State programs now. I think you can see why I have a great deal of trouble forecasting 1980 and 1981 requirements in this area.

TECHNICAL SUPPORT BUDGET

Senator HUDDLESTON. Your technical support subactivity involves a request for $7 million, an increase of $1.3 million, and 23 new positions. How much of this funding in total is for training and how much for actual technical assistance?

Mr. HEINE. There are two aspects there. One is blaster certification, which is an extremely important program and of great concern to all the operators. Much of that will be for training and assistance on setting up a blaster certification program. It is approximately $350,000 of the increase.

Also, we need to have a good technical publications unit, There's a great deal of evolving technology in this field, and it will continue at an accelerating rate, so it's necessary that we give guidance to the States by having a good publications unit.

TECHNICAL SUPPORT PROGRAM

Senator HUDDLESTON. What kind of a technical support program, both in regulation and reclamation, do you think you can get mounted in 1978?

Mr. HEINE. We expect to have about two dozen highly qualified experts available in our headquarters by early fall to assist the Office of Surface Mining staff, the States, and the industry in

clarifying technical questions dealing with the regulations and reclamation programs. These technical assistance personnel will include chemists, geologists, mining engineers, and agronomists among others. Also, the regional directors will make the recruitment of top technical assistance staff a high order of priority and these offices should also be fully staffed by September 30.

Senator HUDDLESTON. Is your catalog and data center part of this appropriation?

Mr. HEINE. Yes; it is part of this activity, which, of course, is mandated by the act.

Senator HUDDLESTON. Do you know how much is going to be committed to the cataloging and data center?

Mr. HEINE. About $400,000 for the center. We recognize that there are other agencies that have good work in this area—the Department of Agriculture, the Bureau of Mines, and private persons—the Smithsonian—so we see our function as not reinventing the wheel but rather pulling all those pieces together so that the operators have one place to go where they can get excellent information concerning surface mining.

POSITION OF TECHNICAL SERVICES

Senator HUDDLESTON. In the revision of your 1979 budget structure, why do you lump all technical services under the regulatory program? Why shouldn't technical services be identified as a separate activity?

Mr. HEINE. Mr. Head.

Mr. HEAD. We don't actually lump all technical services under the regulatory activity. A part of the technical services staffing and budget is under the Federal reclamation program activity in the abandoned mine reclamation fund. The technical groups will support both the regulatory and reclamation programs so we split the funding in proportion to the estimated workload in each area. In both cases technical support is presented as a budget subactivity. Basically it's this way because we felt the most logical activity breakdown would be between the State grants and the Federal activities with the components of the Federal activities such as Federal inspection and enforcement, and technical support being shown as subactivities. The subactivities are separately justified, so there is no loss of detail in the budget documents except in some summary schedules.

STATE RECLAMATION GRANTS BUDGET

Senator HUDDLESTON. The State reclamation grants—your $10 million request for State reclamation grants is based on the assumption that seven States can be expected to have their programs approved in 1979. Assuming that occurs, how did you arrive at the $10 million estimate for initial grants?

Mr. HEINE. Mr. Reeves will respond.

Mr. REEVES. Senator, the seven State estimate in this program comes about the same way as in the regulatory program. In other words, this is an estimate of how many States are likely to be in with early programs.

The $10 million represents a calculation of the pro rata share for seven States; in other words, their 50 percent for the length of time that they would have an approved program. If they would have an approved program, for 1½ months in fiscal year 1979, this would be 1½ divided by 12 or 1½ 12ths of the estimated annual receipts for that State. It is an estimate of what they would likely need to start up their program as soon as the reclamation plan was approved.

RECLAMATION PROJECT BUDGET

Senator HUDDLESTON. Your $30.8 million request for interior reclamation projects, isn't it somewhat ambitious under the circumstances? Isn't there a great deal of preliminary work to be done before you can get into the actual acquisition and reclamation work?

Mr. REEVES. I don't think so, sir. We have some 350-plus projects that have been suggested by States, in their judgment. They are extremely interested in the program. We are looking hard at between 30 and 35 of these projects, which would total somewhere over $20 million if they were all undertaken.

We expect to get a surge of new suggested projects as soon as we say these are the ones we are going to do. And at this point we would only have, with the 1979 appropriation, plus what we have here, about $20 million left that would be kind of zeroing in on the projects.

Senator HUDDLESTON. Do you think all of the $15.8 million appropriated for 1978 can be effectively obligated?

Mr. REEVES. I believe the amount that is available in 1978 for Federal projects is somewhere around $12.5 million, and that's for project work itself, excluding salaries and related expenses.

We anticipate that some portion of this, and not a large portion, will be held for potential emergencies under section 410 of the act. These are projects which would occur without forewarning where we have an obligation to move fairly quickly.

The 10—let's say, 10 to 12 that would remain—would be committed, if not obligated in contracts. In other words, it would be committed for specific projects this fiscal year.

Senator HUDDLESTON. The program and financing statement for the abandoned mine reclamation fund indicates that all appropriations will be obligated in both 1978 and 1979. Is that realistic, and if not, can you supply a revised statement for both years, taking into account the actual circumstances?

Mr. REEVES. Checking with the budget people here, it will be obligated by the end of 1979. The financing statement, showing all of the fiscal year 1978 funds obligated may now be a bit optimistic, but we do expect, as I indicated, to commit nearly all our funds this year.

STRIP MINE LANDS RECLAMATION

Senator HUDDLESTON. Please expand on the statement in your justification that it will be several years before an effective program mix can be determined and long-range plans developed for reclaiming strip mine lands.

Mr. REEVES. Basically what that statement refers to is our need for a comprehensive nationwide inventory which would be com-

plete in 1981 at the funding levels we are proposing. The inventory is basic to insuring that the Office's program, the States' programs, and the rural lands program complement each other and address the highest priorities in the long term. The several years means 3 or 4, certainly no more if I can help it. In the meantime it's not a question of not having an effective program because we are addressing the highest priority of serious health and safety hazards. In this category the needs and priorities are pretty evident from the State nominations and other sources. It won't be so easy when we move into the more general reclamation work in the future years.

FEDERAL PROJECTS IN STATES

Senator HUDDLESTON. Because of the funding situation, we can certainly understand why you have not developed any specific project requests in your justification. What are some of the Federal project nominations from the States that Ms. Davenport indicated you could discuss?

Mr. REEVES. A list of extreme danger projects is evolving as more information is obtained from the States about the more than 300 projects suggested. The number of situations reported by Members of Congress, other Federal agencies, State and private citizens is increasing rapidly. It is unlikely that we will have a truly definitive list until the planned inventory is well underway. I will insert a listing of some of the more serious areas we are now reviewing for funding this year or next.

[The information follows:]

REPRESENTATIVE EXTREME DANGER PROJECTS
(May 1, 1978)

State	Location	Nature of Problem
Alabama	1 mile south of Marvel, Bibb County, on Highway Bibb-10.	Open shafts - a total of six openings within a 150 foot radius readily accessible to the public.
	Within city of Sumiton, Walker County on 4-lane Highway 78.	Abandoned contour surface mine with open pit and water impoundment. Safety and health hazard.
Illinois	Mitchell Lane Area, Belleville, St. Clair County.	Underground mine subsidence causing structural damage to residences, damage to underground utilities and hazard to the public.
Maryland	Frostburg State College Campus, Frostburg, Allegany County.	Deep mine subsidence. Dormitories and other college buildings endangered.
North Dakota	Adjacent to Scranton grade school, Scranton, Bowman County.	Underground mine subsidence creating caverns readily accessible to school children, also spoil piles and deep water impoundments from surface mining.
Ohio	City of Youngstown, Mahoning, Trumbull and Columbiana Counties.	Improperly filled shafts, approximately 140 feet in depth, cave-ins and subsidence in residential and school ground areas.
Ohio	City of Martins Ferry, Belmont County	Buildup of acid mine drainage in an abandoned mine is seeping, threatening a blowout and damage to homes and city high school.

State	Location	Nature of Problem
Oklahoma	On county road south of Lehigh Coal Co.	Strip pit with highwall adjacent to road, with section of road sloughing off.
Pennsylvania	In Percy, North Union Township, Fayette County.	Subsurface mine fire burning in the outcrop and in abandoned underground workings of the Pittsburgh Seam. Hazard to residential area.
	In Renton section, Plum Borough, Allegheny County.	Subsurface mine fire burning along the outcrop line. Causing fire, subsidence and pollution damage in residential area.
	Near Plummer, German Township, Fayette County.	Subsurface mine fire burning in the outcrop and along the open highwall. Endangers dwellings and public utilities.
	Near I-81, Dickson City, Lackawanna	Highwall and water filled pits near shopping center. Readily accessible to the public.
	Near Nalichoke, Luzerne County	Auchincloss Colliery - An abandoned open shaft in close proximity to a densely populated area.
	Johnson's Hollow Road, Washington Township, Fayette County.	A mine pool posing imminent threat of blowout. Mine discharge has caused slide in Johnson's Hollow and seepage affect homes in area.
Tennessee	Big Creek Utility District Lake, near Coalmont, Grundy County.	Drainage from strip mined areas have increased manganese content of lake water to 14.6 ppm and lowered pH to 2.4, killing all fish life and seriously affecting domestic water supply.
Virginia	Straight Creek Watershed, St. Charles, Lee County.	Recurrent serious flooding resulting from erosion of unstable mine refuse piles destroying water carrying capacity of natural drainageways.

State	Location	Nature of Problem
West Virginia	On Peach Creek near West Logan, Logan County.	Washouts from sidehill and cross valley refuse dumps cause recurring flooding and sediment to homes and road. Burning refuse piles result in serious air pollution.
	On Trace Fork Creek, near Holden, Logan County.	Erosion of an abandoned aerial tram dump causes washouts and slides to block a highway. Refuse in Trace Fork resulting recurrent flooding. There is also a severe acid mine drainage problem.
	Darby Hollow, near Keith, Boone County.	Abandoned cross valley refuse pile erosion which destroys stream channel capacity causing recurrent flooding in a residential area.

EXTREME DANGER PROJECTS

Senator HUDDLESTON. Do you have at least a working estimate at this time of the size and cost of the projects needed to reclaim areas that are dangerous to the public?

Mr. REEVES. The time required for individual extreme danger projects range from a few weeks where the work required consists of filling dangerous shafts to several years for mine fire control, stabilization of a watershed, subsidence abatement or acid drainage control. Costs will range from a few thousand to $5 million or more.

ACTION ON RECLAIMING MINING AREAS

Senator HUDDLESTON. At this point, do you expect many State Governors will take advantage of section 409 and ask the Department to fill, seal, and reclaim mining areas? To what extent is this activity included in your budget estimates?

Mr. REEVES. Work under section 409 is only authorized under the 50 percent of the fund allocated to the States and can, therefore, only be undertaken in States having current coal production. Some portion of the funds requested for fiscal year 1979 for State grants could be used for such work if the governors determined that the most serious problems to be corrected resulted from non-coal mining. Projects of current coal production compared to lands previously mined for coal for several States indicate a high probability that funds will be used for section 409 work relatively early in the program. The States where this is most likely, I think, are Texas, New Mexico, Montana, and Wyoming.

DISPOSITION OF RECLAIMED LANDS

Senator HUDDLESTON. What will happen to these lands when they have been reclaimed?

Mr. REEVES. The specific authorities of the act for acquiring land are generally tied to specific disposition or use conditions. The proposed rules published yesterday authorize disposition through implementing the statutory requirements in several ways. One is administrative transfer to other Government agencies for a use that is consistent with the acquisition authorization. Another is sale by the director to a State or Indian tribe for use for a valid public purpose for a price which is at or below the fair market value of the land. We can also transfer or sell reclaimed land to a State or Indian tribe, political subdivision, person, firm, association, or corporation if the transfer or sale is an integral element of an economically feasible plan for certain housing projects. A final disposition method is sale by public auction if the land is suitable for industrial, commercial, residential, or recreational development and if retention of the land is not in the public interest.

Generally we expect that any acquired lands within or adjacent to existing public owned areas will be at least offered to the agency managing the existing area. Until specific sites are identified, I can't predict the proportion of the lands acquired which may be transferred to such agencies for long-term management.

RURAL LANDS PROGRAM BUDGET

Senator HUDDLESTON. Your justification for the rural lands reclamation program implies that a memorandum of understanding has not yet been developed between Interior and Agriculture. What's holding this up and what's the status of it?

Mr. REEVES. We have the memorandum of understanding between the Secretary of the Interior and the Secretary of Agriculture. This is a general memorandum of understanding which was signed on March 10. We have under discussion with the Soil Conservation Service a more specific memorandum of understanding related to the abandoned land program. The budget justification was prepared in January, so it's out of date in this respect.

This agreement is not holding up movement on their program, as Mr. Barry indicated a few minutes ago. Their regulations have been published as proposed. The money which is identified for the Soil Conservation Service this fiscal year is in the process of moving from the Department of the Interior to the Department of Agriculture.

Senator HUDDLESTON. How much of the $5 million appropriated for 1978 can be effectively obligated under the rural lands program by the end of the year?

Mr. REEVES. Mr. Barry signals that they will get it all obligated.

Senator HUDDLESTON. How did you determine the $10.1 million funding level for 1979, since most of the money will go to cost-sharing reclamation projects?

Mr. REEVES. We may have to join forces to answer that. The Soil Conservation Service prepared estimates of what they thought would be an appropriate level through the budget review processes within Interior and the Office of Management and Budget. The $10 million was arrived at as a reasonable level.

Senator HUDDLESTON. Is there a capability to do more if additional funds are available?

Mr. BARRY. Senator, in our present budget request, we do have a balance between the full amount of funds that would be available in fiscal year 1979 and the manpower available. We have a balance between what we could do with the rural abandoned mine program and the people that we have on board.

SUBMITTED QUESTIONS

Senator HUDDLESTON. All right. We have some other questions, of course, that we would like to submit to you, Mr. Heine. We ask that you provide the answers for the record.

[The following questions were not asked at the hearing but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SUBCOMMITTEE

Personnel

Question. In your initial recruiting efforts, have you had any difficulty because of the prohibition against employees having any direct or indirect financial interest in coal mining?

Answer. We have not had any problems with the conflict of interest requirements. There may have been some instances where people did not apply due to these requirements, but we generally have found many well qualified applicants for our positions.

Question. Is it still the case that coal mine inspectors hired under the Coal Mine Health and Safety Act are not being used for strip mining inspection?

Answer. Most coal mine health and safety inspectors do not qualify for OSM reclamation specialist (inspector) positions under CSC Standard 1899 as written for OSM. The educational and experience requirements are quite different for the two types of inspector positions.

General

Question. The Congressional Budget Office originally estimated the five year net cost of implementing the Surface Mining Act at $360 million (Federal). Is that still a reasonable estimate, in your judgment?

Answer. The estimate appears quite reasonable. If anything it is high because the net cost would be only the regulatory activities, not the Abandoned Mine Reclamation Fund activities financed by the production fee revenue. The regulatory costs are only $68 million for the first two years.

Question. Generally, is industry taking a cooperative approach to the implementation of the Surface Mining Act? Do industry spokesmen still consider this Act a roadblock to increased coal production?

Answer. Other than the exercise of their right to judicial review of our regulations, in general, most of the industry is taking a cooperative approach to the implementation of the new law. OSM is aware of purchases of equipment, increases in reclamation personnel, and active consultation and engineering planning by mining companies. State regulatory authorities are working with operators to facilitate the transition.

The transition is not without expense and difficulty, but no major statements have been made recently by industry representatives that the new law is a roadblock to increased coal production. OSM believes that the sooner the transition to the new law and regulations is over, the sooner any possible impact on coal production will end.

Question. Have you encountered any instances so far where it might be necessary to lease coal deposits in exchange to operators who had made substantial commitments to alluvial valley mining outlawed by the Act?

Answer. We have not yet identified any cases where exchanges are necessary. We are still working to determine the overall implications of the alluvial valley floor provision. A technical committee has been established to clarify and define "alluvial valleys." The committee consists of representatives from OSM, USGS, and the States. It will produce a technical

guidance document on how to apply the alluvial valley floor provisions. Once this report is completed, we will begin making determinations which may lead to lease exchanges.

1978 Studies

Question. Your budget justification still contemplates the completion of FY 1978 of the Indian and Alaska lands studies for which we appropriated $1 million. When do you estimate you will actually get these studies underway and completed?

Answer. We have issued a small initial contract to the National Academy of Sciences (NAS) to prepare for the Alaska study. We are now negotiating with NAS regarding the full study. We expect to be under contract within a month. We are also providing names of suggested panel members to NAS, including university, industrial, government and environmental interests. We have consulted with numerous tribes and inter-tribal groups on their views on what should be included in the Indian study and how the study should be conducted. We are now in the process of drafting a study outline and preparing an analysis of options for conducting the study. We expect to be able to begin the data gathering and analysis portions of the study early this summer. This phase should be completed in the fall. The final report and recommendations should then be completed in time for presentation to the 96th Congress when it convenes in early January.

Question. Do you think these studies might have any future budget impact on your 1979 program?

Answer. No, the studies themselves are fully funded in 1978. Our FY 1979 budget will accommodate enforcement activities on Indian lands and in Alaska under any of the alternatives likely to be recommended in the studies.

Coal Waste Safety

Question. Last September the GAO issued a report on coal mine waste disposal practices which found fault with the Interior Department's inspection and enforcement. GAO and the Department disagreed over the extent of Federal authority to inspect coal wastes and enforce safety regulations. Is that still the situation?

Answer. The Department of the Interior substantially adopted most of the GAO recommendations although differences still remain. One of the differences is that the Department continues to believe that the 1969 Coal Mine Health and Safety Act did not authorize the regulation of abandoned structures posing potential hazards to non-miners. However, the practical impact of this position was largely negated by the passage of the Surface Mining Reclamation and Control Act. A copy of the Department's statement of January 25, 1978, in response to the GAO report is provided below.

The Mine Health and Safety Administration is now a part of the Department of Labor; we cannot speak for its present views. OSM's beliefs, as stated in the Department of the Interior's response to the GAO report, do not reflect a wide difference with GAO.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

OCT 25 1977

Honorable John D. Dingell
Chairman, Subcommittee on
Energy and Power
Committee on Interstate and
Foreign Commerce
House of Representatives
Washington, D. C. 20515

Dear Mr. Dingell:

Enclosed, pursuant to your request of October 4, 1977, is a copy of the Department's statement on the following report of the Comptroller General to the Congress: "Actions Needed to Improve the Safety of Coal Mine Waste Disposal Sites" (CED-77-82, September 21, 1977).

Sincerely,

James C. Joseph

JAMES A. JOSEPH
UNDER SECRETARY

DEPARTMENT OF THE INTERIOR
STATEMENT ON GAO REPORT TO THE CONGRESS
"ACTIONS NEEDED TO IMPROVE THE SAFETY
OF COAL MINE WASTE DISPOSAL SITES"
(CED-77-82, September 21, 1977)

Background Statement

As stated in our earlier response to the draft form of the subject report (see page 61 of the GAO report), we agree with some areas of the report, and we have taken specific actions to fully implement GAO's recommendations which address these areas. Our actions will be more fully defined in a later section of this response. However, again, we do not concur with the report in its entirety, nor do we agree with all of the recommendations stated therein.

General Comments on the Report

We feel that the report does not recognize the tremendous amount of remedial work that has been accomplished at coal waste disposal sites during the last four-year period. Once again, we must reemphasize the fact that many of the impounding structures in West Virginia and Kentucky were subjected to severe flooding conditions during April 1977, the same flooding conditions which devastated many residential communities, in particular, Pikeville, Kentucky, and Williamson and Matewan, West Virginia. Yet, frequent onsite inspections during this period did not reveal any significant structural problems occurring at the coal waste disposal sites. Without the extensive remedial work that was accomplished, many of these impounding structures probably would have overtopped and failed.

In addition, it must be pointed out that the regulations governing existing impounding structures became effective May 1, 1976, only three months before GAO initiated its audit and that the amended regulations governing refuse pile construction had only been in force ten months prior to the start of the audit. The remedial work which may be necessary for an operator to comply with these regulations requires, in most cases, not only extensive and detailed subsurface geotechnical investigations and aerial plottings, but also the moving of hundreds of thousands, and sometimes millions, of cubic yards of coal waste material. Such site modifications, as a function of sheer magnitude, cannot be accomplished in a short period of time. The GAO report fails to consider the tremendous effort in terms of man-hours and heavy equipment that is needed to upgrade the physical conditions at a coal refuse disposal site.

The Department's response to the General Accounting Office Report, dated July 14, 1977, with respect to GAO's contention that MESA has responsibility for abandoned coal waste impoundments and refuse piles under the Coal Act, was prepared by the Office of the Associate Solicitor--Mine Health and Safety and was surnamed by the Assistant Solicitor--Coal Mine Health and Safety. The opinions and views in the response of July 14, 1977, were based on previously expressed and long-held views of the Department and the Office of the Associate Solicitor--Mine Health and Safety.

Although we continue to adhere to those positions with respect to the Federal Coal Mine Health and Safety Act of 1969, the impact of those positions is largely negated by the Department of the Interior's position on the reclamation of abandoned mine lands and the inspection of abandoned coal mine waste sites under the authority of the recently enacted Surface Mining Control and Reclamation Act of 1977 (Public Law 95-87, August 3, 1977).

Reclamation of Abandoned Mine Lands

The reclamation program established in Title 4 provides authority for the Secretary to stabilize, reclaim, or otherwise make safe any abandoned coal mine waste disposal site. The first priority objective for this program is "the protection of public health and safety, general welfare and property from extreme danger of adverse effects of coal mining" [Section 403(1)].

It is clear to us that abandoned waste piles, embankments, or dams which pose a threat to "public health or safety or general welfare"

would be eligible for reclamation under this program. Specific authorities provide for reclamation under planned program implementation or on an emergency basis, if such occurs.

Inspection of Abandoned Coal Mine Waste Sites

The reclamation program in Public Law 95-87 does not provide explicit authority for making routine inspections for enforcement-type activities. However, the program does require the development of an annual set of projects which fit under the overall objectives outlined in Section 403 of the Act. The status of abandoned mine areas with respect to hazards to public health and safety change over time. Some situations become more stable through natural compaction and natural revegetation. Other situations can deteriorate rather rapidly through spontaneous ignition, continual erosion, and other destabilizing forces. In the preparation of an annual reclamation program, the Secretary will have the capability to review at appropriate intervals, through onsite investigations or other means, high-hazard or potential high-hazard areas in order to ascertain if reclamation work needs to be conducted under the program's first priority objective.

As regulations and guidelines for the Abandoned Mined Land Reclamation Program are developed, we will consider alternative approaches to meeting this objective. Since the regulations will provide for State Abandoned Mine Reclamation Programs, it is likely that both authorities and funds for State monitoring programs can be provided. Certainly, funding for State reclamation work will be available.

Inspection of Active Coal Mine Waste Sites by States

The Department has also been constrained in the assistance it could give States in the form of grants for inspection of active sites. Section 503 of the 1969 Coal Act states that grants can be made to any State in which coal mining takes place--"to promote Federal-State coordination and cooperation in improving the health and safety conditions in the coal mine." The application for such grants must designate the respective State coal mine inspection or safety agency as the sole agency responsible for administering grants under Section 503 of the 1969 Coal Act throughout the State. In addition, the application must contain satisfactory evidence that such agency will have the authority to carry out the purposes of this Act.

Unfortunately, coal waste disposal sites are not generally inspected by the same State agency responsible for inspection of coal mines; thus, it is very difficult to use grant funds for the purpose of supplementing existing State inspection programs that regulate coal waste impoundments and refuse piles.

Public Law 95-87 broadens our authority in this area. The Office of Surface Mining will also be inspecting the sites and has authority to approve State regulatory programs which must include monthly inspections of active mines. Once a State program is approved, matching grants will be available for its administration. These grants will also go to a single State agency. The State agency will, however, be authorized to transfer funds to other State agencies if the other agencies are identified in the program as responsible for the work involved.

In summary, the Department is much better equipped to deal with the problems discussed by GAO when both the Federal Coal Mine Health and

Safety Act of 1969 and the Surface Mine Control and Reclamation Act of 1977 are considered. We are also continuing our efforts to improve administration of the Coal Mine Health and Safety Act of 1969 as is reflected in the following comments on GAO's specific recommendations.

GAO RECOMMENDATIONS TO THE SECRETARY OF THE INTERIOR

"Accordingly, we recommend that the Secretary of the Interior direct the Administrator of MESA to:

"--Ascertain as soon as possible the extent to which MESA regulations are not being adequately and effectively implemented in all MESA districts."

Comments

An initial evaluation of the subject recommendation was made at a Senior Staff meeting held on June 22, 1977. Following that meeting, MESA headquarters issued a memorandum to the District Offices, dated June 30, 1977, [see enclosure (1)] requesting information concerning the status of impounding structures and related engineering plans. In addition, the memorandum requested a copy of all outstanding Notices of Violation and Orders of Withdrawal issued on refuse piles and a copy of each extension or modification, if any. In addition to the above memorandum, MESA headquarters has issued verbal instructions to all its District Offices to prepare and submit a summarized statement describing the amount of remedial work that has been accomplished at each impounding structure in their respective districts [see enclosure (2)]. This information will be periodically updated so that MESA headquarters can effectively monitor the current status of each impounding structure and the progress of the remedial work performed at each site. Through this reporting and review process, MESA headquarters supervisory personnel will be aware of the findings of the inspectorate and will be able to effectively evaluate and direct this facet of the enforcement program.

"Accordingly, we recommend that the Secretary of the Interior direct the Administrator of MESA to:

"--Establish effective management controls over inspection operations at MESA's headquarters so that (1) required inspections will be made, (2) the results of inspections are adequately documented and reported, (3) inspections are made only by qualified inspectors, and (4) MESA headquarters supervisory personnel are fully apprised of important field inspection findings and are required to evaluate and follow up on the disposition of findings."

Comments

On August 9, 1977, a memorandum was issued to MESA's District Managers instructing them to provide the MESA headquarters in Arlington with a quarterly report that furnished the following information on coal waste impoundments and refuse piles [see enclosure (3)]:

1. Name of company, disposal site, and site identification number.

2. Date of inspection and name of inspector.

3. Action taken in accordance with Section 104(a) or (b) of the Act, if any.

This information will assist the Arlington office in determining whether or not the required number of inspections are being made, who is making them, and what types of violations are being encountered by the inspectorate during onsite inspections. We agree that at the time of the GAO audit the results of inspection activity in District 6 were not properly documented in that such information was incomplete or inadequate. However, since that time, we have conducted an internal audit of the recording and documentation system in District 6, and we have found that a significant improvement has been accomplished. We will continue to monitor the inspection program in District 6 on a periodic basis to insure that adequate documentation of inspection results are achieved.

"Accordingly, we recommend that the Secretary of the Interior direct the Administrator of MESA to:

"--Develop an appropriate training program for inspectors to help insure the adequacy of inspections."

Comments

Coal Mine Health and Safety developed an initial training program for Duly Authorized Representatives of the Secretary which addressed the newly promulgated regulations for coal waste impoundments and refuse piles. This program was presented to the inspectorate during the week of September 22, 1975. To further enhance the inspection and site evaluation capabilities of the inspection personnel, a much more comprehensive and definitive three-day training program was developed by the coal waste technical specialists/engineers during the week of September 26, 1977, [see enclosure (4)]. This training program will be presented to all Duly Authorized Representatives of the Secretary who perform regular inspection work. This training should be completed by December 30, 1977. In addition to this training program, the district coal waste technical specialists/engineers attended a comprehensive 40-hour training seminar at the Denver Technical Center during the week of November 28, 1977, [see enclosure (5)].

"Accordingly, we recommend that the Secretary of the Interior direct the Administrator of MESA to:

"--Develop appropriate guidelines and criteria for inspectors to follow in granting time extensions to coal mine operators to correct violations, and for invoking penalties for noncompliance with MESA's regulations."

Comments

GAO contends that MESA has issued too many extensions of time to abate Section 104(b) Notices of Violation. Furthermore, GAO claims that the extensions are not well documented and are not justified. The Arlington office conducted a Senior Staff meeting on July 27, 1977, during which the problem of adequate documentation and justification of time extensions was discussed in some detail. Verbal instructions were issued to the District Managers at this staff meeting directing them to monitor and evaluate their

inspection program to a greater degree so as to insure that time extensions are well documented and granted on a justifiable basis. As a followup to the July 27, 1977, Senior Staff meeting, the Arlington office issued a memorandum dated November 2, 1977, confirming and outlining in greater detail these earlier verbal instructions [see enclosure (6)].

The larger problem of MESA policy on the issuance of Section 104(b) Notices and subsequent extensions relative to refuse piles and impounding structures remains a difficult area to resolve within the actual terms of Section 104(b) of the Act. Abatement of many violations may require plan approval and extensive structural work and movement of many thousands of cubic yards of material, thereby necessitating a long period of time for total abatement under the provisions of Section 104(b).

Faced with the problem of insuring that the work toward ultimate abatement is proceeding on schedule and in order for MESA to retain control of the situation, MESA's practice has been to issue Notices specifying short abatement times and then extending the Notices as the abatement work progressed. This practice was intended to foreclose the real possibility of an operator taking no steps toward abatement until the very end of the abatement period as defined in Section 104(b) of the Act.

We believe that this procedure in the long run is a better tool to cause compliance than giving a mine operator a long abatement period, returning to the mine and finding that no progress has been made toward compliance. In this case, we would issue an Order of Withdrawal; however, the condition or practice which caused the Section 104(b) Notice to be issued would still exist.

"Accordingly, we recommend that the Secretary of the Interior direct the Administrator of MESA to:

> "--Reexamine the penalty structure governing violations with the objective of determining what types and levels of penalties are required to create sufficient incentives for mine operators to comply with coal waste disposal regulations."

Comments

One type of penalty MESA must, by law, impose is a civil monetary penalty as an incentive for mine operator compliance with the mandatory health and safety standards. On March 1, 1977, MESA instituted a special assessment program which substantially increased penalties for violations caused by operators' unwarrantable failure to comply with the law. Since that date MESA has assessed 1,044 such violations, a total of $3,583,875 for an average of $3,433 per violation.

On June 8, 1977, MESA proposed to the Assistant Secretary--Energy and Minerals that the entire penalty rate schedule be amended to substantially double the amount of penalties for all violations. That proposal will be considered in developing the new assessment regulations required by the Federal Mine Safety and Health Amendments Act of 1977.

"We further recommend that the Secretary of the Interior direct the Director of the Bureau of Mines and the Administrator of MESA

to refine their procedures for disseminating the results of coal waste disposal research, through the involvement of MESA, to help assure that it is received by all interested mine operators and other interested parties."

Comments

To further improve the Technology Transfer process between the Bureau of Mines (BOM) and MESA, a formal committee with representation from BOM and MESA has been established to coordinate Technology Transfer matters. The first meeting of the committee was held on October 6, 1977, and as a result of that meeting, the following procedures were agreed to by BOM:

1. It was agreed that BOM will take the lead in Technology Transfer to industry. The ongoing Technology Transfer Seminars are the primary vehicle for this. However, the need for increased MESA participation in the Seminars is recognized. Therefore, MESA will be brought in to a greater extent during the planning of seminars and open industry briefings.

2. A time slot to be set aside in appropriate mine inspector classes will be devoted to mining research. Appropriate BOM and MESA personnel will provide Technology Transfer information.

3. A research Technology Transfer presentation will be prepared for District Manager meetings to keep those managers abreast of current research developments and status of mining research activities.

4. A copy of each BOM Technology News will be sent individually to each mine inspector.

5. Material will be provided on a regular basis for a mining research column in the MESA Magazine.

In addition, the following procedures were discussed at the MESA/BOM meeting, and we agree that their implementation will further improve Technology Transfer activities.

1. All MESA inspectors will be added to the BOM's mailing list to receive its Monthly List of Publications. The listing describes all BOM publications and how to receive them. Selected BOM series publications describing ready-for-use technology will be sent to mine inspectors.

2. The MESA Magazine will be sent gratis to all BOM mining research professionals to inform them of MESA enforcement problems.

3. Formal meetings between BOM and MESA on Technology Transfer matters will be held on a regular basis.

We believe that this process of informing all MESA personnel of all BOM's research will improve the day-to-day exchange of results with mine operators.

GAO had stated in their report that only some progress toward reducing hazardous conditions has been achieved at many active coal waste sites. MESA has significantly reduced the hazard potential at most of the sites under the agency's jurisdiction. The findings and verbal comments of the members of GAO's Interagency Task Force from recent onsite evaluations of selected waste disposal sites support this position. Yet, GAO has failed to recognize the effort in terms of man-hours, equipment, and monies which have been expended by coal operators toward significantly reducing the hazard potential at most of the active coal waste sites and that this effort is a direct result of MESA's enforcement of the applicable mandatory regulations.

MESA cannot totally disagree with GAO's conclusion that 19 (or 51 percent) of the 37 sites inspected by the Interagency Task Force are potentially hazardous in varying degrees. However, MESA is of the opinion that the term "potentially hazardous" does not accurately reflect the seriousness of the problems existing at these sites. As stated earlier, the hazard potential at these 37 sites has been significantly reduced and structural deficiencies similar in magnitude to those which existed at the Buffalo Creek site at the time of the 1972 flood disaster are not present because of the amount of remedial work which has been accomplished during the previous four-year period.

Once again, we feel that the GAO report has not accurately stated the actual physical condition of coal waste sites currently being inspected by MESA. The enclosed photographs should substantiate this opinion [see enclosure (7)].

Departmental Authority for Inspection and Enforcement

Question. With the passage of the Surface Mining Act, does any question still linger over the Department's authority for inspection and enforcement? Please submit for the record an updated response to the GAO report. State specifically what is being done about the four GAO recommendations, and address any unresolved issues that might still remain.

Answer. It is important to note that the Mine Health and Safety Administration (formerly MESA) has transferred from the Department of the Interior to the Department of Labor. Therefore, coordination of the coverage of this problem must be the subject of interagency agreement. All of GAO's specific recommendations were addressed to MHSA and the Department of the Interior is unable to expand on the report dated January 25, 1978, issued while MESA was within Interior.

OSM is moving to handle effectively its obligations for control of waste piles and impoundments. From among the first inspectors recently hired and trained, a task force has been created to plan and implement a program under the Surface Mining Reclamation Act for inspecting waste impoundments where mining is continuing as required. OSM and the coal producing States are actively analyzing and identifying abandoned sites for early reclamation work. The Mine Health and Safety Administration has provided a listing of such sites based on a survey by their field personnel during the period of January through March of this year. This listing is being reviewed along with other "extreme danger" situations identified by the States. The highest priority for abandoned mine reclamation is those sites which create a hazard to public health and safety, among which should be hazardous waste impoundments. We expect to begin to announce the first such projects soon.

Budget Development

Question. Because your new agency is not yet really off the ground, it is difficult for the Committee to get a feel for the 1978 program development and the 1979 needs. I think it would be helpful to have your budget development history. Please supply for the record, down to the sub-activities level, the details of your original budget request and the departmental allowance. Also include the OMB allowance.

Answer. The 1978 presently available amounts and a history of the FY 1979 request by subactivities follows:

Appropriation/Activity Subactivity	FY 1978 Presently Available	Request to Department	Request to OMB	Request to Congress
	(in thousands of dollars)			
Regulation and Technology				
State regulatory program grants:				
Interim enforcement	3,600	7,500	7,500	7,500
Permanent program development	5,000	4,000	4,000	4,000
Permanent program operations	--	1,500	1,500	1,500
	8,600	13,000	13,000	13,000
Federal regulatory programs:				
Development of permanent programs	3,300	3,930	4,107	4,107
Federal inspection and enforcement	7,520	14,330	15,056	13,632
Technical support	5,760	8,890	9,146	7,022
	16,580	27,150	28,309	24,761
Mineral institutes	5,700	8,550	8,550	--
Total, this approp.	30,880	48,700	49,859[1]	37,761
Abandoned Mine Reclamation Fund				
State reclamation program grants	--	50,000	50,000	10,000
Federal reclamation programs:				
Fund management	4,784	11,300	11,489	8,690
Interim reclamation projects	15,875	50,912	51,163	30,835
Technical Support	988	1,188	1,208	1,208
Rural lands reclamation	5,000	42,000	42,128	10,128
	26,647	105,400	105,988	50,861
Small operater assistance payments	10,000	10,000	10,000	10,000
Total, this approp.	36,647	165,400	165,988[1]	70,861
Total, OSM	67,527	214,100	215,847	108,622

[1]Differences between request to Department and request to OMB were pay cost increases only.

State Grants

Question. How did you reach the conclusion in your justification that, overall, the State costs are expected to be about equal in fiscal 1978 and 1979?

Answer. We anticipated that program development efforts would begin early in FY 1978 and continue through 9 or 10 months. The FY 1979 grants would cover from four to eleven months, with an average of about the same amount as in FY 1978. Most states will be submitting their programs during FY 1979.

Question. You base your program development grant reduction on the drop in Federal assistance from 80 to 60 percent. Will that second year drop in matching apply to all States involved?

Answer. The drop in matching will apply only where a State has already had a grant at 80 percent for a year. There are indications that some States may forego permanent program development grants in FY 1978, in order to save their 80 percent eligibility.

Question. The budget request of $4 million for program development grants would not allow more than $150,000 per State. How do you know that will be sufficient?

Answer. We have no experience which would give us a firm answer on whether this amount is sufficient. It is our best estimate of the amount required to prepare revised legislation, regulations, permit systems, and other activities required to develop a permanent regulatory program.

Question. Page 6 of your justification estimates 27 program development grants for the 26 coal-producing States. For whom is the 27th grant?

Answer. There are presently 26 coal-producing States. Four additional States have coal resources which may be mined in the next few years. These are Louisiana, Michigan, Mississippi, and South Dakota. The estimate of 27 program development grants assumes that one of these four States will request a grant.

Question. Your $1.5 million request for operating grants to the seven States expected to implement permanent programs amounts to about $214,000 each. What operating period is that estimate based on and how did you arrive at the estimated grant level?

Answer. The $1.5 million request is based on periods of a few months at the end of the fiscal year, from two to four months depending on the State. The estimate covers the number of inspectors and related staff that we anticipate States would have at that time. This estimate may have to be revised as we get more data on State staffing requirements.

Question. The $300,000 request to reimburse six western States for enforcing standards on Federal lands works out to $50,000 per State. Is that in line with the cooperative agreement?

Answer. Yes. This estimate is based on the number of mines on Federal lands in each State with a cooperative agreement and the amount of time needed to enforce standards at these mines.

Question. What mechanism do you have for adjusting the various State grant levels if your estimates prove to be inaccurate? In other words, how can we ensure that adequate grant money will be available throughout 1979 without the need for a supplemental appropriation?

Answer. We know of no way to guarantee that adequate grant funds will be available through FY 1979. Many States are only now beginning to make thorough assessments of their needs. Some of those States which have made good estimates for FY 1978 reimbursement grants have given little thought to their needs for FY 1979. Consequently, until we gain more experience, there is no way to assure that our estimate will cover actual needs. Some increases can be covered by reprogramming. Funds can be transferred between program development grants and permanent program grants. Beyond this possibility, there is no way to cover major increases--if they occur--except through supplemental appropriations.

Inspection and Enforcement

Question. Please identify the $313,000 increase for other services.

Answer. This amount includes $250,000 for helicopter rental for use in inspection activities. The remainder is primarily vehicle maintenance. Helicopters will allow rapid response to difficult situations arising from citizen complaints, State requests, or operater requests for assistance. Certain conditions such as drainage patterns can be observed from the air much more readily than on the ground. The State of West Virginia has found that all the mines in five counties can be inspected from the air in the time it takes to complete ground inspections of two mines.

Question. Your request for the purchase of 65 four-wheel drive vehicles works out to almost 1 vehicle per new inspector. Do you really need that many four-wheel drive vehicles?

Answer. Our inspectors will spend the equivalent of 36 weeks a year on the road making mine inspections. Because most inspectors will actually be located at one or two man field stations some distance from their district office, we have only limited opportunities to pool vehicles. Allowing for some pooling, we have budgeted for nine vehicles for each 10 inspectors. In every area of the country, access to some mines requires four wheel-drive capability. The vehicles we are purchasing are the small utility type four wheel drives such as Scouts and Ford Broncos.

Question. Please supply a position detail and object classification for the base inspection and enforcement program. Also break down direct inspection and enforcement and the executive direction and administrative costs allocated to this activity.

Answer. The requested breakdown is as follows:

Positions by Grade:	Inspection and Enforcement Direct	Allocated Executive Direction and Admin.	Total Authority
GS-17	1		1
GS-15	7	3	10
GS-14	30	3	33
GS-13	26	5	31
GS-12	64	6	70
GS-11	55	4	59
GS-9	57	7	64
GS-8	2		2
GS-7	19	3	22
GS-6	7	3	10
GS-5	9	10	19
GS-4	18	5	23
GS-3	9	5	14
Total	304	54	358

($ in 000's)

11.1 Salaries, permanent	$6,273	$1,101	$7,374
11.3 Salaries, temporary	482	62	544
12.0 Personnel benefits	689	113	802
21.0 Travel	351	93	444
22.0 Transportation		130	130
23.1 Standard level user charges	289	58	347
23.2 Other rent, communications and utilities	241	48	289
24.0 Printing		38	38
25.0 Other sources	160	369	529
26.0 Supplies	183	36	219
31.0 Equipment	156	12	168
Total	8,824	2,060	10,884

Technical Support

Question. Your justification has indicated that OSM will rely heavily on other agencies for technical research. Why then do you need $2 million for applied research?

Answer. The $2 million is intended to provide OSM with limited capability to reimburse other agencies and to contract with non-government sources for research needs identified in OSM's regulatory activities. There are many areas where OSM must establish and enforce technical standards, but where another Federal agency has significant research expertise. In some cases on-going research by these agencies can be rescoped to meet OSM needs along with the requirements of the lead agency. The $2.0 million provides OSM with the capability to reimburse the primary agency for such additional efforts. As an example, the Bureau of Mines has long been active in blasting research, but work done to date has not been specifically focused on setting peak particle velocity standards as OSM must do in its regulatory program. With the $2 million OSM will be able to reimburse the Bureau of Mines for modifying its ongoing blasting research program to help OSM set optimum standards.

Question. How much of your total request for technical support is allocated to a cataloging and data center?

Answer. Of the $7,022,000 total, $400,000 is for the cataloging and data center.

Question. Have you complied with the House Committee directive to study currently available data and cataloging services and to report on the established need for this center?

Answer. OSM is continuing to study currently available systems and data. For example, we recently reviewed the operations of the Smithsonian Institution's Science Information Exchange. When we have completed these efforts, we will report to the Committees. We will not establish the Center until the requested report is supplied.

Question. How does the waiver of NEPA requirements in Title V of the authorizing act affect your environmental impact statement workload?

Answer. The waiver in Section 501 allowed us to promulgate the interim program regulations in December of 1977 without preparing an environmental impact statement. The waiver does not extend to the permanent program, and we have begun the preparation of a major EIS on the permanent program regulations which are now being drafted.

Question. Why do you need $186,000 to replace equipment? Will you have to replace equipment that you haven't even bought yet?

Answer. We do not expect to be replacing vehicles or major items such as typewriters and furniture. The $186,000 is for a combination of inspector equipment which will get heavy use every day and in some cases wear out quickly, and a provision for new equipment needs that do not surface until FY 1979. This is a difficult requirement to estimate, but we have allowed only approximately one-sixth the value of FY 1978 equipment purchases, and we believe that is a conservative realistic estimate.

Question. Why do you need $68,000 for 23 new positions most of which are not travel intensive?

Answer. The travel requirements primarily are for the 12 blasting specialists who will be travelling extensively to support Federal and State inspectors. We need to provide for approximately 12 weeks of travel annually for these personnel.

Abandoned Mine Reclamation Fund

Question. In the case of State grants, isn't it better to over estimate since these funds will carry forward into fiscal 1980 if not obligated?

Answer. It would be better to over estimate than to fall short of State needs. Keeping in mind that no State is expected to have an approved program for more than 4½ months in FY 1979, we believe the budget request will be sufficient.

Question. Your justification mentions close coordination to insure that State and Federal projects address high priority needs in any given State. Are you also taking steps to ensure that there is not duplication of State and Federal projects?

Answer. At present, OSM is working directly with the States to identify projects which require high priority attention. Projects suggested by someone other than the State are cleared with the State before the initial assessment is completed.

Section 405(f) of the Act requires the States to support requests for annual grants, after their Reclamation Plan is approved, with "a general description of each proposed project." This will permit close coordination of proposed OSM, SCS, and State projects to assure that duplication does not occur and that joint efforts are planned where appropriate.

Federal Reclamation Programs - Fund Management

Question. Going to Federal reclamation programs, your $8.7 million request for fund management is comprised mainly of $5 million for inventory and data gathering. With whom will you contract for this inventory work?

Answer. Plans have not progressed to a point where specific contractors have been identified. We have had exploratory discussions with several States, particularly with respect to data which must be collected by onsite examinations; with the Geological Survey with respect to mapping and aerial photography; and with some private firms who have expressed interest in contracting for parts of the work. All of these sources are likely to be used.

Question. What precautions are you taking to ensure that you are maximizing the use of available inventory and data? Isn't there already a wealth of data from the various Federal and State agencies that could be picked up at relatively small cost?

Answer. The following is a brief synopsis of several studies or inventories which have been reviewed over the past several months. Our review plus discussions with the contractor now working on the Bureau of Mines Abandoned Mined Lands Survey Demonstration have convinced us that (1) there is considerable information but (2) the existing information is of inconsistent quality, quantity, and utility. As a result, we anticipate that an early step in the inventory will be the compilation of a listing/abstract of existing data and data sources. This will include preliminary analyses of the reliability and usefulness of the data. Costs of this effort will be $300 - $350,000.

Summary of Abandoned Mine
Land Studies

Mined Land Redevelopment: Southeast Kansas portion of the Ozarks Region; The Ozarks Regional Commission and State Geological Survey of Kansas, October 15, 1972.

The report describes ongoing research in southeastern Kansas that is concerned with the redevelopment of land disturbed by mining. A data base was developed regarding location and identification, ownership, and characteristics of mined lands in Cherokee, Crawford, Bourbon, and Labette counties. Consists of two separate volumes, (1) October 15, 1970 to October 15, 1971, and (2) October 15, 1971 to October 15, 1972.

Illinois Lands Surface Mined for Coal; Ronnie J. Haynes and W. D. Klimstra, Southern Illinois University, June 1975.

The results of a survey of all lands in Illinois affected by surface coal mining as of June 30, 1971. An update of existing knowledge. Summaries by counties of various problems. Contains a comprehensive literature section.

Strip Mine Reclamation in Illinois; Illinois Institute for Environmental Quality, Argonne National Laboratory, December 1973.

Data derived from a comprehensive survey of Illinois strip-mined land was combined in a computerized data management system with a detailed assessment of the

unit costs associated with alternative reclamation techniques. The feasibility of achieving alternate end uses of reclaimed land was evaluated and cost-effectiveness measures were developed enabling the design of a step-by-step, long-range, public investment and private incentive reclamation plan for pre-law lands.

Problem Sites Surface-Mined Lands in Illinois; Southern Illinois University, W. D. Klimstra, July 1974.

A site-by-site compilation, identification and evaluation of coal surface mined sites in Illinois. Acreage categorized as "problem" reflect one or more of the following features:

1. Water with a pH less than 5.0.
2. Spoilbanks with a pH of less than 5.0.
3. Spoilbanks with a pH less than 5.0 and vegetation density less than 25 percent.
4. All exposed slurry and gob as well as inactive tipple sites.
5. Spoilbanks where both ground cover and overstory vegetation were less than 25 percent.

Inspection and Appraisal of Coal Mine Refuse Banks and Associated Impoundment in the State of Alabama; Corps of Engineers, May 1975.

This report contains information previously gathered by the Bureau of Mines and additional on-the-ground inspection data gathered by the Corps. The site specific information was rated as follows:

I. Imminent hazard or requiring immediate corrective measures.

II. Obvious deficiencies, hazard unknown.

III. No obvious deficiencies, probably no serious hazard.

Criteria was established for each rating category. The Appendices contain summaries of the refuse banks and associated impoundments and an index map.

Surface Mine Pollution Abatement and Land Use Impact Investigation; Appalachian Regional Commission, Report ARC 71-66-T2, August 1, 1975.

A four-volume report containing: (1) an inventory of pre-law, active and inactive surface mined lands in eastern Kentucky; (2) the selection and detailed analysis of a representative watershed; (3) the development of alternative abatement and post mining land use strategies; and (4) the investigation and recommendations of alternatives data storage and retrieval systems. Contains an inventory ~~of~~ map of pre-law active and inactive mines.

Volume I--An Introduction to the Eastern Kentucky Area and Its Data Characteristics

Volume II--Watershed Ranking Selection of the Study Area Analysis of the Study Area.

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Volume III--Consideration of Post Mining Land Use, Mine Inventory and Abatement Plan for Quicksand Watershed.

Volume IV--An Investigation of Alternative Data Systems With A Recommendation for a Statewide Environmental Storage and Retrieval System.

Land Reborn, A Study of Unreclaimed Coal Strip Mined Land in Ohio; Board on Unreclaimed Strip Mined Lands and Ohio Department of Natural Resources and Consultants, January 1, 1974.

An inventory of surface mined lands containing 253 aerial photograph/mylars at 7 1/2 minute (1:24,000) showing the mined lands, index maps 1:250,000, water pollution inventory, long range reclamation plan. More than 370,000 acres of strip mined land area will require some form of reclamation. This will cost 290 million dollars. Abandoned coal mines discharge over one million pounds of acid each day, 60 percent coming from underground mines. This will cost 440 million dollars.

Criteria for Developing Pollution Abatement Programs for Inactive and Abandoned Mine Sites; Environmental Protection Agency, 1975.

Does not contain direct inventory data, but does contain inferred data. Source of information on how to conduct an inventory and what is needed in an inventory from an environmental viewpoint.

Surface Mining and Our Environment, U.S. Department of the Interior, 1967.

A comprehensive review of the lands affected by surface mining throughout the United States based on a random sampling survey. The factors considered were:

(1) dynamics of the mining activity
(2) extent (area) of acres directly affected
(3) conditions resulting from surface mining
(4) the land surface and mineral rights ownership
(5) effectiveness of past reclamation activities
(6) overall objectives and overall costs

Rehabilitation Potentials and Limitations of Surface-Mined Land in the Northern Great Plains; Paul E. Park, U.S. Forest Service, July 1974. General Technical Report INT-14.

Approximately 86 different kinds of rehabilitation response units involving 146 different areas of land comprise the surface mineable lands at Northern Great Plains. Sixteen coal surface mines and three bentonite surface mines, located on 14 kinds of rehabilitation-response units, have a history of rehabilitation research or of action programs. These histories provide some short-term evaluation of success for comparison with predicted potentials.

Eastern Energy and Land Use Task Force Report, Volume III--Appalachian Coal; U.S. Fish and Wildlife Service, April 7, 1977.

A compilation of information providing a perspective from which the scope and extent of the problem might be contemplated with relation to loss, displacement and diminishment of wildlife resources caused by coal mining in Appalachia.

Status of Land Disturbed by Surface Mining in the United States as of July 1, 1977; Soil Conservation Service.

Areas of land disturbed by the mining of (1) coal, (2) sand and gravel, and (3) other minerals in the United States. The areas are listed by State and county in the following categories:

(a) reclamation not required by law
(b) reclamation required by law
(c) land not requiring reclamation--healed or reclaimed.

Mine Drainage Pollution Watershed Survey--Cherry Creek and Casselman River Watersheds, Garrett County, Maryland; State of Maryland, Department of Natural Resources, May 1973.

The study located, mapped, and evaluated all the coal and clay mines in the study area. Water quality data was gathered, geologic features mapped. Subsurface test borings were made. A unique aquatic biota study was performed. Mine development drawings were produced. Finally, mine abatement plans were assigned a priority ranking. This is Volume II of a two-volume study. Volume I is concerned with the Northern Youghiogheny River Complex.

Survey of Mining Refuse Uses in Northeastern Pennsylvania; Economic Development Council of Northeastern Pennsylvania, June 1977.

This report examines the potential prospects of refuse utilization in the region. The report

--evaluates the nature of the mining refuse problem
--examines existing levels of mining refuse utilization
--examines the problems which have prevented increased utilization, and
--suggests appropriate steps for increased utilization.

Although the report is not really a detailed inventory of the problem, it does quote numbers from other reports.

Illinois Lands Affected by Underground Mining for Coal; Illinois Institute for Environmental Quality, Nawrot, Haynes, Pursell, D'Antuono, Sullivan and Klimstra, March 1977.

This report delineates locations, surface ownership, and environmental problems associated with 4,076 abandoned underground mine sites in 70 counties in Illinois. Various data were collected for these sites to determine the extent of the problems.

Survey of Surface Mining in New Mexico; State Bureau of Mines and Mineral Resources, Circular 114, 1971.

Contains review of surface mining problems for certain minerals in New Mexico. A short chapter is devoted to strip mining of coal in New Mexico by Frank E.

Kottlowski and Edward C. Beaumont. This section notes information from other reports. No site specific data.

Land Utilization and Reclamation in the Mining Industry, 1930-71; Paone, Manning, Giorgetti, U.S. Bureau of Mines. IC 8642, 1974.

This report includes data on land use for wastes from underground and surface mining, for wastes from mill operations, and on subsidence. Data on land use and reclamation were obtained from operating companies, mining organizations, appropriate State agencies, and others concerned with such activities.

Land utilized by the mining industry from 1930 through 1971 amounted to 3.65 million acres, or 0.16 percent of the land mass in the United States. Land reclaimed during the same period was 1.46 million acres, or 40 percent of the land utilized.

Reclamation over the 42-year period was largely on lands utilized for surface mining of bituminous coal. New surface mining methods, particularly for coal, incorporate some form of land restoration.

The 10 leading States in land used for mining in 1971 were, in decreasing order, Kentucky, Pennsylvania, Arizona, Ohio, California, Florida, West Virginia, Illinois, Minnesota, and Indiana. Mineral commodities accounting for a major portion of land use are, in decreasing order, bituminous coal, sand and gravel, stone, copper, phosphate rock, iron ore, and clay; for coal, these commodities are produced principally by surface mining operations.

Abandoned Mined Lands Survey Demonstration-Technical Proposal; U.S. Bureau of Mines, Request for Proposal No. Jo177135, August 15, 1977.

The purpose of the Abandoned Mined Lands Survey Demonstration is to assess the feasibility of acquiring detailed engineering data on the nature and extent of abandoned coal mined lands through site visitations. The study will focus on examining existing data identifying locations of abandoned mined areas to ensure their accuracy and completeness. On-site visits will be conducted to identify abandoned lands in those areas for which data are unavailable or incomplete. In addition to identifying and plotting locations of affected areas, the study will document all safety and environmental hazards associated with each site. Items to be taken into account when considering safety and environmental hazards include,but are not limited to,the accessability of mining openings to the public and their location relative to populated areas, the possibility of the seepage of poisonous gases into surface structures from abandoned mine fires, the degress of air and water pollution created by burning banks and mine drainage, and potential subsidence effects to surface areas. Information will also be obtained on mineral and surface ownership, land values of affected and surrounding areas, and an engineering estimate of costs associated with reclaiming affected lands to a condition compatible with uses of surrounding areas.

The study will focus on comprehensive description of abandoned coal mines and related problems in three typical mining counties in two States: Indiana and Cambria counties, Pennsylvania, and Boone County, West Virginia. The study will examine areas affected by surface and underground mining and coal processing activities, including: abandoned unreclaimed surface mined lands; wastebanks-burning and non-burning; areas overlying abandoned underground mines having potential for subsidence; abandoned mine and coal outcrop fires; source of mine drainage pollution; and abandoned mine openings.

Additional Personnel

Question. You are asking for 18 new positions to strengthen the collection compliance. How many positions in total will that provide?

Answer. The increase will give us a total of 31 fee compliance officers in the field, or about one officer for each 225 mines. We expect this to be adequate staffing for the fee collection function.

Question. When in 1978 does the Bureau of Mines expect to complete its development of the fee accounting system and associated listing of operations subject to fee.

Answer. The basic system is installed and operational now. There is a master file of mines, with the associated accounting data and capability to produce a series of reports. On line access capability from OSM Regional Offices is being considered.

Question. Generally, where are the most critical abandoned mine land reclamation areas? How long do you anticipate it will take to reclaim these areas?

Answer. We are not at this time able to identify "most critical areas" nor to estimate time or costs for their reclamation. Specific "extreme danger" areas have been identified in the following States:

Pennsylvania	Alabama
Ohio	Maryland
Virginia	Illinois
North Dakota	Oklahoma
West Virginia	Tennessee

Colorado, Washington, Montana, and Kentucky have indicated that such areas probably exist but specific areas have not been identified. Other States have indicated that some form of inventory will be necessary before they can clearly identify the areas requiring first attention. Based on information now available, it is not likely that all "extreme danger" situations will be addressed with funds available in FY 1978 and requested for FY 1979.

Question. Please supply position detail and object classification for the base program under fund management.

Answer. The requested breakdown is as follows:

Positions by Grade:	Number
GS-17	1
GS-16	1
GS-15	3
GS-14	12
GS-13	8
GS-12	7
GS-11	-
GS-9	8
GS-8	2
GS-7	9
GS-6	-
GS-5	10
GS-4	6
GS-3	1
Total	68

	$ in 000's
11.1 Salaries, permanent	$1,708
11.3 Salaries, temporary	57
12.0 Personnel benefits	183
21.0 Travel	183
22.0 Transportation	14
23.1 Standard level user charges	69
23.2 Other rent, communications, and utilities	41
24.0 Printing	14
25.0 Other services	3,095
26.0 Supplies	42
31.0 Equipment	22
Total	5,428

Interior Reclamation Projects

Question: What will be the status of lands acquired by the Department for reclamation purposes?

Answer. Proposed rules for the Abandoned Mine Land Program were published April 26. These rules would discourage acquisition of land unless acquisition was necessary to meet program objectives. Where land is acquired, it will be held by the reclamation agency (Federal or State) only for the time required for reclamation. Following reclamation, such lands could be transferred (administratively or by sale under certain conditions) to other units of government for long term use and management or sold by public auction.

Question. Please supply position detail and object classification for the base program under Interior reclamation projects.

Answer. The requested breakdown is as follows:

Positions by Grade	Number
GS-15	8
GS-14	11
GS-13	18
GS-12	12
GS-11	11
GS-10	
GS-9	3
GS-8	2
GS-7	12
GS-6	3
GS-5	8
GS-4	7
GS-3	45
Total	140

	$ in 000's
11.1 Salaries, permanent	$1,673
11.3 Salaries, temporary	352
12.0 Personnel benefits	215
21.0 Travel	126
22.0 Transportation	92
23.1 Standard level user charges	85
23.2 Other rent, communications, and utilities	78
24.0 Printing	30
25.0 Other services	3,983
26.0 Supplies	46
31.0 Equipment	15
32.0 Lands and structures	9,290
Total	$15,985

Technical Support

Question. Please supply for the record, the position detail and object classification for your technical support activity. Also justify any significant object class changes between fiscal 1978 and 1979.

Answer. The requested information follows:

Positions by Grade	Number
GS-15	1
GS-14	10
GS-13	10
GS-12	2
GS-9	2
GS-5	2
GS-4	2
GS-3	1
Total	30

	$ in 000's		
	1978	1979	Change
11.1 Permanent salaries	618	844	+ 226
11.3 Temporary salaries	50	46	- 4
12.0 Personnel benefits	70	86	+16
21.0 Travel	68	71	+ 3
22.0 Transportation	5	9	+ 4
23.1 Standard level user charges	23	31	+ 8
23.2 Other rent, communications and utilities	18	26	+ 8
24.0 Printing	17	7	-10
25.0 Other services	54	58	+ 4
26.0 Supplies	21	17	- 4
31.0 Equipment	44	13	-31
	988	1,208	+ 220

The difference in object class estimates between the years are primarily the higher FY 1979 salary requirements due to substantial FY 1978 lapse savings, and a reduction from FY 1978 in equipment requirements.

Small Operator Assistance

Question. You are continuing the $10 million level for small operator assistance payments under the fund. Do you have any experience to date on the demand for this assistance.

Answer. We have no experience, but there seems to be little reason a qualified small operator would not apply. We are estimating 2,500 eligible small operators.

Question. How did you reach the estimate of $22,000 as the average cost of laboratory assistance per mine?

Answer. The amount required for assistance to each mine is highly uncertain, since the requirements we are helping to cover are new. We estimate that costs will vary from a few thousand dollars per mine where there is already good data available, to $44,000 per mine in extreme cases. The $22,000 average is our estimate from similar types of work being done by the U.S. Geological Survey, Bureau of Land Management, and Bureau of Reclamation which we are using until we get some experience.

Administrative Provisions

Question. Your administrative provisions contain language for the purchase of only 10 passenger motor vehicles. Apparently you do not consider the four wheel drive vehicles to be passenger carrying. Please explain.

Answer. Only sedans, station wagons and buses are considered "passenger carrying vehicles" for appropriation act language requirements. The four-wheel drive utility vehicles we propose to purchase are excluded similar to pick-up trucks.

Questions Submitted by Senator Huddleston

Question. From a review of these regulations, it appears that the one definable and enforceable point of the entire water quality control program is the effluent limitation guideline set forth in Section 715.17(a). Why then can't the water quality control portion of these regulations be based solely upon the attainment of these limitations rather than a complex system of established design criteria and ill-defined, undetermined credits for deviating from these criteria? Would this not achieve the desired result, while eliminating the very controversial sedimentation pond issue?

Answer. The experience of most State regulatory agencies regarding merely requiring the compliance with effluent limits has not been good. The industry, of course, is made of all sizes of operators. In many cases the small and middle size operators do not employ professionals to design their sediment control structures and, therefore, the Office of Surface Mining regulations are actually deemed as assistance or guidance to help them with their design problems. We should note that the "effluent guidelines" were issued by the Environmental Protection Agency (EPA) a year ago and it is felt that they were not generally being met. We feel that the operator who follows the sedimentation pond design standards which we have written (and which are concurred in by EPA) will in most instances satisfy the EPA and the OSM suspended solids standards.

Question. Upon what technical/engineering data will the allowable credits for deviation from the pond design criteria be based?

Answer. A similar mining situation in an adjacent area where the proposed credits have been shown by experience to be satisfactory will usually be the best test. Also the records of successful use on a small scale will indicate probable success in larger scale operations. New designs or concepts proven useful by industry or government research will also be considered when used and credits allowed.

Question. As the regulations now read, does OSM have enough funding to aid the small operators in determining credits for the deviation from these pond design criteria?

Answer. The small operators technical assistance program as authorized now only includes aid with required core drilling and analysis of the impact of the proposed mine on the hydrogeologic regime. It does not now include technical assistance to each small mine operator in pond design. In time we do, however, hope to offer training via conferences, workshops, seminars and field trips on many aspects of mining and reclamation including pond design. We also understand that the Soil Conservation Service can provide some assistance in pond design.

Question. Under Section 715.19 of the Interim Surface Mining Regulations is a requirement that blasting may not be conducted within 1,000 feet of a dwelling, church, school or hospital. Does this section pertain to a coal reserve permitted by a State prior to the time a mobile home or a conventional house is moved or constructed adjacent to the reserve?

Answer. All mines must comply with the Interim Surface Mining Regulations, including Section 715.19, after May 4, 1978.

There has been no allowance for previously permitted mines being given exceptions (unless it is qualified for the Small Mine Operators Exemption).

Question. Also under the same section on Blasting Procedures, the regulations state that distances lesser than 1,000 feet could be approved by the regulatory authority based upon a preblasting survey or other appropriate investigations. What are some of the circumstances you would approve as a variance to the 1,000 foot prohibition?

Answer. A regulatory authority might allow blasting within 1,000 feet of a structure with carefully controlled-usually reduced load-blasts. Other requirements to assure safety might include use of steep rope mats to contain fly rock, special stemming, etc.

Questions Submitted by Senator Robert C. Byrd

Question. West Virginia has many problems caused by past mining practices that have not yet been addressed by the Office of Surface Mining. I will cite several reclamation needs that should have immediate attention:

1. An area in Tucker County has an unreclaimed strip mine adjacent to Blackwater Falls State Park, that also detracts from the beauty of the Monongahela National Forest;

2. Another problem is burning abandoned coal refuse banks. Near Albright and Arthurdale there are refuse banks which are burning and causing air pollution;

3. In the Marion Meadows and Mileground neighborhoods near the Morgantown Airport there has been some subsidence damage due to past mining; and

4. Lost Creek and Browns Creek in Harrison County are experiencing acid mine water drainage.

Can OSM address these needs in the 1979 fiscal year? How? At what cost? Would any additional funding be needed?

Answer. None of the four problem areas identified were included in the "extreme danger" priority areas suggested by West Virginia nor in a list of refuse areas requiring attention provided to OSM by the Mine Safety and Health Administration. Some information had been provided by the Bureau of Mines with respect to the refuse banks near Albright and Arthurdale and subsidence in the Marion Meadows and Mileground neighborhoods. The information available is inadequate for us to determine whether "extreme dangers" do exist, to estimate costs, or to project whether work should or could be done with the funds requested for FY 1979.

On the basis of information provided by the Committee, these areas will be included with others to be evaluated within the next few months. If "extreme dangers" do exist, work will be programmed at the earliest practical date consistent with the degree of danger involved.

Questions Submitted By Senator Stevens

Question. Under section 301 of the Act, a series of authorizations were established to be expended at public institutions where mining schools exist. In 1978, $5.4 million was appropriated for program and research grants. How and where is this money being spent?

Answer. These funds have not yet been obligated. Draft regulations for the Mineral Institutes program have, however, been developed and published with comments due by July 5. Final regulations will be published shortly thereafter.

Question. Are you actively seeking the use of these funds? If not, why not?

Answer. The funds have been apportioned. After the final regulations are promulgated we plan to receive and evaluate applications. We expect 20 State Mineral Institutes to be designated this year, and to receive grants totalling the $5.4 million available. This would be an average of $270,000 per institute.

Question. Is there anything the Committee can do to help you in this area.

Answer. No assistance is necessary in FY 1978.

Question. Under Section 302, you have an authorization of $15 million initially plus $2 million each year for the next six years, for specific research funds for projects, on a grant basis. Where has that money gone?

Answer. Of the $5.4 million available this year, $3.2 million is actually under the Section 302 authorization. Each of the estimated 20 institutes would get an average of $160,000 in Section 302 grants. The remaining $110,000 would be the general grant under Section 301.

Question. What portion of the total of both programs has been expended in Alaska?

Answer. We have been conducting a dialog with Dr. Beistline of the University of Alaska and they are preparing to apply for a grant this fiscal year.

ACTION TAKEN ON SMALL OPERATOR EXEMPTIONS

Senator Huddleston. I would like your office to supply to the committee, if you would, a breakdown on the actions that have been taken on applications for small operators' exemptions, the listing of the number and types of objections. It would be helpful in this regard.

[The information follows:]

STATUS OF SMALL OPERATOR EXEMPTION APPLICATIONS

Number of applications received (Approx.)		1,000
Rejections:		
Late application (postmarked after March 13, 1978)	50	
Excess tonnage (over 100,000)	40	
Incorporated after May 2, 1977 (not eligible)	26	
New permit issued or permit renewed after August 3, 1977 (not eligible)	235	
Total rejections		350
Approvals (Approx.)		300
Pending receipt of additional information requested (Approx.)		350
Total		1,000

SUBCOMMITTEE RECESS

Senator HUDDLESTON. We will conclude our session for this morning. We will stand in recess until May 16 at 10 a.m., when we'll hear from Department of Energy witnesses.

Thank you very much.

[Whereupon, at 11:10 a.m., Thursday, April 27, the subcommittee was recessed, to reconvene on Tuesday, May 16.]

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1979

TUESDAY, MAY 16, 1978

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:05 a.m. in room 1224, Everett McKinley Dirksen Office Building, Hon. Robert C. Byrd (chairman) presiding.

Present: Senators Byrd, Bayh, Huddleston, Leahy, Burdick, Stevens, Young, and Bellmon.

DEPARTMENT OF ENERGY

STATEMENT OF JAMES R. SCHLESINGER, SECRETARY

ACCOMPANIED BY:

ALVIN L. ALM, ASSISTANT SECRETARY FOR POLICY AND EVALUATION
JEROME A. MILES, CONTROLLER
ROBERT THORNE, ASSISTANT SECRETARY FOR ENERGY TECHNOLOGY

1979 BUDGET REQUEST

Senator BYRD. The subcommittee will come to order. We're here to begin 3 days of budget hearings for the Department of Energy's programs that fall within the jurisdiction of this subcommittee. These programs include fossil energy research, development, and demonstration, energy conservation, the Economic Regulatory Administration, the Energy Information Administration, and the Strategic Petroleum Reserve. The fiscal 1979 estimate for all programs before this committee total $6.3 billion, an increase of $1.5 billion over appropriations to date for the same activities in fiscal year 1978.

Departmental justification statements in support of this budget request have been included in the hearing record. Because of a need for more specific information, the committee subsequently requested program summary sheets as a supplement to the justifications. We will include these summary sheets in the record at this point.

[The justifications follow:]

COAL MINING RESEARCH DEVELOPMENT
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 62,780
FY 1979 Request	$ 70,546
Net Changes	$ + 7,766

	(1) FY 1978 Enacted		(2) Base Adjustment		(3) FY 1979 Base		(4) Request		(5) Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. Underground Coal Mining		$45,325		$ + 535		45,860		$52,860		$ +7,000
2. Surface Coal Mining		12,435		+ 180		12,615		12,615		0
3. Coal Preparation Research	___	5,020	___	+ 51	___	5,071	___	5,071	___	0
Total Operating Expenses Mining R&D	114 1/	$62,780	+27	$ + 766	141	$63,546	141	$70,546	0	$ +7,000

NOTES
1/ FTP end-of-year ceiling at ERC's.

Mining Research & Development

	(Dollars in Thousands) FY 1979				
	FY 1978	BASE ADJUSTMENT	BASE	REQUEST	PROGRAM CHANGES
1. Underground Coal Mining	$45,325	$ +535	$45,860	$52,860	$+7,000

FY 1978 Program ($45,325)

The Underground Coal Mining Base Program centers around coal mine development, room and pillar mining, panel mining, novel systems, and haulage. Subactivity emphasis is to improve existing technology, to develop novel systems for thick, multiple, and pitching seam mining, and to assure the lowest cost coal by integrating mining operations into a total system. Among the major areas of concern being explored are:

--Improving the Economics of Production: through increasing capital and labor productivity by developing more efficient cutting and haulage systems and mine development methods; by increasing automation; by adopting labor-saving techniques; and by increasing machine reliability;

--Maximizing Resource Recovery: by improving the efficiency of pillar recovery in room and pillar operations; by increasing the effectiveness of panel mining systems; and by developing techniques for the mining of thick, multiple, and pitching coal seams.

--Protecting the Health and Safety of Mine Workers: by providing remotely operated systems and automated roof support systems; by implementing improved ventilation and degasification techniques; and by providing improved monitoring/warning systems; and

--Protecting the Environment: by reducing acid mine drainage; by minimizing the problems of waste disposal.

The base program for this subactivity includes ($16,350) for room and panel demonstration of mining techniques, such as longwall mining, and miner/bolter systems research; ($7,550) for mine shaft and interior development; ($8,950) for novel mining systems such as longwall caving systems for thick coal seams and emerging mine ventilation plans; ($950) for methane drainage research; ($3,500) for environmental studies, such as disposal of coal mine wastes in an acceptable manner; ($8,025) for transport, safety, and other research.

Base Adjustment ($+535)

The FY 1979 base adjustment provides for basically a continuation of the FY 1978 base program with a minor increase in the area of production mining techniques ($535).

FY 1979 Base ($45,860)

Within the FY 1979 base program methods for underground waste disposal will be evaluated and field trials initiated on those which prove cost-effective. Investigations of alternate mine designs and mine ventilation plans to counter spontaneous combustion problems will be extended. Studies will be initiated to categorize cost-effective pillar recovery techniques which mitigate the environmental consequences of mining while increasing resource recovery rates. A survey will be initiated to categorize and prioritize the full range of health and safety requirements for technology developments, including face ventilation, dust collectors, water spray and water additives. Efforts in room and pillar mining during FY 1979 include continuation of design improvements to the miner/bolters, remotely operated greater than seam height roof drills, and face area coal transport systems to reduce the delay, idle and maneuver time. The development of ancillary equipment and control systems using cost-effective, safe and relaible electrical and electronic components will continue to permit accelerated development of alternate systems. Prototype versions of miner/bolters and drills will be tested with a view to optimal combinations of these machines and alternate roof support techniques. Demonstration of the high productivity, increased safety and high recovery rates of panel mining methods will continue in FY 1979. European techniques and components being evaluated now will be improved in FY 1979 to make longwall mining more suitable to United States mining conditions. Haulage system development will continue in FY 1979 with development of the flywheel powered shuttle car,

development of a continuous miner/face haulage interface vehicle for coal size control, surge, feed control and final floor cleanup. Fabrication of components of an automated rail haulage system will be initiated. Continued empahsis is being placed on mechanization to reduce the time and cost of gaining access to the coal. During FY 1979, field trials and evaluation of the Blind Shaft Borer will continue. Fabrication of a surface powered rotary drilling system will be completed and field tests will be initiated. Development of an advanced tunnel system for slope and in-mine development will begin. Detailed design of the single-face-multiple-entry-system and the multiple-face-continuous-drivage-system will be initiated. A demonstration of directional drilling techniques for degasification will also be initiated. The first panel of the advance technology face will be developed and ready for component tests by the end of FY 1979.

The FY 1979 base funding for Underground Mining R&D is as follows: Mine Planning ($7,550); Production Mining (including novel mining) ($25,835); transport and equipment research ($8,025); and support and research ($4,450).

Program Changes ($+7,000)

The program changes reflect an increase of $7,000 to initiate work to implement Section 908 of the Surface Mining Control and Reclamation Act (P.L. 95-87) relating to (1) development and application of coal mining technologies for enhancing underground coal production and (2) improvement of safety and health techniques.

MINING RESEARCH & DEVELOPMENT (Dollars in Thousands)

		FY 1979			
	FY 1978	BASE ADJUSTMENT	/BASE	REQUEST	PROGRAM CHANGES
2. Surface Coal Mining	$12,435	$ + 180	$12,615	$12,615	$ - 0

FY 1978 Program ($12,435)

The Surface Coal Mining base program centers around equipment and systems for area and contour mining. Emphasis is on more effective use of standard equipment and improvement of present mining systems. However, newly developed equipment that can improve performance and be readily integrated into the mining cycle is also included. Of particular concern is the reclamation of land which has been surface mined. This consideration is built into all R&D in Surface Mining.

The Base Program for this subactivity involves studies for surface mine planning ($2,100); demonstrations and development for area and contour mining ($8,400); and supportive research (1,935).

Base Adjustment ($180)

The base adjustment basically provides for continuation of surface mining R&D begun in FY 1978 and prior with a minor increase of ($180) in the area of production (area and custom) mining.

FY 1979 Base Program ($12,615)

Within the FY 1979 base program, surveys of alternative mining methods that mitigate the environmental consequences of mining will be conducted. Studies will be initiated to develop cost effective overburden handling techniques for acid/toxic overburden materials thereby minimizing adverse environmental impacts. Work will continue on land restoration techniques to meet existing standards. Demonstrations of the dozer power sensor for overburden handling will be conducted and analysis will be completed on dragline components to improve the productivity of extraction. A demonstration on crossbridge mountain top mining will be completed which will evaluate the projected increased resource recovery for this method. Development of an extended depth auger operated from a contour mining highwall will be continued. Additionally, a number of studies will be undertaken to design operating techniques that will minimize the adverse impact of reclamation requirements upon the productivity and economics of surface mining operations. The focus of these

studies will include burial of acid forming materials, outslope space deposits, topsoil removal and replacement, and selective spoil burial.

The FY 1979 base provides for a FY 1978 level of effort in supporting continuous R&D Surface Mining Technology. These include Surface Mine Planning ($2100); Production Mining ($8,580); and Supportive Research ($1,935).

Program Changes (0)

There are no program changes beyond the FY 1979 base program for this subactivity.

Mining Research & Development

(Dollars in Thousands)

	FY 1978	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	Program Changes
3. Coal Preparation Research	$5,020	$ + 51	$5,071	$5,071	$ 0

FY 1978 Program ($5,020)

The coal preparation research base program is aimed at developing improved technologies for the upgrading of coal including its desulfurization, identification and removal of trace fugitive elements in raw coal and alleviating the environmental effects of the coal preparation process itself. Desulfurization can be accomplished either through physical processes or through chemical techniques which will remove the organic sulfur bonded within the coal molecule. Trace elements such as lead may be removed by washing techniques which require production of varying sizes of fine coal. It is necessary then to put the fine size coal in a more convenient form for handling, transport and storage.

The FY1978 base program provides $825 for physical coal preparation; $705 for chemical coal cleaning; and $3,490 for studies and support.

Base Adjustment (+$51)

The FY 1979 base adjustment provides for an oil agglomeration demonstration to recover fine coal from wastes, offset by completion of various coal preparation studies ($51).

FY 1979 Base ($5,071)

The 1979 base program in coal preparation research will permit construction of a coal preparation process test facility to test new washing techniques, flow schemes, and equipment. The facility will enable engineers, for the first time, to completely test a process before scaling it up to commercial size and reduce the time lag between bench scale development and acceptance of new techniques and equipment. An extremely useful byproduct of the facility will be the production of ton lots of specification coal for coal conversion processes. In addition, during FY 1979, an oil agglomeration demonstration to recover fine coal wastes will be completed and demonstrated. This process also shows great promise as a means of separating waste and water from fine coal in an integrated circuit. Continuous flow demonstration of a very promising chemical desulfurization (chlorinolysis) process will begin. Successful demonstration of both processes is vital in transferring much needed new technology to industry. Studies will be continued to identify and characterize minerals, carbon/sulfur compounds and trace elements found in raw coal. FY 1979 efforts in fine size coal handing and transporting include studfes on dewatering, compacting and transporting in coal/gelled oil mixtures. Studies will be initiated on the development of low cost dewatering techniques for process wastes; optimization of a filter process; and the recovery of BTUs associated with coal wastes by firing wastes in fluidized bed combustors.

The FY 1979 base program funds physical coal preparation ($825) chemical coal cleaning ($610) and supportive research ($3,636).

Program Change (0)

There are no program changes beyond the FY1979 base program for this subactivity.

LIQUEFACTI
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 110,200
FY 1979 Request	$ 104,866
Net Changes	$- 5,334

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Liquefaction										
Demonstration Plants		$ 4,000		$ 1,740		$ 5,740		$ 5,740		0
Other R&D		106,200		-7,074		99,126		99,126		0
Total Operating Expenses Liquefaction	118 1/	$110,200	-0-	$-5,334	118	$104,866	118	$104,866	-0-	-0-

1/ FTP end of year ceiling at ERC's.

(Dollars in Thousands)

Coal Liquefaction	FY 1978	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	Change
1. Demonstration Plants	$ 4,000	$ +1,740	$ 5,740	$ 5,740	$ 0

FY 1978 Program ($4,000)

The Solvent Refined Coal (SRC) process has been selected as a new demonstration project. The SRC technology is the most mature of the liquefaction processes; the pilot plant has operated successfully, making solid and liquid fuels, and the preliminary economic evaluations indicate that the process is competitive with other liquefaction processes. SRC provides an attractive route for converting high-sulfur coal to an environmentally acceptable, clean-burning synthetic fuel. An SRC demonstration plant will:

a. Provide an accurate basis for determining investment and operating costs for commercial-sized applications of this technology.
b. Prove the environmental acceptability of this fuel product for direct use in electric power generation.
c. Assess the marketability of a range of fuel products obtainable from a given mix.
d. Confirm the acceptability of this fuel product by utilities and industries with minimum burner retrofit.
e. Demonstrate the technical viability of the process by operating full scale solid-liquid separation, hydrogen generation and residue extraction systems, as well as increasing confidence in the improved metals, design, and fabrication technologies that are needed for commercial scale applications.

The FY 1978 funds provided for design and technical support activities in the areas of environmental and socioeconomic studies and equipment development and component testing for a solvent refined coal demonstration plant to produce a solid product ($4,000).

Base Adjustment ($ +1,740)

The FY 1979 base adjustment provides incremental funding to continue conceptual design for the SRC solid demonstration plant, as well as for the SRC liquid demonstration plant.

FY 1979 Base ($5,740)

The FY 1979 base level provides for continuation of the conceptual design, and environmental and other planning efforts required to initiate detailed design and procurement of equipment in late FY 1978 for the SRC demonstration plants ($3,000). It also provides for further design and technical support of other liquefaction demonstration plant efforts ($2,740) to include:

a. Conceptual design studies of commercial size facilities which are important tools in which reliable data bases (plant , PDU, etc.) are used as the input for developing reliable plant configurations and economic projections for commercially attractive synthetic fuel products. This funding request is for continuation of ongoing studies which focus upon important candidate technologies including: (1) continuation of Coal-to-Methanol design to include conversion of methanol to high octane gasoline; (2) flash pyrolysis liquefaction of coal; and (3) evaluation of emerging technologies to produce synthetic crude oil from different coal provinces.

b. Engineering support to furnish technical capability for evaluation of processes, development and/or review and evaluation of equipment design, and economic analyses of liquefaction process plants.

c. Environmental and socioeconomic studies to demonstrate environmental and socioeconomic acceptability of solvent refined coal. Technical support will be continued for environmental concerns as the demonstration projects move into the construction stage and planning is initiated for operational environmental monitoring.

d. Operational engineering monitoring support to be provided during conceptual and detailed design of the liquefaction demonstration project for operability, health and safety, operating and maintenance manuals, operator training programs, start-up and shut-down procedures and reliability/quality assurance.

		(Dollars in Thousands) FY 1979			
Coal Liquefaction	FY 1978	Base Adjustment	Base	Request	Program Changes
2. Other R&D	$106,200	$-7,074	$99,126	$99,126	0

FY 1978 Program ($106,200)

The overall objective of the Liquefaction activity is to provide technology which is economically feasible and environmentally satisfactory to convert coal of various kinds into clean liquid fuels to replace petroleum based fuels in a variety of applications. The specific objective is to develop alternative processes producing a heavy boiler fuel for electric power generation and industrial boilers, and a synthetic crude oil suitable for refining to transportation fuels, fuel oils, and chemicals. Simultaneously with the development of the coal conversion processes, this activity will develop the refining technology needed to convert crude synthetic oils into the higher grade products, such as gasoline, heating oil, and fuel oil. The FY 1978 program is aimed at research and development of a number of parallel processes for converting coal to a clean fuel to include:

a. Construction of the H-Coal pilot plant ($26,000)

b. Bench scale comprehensive testing program and PDU construction for the Synthoil process ($11,000)

c. Third generation process PDU efforts for Multi-Stage Liquefaction ($1,000), Zinc Chloride Catalyst ($2,000) and Flash Liquefaction ($500)

d. Continued operation of the SRC pilot plants at Tacoma and Wilsonville ($15,000)

e. Combustion tests to determine combustion characteristics of liquid SRC and the environmental effects of combustion ($1,000).

f. Design and long-lead procurement for the Donor Solvent pilot plant ($30,300)

g. Continued engineering research efforts on the Disposable Catalyst ($500), CO-Steam ($500), Fluid Coke ($1,000), Chemicals from Coal ($400), and the Entrained-Bed Pyrolysis ($500) projects.

h. Operation of the Cresap Test Facility to support component and equipment testing ($12,500).

i. Initial engineering design efforts for the Coal Liquids Refining Facility ($1,500).

k. Various environmental and special studies ($2,500).

Base Adjustment ($-7,074)

Negative increments:

a. Completion of construction requirements of the H-Coal pilot plant ($-5,000) and the Synthoil PDU ($-6,111)

b. Suspension of the PDU efforts for the Multi-Stage Liquefaction process ($-1,000)

c. Discontinued operation of the Wilsonville SRC pilot plant ($-1,500)

d. Delay in selection of a contractor for the Coal Liquids Refining Facility ($-1,500)

e. Discontinued efforts on the Chemicals from Coal ($-400), Entrained Bed Pyrolysis ($-500), and Fluid Coke ($1,000) projects.

Total Decrease ..... $-17,011

Positive Increments:

a. Peak activity in equipment procurement and construction of the 250 TPD Donor Solvent pilot plant ($+4,300)

b. Acceleration of the Flash Liquefaction $+1,500) and Zinc Chloride Catalyst ($+100) third generation projects

c. Enhanced plant operation and equipment testing at the Cresap Test Facility ($+1,000)

d. Shift in emphasis in the study of the Disposable Catalyst technology ($+511)

e. Increased environmental and support efforts ($2,526)

Total Increase ..... $+ 9,937

FY 1979 Base ($99,126)

The FY 1979 base for Liquefaction R&D provides funding to continue FY 1978 commitments in support of several pilot plant and PDU projects to advance the technology needed for converting coal to low-sulfur, low-ash fuel oil, and on supporting research to enhance coal conversion technology. Specifically, this includes:

a. Ebullated-bed (H-Coal) pilot plant ($21,000). The H-Coal process utilizes an ebullated bed of catalyst to hydroliquefy the coal to clean fuel oil and/or a synthetic crude oil at choice. Construction of the 200/600 tons per day pilot plant at Catlettsburg, Kentucky, is expected to be nearly completed in FY 1978 and operation is scheduled to begin in FY 1979. The decreased funding for FY 1979 results from the completion of construction.

b. Fixed-bed Hydrogenation PDU ($4,889). In the Fixed-bed Hydrogenation process, pulverized coal is slurried with some of its own product oil and pumped into the reactor with hydrogen at high velocity to create turbulence. The reactor is packed with catalyst is to liquefy and desulfurize the coal. The 10 TPD PDU at the Pittsburgh Energy Research Center, Bruceton, Pennsylvania, will be completed in FY 1978.

c. Zinc Chloride Catalyst PDU ($2,100). This project is designed to produce gasoline rather than fuel oil from coal. Basic tests show that through the use of zinc chloride as a hydrocracking catalyst, the objective can be achieved. A 100 pound-per-hour PDU will be operated in FY 1979.

d. Disposable Catalyst Hydrogenation ($1,011). This process uses very cheap catalysts to avoid the expense of recovery. After a single pass with coal through a hydrogenation reactor to convert the coal to oil, the catalyst is discarded with residual ash. Operations of improved disposable catalyst systems, are being sought in FY 1978. These operations will be at the bench scale at the Pittsburgh Energy Research Center.

e. Solvent Refined Coal (SRC) Pilot Plant ($13,500). Operation of the 50 PDU pilot plant at Tacoma, Washington, in late FY 1977 and early FY 1978, was to explore the use of slurry recycle (SRC II mode) to produce liquid products in sufficient quantity for combustion testing. The budget request for FY 1979 provides for continued operation of the pilot plant.

f. Solvent Refined Coal Utilization ($1,000). The FY 1979 this project will consist primarily of combustion tests with SRC. The feasibility of producing SRC has been demonstrated in the pilot plant so that fuel utilization now becomes the most critical concern. Utilization testing, similar in level to that of FY 1978, will be scheduled in FY 1979.

g. CO-Steam Process ($640). The use of synthesis gas to hydrogenate moist subbituminous coal at higher pressures than the SRC process is being

tested at Grand Forks Energy Research Center. Continued studies at the FY 1978 level of effort are planned for FY 1979.

h. Donor Solvent Liquefaction Pilot Plant ($34,600). The major activity scheduled in FY 1979 includes design, procurement and construction work on the Donor Solvent Liquefaction pilot plant which will be located at Baytown, Texas. This process, developed by EXXON, involves production of a distillate syncrude product in the primary liquefaction step through the use of a carefully tailored donor solvent. The syncrude product is recovered by distillation to effect solid-liquid separation. Recycle solvent (free of solids) is rehydrogenated in a conventional fixed-bed catalytic reactor.

i. Flash Liquefaction ($2,000). This process, being developed by Rocketdyne Division of Rockwell International Corporation, uses short reaction time hydropyrolysis of coal to favor increased yield of liquid products. Coal is reacted with hot hydrogen using a rocket injector system at very short reaction times. This system offers the potential of a small reactor with very high feed rates. Short-term tests in FY 1977 showed the feasibility of the reactor; in FY 1978 additional data were obtained and equipment was modified to obtain material balance data. In FY 1979 process evaluation data will be obtained from extended operation of the PDU.

j. Cresap LIquefaction Test Facility ($13,500). The Cresap Test Facility located at Cresap, West Virginia, will evaluate various critical systems such as solid-liquid separators and will determine the reliability of conventional equipment such as valves, pumps, heaters, and exchangers which are common to most liquéfaction processes. An integrated liquefaction process designed to produce boiler fuel will be operated at Cresap to provide realistic test conditions. Operations will be continued in FY 1979 to obtain data on equipment performance and on the two-stage liquefaction process for which the facility was designed.

k. Environmental STudies and Other Support ($4,885). This effort is to support generic studies applicable to liquefaction projects and to provide support to new project starts. Such studies will consist of, but are not limited to, environmental assessments, process emissions and effluent characterizations and coordination of environmental data among liquefaction projects. In this way, studies not appropriate or limited to single-process programs can be performed on a timely basis. During FY 1979, additional environmental activities will be required to support on-going and new projects. Experienced architect engineering firms are funded to conduct reviews and monitor projects and to help appraise the technical status, commercial feasibility, and economic impact of the various processes in the liquefaction area. The engineering and commercial process economics studies will expedite and assure that selection of the most promising processes will meet the variety of liquid fuel needs of the nation. The funding in FY 1979 is directly related to the technical evaluations and engineering analyses required for the liquefaction programs through FY 1979.

Program Change ($0)

There are no changes from the FY 1979 base program for this area.

COAL GASIF ION

FY 1979 ..get

Summary of Ch..ges

(Budget Authority in Thou..nds of Dollars)

FY 1978 Enacted	$ 141,600
FY 1979 Request	$ 122,446
Net Changes	$ -19,154

	(1) FY 1978 Enacted		(2) FY 1979 Base Adjustment		(3) FY 1979 Base		(4) FY 1979 Request		(5) FY 1979 Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. High-Btu R&D		$ 26,000		$ - 1,109		$ 24,891		$ 31,266		$ + 6,375
2. High-Btu Demo Plants		5,000		- 3,000		2,000		10,000		+ 8,000
3. Low-Btu R&D		55,850		-20,250		35,600		35,600		0
4. Low-Btu Demo Plants		11,500		- 4,200		7,300		7,300		0
5. Special Projects & Support Studies		17,850		+ 410		18,260		18,260		0
6. Underground Coal Gasification		11,000		+ 800		11,800		11,800		0
7. Demo Plant-Design & Technical Support		14,400		- 6,180		8,220		8,220		0
Total Operating Expenses Gasification	238 1/	$141,600	0	$ -33,529	238	$108,071	238	$122,446	0	$ +14,375

1/ FTP end of year ceiling at ERC's.

COAL GASIFICATION

FY 1978	Base Adjustment	Base	Request	Program Changes
$26,000	$ -1,109	$24,891	$31,266	+6,375

1. High-Btu R&D

FY 1978 Program ($26,000)

The High-Btu Gasification subactivity seeks to develop improved processes for the production of pipeline-quality gas from coal. Existing first generation technology is costly and is not applicable to Eastern coals because of the agglomerating properties of these coals. The program thrust includes verification of second generation processes through the pilot phase and the development of improved third generation processes.

The FY 1978 program includes continued operation of two pilot plants to obtain meaningful technical, economic and environmental data on these second generation processses. These include an incremental requirement for continuing operation of the Bi-Gas pilot plant ($3,000) and operating cost for the Synthane pilot plant ($14,500). Work on the Self-Agglomerating Burner Process will be continued in FY 1978 with operation of the PDU. An accelerated effort to develop economically promising third generation technologies is being pursued. These include further bench scale work on the Hydrogasification process in which hydrogen is reacted directly with coal to maximize thermal efficiency and thus reduce cost of the gas ($3,500), and design and construction of a catalytic gasification PDU ($3,500). The potential advantages of the catalytic gasification process include lower temperature, high thermal efficiency and lower equipment requirements.

Base Adjustment (- $1,109)

The FY 1979 base adjustment provides for continued operation of the Bi-Gas pilot plant with termination of the operational phase scheduled for the end of FY 1979 ($+4,900); operation of the Synthane pilot plant to test the feasibility of processing agglomerating bituminous coals ($-4,509) and termination of work on the Self-Agglomerating Burner process which has been tested in a PDU since FY 1977 with only modest success ($-1,500).

FY 1979 Base ($24,891)

The FY 1979 base level reflects the funding necessary to maintain a balanced High-Btu R&D program for pilot plant verification testing of second generation processes and an aggressive effort for developing efficient and less costly third generation technology.

High-Btu Gasification

Specifically the program includes:

Bi-Gas Pilot Plant (A.G.A. cost shared).....$ 7,900

The Bi-Gas pilot plant is located in Homer City, Pennsylvania. It is a slagging gasifier for operation at very high pressures to maximize methane formation in the gasifier product gas. The conceptual process was developed by Bituminous Coal Research, Inc. In FY 1978 short continuous operations of the pilot plant were achieved. Considerable modification of equipment and operating procedures were required and increased operating expenses were encountered. Operation of the pilot plant will be continued through FY 1979.

Synthane Pilot Plant.....$ 9,991

This gasification process, funded entirely by the Government, has inherent advantages in its simplicity and the ability to process any type of coal. Over 50 percent of the methane is produced in the gasifier which reduces costs of down-stream equipment. An integral oxygen fired pretreater eliminates the need for a separate pretreating step and improves the utilization of coal to produce pipeline gas. Shakedown and operation of the Synthane pilot plant at the Pittsburgh Energy Research Center (Bruceton, Pennsylvania) was initiated in

FY 1977 with Montana Rosebud subbituminous coal. By altering operating parameters, an improved heat transfer potential was effected and production of environmentally undesirable tars and phenols was eliminated. Currently the pilot plant is processing agglomerating bituminous coal and operation with this type of coal will continue into FY 1979.

Hydrogasification (Hydrane).....$ 3,500

This process is a promising third generation coal gasification technique in which almost all the producible methane (95%) is generated in the gasifier by direct hydrogasification of the raw coal. This technique results in a high thermal efficiency and makes the hydrogasification process potentially one of the least expensive ways to convert coal to substitute natural gas. Work on refining the reactor design and down-stream processing systems begun in FY 1978 will be continued under the base program in FY 1979 using facilities at Rocketdyne, PERC, MERC, Brookhaven and Cities Service.

Catalytic Gasification.....$ 3,500

The Catalytic Gasification process offers considerable promise for generating synthetic natural gas (SNG) more efficiently and economically. The most significant feature of the process is the use of coal impregnated with an alkali metal catalyst. This treated coal can be converted into SNG within the gasifier reactor or in a single processing step. In present gasification techniques the synthesis gas generated in the gasifier must be further processed in several additional steps prior to its conversion to SNG. Scale-up and conceptual design studies are in progress for modifying an existing pilot plant so that accelerated development of this process might be achieved. During FY 1978, these studies will permit initiation of a detailed design effort. Funds requested in FY 1979 will be utilized to operate bench scale and PDU systems.

Program Changes ($+6,375)

FY 1979 program changes reflect the acceleration of the development of potentially more efficient and less costly third generation coal gasification technology. In FY 1979 scaleup of the hydrogasification process to the PDU scale will be undertaken to reflect improved reactor designs and downstream processing systems ($+2,647) and in the catalytic gasification project, detailed design and modification of an existing pilot plant will be conducted to test this process at an expanded scale.

Coal Gasification

(Dollars in Thousands)

		FY 1979			
	FY 1978	Base Adjustment	Base	Request	Program Changes
2. High Btu Demo Plants	$5,000	$-3,000	$2,000	$10,000	$+8,000

FY 1978 Program ($5,000)

The purpose of this subactivity is to demonstrate, on a near commercial scale, second generation coal gasification processes as the final step in the R&D process leading to commercial implementation of this technology. Specific objectives include verification of the technical, economic and environmental feasibility of second generation technology for use of a range of U. S. coals.

The FY 1978 program comprises the concept development, design, construction and operation of a demonstration plant capable of processing up to 3,800 tons of coal per day to produce pipeline-quality gas. Two competitive conceptual process designs are underway. The plan is to select one of the two to proceed to eventual construction and operation.

Base Adjustment ($-3,000)

This adjustment to base reflects a decreased incremental requirement to complete the conceptual design effort for a High Btu pipeline gas demo plant in FY 1979.

FY 1979 Base ($2,000)

Under the base program conceptual and process design activities on the two competitive contracts (CONOCO - Slagging Lurgi process and ICGG - Cogas process) will have reached the stage where a successful candidate process will be selected to proceed to detailed design and planning for construction. The FY 1979 funds will provide for the completion of environmental analyses and cost studies in relation to these projects.

Program Changes ($+8,000)

The FY 1979 Program change reflects initial funding to support conceptual design efforts and related environmental analyses, engineering evaluations and testing activities involving processes to produce high Btu pipeline gas from coal. Among the processes being evaluated in the HYGAS process for which technical feasibility has been established in the HYGAS pilot plant. If required to complete the evaluation of this process, operation of the pilot plant may be maintained to obtain precise engineering design data essential for completing the conceptual design effort.

COAL GASIFICATION

	FY 1978	BASE ADJUSTMENT	FY 1979 BASE	FY 1979 REQUEST	PROGRAM CHANGES
3. Low-Btu R&D	$55,850	$ - 20,250	$35,600	$35,600	$ 0

FY 1978 Program ($55,850)

The objectives of this activity are to develop in cooperation with industry, the technology needed for commercial plants to convert coal to gaseous fuels with a heating value of from 100 to 500 Btu per cubic foot, to establish the required techniques for using these coal derived fuels for chemical feedstocks, industrial fuels, and combined cycle systems.

The FY 1978 program includes bench scale studies, PDU construction and operation related to technology development of Fixed Bed Gasification ($4,550); and Fluid-Bed Gasification, pressurized ($5,000) processes. This program also includes funds for completion of design and initiation of construction of the Combined Cycle Test Facility ($20,000); initiation of design for a Hydrogen from coal facility ($15,000); completion of R&D in Ash Agglomeration ($1,300); and funding to begin fabrication or operation of five Gasifier in Industry demonstration projects ($10,000).

Base Adjustment (- $20,250)

The base adjustments provide for incremental funding to modify the continued operation and testing of Fixed Bed Gasification PDU's (+ $1,950); a decreased requirement in fluid-bed gasification due planned completion of operations and process evaluation (- $1,000). The incremental funding required to continue entrained bed gasification, atmospheric R&D leading to process evaluation (+ $1,490); termination of Ash Agglomeration R&D work (- $1,300), and reduced requirement to complete fabrication and operate five Gasifier in Industry projects underway (- $8,000).

The base adjustment also provides for a significant decrease in the pace of development of the Combined Cycle Test facility (- $10,000) and in the Hydrogen from Coal facility (- $3,390).

FY 1979 Base ($35,600)

The base program in the Low-Btu Gasification subactivity is responsive to the growing demand for technology that can generate alternate sources of fuel gas to satisfy the needs of industry and power generation. The program includes:

Fixed-bed Gasification, Atmospheric ($6,500)--Two projects are underway directed toward advancing the technology of fixed-bed gasifiers and expanding their suitability for the generation of fuel gases. In the first project, at the Morgantown Energy Research Center, operation of the fully integrated stirred fixed-bed gasification process, including gasifer, cleanup, and combustion is scheduled in FY 1979.

The second project at the Grand Forks Energy Research Center, North Dakota, continues development of a slagging, fixed-bed gasifer. The 25 tons-per-day gasifier has been reactivated for this work. An expansion of the building, installation of a continuous pressurized coal feeding system and addition of improved auxilliary and utility services will be implemented in FY 1979. This will allow process data to be obtained on a variety of coals at slagging, fixed-bed conditions.

Fluid-Bed Gasification, Pressurized ($4,000)--Three fluid-bed gasification projects are in progress and will be continued through FY 1978 and early in FY 1979. One or, perhaps, two of these projects will be continued on an expanded scale. FY 1979 funds are requested for design and construction of a pilot plant.

Entrained-Bed Gasification PDU ($1,490)--This project comprises a three-phase project consisting of design, construction and operation of five-ton per-hour PDU at Windsor, Connecticut. Under Phase I of the project, the facility was designed and evaluated to determine technical and economic feasibility of the process. Phase II, the pilot plant construction, has been completed and the operational test program has been initiated. During FY 1978 and FY 1979, it will be operated at atmospheric pressure to obtain data for possible scaleup.

Combined Cycle Test Facility ($10,000)--The Powerton Combined Cycle Test Facility is a highly adaptable and flexible test facility which provides a capability to evaluate, at minimum cost, a variety of coal gasification, gas purification, energy conversion systems and the integration of combinations of these technologies.

Procurement of the gasifiers, the gas turbine components and most of the gas purification components will be underway in FY 1978 and in FY 1979. Construction begins in FY 1978 and will continue through FY 1979.

Hydrogen-from-Coal-Facility ($11,610)--Hydrogen is an essential industrial raw material for the fertilizer, chemical and petroleum refining industry. Production from coal would conserve large quantities of natural gas and fuel oil. The use of hydrogen is a prerequisite for most coal liquefaction and gasification processes. To demonstrate production of hydrogen from coal, a Program Opportunity Notice (PON) was issued in FY 1976 seeking industrial co-funding on an equal basis with the Government. Proposals have been evaluated and contract negotiations with Air Products and Chemicals will be completed in FY 1978 to design, construct and operate such a facility in Cedar Bayou, Texas. Primary construction and procurement expenditures will occur in FY 1979.

Gasifiers in Industry ($2,000)--This project is aimed at the end-use investigation of low-Btu gas produced in state-of-the art equipment. A Program Opportunity Notice (PON) which mandated 50 percent co-funding by industry was issued in FY 1976 and five cooperative agreements have been negotiated for the integration of low-Btu gas production with various industrial end-use application. The first project began operation early in FY 1978 at the Glen Gary Brick Company in York, Pennsylvania, and operation of the second project will be started before the end of FY 1978 at the Duluth, Minnesota, campus of the University of Minnesota. Additional projects will be in design and/or construction phases at Pikesville, Kentucky; Perham, Minnesota; and Hitchins, Kentucky, during FY 1978. The FY 1979 funds will be utilized for additional equipment at the Pikesville facility to remove sulfur from low-Btu gas for possible use in an industrial park, and for studies on economic potential of small low-Btu gasifiers in various industries.

Program Changes (-0-)

There are no substantial program changes in the subactivity in FY 1979.

Coal Gasification

	(Dollars in Thousands) FY 1979				
	FY 1978	Base Adjustment	Base	Request	Program Changes
4. Low Btu Demo Plants	$11,500	$ -4,200	$7,300	$7,300	$ -0-

FY 1978 Program ($11,500)

The FY 1978 Program provides necessary funding for conceptual design of three Demonstration Plants. This includes a Low Btu Fuel Gas Industrial Demo Plant ($4,500), a Low Btu Fuel Gas, Small Industrial Demo Plant ($4,000), and initiation of conceptual design for a Low Btu Fuel Gas Utility Demo Plant ($3,000).

Base Adjustment ($-4,200)

The FY 1979 Base Adjustment reflects a reduced incremental requirement for completion of conceptual design for a Low Btu Fuel Gas Industrial Demo Plant ($-1,500); and the reduced incremental requirement for completion of conceptual design for a Low Btu Fuel Gas, Small Industrial Demo Plant ($-2,700).

FY 1979 Base ($7,300)

The Base Program provides for the demonstration on a commercial component scale, second generation processes for converting coal to clean gaseous fuels for industrial and utility use and for use as chemical feedstocks. The FY 1979 program includes:

Industrial Low-Btu Fuel Gas demonstration plant. FY 1979 operating funds for this project are required for the completion of Phase I activities which include: commercial design and evaluation, process and conceptual design of the demonstration plant, current Phase II and III working estimates; environmental reports; construction and operating plans for the demonstration plant; and economic reassessment; pilot plant confirmation studies and all of the program management activities to cover these areas ($3,000).

Small Industrial Low-Btu Fuel Gas demonstration plant. The conceptual design effort of the Small Industrial demonstration plant will be completed in FY 1979. Environmental monitoring and identification of constituents in plant effluents, products and by-products, and trade-off studies for alternate uses of oil and tar produced as a by-product of gasification will also be completed prior to Phase II (detailed design and construction) activities ($1,300).

Utility Low-Btu Fuel Gas demonstration plant. Process, conceptual design efforts and market studies will be continued in FY 1979 ($3,000).

Program Changes (0)

There are no program changes in this subactivity in FY 1979.

	(Dollars in Thousands) FY 1979				
	FY 1978	Base Adjustment	Base	Request	Program Changes
5. Special Projects & Support Studies					
FY 1978 Program	$17,850	$+410	$18,260	$18,260	-0-

The FY 1978 Program provides for R&D projects in direct support of gasification technologies such as Hot Gas Cleanup ($3,600); Engineering Evaluation ($3,000); Equipment Materials and Process Development ($4,100) and Environmental and Other Supporting R&D projects ($7,150).

Base Adjustment ($+410)

The FY 1979 Base Adjustment reflects the incremental cost associated with contract commitments to continue FY 1978 initiated ongoing support and special projects. Specifically Hot Gas Cleanup ($-2,200); Engineering Evaluation ($-100); Equipment Materials and Process Development ($-1,256); offset by Environmental and Other support projects ($+3,966).

FY 1979 Base ($18,260)

The Base program provides for a continuing but varying R&D projects necessary to support FY 1978 authorized technology development in the gasification Activity.

Specifically the program includes:

Hot Gas Cleanup ($1,400) - The project includes the development of a continuous method of removing gas impurities by molten salt. A PDU which has been operated on a batch basis at the Battelle Pacific Northwest Laboratories will be converted to continuous operation in FY 1978. A decision point will be reached by the end of FY 1978 and a favorable decision will require funding for the design and possible construction of a larger unit in FY 1979. Other gas cleanup activities include laboratory investigation of solid absorbants such as iron oxide and improvements in cyclones and other inertial methods for removing of solid particles from gas streams. A special Program Research and Development Announcement procurement will be jointly funded in FY 1979

Engineering Evaluations ($2,900) - Monitoring of pilot plant operations and data collection will be continued in FY 1979 to provide comparative cost of these processes. Emphasis will be placed on providing these services to the Low-Btu Gasification subactivity to evaluate the adaptability of gasifiers currently under development.

Equipment, Materials and Process Development ($2,844) - Equipment and Materials Studies on pilot plant operational data as well as on the preliminary design efforts underway on conceptual high-Btu gasification plants will be continued hrough FY 1979. The data generated is essential to solving those specific problems that will be encountered in pilot plant operation.

Process development efforts include methanation studies at PERC and the development of improved systems for removal of char from a high pressure gasifier which will be continued through FY 1979.

Environmental Studies and Other Support ($11,116) - The environmental studies support many or all gasification projects and provide support to both new-start and ongoing projects. Such studies consist of, but are not limited to, environmental assessments, process emissions and effluent characteristics. Studies on detailed evaluation of the effluents from each pilot plant and PDU installation will be expanded in FY 1979

Program Changes (-0-)

There are no changes from the FY 1979 base program in this subactivity.

(Dollars in Thousands)

		FY 1979			
	FY 1978	Base Adjustment	Base	Request	Program Changes
6. Underground Coal Gasification	$11,000	$+800	$11,800	$11,800	-0-

FY1978 Program ($11,000)

The FY 1978 program provides for an ongoing field testing program in Linked Vertical Wells ($4,200) and Packed Bed ($2,200) along with site selection and preliminary planning for field testing of Steeply Dipping Bed technology ($1,100). Also included in preliminary planning for field testing of Longwall Generator technology for thin coal seams in the eastern United States ($1,200) plus related environmental and advanced studies ($2,300).

Base Adjustment ($+800)

The funding for Linked Vertical Wells (LVW) will permit continuing sub-pilot design at Hanna No. 5 and initial testing,coupled with LVW site applicability tests at Hoe Creek, Wyoming and Pricetown, West Virginia. This increase in field testing will require additional funding for the LVW program ($+100).

An increase in funding is required to support field testing of Hoe Creek No. 3 (LVW-steam/oxygen injection), offset by completion of shaped charge link tests ($+250).

Decision has been made to defer research efforts developed by Morgantown ERC on the Longwall Generator process, which may be applicable to eastern coal. The gasification test at Pricetown, West Virginia, to assess planning as

described above, will be completed in early FY 1979. Data from this test will be analyzed to support a later program of advanced directional drilling technology (-$1,200). Funds will be necessary to permit initiation of design work for two field tests of Steeply Dipping Bed (SDB) technology in support of contract with Gulf R&D Company to undertake such research (+$950). Additional funding is necessary to support further air-emission measurements for LVW testing at Hanna No. 4, water quality data testing at MERC and analysis of 2-stage gasification concept applicable to Southwest dry coals (+$700).

FY 1979 Base ($11,800)

This funding level will permit orderly continuation of in situ coal gasification research on three vital and complex technologies. Funds for the LVW process will permit initial field testing of Hanna No. 5, with efforts to secure increased industrial participation. Also, site applicability testing will take place for additional LVW projects ($4,300). Funding for the Packed Bed process to permit field testing at Hoe Creek No. 3, and continuing research on in situ production of a medium Btu gas, will require $2,450K. The Gulf R&D contract on the SDB project will require additional funding to characterize site selection, install underground manifolding and instrumentation ($2,050). Funding will be required for environmental support, such as studies of process-related effects on air emissions, hydrology, and subsurface water quality ($900). Also, Supporting Research to permit support of major concepts which could apply to dry seams, Eastern coals and Texas lignites, and development of instrumentation is necessary ($2,100). This will permit process analysis of a two-stage gasification concept applicable to Southwest dry coals.

Program Changes (0)

There are no changes from the FY 1979 base in this subactivity.

(Dollars in Thousands)

		FY 1979			
	FY 1978	Base Adjustment	Base	Request	Program Changes
7. Demo Plants-Design and Technical Support	$14,400	$-6,180	$8,220	$8,220	-0-

FY 1978 Program - $14,400)

The FY 1978 program in this subactivity includes ongoing design studies to develop optimum plant configurations and provide valuable benchmarks in planning demo plant projects, and evaluating proposals; large-scale operating equipment testing, such as values, coal feeders, etc., which are generic to the coal conversion plant; development of components; engineering support for the various demonstration plant projects, provided by DOE energy research centers and laboratories, U. S. Army Corps of Engineers, and various private engineering firms; studies on the social, ecological, and esthetic impact of coal conversion plant development; numerous modeling, economic and financial analyses; and management support.

Base Adjustment ($-6,180)

The base adjustment reflects decreased incremental funding for numerous studies, equipment testing, environmental studies, etc., which will be completed in the budget year including design study on identifying potential demonstration candidates, engineering studies required for conceptual design of selected demonstration projects and miscellaneous reductions in equipment testing and program support.

FY 1979 Base ($8,220)

The FY 1979 Base provides for continuation of ongoing studies to identify potential candidates for conceptual design considerations; development work on major components and equipment suchas valves, pressure vessels, and instrumentation for coal feeders; engineering support for the slagging gasifier at Grand Forks ERC and selected technical support and analysis of environmental concerns for the gasification demonstration program and minimal planning and support.

Program Change (-0-)

There are no changes from the FY 1979 base program for this area.

ADVANCED POWER SYSTEMS
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 25,500
FY 1979 Request	$ 26,700
Net Changes	$+ 1,200

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. Advanced Power Systems - Advanced Power Systems		$25,500		$+1,200		$26,700		$26,700		$ 0
Total Operating Expenses - Advanced Power Systems	0	$25,500	0	$+1,200	0	$26,700	0	$26,700	0	$ 0

ADVANCED POWER SYSTEMS

(Dollars in Thousands)

	FY 1978 ENACTED	FY 1979 BASE ADJUSTMENT	FY 1979 BASE	FY 1979 REQUEST	PROGRAM CHANGES
1. Advanced Power Systems	$25,500	+ $1,200	$26,700	$26,700	0

FY 1978 Program ($25,500)

The objective of the Advanced Power Systems activity is to increase the direct utilization of coal in the utilities by developing advanced, highly efficient integrated coal conversion utilization systems that can efficiently displace critical oils and gas fuels. Subactivities include technology development of open cycle gas turbines ($18,700), closed cycle power systems ($3,500), and support and additional programs ($3,300). Efforts are focused on continuing high temperature turbine technology, combustor and ceramics development, completing the alkali metal vapor turbine boiler shakedown tests, initiating systems definition studies for central station district heating applications for closed power systems, and continuing studies and engineering evaluations of advanced turbine components and equipment.

Base Adjustment (+ $1,200)

The base adjustment provides for the continuation of the open cycle high temperature turbine technology (HTTT) development (+ $5,650) at a slightly accelerated pace but still at a stretchout schedule from the target date of the mid-1980's for technology readiness. The closed cycle base adjustment (-$3,500) was a result of completing the alkali metal boiler tests and to use FY 1979 as an assessment period to determine if this technology should be developed further. The base adjustment in the support and additional programs area (- $950) is a result of the completion of several studies and the continuation of others initiated in FY 1978 but at lower funding levels.

FY 1979 Base ($26,700)

The major application of the technology under development is for base load electrical generation by central station utilities. Coal and coal-derived fuels are projected to be the predominate fossil energy resource for electric utilities in the future. Advanced Power Systems have shown to be a most promising option for efficiently using coal in an economic and environmentally acceptable manner. They are aimed toward providing technology for increasing the utilization of our abundant coal fuel resources in order to offset the use of critical oil and gas in the utility market. The effort is arranged in three tasks: 1) Open-Cycle Gas Turbine, 2) Closed-Cycle Power Systems, and 3) Support and Additional Programs.

Open Cycle Gas Turbine ($24,350)

The integrated high-temperature gas turbine/low-Btu coal gasification combined cycle plant holds significant promise for achieving the high efficiency needed to offset the energy losses in cleaning and gasifying coal so that electricity can be produced at a comparable cost with oil-fired steam and nuclear baseload systems. Such a system would use materials, internal cooling and components designed specifically for high reliability utility service and reject heat to a heat recovery boiler to generate additional steam turbine power. This system concept offers potentially lower capital cost, shortened construction time and higher efficiency than a conventional high pressure steam powerplant. The program is to establish a technological base for use in developing a combined cycle or similar system. A gas turbine with a high turbine inlet temperature (over 2600°F) burning coal derived fuels is the key component for this system. The critical technical problem which is being solved in order to commercialize such a plant is cooling of the high temperature turbine components.

Major potential economic advantages are offered by integrated coal conversion and utilization systems as a result of possible lower capital costs of high-performance combined cycle turbine systems, and from their attractive coalpile-to-busbar efficiency. Additional benefits include lower environmental impact (reduced consumptive water use, clean flue gas), reduced

fuel usage due to higher efficiency, and reduced usage of premium-priced synthetic/natural gaseous and liquid fuels.

Phase II of the open cycle gas turbine program was initiated in FY 1978 with two parallel contracts. One investigates advanced water cooling techniques for achieving the 2600°F firing temperatures, the other explores advanced transpiration air cooling. FY 1979 funding will permit continuation of this work on the planned schedule of accomplishments leading to the Phase III verification testing beginning in FY 1980.

Closed Cycle Systems ($0)

The closed power systems presently do not appear as attractive as the open cycle systems for baseload power, unless the cycle reject heat is recovered and distributed for space heating needs of a community. Thus, closed power systems are being evaluated to use district heating applications where both power and useful heat are produced (cogeneration). Work will concentrate on systems configuration optimization supported by experimental technology evaluation of key components in order to generate data which can be used to further develop a full scale system, if warranted. In a like manner, work on the Alkali Metal Vapor Turbine (AMVT) closed cycle topping system will be limited to developing critical boiler technology permitting a decision on future system development. A complete assessment of closed cycle systems is being conducted through FY 1979 to determine which system holds the most promise for utility applications and justifies further R&D support under subsequent budget requests.

Support and Additional Programs ($2,350)

Supporting technology for the Integrated Coal Conversion and Utilization Systems is required in many areas. Within DOE there must be close coordination in this technology development to avoid duplication. In addition, strong coordination is required and will be maintained with other Federal agencies, National Aeronautics and Space Administration (NASA), Electric Power Research Institute (EPRI), and industry.

Studies will be conducted to determine the overall economics of various closed-power system approaches. Coal-derived liquid fuel/open cycle gas turbine interface studies are also planned. These studies will assess the economical technological trade-off for coal fuel conversion and gas turbine technology development (e.g., optimum level of coal liquid fuel cleanliness considering the projected turbine technology). Additional efforts in FY 1979 will concentrate on environmental studies, fireside corrosion, NASA support, special projects, combustion studies, reliability studies, plant integration efforts, and hot gas cleanup and heat transfer studies.

Program Changes ($0)

There are no program changes.

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DIRECT COMBUSTION
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 68,200
FY 1979 Request	$ 54,716
Net Changes	$ -13,484

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Direct Combustion Demonstration Plants		$10,000		$-6,400		$ 3,600		$ 3,840		$+240
Other R&D		58,200		-14,474		43,726		50,876		+7,150
Total Direct Combustion	82 1/	$68,200	-0-	$-20,874	82	$47,326	82	$54,716	-0-	$7,390

1/ FTP end of year ceiling at ERC's

Direct Combustion

	(Dollars in Thousands) FY 1979				
	FY 1978	BASE ADJUSTMENT	BASE	REQUEST	PROGRAM CHANGE
1. Demonstration Plant	$10,000	$ -6,400	$3,600	$3,840	$ +240

FY 1978 Program ($10,000)

The FY 1978 Direct Combustion Demonstration Plant Program allows a project start for a plant which would demonstrate the feasibility of direct coal burning in a fluidized-bed boiler as a heat source to a central station power plant. The FY 1978 program supports competitive design efforts for an Atmospheric Fluidized-bed Demo Plant ($6,000). The program also includes Design and Technical Support ($4,000) to develop and test equipment and to provide management support for Combustion Demonstration Plants.

Base Adjustment ($-6,400)

During FY 1978 competitive power plant designs will be conducted. Preliminary boiler designs have been funded by DOE. Project delays due to changes in environmental standards and technical problems reflects a negative increment for the Atmospheric Fluidized-bed Demo Plant ($-4,640). Reduction in Design and Technical Support ($-1,760) due to completion of conceptual design studies is reflected in the base adjustment.

FY 1979 Base ($3,600)

The goal of the FY 1979 base program for Direct Combustion Demonstration Plants is to demonstrate, on a near-commercial basis, the feasibility of direct coal burning in an Atmospheric Fluidized-bed Boiler. The FY 1979 base program provides for completion of conceptual designs for the Atmospheric Fluidized-bed Demo Plant ($2,000) and for associated Design and Technical Support ($1,600) activities. These activities include conceptual design studies, equipment and material development, and engineering studies.

Program Change ($+240)

The positive increment reflects efforts to complete conceptual designs and design modifications in FY 1979. The ultimate goal of this project will be to demonstrate a scaled-up AFBC plant maximizing the use of available coal reserves.

	(Dollars in Thousands) FY 1979				
	FY 1978	Base Adjustment	Base	Request	Program Change
2. Other R&D	$58,200	$ -14,474	$43,726	$50,876	$7,150

FY 1978 Program ($58,200)

The primary objectives of the Direct Combustion FY 1978 Program are: (1) to develop atmospheric and pressurized systems capable of burning high sulfur coals directly in fluidized-bed combustion; (2) develop technology for substituting coal for oil in existing oil fired combustion; (3) to improve reliability and efficiency of boilers. The FY 1978 Atmospheric Combustion Program will support testing and modification of the 30 Mw multi-cell boiler ($4,000) to provide data for utility demonstration plants. Fabrication of several prototype systems in the industrial fluidized-bed will continue ($10,000). Construction of the Technology Test Unit ($2,000) for application to industrial cogeneration activities will continue in FY 1978. Fabrication and field erection of the Atmospheric CTIU ($13,500) will peak in FY 1978, this facility will provide the capability of developmental testing of components. The pressurized CTIU ($4,729) will also be in the construction phase during this time frame. Other pressurized systems efforts which are a means of increasing power generation efficiency in FY 1978 include the detailed design and construction of the Fluid-bed Combined Cycle Plant ($7,000), experiments with granular bed filters and other hot-gas particulate removal equipment ($1,500), and continuation of the IEA ($2,000) combustion research projects. The coal-oil mixtures program ($3,000) will continue with test equipment installed at PERC. Laboratory and design studies ($10,471) will continue to support the development projects.

Base Adjustments ($ -14,474)

The FY 1979 base adjustments include an increase for the Fluidized-bed Boiler, 30 Mw ($+7,000) for modification of auxiliaries for reliable operation, performance testing, and data for use in future demonstration programs. Industrial Applications (-$10,000) reflects a negative increment due significant appropriations in FY 1978 to facilitate project initiation. Schedule slippages due to project redirection in both the Technology Test Unit ($-1,086) and the Atmospheric CTIU ($-1,700) caused negative base adjustments. The FY 1979 base adjustments for pressurized systems ($+71) reflects maintenance of the current program objectives of increasing power generation efficiency and lowering capital investment via pressurized Fluidized-Bed Technology. The Coal Oil Mixtures Program reflects a base adjustment ($-2,880) due to the cancellation of selected demonstration projects due to technical risk. The FY 1979 support studies and engineering evaluations ($-5,879) increment represent a reduction in candidate process designs.

FY 1979 Base ($43, 726)

The primary objectives of the FY 1979 Base Program are: to develop both atmospheric and pressurized fluidized-bed coal combustion systems capable of burning high-sulphur coals in an environmentally acceptable manner. The atmospheric fluidized-bed boilers program for FY 1979 includes test operation of the 30 Mw ($11,000) boiler to provide data on material life and for future demonstration design. Completion of the Construction of the Technology Test Unit ($914) will enable a technology demonstration for cogeneration. The Atmospheric CTIU Construction ($11,800) will also continue with operation of th unit planned in FY 1980 to obtain engineering data or combustion systems. Pressurized Fluidized-bed Combustion activities in the FY 1979 base program will continue development as a means of increasing power generation efficiency and reducting emissions. The construction of the combined cycle plant ($5,000) will continue in FY 1979. This prototype unit is designed to be a basic element of a central station powerplant. The construction of the pressurized CTIU ($3,800) will remain on schedule during FY 1979, and continued development of Granular bed Filter/Hot gas Clean-up Systems ($3,000) to clean combustion products will proceed. Development of a pressurized combustor will continue under the auspices of the International Energy Agency ($3,500). Support Studies and Engineering Evaluations ($4,592) continue in the FY 1979 program to support a variety of projects supporting the major combustion projects. In addition, several environmental studies ($120) including assessments, process emissions and effluent characterizations will be conducted.

Program Changes ($+7,150)

The FY 1979 program changes reflect emphasis on Atmospheric Fluidized-bed Combustion ($+1,686), Coal-oil Mixtures ($+5,330) and increased efforts in Environmental Studies and other Support ($+2,858). These increases are offset by some reduction in emphasis on Pressurized Systems ($-2,724) development. A significant increase under the Atmospheric Fluidized-bed Boiler category is a new start effort for FY 1979.

The purpose of this effort is to develop the use of anthracite culm as a fuel source. Coal-oil mixtures efforts are also increased to accelerate program schedules to commence construction at Field demonstration sites. New efforts in Environmental Studies will include environmental assessments, process emission and effluent characterization. Support projects will include the Study of Fluidized-bed Combustion of Water Materials.

ADVANCED RESEARCH UPPORTING TECHNOLOGY

FY 1979 B.. .et
Summary of Cl.ages
(Budget Authority in Thou.nds of Dollars)

FY 1978 Enacted	$ 40,000
FY 1979 Request	$ 57,826
Net Changes	$+17,826

	(1) FY 1978 Enacted		(2) FY 1979 Base Adjustment		(3) Base		(4) Request		(5) Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Total Operating Expenses - Advanced Research & Supporting Technology	130 1/	$40,000	0	$+7,041	130	$47,041	130	$57,826	0	$+10,785

1/ FTP end of year ceiling at ERC's.

	FY 1979			
FY 1978	Base Adjustment	Base	Request	Program Change
$40,000	$+7,041	$47,041	$57,826	$+10,785

FY 1978 Program ($40,000)

The Advanced Research and Supporting Technology (AR&ST) activity covers a diverse group of activities ranging from basic and applied research to R&D supporting activities. The FY 1978 program provides for Processes ($16,401), Direct Utilization ($5,972), and Materials and Components ($9,264) carried out approximately 50 percent by industry, 25 percent by ERC's and National Laboratories and other government agencies, and 25 percent by universities. Program Development and Coordination ($8,363) is also provided for in the FY 1978 program to integrate planning and review of fossil programs.

The objectives of this program are to provide for a central basic and applied research focus for all program areas of Fossil Energy; to provide a foundation for innovative technology leading to advanced processes through its programs in the field, other government agencies, private industry and universities; and to facilitate reliable and efficient operation of synthetic fuel plants through materials and components research. Other objectives are to investigate and develop through the feasibility stage advanced technology for the direct utilization of coal; to ensure an adequate supply of trained technical personnel from universities; and to assess the viability of Fossil Energy processes under development in terms of national needs, economic, social and environmental constraints and benefits. Research is conducted to advance fossil fuel conversion processes and the Fossil Energy program in general in an environmentally acceptable manner.

Base Adjustment (+$7,041)

The FY 1979 base adjustment reflects cost of living escalation in all areas including processes (+$1,314), Direct Utilization (+$478), Materials and Components (+$776) and Program Development and Coordination (+$973). In addition, a new initiative (+$3,500) for Project and Policy Coordination in the Program Development and Coordination subactivity is included. The additional funding is required to finance special analytical studies required for major across-the-board policy and project coordination decisions and execution direction of the Fossil Energy R&D program.

FY 1979 Base ($47,041)

The FY 1979 base program reflects a cost of living escalation for continued research in Processes ($17,715), Direct Utilization ($6,450), Materials and Components ($10,040) and Program Development and Coordination ($9,336). Initiation of a Fossil Energy Management System task in Project and Policy Coordination ($3,500) is also included at the base level.

Program Change ($10,785)

The program changes provide for expanded Fossil Energy research activities during FY 1979 in the areas of Processes (+$6,735), Direct Utilization (+$3,000), and Materials and Components (+$1,050), emphasizing third generation technologies for improving process economics. Funds requested under Processes will provide for a diversified basic exploratory and supporting research program with heavy reliance on the university community; acceleration and initiation of research to facilitate the successful development of second generation processes; exploratory research on new process concepts; and specific research in the area of refining and chemicals. An advanced coal beneficiation program will be funded under Direct Utilization along with evaluation and study on advanced fluid bed concepts and other bench-scale studies. Materials and Components work in FY 1979 will include materials evaluation to provide engineering design data, expanded materials testing and exposure program, development of a high pressure throttling valve for liquefaction processes, start of a program to develop a hot char discharge system, development of an environmentally acceptable vent system for gasifiers and a liquefaction ash separation equipment development program. FY 1979 activity in Program Development and Coordination will continue with ongoing work on management plans, Environmental Development Plans, analytical studies, and budget preparation.

MAGNETOHYDRODYNAMICS
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 66,800
FY 1979 Request	$ 68,825
Net Changes	$ + 2,025

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Magnetohydrodynamics	-	$66,800 2/	-	$2,025	-	$68,825	-	$68,825	-	-
Total Operating Expenses - Magnetohydrodynamics	56 1/	$66,800	-0-	$2,025	56	$68,825	-0-	$68,825	-0-	-0-

1/ FTP end of year ceiling at ERC's.
2/ Includes 1,000,000 FY 1978 supplemental appropriation.

Magnetohydrodynamics

(Dollars in Thousands)

FY 1978	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	Program Changes
$66,800	$2,025	$68,825	$68,825	0

FY 1978 Program ($66,800)

The FY 1978 Magnetohydrodynamic (MHD) budget is directed towards the major current focuses of the program -- the Component Development and Integration Facility (CDIF) and the Engineering Test Facility (ETF).

CDIF addresses components that make up the facility as well as direct operations expenses. Funding provides for the development of the initial CDIF power trains, as well as for initiation of the 6-Tesla superconducting magnet. The CDIF project also includes funding for both integration of components at the facility and for pre-operations expenses. ($17,305)

The ETF which is at an earlier stage of development, emphasizes system definition and requirements. Funding provides for a series of three conceptual design studies which are to be completed in 1978. The studies will lead to the initial iteration of the ETF conceptual design. Funding is also included for initial environmental and site studies.($2,941)

Engineering Development provides for the development of component technology to generate a data base for later hardware scale-up and fabrication to CDIF and larger size. Funding is provided for development work on combustors, including development of three competitive designs for a subscale 50 MWt CDIF combustor. The MHD superconducting magnet data base is to be extended. Finally, funding is provided for diverse MHD generator system development projects as well as for heat recovery and seed recovery system projects.($27,300)

Supporting Research establishes the applied research base for the identification of component designs. Funding provides for diverse applied research projects on generators and electrodes, radiant boilers, materials, as well as for special coal studies and instrumentation development. ($9,300)

Systems Engineering provides for modeling code work and other engineering methodologies to predict systems interactions and optimization requirements as well as to identify systems requirements and individual performance specifications. Funding provides for analytical development work including support for baseline plant studies and overall technical support for the Open-Cycle Program.

Funding also provides for definition studies of alternative MHD powerplants; for modeling techniques and computer codes for cost/performance analysis of MHD-steam system and component designs; and to perform other parametric and support studies. ($6,754).

Closed-Cycle represents an alternative technology that is at an earlier stage of development. Projects being funded include heat exchanger studies (the heat exchanger is critical in the closed-cycle concept) and system definition studies. Liquid metal is also included under this category ($3,200).

Base Adjustment ($+2,025)

The FY 1979 Base Adjustment provides for approximately unchanged CDIF funding but with a change in project mix to support additional operations expenses. The CDIF is scheduled to become operational October 1, 1979 ($-416); approximately unchanged Engineering Development funding will continue development work on MHD power train and balance-of-plant components ($-204); decreased ETF funding with FY 1979 funding primarily for environmental and support studies. Higher FY 1978 ETF funding completed support for the conceptual design studies ($-2,541). Increased Systems Engineering and Supporting Research funding provides for improved base science and engineering support for the total program (+$7,386); closed cycle is decreased (-$2,200).

FY 1979 Base ($68,825)

MHD power generation offers three potential advantages of major significance to the National Energy Program. The first is the direct conversion of coal to electrical power. The second advantage obtained is improved overall coal-pile-to-busbar power conversion efficiencies. In comparison to a conventional plant, MHD combined-cycle power generation requires significantly less coal per kilowatt of electricity produced. The production and plant cost per kilowatt is, however, similar to that of conventional power generation. Finally, MHD offers unique characteristics which can minimize adverse environmental impacts. With the higher topping cycle discharge temperatures inherent in the process, MHD meets mandated environmental emission levels for NOx, SO2 and particulates and also minimizes thermal pollution effects.

The above cited advantages were demonstrated in the recently completed Energy Conversion Alternatives Study (ECAS) of various advanced power systems. The study, jointly sponsored by ERDA, NSF and NASA showed that MHD possessed the highest efficiency of all base load plants considered.

The primary focus in FY 1979 is on continued component development work for CDIF test hardware ($16,889). MHD Technology and Balance-of-Plant work will be conducted at about the same level as in FY 1978 ($27,096). ETF efforts in FY 1979 will be limited to environmental studies. This is compatible with the overall systems approach in MHD technology development ($400). The CDIF components will represent concepts which can be scalable to ETF size, and which can potentially achieve durability efficiency and cost levels acceptable for commercial MHD application. Since best first generation component designs cannot be selected from among alternatives prior to actual testing, additional configurations need to undergo parallel development for sequential integrated operations. Accordingly, increased systems Engineering and Supporting Research will be included in the base program ($23,440). Closed-Cycle R&D ($1,000) is funded to continue study of the feasibility of coal-fueled, closed-cycle MHD for baseload power generation and, in particular, to evaluate the performance of ceramic air heaters, a critical element in the closed-cycle concept.

Program Changes ($0)

There are no changes from the FY 1979 base program in this activity.

ADVANCED ENVIRONMENTAL CONTROL TECHNOLOGY
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 0
FY 1979 Request	$ 14,000
Net Changes	$+14,000

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Advanced Environmental Control Technology	0	0	0	0	0	0	0	$14,000	0	$14,000
Total Operating Expenses - Advanced Environmental Control Technology	0	0	0	0	0	0	0	$14,000	0	$14,000

Advanced Environmental Control Technology (AECT)

	(Dollars in Thousands)				
		FY 1979			
	FY 1978	Base Adjustment	Base	Request	Program Change
AECT	0	0	0	$14,000	$14,000

FY 1978 Program ($0)

Transferred to DOE from EPA starting with the FY 1979 program.

Base Adjustment ($0)

FY 1979 Base ($0)

Program Changes $14,000)

The FY 1979 program is directed toward developing technology which will minimize the environmental impacts of new and existing fossil fuel utilization systems. It will continue those projects designated for transfer as well as initial advanced R&D efforts in environmental control technology.

Integration of this effort with the Department's Fossil Energy program allows complete systems approach leading to a single, balanced national program on coal utilization.

Specific objectives for this program include the development of:

- o Advanced technologies for coal clean-up prior to use.
- o Technologies for gas clean-up during the combustion process.
- o Environmental control technologies to clean post-combustion gases including second generation flue gas technologies.
- o Cost versus environmental impact tradeoffs for environmental control/power systems combinations.

The FY 1979 budget request of $14 million will be used to integrate former EPA (Environmental Protection Agency) programs into the Department's Fossil Energy program. EPA will continue to have access to all environmentally related work conducted in the Fossil Energy program.

GENERAL REL ION
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ -24,500
FY 1979 Request	$ 0
Net Changes	$ -24,500

	(1)	(2)	(3)		(4)		(5)	
	FY 1978	FY 1979						
	Enacted	Base Adjustment	Base		Request		Program Change	
	Pos. B/A	Pos. B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
General Reduction	-$24,500 1/	0	0		0		0	

1/ The FY 1978 Appropriation Committees directed a general reduction of $50.393 million in Fossil Energy programs in the FY 1978 budget. They also directed the Department to submit an allocation of the reduction to the Appropriations Committees for approval prior to implementing the reduction.

On March 7, 1978, the Department submitted to the Appropriation Committees an allocation of $25.893 million. The allocation of the balance of $24.5 million is still under review by the Department.

General Reduction

	(Dollars in Thousands)				
		FY 1979			
	FY 1978	Base Adjustment	Base	Request	Program Change
1. General Reduction	$-24,500	0	0	0	0

FY 1978 Program ($-$24,500)

The Congressional Committees on Appropriations for the Fossil Energy FY 1978 budget were concerned over ERDA's inability to obligate funds in an expeditious manner and the potential for funds for many programs carrying into future fiscal years. Thus, the Committees recommended a general reduction of $50.393 million for Fossil Energy programs for FY 1978.

After careful review of the financial and programmatic posture of the Fossil Energy program the Department identified $25,893 million in FY 1978 Operating Expense funds that could be applied to the program without unduly impacting the planned thrust of some of the major programs. The allocation includes:

Activity	Reduction
Liquefaction Support Studies	$ 800
Gasification	
BIGAS Pilot Plant	8,000
High-Btu Support Studies	700
Combined Cycle Test Facility (Powerton)	8,000
Hydrogen from Coal Facility	8,000
Petroleum	278
Gas	115
Total	$ 25,893

The Department is continuing to review other potential areas for allocation of the balance of $24.5 million.

FY 1979 Base Adjustment ($0)

FY 1979 Base ($0)

FY 1979 Request ($0)

Program Changes ($0)

PETROLEUM
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 72,972
FY 1979 Request	$ 78,150
Net Changes	$ + 5,178

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. Enhanced Oil Recovery		$45,940		$ + 60		$46,000		$46,000		$ 0
2. Oil Shale		24,032		+5,318		29,350		29,350		0
3. Drilling & Offshore Tech.		1,600		0		1,600		1,600		0
4. Product Characterization and Utilization		1,400		- 200		1,200		1,200		0
Total Operating Expenses Petroleum	1/ $244	$72,972	$ 0	$ +5,178	$244	$78,150	$244	$78,150	$ 0	$ 0

1/ FTP end of year ceiling at ERC's.

Petroleum

(Dollars in Thousands)

	FY 1978	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	Program Changes
1. Enhanced Oil Recovery	$45,940	$+60	$46,000	$46,000	$ 0

FY 1978 Program ($45,940)

The Enhanced Oil Recovery (EOR) activity objective is to encourage and support industry efforts to develop and demonstrate the technologies involved in increasing production rates and percentage recoveries of original oil in place as described in the EOR Management Plan as follows:

1. Cost sharing field demonstrations to accelerate implementation of EOR technology.

2. Pursuing concurrent in-house and contractor research and development supporting the field tests.

3. Providing a means for documentation and dissemination of developed data on EOR technology.

4. Maintaining an aggressive research program in DOE and industry laboratories and academic institutions on EOR to provide a basis for present and future recovery methods.

The FY 1978 Program provides for on going field testing in four Enhanced Oil Recovery Technologies. These are Micellar Polymer Flooding ($12,500); Improved Waterflooding ($3,500); Carbon Dioxide Flooding ($6,600); and Thermal Recovery ($12,000). The FY 1978 Program also provides for Environmental Studies and other Support ($11,340).

The objective of field project testing by Micellar Polymer Flooding and Improved Waterflooding is to demonstrate the efficiency and economics of recovering tertiary oil from reservoirs already depleted by waterflooding. Laboratory tests and limited field tests conducted by the Bartlesville Energy Research Center, under optimum conditions, a high percentage of residual reservoir oil can be recovered by Micellar-Polymer Improved Waterflooding.

The objective of field project testing by Carbon Dioxide Flooding is to determine the efficiency and economics of recovering oil from a shallow, low-temperature reservoir using carbon dioxide and water to displace oil.

The objective of field project testing by Thermal Recovery processes is to effectively recover heavy oil and tar sands.

FY 1978	BASE ADJUSTMENT	FY 1979 BASE	FY 1979 REQUEST	PROGRAM CHANGE

Base Adjustment (+ $60)

Reduced incremental funding required for continuation of field testing in Micellar Polymer Flooding (- $6,640) and Carbon Dioxide Flooding (- $1,380) and increase incremental funding for Improved Waterflooding (+ $1,190) and Thermal Recovery (+ $6,430). Increase Environmental Studies and other Support (+ $460).

FY 1979 Base ($46,000)

The FY 1979 base level reflects the funding necessary to maintain field testing in the four Enhanced Oil Technologies: (1) Micellar Polymer Flooding ($5,860). One micellar Polymer pilot test is planned for initiation in California during FY 1978 which will require incremental funding in FY 1979; (2) Carbon Dioxide Flooding ($5,220). Six carbon dioxide mini-tests will be initiated in FY 1978 which will require incremental funding in FY 1979. Three of these mini-tests will test the CO_2 process in high residual oil carbonates. The other three will test the process in low residual oil carbonates. In addition, two field tests of CO_2 mobility control are currently planned for initiation in FY 1979; (3) Improved Water Flood ($4,690). Test will continue on an ongoing California caustic flood and also continue the studies begun in FY 1978 to assess the

value of early implementation of EOR processes in Prudhoe Bay; (4) Thermal Recovery ($18,430). The EOR Management Plan indicates that Thermal Recovery Technology has the highest potential for near term increased oil production. Four new pilot tests and several mini-tests will begin in FY 1978. The mini-tests and one pilot will be in California heavy oil reservoirs, and two pilots will be in situ combustion tests. In addition, two projects to demonstrate the use of cheaper fuels to generate steam were begun; these involve use of coal and/or coke in oil field, boilers for thermal recovery projects. In FY 1979, two thermal pilot tests in light oil reservoirs, two in tar sands and one in a heavy oil reservoir are scheduled for initiation. Work will also be continued to develop and test a prototype down hole steam generator. Environmental Studies and Support ($11,800)--in addition to environmental studies for specific processes, other essential studies will be started on the bio-oxidation of organic matters, including crude oil and chemicals, and on the handling and disposal of fluids containing hydrogen sulfide. Research to develop new ideas, promote advanced technology and support on-going field activities will continue at the Energy Research Centers and National Laboratories in Enhanced Oil Recovery. This ongoing work supplements oil industry research efforts.

A number of university projects in EOR technology will be continued in FY 1979. Also an increased effort will be expended to better define and measure residual oil saturation. The budget request provides for small field tests and associated applied research at BERC, LERC, and MERC in FY 1979. An active technology transfer program to implement EOR processes will continue.

Program Changes (-0-)

There are no changes from the FY 1979 base program in this subactivity.

Petroleum

	(Dollars in Thousands)				
		FY 1979			
	FY 1978	BASE ADJUSTMENT	BASE	REQUEST	PROGRAM CHANGE
2. Oil Shale	$24,032	$ +5,318	$29,350	$29,350	$ 0

FY 1978 Program ($24,032)

The Oil Shale activity has both near-term (by 1985) and mid-term (1985-2000) objectives. The immediate objective is to support development of a commercial shale oil industry with a daily capacity of 300,000 barrels per day by 1985. This objective will be fostered by providing the technology base for commercial implementation by 1981 through process development in cooperation with industry. The mid-term objective is to provide the technology base to expand an oil shale industry to its full potential by maximizing resource recovery efficiency and minimizing environmental impacts and water requirements. The FY 1978 funding provides for Laboratory and Field Tests ($21,055), Environmental Research ($1,380), and Supporting Research ($1,597), for shale oil production. The objective of the Laboratory and field tests is to demonstrate the technical and economic feasibility of true in situ retorting techniques. These techniques promise to produce shale oil with minimal environmental impacts.

Base Adjustment ($+5,318)

The FY 1979 base adjustment provides for the continuation of projects underway in FY 1978. This request includes incremental funding of contracts for in situ technology procured under the PON field instrumentation and other work by DOE laboratories in conjunction with these projects ($+5,145), and university research directly related to in situ shale oil production ($+173).

FY 1979 Base ($29,350)

The major thrust of DOE's shale oil production is the development of in situ technologies capable of utilizing each of the major geologic types of oil shales while lowering environmental impacts and water requirements. The major types of oil shales to be addressed in this program include: deeply buried shales such as occur in the lower zone of the Piceance Creek Basin in Colorado; shallow beds such as in the upper zone of the Piceance Creek Basin in Utah and Colorado; variable depth thin beds as in Wyoming; and deep leached shale beds in Colorado. No one process is applicable to all of these major resource types, but the vertical modified in situ process is the most technically advanced and appears closest to economic commercialization. The budget estimate would provide incremental funding for com-

pleting the Phase I tests at the Occidental site near Debeque, Colorado, and initiating Phase II at the C-b lease tract ancillary test site; performing processing and evaluation tests on Geokinetic's retorts prepared in FY 1978 while preparing scaled-up retorts prior to the final demonstration phase scheduled for FY 1980-81; initiation of shale oil production from Equity's large retort test begun in FY 1978; completion of Talley-Frac's first retorting test and initiation of a 16-unit module demonstration; and incremental funding support for the new-refining-technology contract expected to be awarded in FY 1978 as a result of the Program Research and Development Announcement (PRDA) issued in FY 1977.

The budget request also includes funding for continuing research projects that will be ongoing in FY 1978 at DOE's Laramie Energy Research Center (LERC), Sandia Laboratories (SL), Lawrence Livermore Laboratory (LLL), and Los Alamos Scientific Laboratory (LASL). These projects provide general support of in situ technology development. A predictive design capability is being developed and tested for oil shale fracturing based on the interaction of rock mechanics properties of the shale with specific types of explosives. Diagnostic techniques are being developed to monitor the in situ rubblization and subsequent retorting to provide the data for predictive models.

A coordinated program exists to develop process control models for the in situ retorting phase. Laboratory research and tests in large batch retorts under simulated in situ conditions, plus data from field tests, will provide the data on shale chemistry and retorting parameters required to develop these models. Technology transfer assistance to companies other than those with DOE contracts will be continued.

Environmental research related to shale oil production will continue. The work will include continued development and application of environmental strategy and evaluation of residual effects from the field projects. Field work will include continued monitoring in regions of known or expected in situ activities. On site analyses of effluent samples will be made to maintain real-time monitoring for specific contaminants. Revegetation studies will be conducted. Detailed and specialized analyses will continue to be performed by the Lawrence Berkeley Laboratory and by the University of Wyoming. LERC's Rock Springs Sites 11 and 12 will be the locations of particularly intensive field environmental studies. Approximately $1,000,000 of the FY 1979 work under the PON and Dow contracts is related to required environmental compliance activities.

The FY 1979 budget request also provides supporting research funds for projects ongoing at LERC and for university and industrial basic research projects on oil shale. These projects are those which are supportive of oil shale development in general, such as oil shale characterization, shale oil upgrading and refining studies, and advanced process research; and the monitoring, evaluating, and caretaking activities concerned with DOE's Anvil Points Oil Shale Facility.

Program Changes (-0-)

There are no changes from the FY 1979 base program in this subactivity.

Petroleum

(Dollars in Thousands)

		FY 1979			
	FY 1978	Base Adjustment	Base	Request	Program Change
3. Product Characterization & Utilization	$1,400	-$200	$1,200	$1,200	-0-

FY 1978 Program ($1,400)

The objectives of this program are: to evaluate the problems and potential of automotive use of methanol fuels, to evaluate refining-process parameters as a function of coal type; to develop data on heavy petroleum fractions to aid in their processing; to identify and monitor the qualities of domestic and imported crudes; to develop advanced detection techniques for oil-spill identification; and to develop asphalt compositions which provide significantly longer road life.

Base Adjustment (-$200)

This adjustment provides for continuation of the essential efforts at a minimal level.

FY 1979 Base ($1,200)

The FY 1979 Base level provides for a continuation of basic research work, including engine testing of re-refined lubricating oil and shale oil products. Further research will be conducted on methanol, as a non-petroleum alternative fuel.

The quality of the Nation's petroleum supply is declining and processors are being forced to poorer quality crudes and petroleum fractions. Characterization data on such fractions are essential for successful processing. The project on crude quality is the only one of its kind and provides the most comprehensive study of crude quality available. Sophisticated detection techniques are finding great use in oil-spill identification. Recycling asphalt has potential for significantly stretching this hydrocarbon-resource.

Program Changes (-0-)

There are no changes from the FY 1979 base program in this activity.

Petroleum	(Dollars in Thousands) FY 1978	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	Program Changes
4. Drilling and Offshore Technology	$1,600	$ 0	$1,600	$1,600	$ 0

FY 1978 Program ($1,600)

The objective of this activity is to expand and accelerate development of new domestic sources of oil and gas through cooperative programs for critical new technology needed (a) to bring marginal prospects within the range of economic feasibility through lower cost and faster drilling and lower risk operations; (b) to expedite production in frontier areas (deep drilling, deep offshore and arctic) through improved safety and reliability of structures and operations.

The FY 1978 funding provides for Drilling and Exploration ($1,000) and Environmental and advanced concepts ($600) is to enhance the development of drilling technology.

Base Adjustment ($0)

FY 1979 Base ($1,600)

he FY 1979 base level reflects the funding necessary to maintain progress in the development of drilling technology. Specifically, this includes Drilling ($777) and Environmental and Advanced Concepts ($823). The drilling subactivity is directed at the development of new drilling and exploration technology which will accelerate the recovery of oil and gas from all domestic sources--conventional and tertiary oil, tight and unconventional gas--as well as oil shale, in situ coal and geothermal energy.

The work on synthetic diamond bit cutters, improved drilling fluids instrumentation and severe service elastomers and steels is requested at the same level as FY 1978. Drilling Technology strategies will be defined, including an analytical base for program justification and identification of technologies having highest payoff potential. A comprehensive Management Plan will be initiated.

Environmental and Advanced Concepts - Advanced technology needs for development of the frontier areas with joint industry/Government participation in assessments, feasibility studies and basic research have been identified.

Continuation of the seafloor instrumentation project will provide offshore seismic instrumentation, field tests, and data immediately usable by industry and government. Geotechnical (sediment stability and transport, wave and current forces, etc.) sensing and reporting capability will be added. The analysis necessary to develop strategies and program definition for Offshore Technology to provide a Management Plan will be initiated.

rogram Change ($ 0)

There are no changes from the FY 1979 base program in the subactivity.

GAS

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 30,635
FY 1979 Request	$ 25,650
Net Changes	$ - 4,985

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. Enhanced Gas Recovery		26,785		-7,185		19,600		21,300		+1,700
2. Gas from Oil Shale	___	3,850	___	+500	___	4,350	___	4,350	___	0
Total Operating Expenses - Gas	95 1/	30,635	-0-	-6,685	95	23,950	95	25,650	-0-	+1,700

1/ FTP end of year ceiling at ERC's.

GAS

	(Dollars in Thousands)				
		FY 1979			
	FY 1978	Base Adjustment	Base	Request	Program Change
1. Enhanced Gas Recovery	$26,785	$-7,185	$19,600	$21,300	$+1,700

FY 1978 Program ($26,785)

There are four large unconventional gas resources that are not being fully exploited. These are Eastern Gas Shale, Western Gas Sands, Methane from Coal and Geopressured Aquifers. The near term objectives of this program are: (1) improvement of techniques necessary for prompt, orderly development of the nation's gas resources; (2) addition of 10 tcf of producible reserves by 1985; and (3) increase of gas production by an incremental 3 bcf/d by 1985. The FY 1978 program provides for expansion of the Eastern Gas Shales Project to determine the magnitude of potential gas reserves in the shale, thoroughly characterizing the shale, and evaluating and improving state-of-the-art gas exploration and extraction technology ($14,000); continuation of field drilling and resource characterization of tight sandstone gas to define the resource base and the physical/chemical parameters governing gas production in the Western Gas Sands Project ($4,300); initiation of a project to determine the magnitude and characterization of unconventional gas reserves in Methane from Coal ($2,000) and Geopressured Aquifers ($1,500); and accelerating study of environmental implications of new drilling and fracturing techniques, conducting environmental assessments and determining health and safety requirements for all field projects ($4,985).

Base Adjustment ($-7,185)

The 1979 base adjustment reflects a decision to slightly reduce resource characterization studies relating to the stratigraphy, structure, geochemistry and geophysical properties of the gas-bearing Devonian shales and specific studies such as the "Mineback" and fracture mapping experiments in the Eastern Gas Shales Project ($-2,800) and in field drilling and resource characterization of tight sandstone gas in the Western Gas Sands Project ($-900). Since some of the field tests, special studies and resource characterization studies funded in FY 1978 will carry-over into FY 1979, there will be a reduced program in Methane from Coal ($-1,600) and Geopressured Aquifers ($-300) although coordination will be maintained with lead activities in DOE and DOI. Although environmental assessments for each field project will be made, only support studies relating to constructing a Technical Implementation Plan and development of a Program Management and Reporting System will continue from FY 1978.

FY 1979 Base ($19,600)

The FY 1979 base level will ensure continuation of the Eastern Gas Shales Project and Western Gas Sands Project. The thrust of these projects will be directed at developing the considerable resources of gas present in the Devonian shales of the Eastern United States and tight gas sandstones of the Rocky Mountain Region. Several cost-shared Advanced Hydrolic Fracturing field stimulation experiments will be funded. Coring, testing, logging, and special studies necessary to provide backup for the resource characterization work will be continued. Also, environmental assessments for each major field project will be made and ongoing support work will continue to define and refine project plans for both the EGSP and WGSP. These efforts include Eastern Gas Shales ($11,200); Western Gas Sands ($3,400); Methane from Coal ($400); Geopressured Aquifers ($1,200); and, Environment and Support ($3,400).

Program Change ($+1,700)

The FY 1979 program change provides for an annualization of the cost of resource characterization and advanced hydrolic fracturing field stimulation experiments in the Eastern Gas Shales Project ($+800) and environmental assessments and ongoing support work in Environment and Support ($+400). Since some of the field tests and resource characterization studies funded in FY 1978 will carry-over into FY 1979, all new initiatives will be deferred pending economic assessments on Methane from Coal ($-400) and Geopressured Aquifers ($-1,200). Coordination will still be maintained

with the lead activities in DOE and DOI. There will also be a slight increase in resource characterization studies and field stimulation testing in the Western Gas Sands Project ($+2,100)

	(Dollars in Thousands)				
			FY 1979		
	FY 1978	BASE ADJUSTMENT	BASE	REQUEST	PROGRAM CHANGE
2. Gas from Oil Shale	$3,850	$+500	$4,350	$4,350	$ 0

FY 1978 Program ($3,850)

The Federal Government is working with industry to find a means of producing large quantities of low-Btu gas from oil shale by an economically feasible in situ process. Also through this activity, there is a joint effort to study the feasibility of producing medium-Btu gas from oil shale for upgrading to pipeline gas and of developing production methods. Further research to define the operating parameters necessary to ensure maximum utilization of the resource and to determine the yield and composition of liquid and gaseous products from oil shale retorting and their relationship to process variables is also being conducted. An underground operation to produce gas from oil shale can be identical to one designed to produce shale oil. Changes in the levels of operating variables, resulting in higher shale bed temperatures tend to favor gas production over liquid production. The heating value of the gas can be changed by changing the composition of the injected gas. The FY 1978 program provides for a continuation of laboratory bench-scale retort work, operation of an intermediate-scale gasification retort to verify the bench-scale work, economic feasibility for utilization of the resources, and initiation of fracturing experiments on eastern and western oil shales for Shale Gas Production ($3,850).

Base Adjustment ($+500)

The FY 1979 Base Adjustment provides for operation of an intermediate-scale gasification retort at LERC to test Eastern and Western shales from which process control parameters for adjusting gas/oil production may be adequately designed ($+500).

FY 1979 Base ($4,350)

The FY 1979 base level provides funding for continuation of R&D efforts to develop a technology base to support initial commercialization by 1985. This research will continue at a level effort for the major contract efforts with Dow Chemical and Michigan Energy Research Association (MERA) plus an additional $500 at Laramie Energy Research Center for operation of the .5 ton gasification test facility.

Program Change ($0)

There are no changes from the FY 1979 base program in this subactivity.

CAPITAL EQUIPMENT NOT RELATED TO CONSTRUCTION

FY 1979 Budget

Summary of Changes

(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 5,500,000
FY 1979 Request	$ 4,720,000
Net Changes	$ - 780,000

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Capital Equipment not Related to Construction										
1. Coal		$4,000		$ - 1,080		$2,920		$2,920		$ 0
2. Petroleum		1,153		+ 422		1,575		1,575		0
3. Gas		347		- 122		225		225		0
TOTAL FOSSIL ENERGY		$5,500		$ - 780		$4720		$4,720		$ 0

CAPITAL EQUIPMENT NOT RELATED TO CONSTRUCTION

		FY 1979			
	FY 1978	BASE ADJUSTMENT	BASE	REQUEST	PROGRAM CHANGE
1. Coal	$ 4,000	$ - 1,080	$ 2,920	$ 2,920	$ 0

FY 1978 Program ($4,000)

This program provides funding for acquisition of necessary laboratory and test equipment at energy research and national labs to be used in conducting required research. Specific requirements for activities are Liquefaction ($400), Surface Gasification ($800), Advanced Power Systens ($200), Direct Combustion ($200), Advanced Research and Supporting Technology ($300), and MHD ($500).

Additionally, this resource will be responsible for funding the In Situ Coal Gasification subactivity since the inception of the Department of Energy. Funds will be required to purchase reusable equipment for both field and laboratory testing ($1,600), such as surface-based instruments, recorders, computer modules for process control, valves, gas handling equipment, laboratory instruments, and modifications to field trailers. The funds do not cover equipment such as implanted instruments that are destroyed by the field tests.

Base Adjustment (- $1,080)

Acquisition of major equipment for R&D work in the liquefaction processes, such as valves and specialized analytical equipment, has been accomplished (- $200). Further, purchase of reusable equipment to support the In Situ Coal Gasification subactivity, and other testing equipment for surface gasification have been made, resulting in less need for acquisition of testing and specialized equipment for this activity (- $1,200).

Minor increases for equipment, such as recording instruments, are required for the Direct Combustion and Advanced Research and Supporting Technology activities (+ $100). Initial funding will be required for Mining R&D (+ $220), which was recently transferred into Fossil Energy. These funds will be used to support continuing equipment requirements at the Carbondale and Pittsburgh mining operations centers.

FY 1979 Base ($2,920)

The FY 1979 base will provide necessary funding to:

- Purchase general laboratory and testing equipment to be used at the two mining operations centers ($220).
- Purchase of general laboratory and supporting equipment, such as pumps, microscopes, etc. for Liquefaction ($200).
- Purchase and replacement of general and standard items and instrumentation at the National Laboratories and ERCs which perform work in both surface and in situ coal gasification processes ($1,200).
- Purchase of general laboratory and supporting equipment for R&D in the high temperature turbines technology ($200).
- This request is for the acquisition and replacement of general laboratory, testing, and supporting equipment at DOE energy research center and laboratories which do work for Direct Combustion ($225) and for the various areas embraced by Advanced Research and Supporting Technology, such as advanced liquefaction processes, materials research, and environmental studies ($375).
- Purchase for acquisition and replacement of equipment utilized by DOE energy research centers and laboratories for work in MHD development ($500).

Program Changes (-0-)

There are no program changes beyond the FY 1979 base program.

(Dollars in Thousands)

		FY 1979			
	FY 1978	Base Adjustment	Base	Request	Program Changes
2. Petroleum	$ 1,153	$ + 422	$ 1,575	$ 1,575	$ 0

FY 1978 Program ($1,153)

The FY 1978 program includes funding for equipment to support research in Enhanced Oil Recovery, such as stirred reactors, pumps, etc. ($300); required equipment at Laramie ERC and Sandia Lab for Shale Oil Production ($740); and other needs ($113) for oil shale research.

Base Adjustment (+ $422)

Additional funding for purchase of laboratory and testing equipment, such as stirred reactors, filters, chromotographs, is required for the Enhanced Oil Recovery activity (+ $400). The acquisition of this equipment is necessary to support additional testing scheduled for CO_2 mobility control, thermal recovery, and small field testing and applied research to be conducted at BERC, LERC, and MERC.

Funding for acquisition of laboratory and test equipment to maintain ongoing and planned projects relating to the in situ processing of oil shale will require a minor increase ($22).

FY 1979 Base ($1,575)

The base for this fiscal year provides the necessary funding to purchase and maintain the necessary general purpose laboratory and testing equipment, as described above, for the Enhanced Oil Recovery activity ($700).

This level of funding maintains laboratory and equipment requirements for oil from oil shale at approximately the FY 1978 level ($875). This includes such items as spectrometers to support shale oil production; general purpose support equipment such as calculators, typewriters, lathes.

Program Change ($ 0)

There are no changes beyond the FY 1979 base program.

	FY 1978	BASE ADJUSTMENT	FY 1979 BASE	FY 1979 REQUEST	PROGRAM CHANGE
3. Gas	$ 347	$ - 122	$ 225	$ 225	$ 0

FY 1978 Program ($347,000)

The FY 1978 program provides funds for equipment needs to support Enhanced Gas Recovery, particularly Fischer assay equipment and imagery enhancing ($300) Minor equipment needs for Shale Gas production ($47)

Base Adjustment (- $122)

Funding requirements for laboratory and specialized testing equipment will be required for only two projects--the Eastern Gas Shales, and the Western Gas Sands project, resulting in a net decrease in acquisition of such equipment (- $100). Purchase of equipment for laboratory and general support will be less than to the previous year's requirements (- $22).

FY 1978 Base ($225)

The capital equipment requirements for Enhanced Gas Recovery are for pumps, drill bits, and other field items ($200). Equipment for the Gas from Oil Shale activity includes laboratory and support equipment such as compressors, calculators, to be used at Laramie ERC ($25).

Program Change (-0-)

There are no changes beyond the FY 1979 base program.

FOSSIL ENERGY CONSTRUCTION PROJECTS
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 83,800
FY 1979 Request	$ 95,350
Net Changes	$+11,550

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. Solvent Refined Coal Demo Plant Project No. 78-2-d		0		0		0		20,000		+20,000
2. Low-Btu Fuel Gas, Small Industrial Demo Plant, Project No. 78-2-c		3,000		+ 6,000		9,000		9,000		0
3. High-Btu Synthetic Pipeline Gas Demo Plant, Project No. 76-1-b		29,000		+11,000		40,000		40,000		0
4. Low/Medium-Btu Fuel Gas Industrial Demo Plant, Project No. 76-1-c		36,000		-22,000		14,000		14,000		0
5. General Plant Projects for ERCs Project No. 79-6		0		+ 9,000		9,000		9,000		0
6. Morgantown ERC Warehouse Building Project No. 79-1-b		0		0		0		350		+ 350
7. MHD Component Development and Integration Facility (Butte, Montana), Project No. 77-1-d		4,200		- 1,200		3,000		3,000		0
8. Analytical Research Chemistry and Coal Carbonization Lab, Pittsburgh ERC, Project No. 78-2-a		6,600		- 6,600		0		0		0

FOSSIL ENERGY CONSTRUCTION PROJECTS (cont.)
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

	(1) FY 1978 Enacted		(2) FY 1979 Base Adjustment		(3) FY 1979 Base		(4) FY 1979 Request		(5) FY 1979 Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
9. Modification and Additions to ERCs, Project No. 78-2-b		3,000		- 3,000		0		0		0
10. Fluidized Bed Direct Combustion Demo Plant, Project No. 76-1-d	___	2,000	___	- 2,000	___	0	___	0	___	0
Total Fossil Energy Construction		83,800		- 8,800		75,000		95,350		+20,350

FOSSIL ENERGY CONSTRUCTION PROJECT

	(Dollars in Thousands) FY 1978	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	Program Changes
1. Solvent Refined Coal Demo Plant	$ 0	$ 0	$ 0	$20,000	$+20,000

FY 1978 Program (-0-)

This project provides for design of an SRC demonstration plant capable of processing on the order of 6,000 tons/day coal feed. The proposed demonstration plant would provide essential economic, technical and environmental data leading to early commercialization of the SRC process. The SRC process provides an attractive route of conversion of high sulfur abundant eastern coal to an environmentally acceptable clean burning synthetic fuel. The decision to proceed with a demonstration project for SRC technology was based on the successful operation of the SRC pilot plant. Ft. Lewis, Washington is producing both solid and liquid fuels; preliminary economics indicate that the SRC process is competitive with other liquefaction processes, and that SRC technology is the most mature of the liquefaction processes. An SRC demonstration plant will provide an accurate basis for determing investment and operation costs for commercial-sized applications of this technology; prove the environmental acceptability of this fuel product for direct use in electric power generation; assess the marketability of a range of fuel products obtainable from a given coal and process; confirm the acceptability by utilities and industries of this fuel product with minimum burner retrofit; and demonstrate the technical viability of the process by operating full-scale solid/liquid separation, hydrogen generation and residue extraction systems, as well as by increasing confidence in the improved metals, design, and fabrication technologies needed for commercial-scale applications.

During FY 1978, the SRC Demo Plant is in the conceptual design stage which is funded under Operating Expenses only.

Base Adjustment (-0-)

Not applicable.

FY 1979 Base (-0-)

Not applicable.

FY 1979 Program Change ($+20,000)

The FY 1979 program change provides for funds to initiate the detailed (A&E) design for construction of the SRC Demo Plant ($20,000) following conceptual design work being funded under Operating Expenses in the FY 1978 base program.

	(Dollars in Thousands) FY 1978	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	Program Changes
2. Low-Btu Fuel Gas Small Industrial Demo Plant	$3,000	$+6,000	$9,000	$9,000	$ -0-

FY 1978 Program ($3,000)

This project includes design, construction, and operation of a demonstration plant dedicated to an individual industrial user of energy (i.e., Erie Mining Company). This facility located in Minnesota will consume 500 tons/day of high-sulfur coal using the Woodall-Duckham process and will generate 7.4 x 10^9 Btu per day. The low-Btu gas produced will heat iron ore pellet shaft furnaces in a taconite plant. The project will be cost-shared on a 50/50 basis by the government and Erie Mining. At the completion of Phase III, Erie Mining will purchase the government's share of the gasification plant.

Erie Mining will use the fuel gas to produce taconite iron ore. They currently produce 13 percent of the U. S. output. The technology application exists for other taconite producers who currently account for 67 percent of the total U. S. iron ore production.

The FY 1978 Program provides for the initiation of detailed design and construction activity for the Low-Btu fuel gas small industrial demo plant to start around July 1978 ($3,000). Conceptual design activity during FY 1978 is being funded under Operating Expenses.

Base Adjustment (+$6,000)

The FY 1979 base adjustment provides for annualization of the cost to continue detail design and construction during the full year in FY 1979 for the Low-Btu fuel gas small industrial demo plant ($6,000).

FY 1979 Base ($9,000)

The FY 1979 Base program provides for the orderly and planned design and construction of a Low-Btu fuel gas small industrial demo plant (Erie Mining Co., Hoyt Lakes, Minnesota) to produce a fuel gas for production of talconite iron ore.

Program Change (-0-)

There are no program changes beyond the FY 1979 base program.

	(Dollars in Thousands) FY 1979				
	FY 1978	Base Adjustment	Base	Request	Program Changes
3. High-Btu Synthetic Pipeline Gas Demo Plant	$29,000	$+11,000	$40,000	$40,000	$ -0-

FY 1979 Program ($29,000)

The high-Btu synthetic pipeline gas demonstration plant is specifically directed at stimulating industrial production of pipeline gas from coal, and to demonstrate and transfer to industry technology for converting coal to pipeline gas. The development of alternative sources for pipeline gas is especially needed in view of increasing production shortfalls from natural well-head sources. Both Conoco Coal Development Company and Illinois Coal Gasification Group were selected to prepare conceptual designs using the slagging Lurgi Fixed-bed Gasifier concept developed by British Gas at Westfield, Scotland and the COED coal pyrolysis concept and char air blown gasifier concept developed by the Cogar Development Company, Princeton, N. J. with pilot plant facilities located in Leatherhead, England respectively. Once complete, the conceptual design, economics and operability of the process on agglomerating coals will be compared and a cost sharing partner will be selected.

The FY 1978 program provides funding to initiate the detailed design for construction around July 1978 of a High-Btu pipeline gas demo plant based on selection of one of these competing conceptual designs to be completed during FY 1978 (ICGG-Cogas or CONOCO Slagging Lurgi) ($29,000).

Base Adjustment ($+11,000)

The FY 1979 base adjustment provides incremental funding necessary to initiate long lead procurement and begin construction in 4th quarter on a High-Btu pipeline gas demo plant (+$16,000) in FY 1979 based on the selection of conceptual design and an industrial cost sharing partner.

FY 1979 Base ($40,000)

The FY 1979 Base provides for the orderly and planned design and construction of a High-Btu pipeline gas demo plant in FY 1979--site and contractor to be determined based on competitive conceptual design selection. ($40,000).

Program Change (-0-)

There are no program changes beyond the FY 1979 Base Program.

(Dollars in Thousands)

	FY 1978	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	Program Changes
4. Low/Medium-Btu Fuel Gas Industrial Demo Plant	$36,000	$-22,000	$14,000	$14,000	$-0-

FY 1978 Program ($36,000)

This project is specifically directed to industrial applications. The project includes the conceptual design, construction, and operation of a demonstration facility which would reveal the economic and technical feasibility of converting coal to fuel gas for use by an industrial community, i.e., to serve the needs of a local supplier distributing fuel gas centrally to several large industrial users.

This project is designated to demonstrate in cooperation with industry the technology for construction of commercial-scale plants to convert coal to environmentally acceptable gaseous fuels with a heating value of 100-300 Btu/scf. Contracts have been awarded for two competitive conceptual designs for which a selection will be made in FY 1979 for proceeding with actual construction.

A large industrial-user-dedicated plant will be conceptually designed by Memphis Light, Gas and Water Division, City of Memphis, that could lead to construction and operation of a 2800-tons/day low-Btu Fuel Gas demonstration plant utilizing 2,800 tons/day of Kentucky No. 9 coal.

W. R. Grace and Company will prepare a conceptual design of a demonstration plant utilizing 1,700 tons/day of Kentucky No. 9 coal feed in an ash agglomerating gasifier, to produce 1,200 tons/day of ammonia at an adjacent facility.

The FY 1978 program provides funding to initiate detailed design and long lead procurement for a Low-Btu fuel gas industrial demo plant pending completion and selection of one of two competing conceptual designs (Memphis Gas, Light and Water Division - Ugas or W. R. Grace & Co., Texaco slagging gasifier). ($36,000).

Base Adjustment ($-22,000)

The FY 1979 base adjustment reflects nearly a year's slippage in initiating the construction of this plant due to problems in negotiating contracts for competitive conceptual designs. This produced carryover funds which reduced the incremental funding requirement to proceed with detailed design and long lead procurement once a selection is made ($-22,000).

FY 1979 Base ($14,000)

The FY 1979 base provides the necessary funding to proceed immediately with detailed design and long lead procurement for construction of a Low-Btu fuel gas industrial demo plant during FY 1979 ($14,000) once the contractor and technology/design are chosen.

Program Change ($0)

There are no program changes beyond the FY 1979 base level.

	FY 1978	BASE ADJUSTMENT	FY 1979 BASE	FY 1979 REQUEST	PROGRAM CHANGE
5. General Plant Projects at ERCs	$ 0	$ + 9,000	$ 9,000	$ 9,000	$ 0

FY 1979 Program (-0-)

The FY 1978 program for GPP at ERCs is financed under "Modifications and Additions to ERCs", Project 78-2-b.

Base Adjustment (+9,000)

The FY 1979 base adjustment provides for the FY 1979 minor construction projects most urgently required at the ERCs for facility upkeep, health, safety, and

environmental protection. This is a continuation of an annually authorized program for ERC Modification and Additions ($9,000).

Base Program ($9,000)

The base program provides for the necessary modifications and additions at the ERCs necessary to comply with NIOSH Standards, and other items such as elevators, heating systems, air conditioning, tunnels, roofs, and general maintenance and improvement projects at the ERCs in Bartlesville, Grand Forks, Laramie, Morgantown, and Pittsburgh ($9,000).

Program Change

There are no program changes from the FY 1979 base program.

	(Dollars in Thousands) FY 1979				
	FY 1978	Base Adjustment	Base	Request	Program Change
6. Morgantown ERC Warehouse Building	$ 0	$ 0	$ 0	$ +350	$350

FY 1978 Program ($0)

Not applicable.

Base Adjustment ($0)

Not applicable.

FY 1979 Base ($0)

Not applicable.

Program Change ($350)

The FY 1979 program change provides for initiation of construction of a warehouse building at Morgantown ERC urgently needed to house equipment pool, store materials for future projects, control storage and issue of standard parts and temporarily store and protect excess equipment ($350). The expansion of office space into existing warehouse facilities has created a shortage of warehouse space for the Morgantown ERC.

	FY 1978	BASE ADJUSTMENT	FY 1979 BASE	FY 1979 REQUEST	PROGRAM CHANGE
7. MHD Component Development and Integration Facility (CDIF) (Butte, Montana)	$ 4,200	$ -1,200	$3,000	$ 3,000	$ 0

FY 1978 Program ($4,200)

Construction of the CDIF began in FY 1976 and will be completed in FY 1980. This facility is intended to pursue open-cycle MHD component development with the purpose of improving the technology and laying the groundwork for a pilot-scale generation plant. The facility consists of two test beds, each capable of testing and evaluating MHD components of about 50 thermal MW size and will provide advanced capability for testing MHD components and subsystems over a wide range of test conditions using several domestic coals including higher reactive western coals. The CDIF is a key element in achieving the objective of MHD to develop electrical, utility-sized combined MHD/steam cycle power generating plants utilizing coal as a primary fuel in a process that is significantly more efficient and environmentally acceptable than other known processes. The FY 1978 program provides the necessary funding to continue orderly construction of the CDIF in Butte, Montana, through FY 1978. To date, construction is 40% complete, running on time, and below projected costs ($4,200).

Base Adjustment ($-1,200)

The FY 1979 base adjustment provides for the final incremental funding necessary to complete construction of the CDIF. This results in a slightly reduced requirement in FY 1979 ($-1,200).

FY 1979 Base ($3,000)

The FY 1979 base allows for completion of the CDIF major testing facility designed to generate electrical power at a sub-scale component level to determine the necessary engineering parameters for scale-up to a pilot scale engineering test facility for MHD technology.

Program Change

There are no program changes beyond the FY 1979 base program.

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	Program Change
8. Analytical research chemistry and coal carbonization lab, Pittsburgh ERC	$ 6,600	$-6,600	- 0 -	- 0 -	- 0 -

FY 1978 Program ($6,600)

The FY 1978 program provides the total funding required to construct an analytical research chemistry and coal carbonization lab at the Pittsburgh ERC in FY 1978 which is currently housed in overcrowded multi-purpose lab space. ($6,600).

Base Adjustment ($-6,600)

The base adjustment reflects the completion in FY 1979 of construction within budget authority provided in FY 1978.

FY 1979 Base

There is no requirement for additional funds for complete construction of the analytical research chemistry and coal carbonization lab at PERC.

Program Changes

Not applicable

	FY 1978	Base Adjustment	FY 1979 Base	FY I979 Request	FY 1979 Change
9. Modification & Additions to ERC's	$ 3,000	$ -3,000	- 0 -	- 0 -	- 0 -

FY 1978 Program ($3,000)

The FY 1978 program provides for urgently needed minor construction projects at ERCs to provide for facility upkeep, health, safety and environmental protection. The locations include Bartlesville, Grand Forks, Laramie, Morgantown, and Pittsburgh.

Base Adjustment ($-3,000)

The base adjustment reflects the completion of Project 78-2-b, an annual authorization for FY 1978 Mods and Additions to the ERCs. The FY 1979 annual request is contained in project 79-6.

Base Program (0)

None

Program Changes (0)

Not applicable.

	(Dollars in Thousands) FY 1979				
	FY 1978	Base Adjustment	Base	Request	Program Change
10. Fluidized-Bed Direct Combustion Demo Plant	$2,000	$-2,000	$ 0	$ 0	$ 0

FY 1978 Program ($2,000)
The demonstration of a coal-fired fluidized-bed combustion boiler at a near-commercial size will be required to implement commercial adoption by the utilities. Congress authorized a direct combustion demonstration plant in FY 1976. The Fluidized-Bed unit is to be a nominal 200-MW size and will provide high-pressure steam for utility power generation. The experienced gained from operation of the 30 MWe AFB boiler at Rivesville, W. Va. is being applied to the design of this demonstration plant.

The FY 1978 program provides funding to initiate detailed design of a Fluidized-bed direct combustion demo plant of 200 MW scale following completion of conceptual design. ($2,000)

Base Adjustment ($ -2,000)

We have delayed the Fluidized-Bed Direct Combustion Demonstration Plant project to permit sufficient time to operate the Rivesville facility and the Morgantown CTIU to gather data we feel is essential to support a decision to move ahead with this project.

FY 1979 Base ($ 0)

Program Change ($ 0)

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 3,717
FY 1979 Request	2,930
Net Change	$ - 787

	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Coal Utilization, Industrial and Utilities		3,717		-2,637		1,080		2,930		+1,850
TOTAL OPERATING EXPENSES - COAL	66*	3,717	0	-2,637	66*	1,080	167*	2,930	+101*	+1,850

* Positions and associated costs budgeted under Policy and Management.

Coal Utilization, industrial and utilities ($000)

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
$3,717	$-2,637	$1,080	$2,930	$+1,850

FY 1978 Program ($3,717)

The FY 1978 program under the authority of the Energy Supply and Environmental Coordination Act (ESECA) provides for the issuance of Construction orders to 58 units at 27 sites, prohibition orders to 76 units at 38 sites and projected environmental evaluations for 28 sites for orders issued in FY 1977 in the industrial sector ($980). For the utility sector, projected issuance of 53 prohibition orders and the completion of environmental evaluation for 43 sites for which orders have been issued, will be effected ($1,237). Also, in FY 1978 programmatic environmental and economic analyses will be undertaken to implement provisions of the NEP as well as the development of new regulations, including methodologies, procedures and associated forms ($1,500).

Base Adjustment ($-2,637)

The FY 1979 base adjustment provides for the orderly continuation of the ESECA program which is scheduled to expire December 31, 1978 ($-1,137). Also, the FY 1979 base adjustment excludes the NEP start-up costs for developing and issuing regulations and programmatic environmental and economic analysis ($-1,500).

FY 1979 Base Program ($1,080)

Funding will provide for the necessary follow-up actions on orders issued under ESECA in FY 1978 and prior years by developing environmental impact statements and issuing Notices of Effectiveness (required to implement orders previously issued). A total of 33 environmental impact statements are planned to be developed at a cost of $1,080.

Program Changes ($+1,850)

The FY 1979 program changes reflect the implementation of the NEP. This includes providing engineering, financial and legal program analyses for processing approximately 390 petitions for exemptions from broad prohibition of oil and gas use in existing facilities and facilities scheduled for construction; issuing environmental impact statements; and preparing technical, financial and other documentation requested for administrative review and U.S. Court of Appeals proceedings resulting from denial of petitions for exemptions. Approximately 130 appeals are projected for 1979. Funding will be used for site visits for engineering analyses ($+1,120), financial analyses of approximately 55 sites ($+165); and other environmental and program analyses ($+565).

COAL LOAN GUARANTEE PROGRAM
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 6,915
FY 1979 Request	$ ...
Net Change	$-6,915

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Coal Loan Guaranty Program	...	6,915	...	-6,915	...	...	...	...	...	...

	(Dollars in Thousands)				
		FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
1. Coal Loan Guaranty Program	$6,915	$-6,915	$...	$...	$...

1978 Program $ 6,915

In FY 1978, the Coal Loan Guaranty Program operating under authorities granted by Section 102 of the Energy Policy and Conservation Act (PL 94-163) and later amended by Section 164 of the Energy Conservation and Production Act (PL 94-385) has published the draft programmatic Environmental Impact Statement (EIS) for public comment and will publish the final programmatic EIS as well as the final program regulations. It is anticipated that applications will begin being accepted later this fiscal year. Funding already provided will enable the program to process approximately 50 applications and plan for issuance of about 25 loan guarantees for developing five new mines and for expanding or reopening of 20 existing mines during the next fiscal year.

Base Adjustment $-6,915

It is anticipated that all mine feasibility studies and site specific environmental assessment work will be contracted in FY 1978, therefore, FY 1979 will involve the in-house analysis and processing of loan applications to small coal producers. Currently there are over 350 identified potentially eligible producers, and numerous others who may prove to be eligible borrowers. Although no loan defaults are anticipated in FY 1979, the $6 million reserve fund will be available as a no year appropriation to assure lenders that funds are available for prompt repayment if necessary.

NAVAL PETROLEUM AND OIL SHALE RESERVES
FY 1979 BUDGET
SUMMARY OF CHANGES
BUDGET AUTHORITY ($000)

FY 1978 Enacted	$152,151
FY 1979 Request	$199,005
Net Change	$ 46,854

	(1) FY 1978	(2) FY 1979	(3) FY 1979	(4) FY 1979	(5) FY 1979
	Enacted	Base Adjustment	Base	Request	Program Change
	Pos. B/A	Pos. B/A	Pos. B/A	Pos. B/A	Pos. B/A
1. Naval Petroleum Reserves No. 1 and 2	126,340	+43,254	169,594	169,594	-0-
2. Naval Petroleum Reserve No. 3	24,511	+ 3,600	28,111	28,111	-0-
3. Naval Oil Shale Reserves	1,300	-0-	1,300	1,300	-0-
TOTAL	152,151	+46,854	199,005	199,005	-0-

(Dollars in Thousands)

		FY 1978	FY 1979			
1.	Naval Petroleum Reserves No. 1 and 2	Enacted	Base Adj.	Base	Request	Program Change
		126,340	+43,254	169,594	169,594	-0-

FY 1978 Program (126,340)

Public Law 94-258 mandates that the Naval Petroleum Reserves be developed and produced at their maximum efficient rates of production. The NPR No. 1 FY 1978 program is a continuation of the development program which was initiated in FY 1974 and will continue through FY 1982 to fulfill the requirements of the law. This is for the most part drilling and equipping of producing oil wells, construction of gas handling facilities and operating costs involved with these activities.

In addition to the FY 1978 appropriations, unexpended carryover from funds Appropriated to the President (FAP) in FY 1977 are available for this program as follows:

	FY 1978	FAP Carryover	Total Available	FY 1979
Operations & Maintenance	18,577	14,395	32,972	44,876
Development Drilling	14,937	29,313	44,250	50,701
Facilities	89,699	136,763	226,462	60,876
Exploratory Drilling	3,127	7,820	10,947	13,141
	126,340	188,291	314,631	169,594

Operations and Maintenance (32,972 total)

This category includes costs to operate and maintain existing wells and facilities at the Reserves. Included is operator and contractor labor (9,587), remedial work on 400 wells (9,913), and costs for facilities operations and miscellaneous categories such as tank settings, field compressor repairs, etc. (13,472).

Development Drilling (44,250 total)

These costs are for drilling and equipping 100 producing oil wells.

Facilities (226,462 total)

This category includes capital costs for gas handling systems (140,978), oil collection systems (57,434), roads and support buildings (6,541), electrical distribution system (3,368), metering facilities (4,102), cathodic protection (5,805), fresh water and fire protection (7,383), and miscellaneous (851).

Exploratory Drilling (10,947)

This includes costs for the drilling of approximately 6 wells to further define the productive zones at the Reserves.

Base Adjustment (+43,254)

Operations and Maintenance (+26,299)

This increase is a result of FAP carryover (14,395), approximately 300 more wells to operate and maintain (8,904), a gas plant starting operation during FY 1979 (4,846) and reductions to various miscellaneous categories (-1,846).

Development Drilling (+35,764)

The change in this category is a result of FAP carryover (29,313) and drilling into deeper zones in the geologic structure (6,451).

Facilities (-28,823)

This reduction occurs because the facilities program is nearing completion.

Exploratory Drilling (+10,014)

This change results from FAP carryover (7,820) and increased drilling rig costs (2,194).

FY 1979 Base (169,594)

The FY 1979 base level reflects the funding necessary to continue the programs as mandated by Public Law 94-258.

Operations and Maintenance (44,876)

Included is operator and contracts labor (10,550), remedial work on 700 wells (18,817) and costs for facilities operations and miscellaneous categories such as tank settings, field compression repairs, ect. (15,509).

Development Drilling (50,701)

Costs are for drilling and equipping 106 producing oil wells.

Facilities (60,876)

Includes capital costs for gas handling systems (19,684), oil collection systems (14,618), electrical distribution system (11,314), water collection (14,995) and LACT facilities (265)

Exploratory Drilling (13,141)

Includes costs for the drilling of approximately 10 wells to further define the production zones at the Reserve.

Program Changes

None

(Dollars in Thousands)

2. Naval Petroleum Reserve No. 3	FY 1979 Enacted	Base Adj.	FY 1979 Base	FY 1979 Request	Program Change
	24,511	+3,600	28,111	28,111	-0-

FY 1978 Program (24,511)

This program also follows the mandates of Public Law 94-258. The same concepts used in Naval Petroleum Reserve No. 1 apply to this program only to a smaller degree.

Operations and Maintenance (5,805)

These costs include production (1,500), field operations and maintenance (1,298), labor costs and overhead fee (2,753) and miscellaneous work (254).

Development (16,216)

Includes drilling and equipping 144 new wells (8,520), purchase of long lead time oil field materials (2,000), waterflood facilities (2,800), electrical and flowline systems (1,700) and miscellaneous work such as safety, environmental, reservoir studies, etc. (1,196).

Exploratory Drilling (2,490)

Includes cost of drilling 10 wells to further define the productive zones at the Reserve.

Base Adjustment (+3,600)

This change results from increased production costs in the Operations and Maintenance category (1,055), increased drilling costs for develop-

ment wells into deeper zones in the geologic structure (3,035) and decreased number (8) of exploratory wells (-490).

FY 1979 Base (28,111)

The FY 1979 base level contains the funding necessary to carry out the provisions of Public Law 94-258 as follows:

Operations and Maintenance (6,860)

These costs include production (2,200), field operations and maintenance (1,100), labor costs and operator's fee (2,525), purchase of water (840), and miscellaneous work (195).

Development (19,251)

Includes drilling and equipping 122 new wells (15,851), purchase of long lead time oil field materials (2,610), and miscellaneous work (790).

Exploratory Drilling (2,000)

Includes cost of drilling 8 wells to further define the productive zones at the Reserve.

Program Changes

None

		(Dollars in Thousands)				
				FY 1979		
		FY 1978	Base			Program
3.	Naval Oil Shale Reserves	Enacted	Adj	Base	Request	Change
		1,300	-0-	1,300	1,300	-0-

FY 1978 Program (1,300)

The FY 1978 program provides for program support of contractor staff (334), the drilling of 4 coreholes (802) to study geologic formations, hydrology studies (72), and surface management activities (92) conducted by the Bureau of Land Management.

Base Adjustment

None

FY 1979 Base (1,300)

The FY 1979 base would provide funds for program support for the full component of contractors' staff (400), drilling of 3 coreholes (716), the conclusion of a three-year hydrology study (69), and preparation of a report on that study (20). Also included are surface management funds for the Bureau of Land Management (95).

Program Changes

None

SOLAR
FY 1979 Budget
SUMMARY OF CHANGES
(BUDGET AUTHORITY IN THOUSANDS OF DOLLARS)

FY 1978 Enacted	$21,400
FY 1979 Request	28,381
Net Change	$ 6,981

	FY 1978	FY 1979			
	Enacted B/A	Adjustment B/A	Base B/A	Request B/A	Change B/A
1. Federal Buildings solar program	20,000	+5,668	25,668	25,668	0
2. Solar Commercialization	1,400	+1,313	2,713	2,713	0
Total Operating	21,400	+6,981	28,381	28,381	0

(Dollars in Thousands)

	FY 1978 Enacted	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Program Changes
1. Fed. Bldgs. Solar Prog.	$20,000	+$5,668	$25,668	$25,668	$0

1978 Program (20,000)

FY 1978 funding is to implement the first year of a 3-year, $100 million (Sections 741-746, National Energy Plan) program to design, acquire, install and construct solar hot water and space heating and cooling systems on Federal buildings. The objectives are to demonstrate Federal confidence in solar energy equipment, and to provide a stimulus to an embryonic solar industry.

Base Adjustment (+$5,668)

The FY 1979 Base Adjustment provides for a 28.5 percent increase in funding over FY 1978, reflecting an acceleration and expansion of the program during the second year of its three year existance.

FY 1979 Base Program ($25,668)

The FY 1979 Base Program provides for funding to support continuation of the program at a level commensurate with what we anticipate to be the level of proposals coming in from the participating Federal agencies. Expenditures by the end of FY 1979 (the second year of operation) will be approximately 46 percent of the $100 million as proposed in the NEP.

Program Changes (0)

There are no changes from the FY 1979 base program in this subactivity.

	FY 1978	FY 1979 Base Adjust.	FY 1979 Base	FY 1979 Request	FY 1979 Program Changes
2. Solar commercialization	$1,400	+$1,313	$2,713	$2,713	$-0-

FY 1978 Program ($1,400)

The FY 1978 Program provides for consumer education/protection, including public/private sector standards development, training, and information gathering and dissemination. It provides for a continuing planning process of evaluation, updating and modification of Federal incentives to accelerate solar commercialization. Funds also provide for preparation of guidelines/regulations for the tax credit and public utility service elements of the National Energy Plan.

Base Adjustments ($1,313)

The base adjustments provide for incremental funding to continue operations in the area of the utility public service program (313); and in the area of Federal-State consumer education protection (400); and to support the joint DOE and DOL program to train solar equipment installers (600).

FY 1979 Base Program ($2,713)

The FY 1979 Base Program provides for funding to carry-out responsibilities authorized in the National Energy Act with regard to tax credits (Title II) and the utility service program (Title I).

Program Changes (-0-)

There are no changes from the FY 1979 base program for this subactivity.

MULTI RESOURCE

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 450
FY 1979 Request	1,000
Net Change	550

	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Electricity		450		-450		0		0		0
Alternate Fuels Demonstration Program		0		0		0		1,000		1,000

	(Dollars in Thousands) FY 1978 Enacted	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Program Changes
1. Electricity	$ 450	$-450	$...	$...	$...

1978 Program $ 450

To assure an adequate, reliable and cost effective supply of electricity with a generation mix which will minimize the consumption of oil and gas, several program initiatives are being undertaken with the projection that they will emerge as potential new program entities in future years. Programs to be given greater emphasis are: (1) promoting increased use of small hydroelectric generation facilities, (2) achieving greater interconnection, power pooling and economic dispatch by adjacent utility systems and (3) identifying priorities to problems and selection of feasible solutions to institutional factors impeding installation of dual purpose industrial boilers in producing industrial steam and electric power.

Base Adjustment $-450

This program is intended to serve as a development basis for new initiatives in power applications work within the Resource Applications Program of the Department of Energy. Having fulfilled this purpose within the given study period of one year, no further budget request is anticipated.

	(Dollars in Thousands) FY 1978 Enacted	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Program Changes
2. Alternate Fuels Demonstration Program	$ 0	$ 0	$ 0	$ 1,000	+ $1,000
1978 Program				$ 0	
Base Adjustment				$ 0	
FY 1979 Base				$ 0	
Program Changes				$ 1,000	

This funding is to be utilized in the Alternative Fuels Demonstration Program:

a. to develop a Market Plan. The plan would formulate a tactical approach by which we would assess market preferences and tailor products and processes to market requirements and/or induce the market to accept our products; and

b. to conduct studies in support of oil shale commercialization activities to include analyses (1) to reduce the uncertainty relative to cost of shale oil production, (2) of alternate methods of reducing risk in oil shale ventures, (3) in support of developing a market plan for oil shale to penetrate petroleum markets, (4) of the cost of alternate incentives as inflation and world oil price fluctuate, (5) of oil shale resource requirements, evaluation of specific barriers to commercial oil shale operations, and analyses of industry activity at current and enhanced levels of Federal support.

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 14,367
FY 1979 Request	14,793
Net Change	$ + 426

	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Utilities Demonstration		1,425		-1,425		0		0		0
District Heating		0		0		0		625		+ 625
Consumer Offices		1,942		- 2		1,940		1,940		0
Rate Reform		11,000		0		11,000		12,228		+1,228
TOTAL OPERATING EXPENSES - UTILITIES	23*	14,367	0	1,427	23	12,940	30*	14,793	+7	1,853

* Positions and associated costs budgeted under Policy and Management.

Utilities ($000)

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
1. Utility Demonstrations	$1,425	$-1,425	0	0	0

FY 1978 Program ($1,425)

The major objectives of the Utility Demonstration Program are: demonstrate the viability and consumer acceptance of innovative electric rates; gather empirical data on innovative rate impacts; and transfer nationwide the results of data analysis. The program was initiated in FY 1975 building to a level of 16 projects, of which 10 are still in progress in FY 1978. These projects are all cooperative agreements requiring cost sharing (at least 10%) on the part of the sponsoring State or local public agency. Through FY 1978 the total Federal investment is $9.2 million with matching local shares of $4.3 million. Initial results show residential KwH usage is significantly responsive to time-of-use rates, even during peak periods. A program summary table is attached.

Base Adjustment ($-1,425)

No funds are requested for FY 1979 since it has been determined that funding through FY 1978 will be sufficient to meet program objectives. There are no plans for new projects and the FY 1978 multi-year funding required by five of the remaining projects completes the Federal commitment. Four of the projects will be completed in FY 1979 and the remaining project will conclude in the first quarter FY 1980.

FY 1979 Base ($0)

No funds are requested in FY 1979.

Program Changes ($0)

For the reasons noted above the contract funds outlay of this program is concluded. ERA personnel will monitor and analyze the projects. Data and conclusions will be made available to State regulatory commissions, utility consumer offices, utilities and other interested parties. These data will also be a key aspect of rate reform recommendations prepared for consideration by the Congress.

SUMMARY OF FEDERAL FUNDING FOR
UTILITY DEMONSTRATION PROJECTS
FISCAL YEARS 1975-1978

Regulatory Jurisdiction*	FUNDING ($000) Fiscal Year 1975	Fiscal Year 1976	Fiscal Year 1977	Fiscal Year 1978**	Total
1. Vermont	$360	--	--	--	$ 360
2. Connecticut	230	130	--	--	360
3. New Jersey	160	555	450	202	1,367
4. Ohio	220	168	--	--	388
5. Arkansas	210	160	42	--	412
6. Arizona	210	--	--	--	210
7. Los Angeles	170	350	277	330	1,127
8. Wisconsin	--	200	181	200	581
9. Michigan	--	200	--	--	200
10. New York	--	237	--	--	237
11. California	--	355	215	--	570
12. Puerto Rico	--	357	282	457	1,096
13. North Carolina	--	533	263	236	1,032
14. Edmond, Oklahoma	--	203	182	--	385
15. Washington	--	281	152	--	433
16. Rhode Island	--	275	125	--	400
TOTAL	$1,560	$4,004	$2,169	$1,425	$9,158

* Listed in chronological order of initiation.

** Projected funding levels; funding in FY 78 is contingent upon acceptable performance under FY 77 awards.

Utilities ($000)

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
2. District Heating	0	0	0	$+625	$+625

FY 1978 Program ($0)

District heating is supplying heat, co-produced with electricity in utility power plants, to be used in nearby communities for space conditioning, water heating or industrial processes. The energy saving potential of this concept has been shown to be significant, as has its widespread applicability. The program is co-managed with the Office of Conservation and Solar Applications.

No funds are provided in FY 1978. However, work is underway to identify specific geographic areas where district heating economics are favorable and where institutional barriers are manageable.

Base Adjustment ($0)

There is no base adjustment. See Program Changes.

FY 1979 Base ($0)

There is no base. This is a new start in FY 1979.

Program Changes ($+625)

FY 1979 is the first fiscal year in which district heating would become a discrete budget activity. The requested funds would be applied to two initiatives: first, to selected State or local regulatory agencies for development of detailed, site-specific implementation plans for two plants - one a new plant not yet constructed, and the other an existing plant suitable for retrofitting ($+555); and second, to provide technical assistance pertaining to implementation of district heating to 3 to 4 cognizant State and local public agencies ($+75). District heating is not a new technology. Therefore, the intent of Federal involvement is to encourage adoption of the concept. This level of funding is considered appropriate to the introduction of a new program which complements work ongoing in the Office of the Assistant Secretary for Conservation and Environment. At the outset, the program will focus on analysis of economic and institutional considerations relevant to adoption of the district heating concept.

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
3. Consumer Offices	$1,942	0	$1,940	$1,940	0

FY 1978 Program ($1,942)

The objective of the Consumer Offices program is to support the establishment and operation of State offices to assist electric utility consumers in presentations before public utility commissions.

Funding for this program has been essentially level since its inception in FY 1977 (approximately $2 million per year). Awards are made on a grant basis consistent with guidelines published in July 1977, and are limited to $200K per grantee per year. Twelve projects are now funded with FY 1977 funds. Plans for FY 1978 provide for the continuation of these existing projects assuming acceptable performance. A program summary table is attached.

Base Adjustment ($0)

There is no significant adjustment. The program is projected at a current services level.

FY 1979 Base Program ($1,940)

The FY 1979 base will provide for continuation of approximately nine projects and the initiation of three new ones using a selection procedure similar to the one employed in FY 1977. The requested funds are sufficient

for the program to achieve 30% of its outreach goal of 40 states; i.e., establishment of consumer offices in 12 states.

Program Changes ($0)

There are no changes.

LIST OF STATES AND AMOUNTS OF AWARDS
TO SUPPORT UTILITY CONSUMER OFFICES
FISCAL YEAR 1977

State	($000) Department of Energy Funds
Arkansas	186
District of Columbia	126
Georgia	188
Guam	60
Idaho	193
Illinois	182
Indiana	200
Massachusetts	195
Michigan	200
New Hampshire	40
New Mexico	200
New York	200
Total	1,970

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
4. Rate Reform	$11,000	0	$11,000	$12,228	$+1,228

FY 1978 Program ($11,000)

The objective of the Rate Reform program is to support and encourage State regulatory agencies and non-regulated utilities in instituting utility rate-making practices that are equitable and that encourage energy conservation and efficient production.

The FY 1978 request is based on the following:

1. Continuation of financial assistance funding for 10 pilot rate projects and the initiation of 12 new projects. The actual number of projects at year end will depend significantly on the availability of supplemental funds of $7.4 million ($9,600)

2. Providing technical assistance to PUC's and non-regulated utilities through three types of activities: on-site technical assistance teams (10 efforts); regional workshops (4); and case studies (5). ($900)

3. Intervention in 20 evidentiary hearings of State regulatory agencies. ($500)

Base Adjustment ($0)

The program base has not been adjusted but does reflect the supplemental noted above.

FY 1979 Base Program ($11,000)

The FY 1979 reflects a continuation of the generic activities undertaken in FY 1978.

Program Changes ($+1,228)

Program changes for FY 1979 are accounted for as follows:

1. Financial assistance -- $10.5 million vs $9.6 million, an increase of $928 attributable to inflationary trends in providing follow-on funding to 22 pilot rate projects initiated in FY 1977 and FY 1978 and project data management and analysis costs.

2. Technical assistance - $1 million vs $900, an increase of $100 attributable to an increase from 10 to 15 on-site efforts.

3. Intervention $700 vs $500, an increase of $200. A significant increase in State rate evidentiary hearings is not anticipated. Rather, the issues will become more tightly drawn and a more intensive effort will be required to prepare the necessary case briefs and support materials.

CONSERVATION
RESIDENTIAL AND COMMERCIAL
BUILDINGS AND COMMUNITY SYSTEMS

FY 1979 BUDGET
SUMMARY OF CHANGES
(BUDGET AUTHORITY IN THOUSANDS OF DOLLARS)

FY 1978 Enacted.....$55,090
FY 1979 Request.....$57,800
Net Change.....$ 2,710

	FY 1978	FY 1979			
	Enacted	Base Adjustment	Base	Request	Program Change
1. Building Systems	$19,500	$-2,650	$16,850	$17,600	$ +750
2. Community Energy Utilization	12,800	+5,600	18,400	19,400	+1,000
3. Urban Waste	11,000	-2,911	8,089	8,500	+411
4. Technology & Consumer Products	9,200	+ 25	9,225	9,500	+275
5. Analysis & Technology Transfer	2,590	+ 50	2,640	2,800	+160
TOTAL OPERATING EXPENSES-- BUILDINGS AND COMMUNITY SYSTEMS	$55,090	$+ 114	$55,204	$57,800	$+2,596

BUILDINGS AND COMMUNITY SYSTEMS

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
$19,500	$-2,650	$16,850	$17,600	$ 750

1. Building Systems

FY 1978 Program ($19,500)

The Buildings Systems objective is to develop and commercialize energy efficient design, construction and operations methods, standards for application to new and existing residential and commercial buildings. The program focus is oriented toward commercial buildings ($2,500), residential buildings ($3,100) and performance standards ($13,900). These include such efforts as ventilation and infiltration, retrofit of elementary and secondary schools, and initiation of studies for retrofit of Federal hospitals, ACES and performance standards in accordance with Title III, P.L. 94-385.

Base Adjustment ($-2,650)

The FY 1979 negative Base Adjustment results primarily from the completion of specific projects such as the retrofit of ten elementary schools; the Jolly Tiger Restaurant, and the Minimum Energy Dwelling (MED).

FY 1979 Base ($16,850)

The FY 1979 base level reflects the funding necessary to maintain Building Systems efforts at the FY 1978 authorized level and meet legislative time frame for performance standards.

Program Changes ($750)

The FY 1979 program changes reflect the continued efforts in the area of schools and hospitals specifically the retrofitting of university buildings and Navy medical facility to study heat recovery and ventilation. Also indicated is the initiation of efforts to retrofit multi-family housing.

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
$12,800	$5,600	$18,400	$19,400	$1,000

2. Community Energy Utilization

FY 1978 Program ($12,800)

Community Energy Utilization program efforts aid in the determination of the community forms and development patterns most amenable to employment of integrated systems and energy efficient community design. This area has three major thrusts: Integrated Systems ($6,030); Planning Design and Management ($5,245) and Implementation Mechanisms ($1,475). These areas include such efforts as Grid-Connected Integrated Community Energy Systems, District Heating and Cooling, and Comprehensive Community Energy Planning.

Base Adjustment ($5,600)

The FY 1979 Base Adjustment provides primarily for program continuation and progress from initial studies to more detailed evaluation and analysis of four concepts of the grid-connected total energy system. Subsequently, two of these projects will progress to the engineering design stage. Additionally, district heating and cooling and heat pumps centered ICES are expected to progress to the final engineering design phase.

FY 1979 Base ($18,400)

The FY 1979 base level reflects the funding necessary to maintain R&D efforts initiated in prior fiscal years.

Program Changes ($1,000)

The FY 1979 program changes involve power plant retrofit activities for the Integrated Community Energy Systems.

BUILDINGS AND COMMUNITY SYSTEMS

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Changes
$11,000	$-2,911	$8,089	$8,500	$411

3. Urban Waste

FY 1978 Program ($11,000)

The objective of this activity is to conduct RD&D to provide technological options to waste management/waste utilization planners in order that they may select a waste-to-energy system applicalbe to their specific situation. A limited number of municipalities were funded for Urban Waste demonstration feasibility design ($4,000), anaerobic digestion activities ($2,500) and other biological energy recovery projects ($4,500). Included in FY 1978 were efforts to develop a fluid-bed combustor operating on urban waste and producing steam, completion of the proof-of-concept facility for anaerobic digestion of solid waste and sewage sludge with facility shakedown and initiation of limited testing. New efforts were also undertaken in the area of combined liquid and solid waste-to-energy systems and methane recovery from landfill.

Base Adjustment ($-2,911)

The FY 1979 negative Base Adjustment results from the fact that preparation of the budget request was done in advance of final approval of the FY 1978 DOE Authorization which established new Sections 19 and 20 in the Federal Nonnuclear Energy Research and Development Act of 1974. The FY 1978 authorization P. L. 95-238, was signed by President Carter on February 25, 1978.

FY 1979 Base ($8,089)

The FY 1979 base level reflects the funding necessary to maintain Urban Waste program efforts at the FY 1978 authorized level.

Program Changes ($411)

The FY 1979 program changes reflect the desire and intent to continue to stimulate pertinent research and development through supporting promising unsolicited proposals which reflect creativity and innovation. Also involved in this change is the conduct of a series of seminars to acquaint potential system users with the concept of energy recovery from waste, and to inform the public of our loan guarantee and price support programs.

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Changes
4. Technology and Consumer Products	$9,200	$25	$9,225	$9,500	$275

FY 1978 Program ($9,200)

The objective of this activity is to develop, demonstrate and encourage the commercialization of more energy efficient new technologies in heating, cooling, and ventilating equipment and systems ($4,083), lighting and windows ($1,506), appliances ($1,669), building controls ($710) and materials and diagnostic equipment ($1,232) used to determine the efficiency of energy use in buildings. The FY 1978 effort includes a continuation of efforts previously initiated toward the development of highly reliable advanced heat pump systems. Two new gas heat pump projects were started in FY 1978--absorption refrigeration cycle system and Brayton/Rankine 7 1/2 ton heat pump. In FY 1978 over 50 residential oil fired heating units were evaluated under DOE's testing program.

Base Adjustment ($25)

The Base Adjustment is negligible.

FY 1979 Base ($9,225)

The FY 1979 base level reflects the funding necessary to maintain the efforts of Technology and Consumer Products at the FY 1978 authorized level.

Program Changes ($275)

The FY 1979 program changes entail new diagnostic projects in the areas of audit procedures, microprocessor control thermostats and appliance control systems.

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Changes
$2,590	$50	$2,640	$2,800	$160

5. Analysis and Technology Transfer

FY 1978 Program ($2,590)

The goal of this activity is to encourage the earliest possible acceptance of new and existing means for improving the efficiency of energy use through development of information and technology transfer methods and to conduct research to encourage consumers to purchase energy efficient products. The program focus is directed at Analysis ($800), Technology Transfer ($1,200) and Consumer Motivation ($590). In FY 1978 international cooperative efforts are underway in the areas of: Buildings and Community Systems, Heat Pumps, Energy Cascading, Heat Transfer, Combustion, Materials and Industrial Processes. Some key publications prepared in FY 1978 include a newsletter, a document on lighting for small commercial use, a Homebuyers Guide for the layman, the Model Energy Conservation Code with workbook, and the Minimum Energy Design and Construction Report. In FY 1978, a nine city demonstration was eveloped to test a method of providing convenient financing for energy efficient measures at the time a resale home buyer purchases a home.

Base Adjustment ($50)

The Base Adjustment is negligible.

FY 1979 Base ($2,640)

The FY 1979 base level reflects the funding necessary to maintain the efforts of the Analysis and Technology Transfer program at the FY 1978 authorized level.

Program Changes ($160)

The FY 1979 program changes are primarily oriented toward the financing area and emphasize the training efforts for lenders for residential and commercial structures to insure incorporation of energy efficiency as a criteria in the lending decision making process.

CONSI ION

RESIDENTIAL AND COMMERCIAL
Mandatory Appliances
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 4,267
FY 1979 Request	3,750
Net Change	$ - 517

	FY 1978	FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
Total Operating Expenses					
1. Mandatory Appliances	$ 4,267	$ -817	$ 3,450	$ 3,750	$ + 300

MANDATORY APPLIANCES

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
$4,267	$-817	$3,450	$3,750	$300

FY 1978 Program ($4,267)

This regulatory program is in support of Title III, Part B of EPCA and is concerned with reducing the energy consumed by major home appliances. Pursuant to provisions of the National Energy Plan as submitted to Congress by the President in April 1977, this program is mandated to develop and prescribe minimum efficiency standards for each of seven product categories. Although this standards program is concerned with seven products the test procedures requirements under EPCA apply to thirteen products. FY 1978 efforts are directed at modifications in the test procedures so they are applicable to the NEA requirements. The program is principally comprised of analysis efforts ($3,667) and consumer education ($600).

Base Adjustment ($-817)

The reduction in the Base Adjustment reflects programmatic stretchout in the development of test procedures, minimum standards, consumer education and certification methods in support of the seven product categories.

FY 1979 Base ($3,450)

The FY 1979 base level reflects the funding necessary to maintain the efforts of the Mandatory Appliances program at the FY 1978 authorized level.

Program Changes ($300)

The FY 1979 program change relates to the requirement for the conduct of an environmental impact assessment.

CONSERVATION

RESIDENTIAL AND COMMERCIAL
Other Commercial

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 200
FY 1979 Request	$ 500
Net Change	$+300

	(1) FY 1978	(2)	(3)	(4)	(5)
		FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
Total Operating Expenses					
1. Other Commercial	$200	$ +150	$350	$500	$ +150

OTHER COMMERCIAL

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Changes
$200	$150	$350	$500	$150

FY 1978 Program ($200)

This program is directed at increasing the energy efficiency of the Nation's 9.4 million small businesses by developing nontechnical guidance for small businesses on methods to reduce both energy use and costs. In FY 1978 the second phase of the Program was initiated bringing to twelve the total number of business sectors addressed.

Base Adjustment ($150)

The FY 1979 Base Adjustment allows for planned continuation with eight other business sectors.

FY 1979 Base ($350)

The FY 1979 base level reflects the funding necessary to maintain previously initiated efforts.

Program Changes ($150)

The change allows for an evaluation of the program to measure the impact.

CONSERVATION
RESIDENTIAL AND COMMI(.L

WEATHERIZATION

FY 1979 Budget

Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enactment	$ 64,166
FY 1979 Request	198,950
Net Change	+$ 134,784

FY 1978				FY 1979					
Enacted		Base Adjustment		Base		Request		Program Change	
Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
	64,166		+134,784		198,950		198,950		0

(Dollars in Thousands)
FY 1979

	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
Weatherization	$64,166	+ $134,784	$198,950	$198,950	0

1978 Program $64,166

The Weatherization Assistance Program provides grants to States for the purpose of weatherizing the dwellings of low-income persons, particularly the elderly and handicapped. $64,066,000 in grants will be awarded in FY 1978 to weatherize approximately 278,500 homes. Energy savings as a result of the FY 1978 program will be 2,045 barrels of oil equivalent per day. $100,000 in contract support is being used for training materials and monitoring activities.

Base Adjustment + $134,784

The FY 1979 Base Adjustment provides funds for an additional 579,000 homes over FY 1978 and brings the FY 1979 commitment or base level to $198,950,000 as authorized under the National Energy Act (NEA). The NEA expands this program (originally authorized under the Energy Conservation and Production Act) to reach and assist more low-income persons.

FY 1979 Base $198,950

The FY 1979 Base level reflects the funding needed to bring this program to the level anticipated in the NEA. $198,750,000 in grants will weatherize approximately 857,000 homes at a savings of 6,300 barrels of oil equivalent per day. $200,000 in contract support will be used for monitoring and evaluation.

Program Changes $0

There are no program changes from the FY 1979 base for this program.

BACKUP - FY 1979 CONGRESSIONAL BUDGET REQUEST
Conservation
Grant Awards to States

Weatherization Assistance Program (ECPA)	(000's) FY 1978 Estimate BA	(000's) FY 1979 Estimate BA
Alabama	654,700	1,543,600
Alaska	516,400	1,021,700
Arizona	287,600	614,100
Arkansas	625,700	1,303,700
California	1,566,800	6,138,200
Colorado	1,303,400	4,330,800
Connecticut	889,500	3,112,200
Delaware	227,000	472,700
District of Columbia	290,600	928,100
Florida	251,200	535,600
Georgia	724,400	1,977,800
Hawaii	-0-	-0-
Idaho	583,500	1,443,100
Idaho Indian Tribes		
Illinois	4,088,800	13,852,500
Indiana	1,804,800	7,891,800
Iowa	1,589,300	4,169,100
Kansas	693,200	1,700,800
Kentucky	1,451,400	3,387,900
Louisiana	334,800	748,500
Maine	994,800	2,704,700
Maryland	843,200	2,505,900
Massachusetts	1,782,000	7,290,200
Michigan	4,381,800	12,703,700
Minnesota	3,055,400	9,089,500
Mississippi	478,500	1,021,600
Missouri	1,962,500	5,212,400
Montana	794,700	1,890,000
Montana Indian Tribes		
Nebraska	863,400	2,283,000
Nevada	202,900	451,900

Weatherization Assistance Program (ECPA)	(000's) FY 1978 Estimate BA	(000's) FY 1979 Estimate BA
New Hampshire	508,900	1,439,600
New Jersey	1,769,600	5,999,100
New Mexico	584,100	1,266,900
New York	5,736,200	26,163,400
North Carolina	1,108,100	3,088,300
North Dakota	831,000	2,039,300
North Dakota Indian Tribes		
Ohio	3,546,800	11,604,700
Oklahoma	729,600	1,751,500
Oregon	802,600	2,390,800
Pennsylvania	4,412,700	13,664,700
Rhode Island	442,600	1,370,800
South Carolina	428,400	984,600
South Dakota	735,800	1,372,700
South Dakota Indian Tribes		
Tennessee	1,135,900	3,145,600
Texas	966,600	2,436,300
Utah	619,600	1,562,500
Vermont	531,850	1,385,900
Virginia	1,124,700	2,830,100
Washington	1,169,700	3,935,700
West Virginia	995,000	2,300,300
Wisconsin	2,329,400	6,907,500
Wyoming	354,600	784,600
TOTAL	64,000	198,750

Residential and Commercial Insulation Service

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 1,555
FY 1979 Request	' 1,000
Net Change	$ - 555

	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Insulation Service		1,555		0		1,555		1,000		- 555
TOTAL OPERATING EXPENSES - INSULATION SERVICE	8*	1,555	0	0		1,555	15*	1,000	+ 7	- 555

* Positions and associated costs budgeted under Policy and Management.

Insulation Services ($000)

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
$1,555	0	$1,555	$1,000	$ -555

FY 1978 Program ($1,555)

The objective of the Utility Insulation Service Program is to reduce annual energy consumption in the residential sector by encouraging utilities to offer a comprehensive insulation service to their residential customers. Ten rate design pilot projects were undertaken in FY 1977. Nine of these projects also involve insulation services. These projects are expected to continue in FY 1978 with $1 million being applied as the insulation service share of project costs. Additionally, $500 will be spent on technical assistance for on-site teams, regional work shops, and informational materials; $55 will be used to support the preparation of case briefs to forward the case for insulation in appropriate regulatory hearings.

Base Adjustment ($0)

The program base has not been adjusted.

FY 1979 Base ($1,555)

The program base in terms of substance and outreach is the same as FY 1978.

Program Changes ($ -555)

The FY 1979 request is $-555 lower than FY 1978. This obtains as follows:

1) Financial assistance to pilot projects $800 vs $1000, down $200 reflecting lower per project outlay and a new project initiation pace consistent with State regulatory and industry self initiated activities.

2) Technical assistance; $150 vs $500, down $350 reflecting the maturation of this activity and the fact that front end costs for developing support materials were incurred in FY 1978.

3) Intervention; $50 vs $55, down $5. No significant change in this effort.

CONSERVATION

RESIDENTIAL AND COMMERCIAL
Capital Equipment

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 170
FY 1979 Request	$ 1,200
Net Change	$+1,030

	FY 1978	FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
1. Building Systems	$ 170	$+ 330	$ 500	$ 900	$+ 400
2. Community Energy Utilization	0	0	0	300	+ 300
Total Capital Equipment Residential and Commercial	$ 170	$+ 330	$ 500	$1,200	$+ 700

CAPITAL EQUIPMENT

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Changes
Building Systems	$170	$330	$500	$900	$400

FY 1978 Program ($170)

A major end product of the RD&D activities of the Buildings Systems program is the collecting, analysis, and dissemination of data. In order to collect and analyze this data, certain capital equipment items are required: collection, instrumentation, testing equipment, data reduction equipment, basic laboratory equipment, etc. In FY 1978 capital equipment was required for the ACES project as well as for field validations with actual installations of hardware projecting the best energy conservation potential with the most cost effective measures possible in the operations and maintenance of restaurants.

Base Adjustment ($330)

The FY 1979 Base Adjustment provides for the requisite equipment to collect operational data on the performance of specific retrofit elementary schools. A reprogramming request of $966,000 from operating to capital equipment is currently awaiting approval.

FY 1979 Base ($500)

The FY 1979 base level reflects the funding necessary to maintain efforts at the FY 1978 authorized level.

Program Changes ($400)

The FY 1979 program change addresses the need for specific equipment required to perform continued data acquisition involving heat transfer, flow rates and spot temperature levels regarding retrofit systems in colleges and universities; performance testing equipment is also required for residential structures to reduce cooling/heating loads and establish air infiltration rates; instrumentation equipment will be required to validate; air chemical composition in hospitals, schools and residences; equipment will be required to modify ACES data gathering.

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Changes
Community Energy Utilization	0	0	0	$300	$300

FY 1978 Program (0)

Community Energy Utilization projects during FY 1978 are functioning in the area of paper feasibility analysis and study phases and therefore have had no requirement for capital equipment.

Base Adjustment (0)

FY 1979 Base (0)

Program Changes ($300)

Community Energy Utilization projects are now progressing from study phases to systems demonstration activities which require instrumentation and data collection and reduction equipment. This will specifically be required for the integrated community energy systems projects for purposes of validating results of demonstration operations.

INDUSTRY
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted.....$23,750
FY 1979 Request..... 32,000
Net Change.....$+8,250

	FY 1978	FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
1. Waste Energy Reduction	$10,513	+$2,227	$12,740	$14,240	+$ 1,500
2. Industrial Process Efficiency	13,237	+ 3,323	16,560	17,760	+ 1,200
Total - Industry	$23,750	+$5,550	$29,300	$32,000	+$ 2,700

Industry ($000)

		(Dollars in Thousands) FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
1. Waste Energy Reduction...	$10,513	+$2,227	$12,740	$14,240	+$1,500

FY 1978 Program ($10,513)

The FY 1978 program provides for continuing the waste heat recovery efforts ongoing from FY 1977 (heat pumps, recuperators and energy-integrated industrial parks) ($3,050); waste materials utilization as fuels and feedstocks ($1,200); and program analysis, support and Divisional technology transfer activities ($2,800);and initiating new activities in combustion efficiency improvements ($150); advanced industrial heat pumps ($200); alternative feedstocks ($3,023); and a laboratory analysis to optimize proportions of alkali and aggregate in cement ($90).

Base Adjustment (+$2,227)

The FY 1979 base adjustment provides for continuing waste heat recovery (principally advanced heat pumps and energy-integrated industrial parks) into hardware design and fabrication phases (+$3,500) and reducing alternative feedstock effort having passed through an expensive project phase in FY 1978 (-$1,273).

FY 1979 Base ($12,740)

The FY 1979 base level reflects the funding necessary to maintain the waste heat recovery, alternative materials utilization, combustion efficiency improvement and program analysis and technology transfer activities at the appropriate levels based on continued FY 1978 efforts.

Program Change (+$1,500)

The FY 1979 program change reflects initial line-item funding for feasibility studies and laboratory experiments for utilization of industrial waste gases of low heating value (+$400) and higher efficiency, higher thermal level Stirling heat pumps (+$300); analysis of wood waste pelletizing, logistics and economics (+$400); and applications analysis for remanufacturing to identify candidate product lines (+$400).

Industry ($000)

		(Dollars in Thousands) FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
2. Industrial Process Efficiency	$13,237	+$3,323	$16,560	$17,760	+$1,200

FY 1978 Program ($13,237)

The FY 1978 program provides for continuing the RD&D efforts started in prior years for increased process efficiency in high temperature processes (steel, aluminum, glass and cement) ($5,830); low temperature processes (chemicals, paper, petroleum refining and textiles) ($3,041); end product processes (general manufacturing and finishing) ($852); and agriculture and food processes ($3,514).

Base Adjustment (+$3,323)

The FY 1979 base adjustment provides for continuing several activities into demonstration hardware phases (principally improved aluminum cathode, direct reduction of aluminum, blast furnace gasifiers, alternatives to natural gas in paint curing, crop drying and energy-integrated farm systems) (+$6223) in view of activities that were completed in FY 1978 (slot forge furnace improvement, CO for methane, foam dyeing, analysis of computer-controlled paper processes, study of conservation in ethyl polymers, CO as a feedstock and poultry processing) (-$2900).

FY 1979 Base ($16,560)

The FY 1979 base level reflects the funding necessary to maintain the industrial process efficiency RD&D activities initiated in FY 1978 at the appropriate phase as planned.

Program Change (+$1200)

The FY 1979 program change reflects the initiation of six projects of RD&D in nitrogen-based fertilizer production improvements. These projects were developed from proposals of a Program Opportunity Notice in FY 1978 but, due to time constraints, contracts cannot be awarded until FY 1979.

INDUSTRIAL COGENE[illegible]ON

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 5,000
FY 1979 Request	16,000
Net Change	$+11,000

	FY 1978	FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
Total Industrial Cogeneration.....	$5,000	+$11,000	$16,000	$16,000	0

	(Dollars in Thousands)				
		FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
Industrial Cogeneration	$5,000	+$11,000	$16,000	$16,000	0

FY 1978 Program ($5,000)

The FY 1978 budget provides for continuation of bottoming cycle component development activities started in previous years ($900), for the initiation of studies to determine optimum cogeneration system configurations for each of several industrial sectors ($1000), for initiation of case history studies of existing cogenerators and for initiation of a first generation of industry demonstration projects which incorporate innovative and beneficial features ($3100).

Base Adjustment (+$11,000)

The FY 1979 base adjustment provides for annualization of the costs required to continue the five demonstration projects into the hardware design, fabrication and demonstration phases.

FY 1979 Base ($16,000)

To continue studies to provide definition of technical deficiencies and develop guidelines to overcome economic, institutional and regulatory problems ($700), and to maintain the demonstration projects initiated in FY 1978 ($15,300).

Program Changes ($0)

There are no new starts planned for FY 1979 in cogeneration.

INDUSTRIAL MONITORING AND ANALYSIS
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted.....$100
FY 1979 Request.....$300
Net Change.....$ 0

	FY 1978	FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
Total - Industrial Monitoring and Analysis	$100	$ 0	$100	$300	+$200

Industrial Monitoring and Analysis ($000)

	(Dollars in Thousands) FY 1979			
FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
$100	$ 0	$100	$300	+$200

FY 1978 Program ($100)

Accomplished legislative mandates of the Energy Policy and Conservation Act (EPCA) which included: identification of industries and companies required to report their energy consumption; review of progress toward achievement of EPCA energy efficiency improvement targets; analysis of industrial energy information reporting programs; development and submission of annual progress report; initiation of data validation program.

Base Adjustment ($ 0)

No adjustment required.

FY 1979 Base ($100)

No changes from FY 1978. Legislative mandates of EPCA continue.

Program Change (+$200)

Program change includes expansion of data validation effort to include wider coverage of reporting firms and industries; expanded and improved validation of plant level reported data; expanded coverage of firms and industries to include identification and data collection from all firms consuming 1 trillion BTU's or more; review, analyses, and update where appropriate of energy efficiency improvement targets; improve and refine annual progress report.

COMMERCIALIZATION AND TECHNOLOGY TRANSFER
FY 1979 Budget
Summary of Changes
(Budget Authority in thousands of Dollars)

FY 1978 Enacted.....$200
FY 1979 Enacted.....$300
Net Change.....$+100

	FY 1978	FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
Total - Commercialization and Technology Transfer	$200	$ 0	$200	$300	+$100

mercialization and
nology Transfer ($000)

(Dollars in Thousands)				
		FY 1979		
FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
$200	$ 0	$200	$300	+$100

FY 1978 Program ($200)

The FY 1978 level provides for work with 50 trade associations and industrial groups through the Voluntary Business Energy Conservation Program (VBECP), a statutorily mandated (EPCA) energy use reporting system through trade associations and industrial groups. Work with 50 such associations, representing some 3,000 business units using from 40 percent to 50 percent of U.S. industrial energy, is focused upon development of energy conservation programs, assisting in accumulating information about achievements, monitoring and validating data, and reporting such activities. CS participation in three industrial trade shows to foster technology transfer and commercialization will be accomplished as well as sponsorship of about 20 workshops and seminars. Technology transfer will be supported through technical literature development and dissemination.

Base Adjustment ($ 0)

No adjustment required.

FY 1979 Base ($300)

No change from FY 1978 level of activity.

Program Change (+$100)

The FY 1979 program change will allow the VBECP to expand its coverage by about 10 to 20 new associations and by approximately 10 percent of industrial energy use. An additional industrial trade show will be sponsored to enhance technology transfer and commercialization and an additional 10 or so workshops and seminars will be sponsored.

CAPITAL EQUIPMENT
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$500
FY 1979 Request	500
Net Change	$ 0

	FY 1978	FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
1. Industrial Process Efficiency..	$100	-$100	0	0	0
2. Industrial Cogeneration	400	+100	500	500	0
Total - Capital Equipment	$500	$ 0	$500	$500	$ 0

Capital Equipment ($000)

		(Dollars in Thousands) FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
1. Industrial Process Efficiency	$100	-$100	0	0	0

FY 1978 Program ($100)

The FY 1978 program provides capital equipment funds for instrumentation to be installed in canning processing plants ($75) and measuring and recording items for conducting energy audits of selected processes ($25).

Base Adjustment (-$100)

No capital equipment funding for industrial process efficiency activities is planned for FY 1979. Hence the FY 1979 base adjustment is -$100.

FY 1979 Base ($ 0)

No capital equipment funding is included in the FY 1979 base for industrial process efficiency.

Program Change ($ 0)

No new initiatives requiring capital equipment funding are planned for FY 1979 for industrial process efficiency.

		(Dollars in Thousands) FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
2. Industrial Cogeneration	$400	+$100	$500	$500	$ 0

FY 1978 Program ($400)

The FY 1978 program reflects the capital equipment funds for component procurements for the organic Rankine cycle systems being developed for industrial applications of cogeneration.

Base Adjustment (+$100)

The base adjustment for FY 1979 provides the funds necessary for the cogeneration activities initiated in FY 1978 which progress to hardware phases in FY 1979.

FY 1979 Base ($500)

The FY 1979 base level for capital equipment is for procuring cogeneration equipment elements for activities initiated during FY 1978 which reach hardware phases in FY 1979.

Program Change ($ 0)

No new initiatives are planned for cogeneration in FY 1979. No additional capital equipment funding is planned.

TRANSPORTATION ENERGY CONSERVATION

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$64,400
FY 1979 Request	94,800
Net Change	$30,400

	FY 1978 Enacted B/A	FY 1979 Base Adjustment B/A	FY 1979 Base B/A	FY 1979 Request B/A	FY 1979 Program Change B/A
1. Heat Engine Highway Systems	27,000	+ 2,100	29,100	46,300	+ 17,200
2. Alternative Fuels Utilization	2,380	+ 200	2,580	5,500	+ 2,920
3. Electric/Hybrid Vehicle Systems	30,000	+ 2,100	32,100	37,500	+ 5,400
4. Nonhighway Transport Systems	1,400	+ 100	1,500	1,800	+ 300
5. New Concepts/Impact Assessments	3,620	+ 100	3,720	3,700	- 20
TOTAL OPERATING EXPENSES - Transportation Energy Conservation	64,400	+ 4,600	69,000	94,800	+ 25,800

	(Dollars in Thousands) FY 1978 Enacted	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Program Changes
1. Heat Engine Highway Systems	$27,000	$ + 2,100	$29,100	$46,300*	$ + 17,200

1978 Program

The Heat Engine Highway Systems activity focuses on the development of new engines, transmissions, and components for automobiles that offer the potential of significantly improved fuel economy and exceedingly low exhaust emissions and the capability of using virtually any combustible liquid as fuel. The FY 1978 funds provide for the continuation of research and development of the gas turbine and Stirling cycle engines ($23.8 million), and the continuation of development of components of vehicles other than the engines ($3.2 million). Specific projects include: (1) completing conceptual and final designs of the improved gas turbine automobile engine and procurement of hardware for this engine, (2) advancing the durability limits of gas turbine ceramic components and introducing a number of ceramic components into modified gas turbine engines for testing, (3) completing emission, fuel economy and dynamic performance tests on the first generation 170 hp design Stirling engine, and (4) continuing to test the first generation continuously variable transmission to improve control shifting and initiating development of a preproduction prototype hydrostatic module for the second generation continuously variable transmission.

Base Adjustment

The FY 1979 Base Adjustment provides for an inflation adjustment to continue the gas turbine and Stirling engine development programs, including development and durability testing of high temperature ceramic materials, and to continue development of vehicle systems improvements at the FY 1978 authorized level.

FY 1979 Base

The FY 1979 base level reflects the funding required to maintain R&D efforts begun in prior fiscal years.

Program Changes

The FY 1979 program changes provide for accelerating gas turbine hardware development with emphasis on aerodynamic designs of rotating machinery and testing new designs in hardware ($4.6 million); expanding the Stirling engine program by initiating testing of upgraded baseline and second generation engines and initiating major hardware developments ($10.4 million); initiating preproduction design and testing of organic bottoming cycle components ($0.2 million); initiating the preproduction prototype testing of the second generation continuously variable transmission ($0.6 million); and initiating the in-use testing of the gas turbine in a limited number of city buses ($1.4 million). This level of funding will permit expansion of contractor activity for the prime engine systems and will increase the probability that the engine performance goals will be met.

	(Dollars in Thousands) FY 1978 Enacted	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Program Changes
2. Alternative Fuels Utilization	$ 2,380	$ + 200	$ 2,580	$ 5,500	$ + 2,920

1978 Program

The Alternative Fuels Utilization program is focused on identifying and resolving major problem areas related to the utilization of alternative fuels and providing a broad-based understanding of the practical problems and system aspects associated with the implementation of alternative fuels in conventional

* Funds required for the implementation of the recently enacted Automotive Propulsion R&D Act of 1978 (P.L. 95-238, Title III) are not included in this request.

automotive engines. The FY 1978 funds provide for continuation of base-level research and testing of alcohol fuels and initiation of research and testing of hybrid fuels to characterize emissions, fuel composition and properties, and to understand materials and lubricant compatibility problems, as well as toxicity and safety problems ($1.8 million); base-level assessment of solutions to alcohol-use problems through modification of the engine and vehicular fuel systems ($0.2 million); and continuation of ongoing work to improve on-board storage capability for advanced hydrogen vehicles and expansion of research characteristics of hydrogen fuel combustion ($0.4 million).

Base Adjustment

The FY 1979 Base Adjustment provides for an inflation adjustment to continue systems studies and testing of fuels to solve problems related to the use of alternative fuels at the FY 1978 authorized level.

FY 1979 Base

The FY 1979 base level reflects the funding required to maintain efforts begun in prior fiscal years.

Program Changes

The FY 1979 program changes provide for accelerated pace of fuels research leading toward demonstration of the use of alcohol/gasoline blends in vehicles. Specific projects include: studies on the effectiveness of selected methods to reduce cost of alcohol fuels to U.S. consumers and the assessment of the effect of alcohols in the distribution and refining systems ($0.75 million); determination of the practicability of using ethers from methanol and refinery processes that might be used for high concentration alcohol/ether blends in gasoline ($0.4 million); and expansion of research and testing of methanol and hybrid fuels and initiation of testing of synthetic hydrocarbon fuels to characterize emission and fuel compositions and to solve materials and lubricants compatibility problems ($1.77 million).

(Dollars in Thousands)

	FY 1978 Enacted	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Program Changes
3. Electric/Hybrid Vehicle Systems	$30,000	$ + 2,100	$32,100	$37,500	$ + 5,400

1978 Program

The Electric and Hybrid Vehicle Program encompasses the activities being conducted to fulfill the requirements of the Electric and Hybrid Vehicle Research, Development, and Demonstration Act of 1976 (P.L. 94-413) as amended by P.L. 95-238. In addition, some elements of the R&D Program are directed toward longer range activities that extend beyond the dates of the Act but are consistent with the overall goal and purpose of the Act. The FY 1978 funds provide for the continuation of electric and hybrid vehicle research and development ($16.0 million); the demonstration and incentives ($6.0 million); battery research and development ($5.5 million); and studies, standards, and program support activities ($2.5 million). Specific projects include: (1) purchase and demonstration of 200 vehicles using private and Federal site operators; (2) development of improved electric vehicles; (3) development of improved batteries; (4) continuation of mandated special studies and assessments; (5) publication of performance standards; (6) development of improved motors, controllers, and other components; (7) initiation of hybrid vehicle development; and (8) issuance of planning grants.

Base Adjustment

The FY 1979 Base Adjustment provides for an inflation adjustment to continue the Electric and Hybrid Vehicle Program at the FY 1978 authorized level. This includes demonstrations, incentives, research, development and special studies.

FY 1979 Base

The FY 1979 base level reflects the funding required to maintain development efforts begun in prior fiscal years.

Program Changes

The FY 1979 program changes include funds for conducting the demonstration project at the minimum mandated level of 600 additional vehicles ($6.6 million) and initiation of the loan guaranty and incentives program ($1.9 million). Changes in the vehicle and component development areas will result in a stretchout of hybrid development and a reduction of funding (-$1.0 million). The near-term battery funding will drop slightly (-$0.4 million) reflecting a reduction of parallel efforts. Funding for supporting studies will be significantly reduced ($-1.7 million).

		(Dollars in Thousands)			
		FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
4. Nonhighway Transport Systems	$ 1,400	$ + 100	$ 1,500	$ 1,800	$ + 300

1978 Program

The Nonhighway Transport Systems program supports end-use efficiency and alternative fuels activity for the transport modes of pipeline, rail, marine and air. In addition support is provided to energy conservative projects involving multi-modal applications. The pipeline program ($0.34 million) supports efforts leading to a demonstration of a waste heat recovery system for pipeline compression stations and assessment of fuel cell applications to pipeline pumping and a study of coal-methanol slurry pipelines. For railroad systems ($0.22 million) laboratory testing of alternative fuels for locomotive diesel engines will begin along with an assessment of alternative propulsion systems for locomotion. The marine program ($0.19 million) will support projects involving alternative fuels (coal-oil slurry) and bottoming cycle applications to marine diesel engines. Modal shift investigations include the study of the transportation of energy materials and a nonhighway alternative fuels study will be supported under the multi-modal activity ($0.50 million). Air modal activity ($0.15 million) will continue the study of commercial airline operational techniques with energy conservative potential.

Base Adjustment

The FY 1979 Base Adjustment provides for an inflation adjustment to continue nonhighway projects at the FY 1978 authorized level.

FY 1979 Base

The FY 1979 base level reflects the funding required to maintain R&D efforts begun in prior fiscal years.

Program Changes

The FY 1979 program changes allow for the accelerated development and demonstration of a waste heat recovery system ($0.3 million) for pipeline compressor station application holding the potential for saving 58,000 barrels of oil per day equivalent, if fully implemented.

	(Dollars in Thousands)				
		FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
5. New Concepts/Impact Assessments	$ 3,620	$ + 100	$ 3,720	$ 3,700	$ - 20

1978 Program

The New Concepts/Impact Assessment activity covers three areas: new concepts, technology assessment, and supporting data analysis. These support overall objectives to bring new concepts to the marketplace ($0.52 million), to establish priorities for research, development and demonstration using a consistent data base and set of forecasting models ($0.69 million), and to meet NEPA requirements for impact assessment and environmental development planning ($2.37 million). Specific projects include: (1) Driver Energy Conservation Awareness Training and evaluation of an optimized preproduction prototype micro carburetor; (2) expansion of the TEC Data Book and continuation of the future scenarios project; and (3) impact assessment of electric and hybrid vehicles and alternative fuels, and methodologies development in support of the TEC program.

Base Adjustment

The FY 1979 Base Adjustment provides for an inflation adjustment across the three support levels, consistent with the TEC program.

FY 1979 Base

The FY 1979 base level reflects the funding level supportative of overall TEC research, development and demonstration efforts begun in prior fiscal years.

Program Changes

The reduction in the FY 1979 program changes has minimal effect on the New Concepts/Impact Assessment program, but may stretch out the evaluation of new concepts.

VEHICLE/SYSTEMS UTILIZATION

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 88
FY 1979 Request	1,200
Net Change	$ 1,112

	FY 1978 Enacted B/A	FY 1979 Base Adjustment B/A	FY 1979 Base B/A	FY 1979 Request B/A	FY 1979 Program Change B/A
1. Vehicle/Systems Utilization	88 a/	+ 6	94	1,200 b/	+ 1,106
TOTAL OPERATING EXPENSES - Vehicle/Systems Utilization	88	+ 6	94	1,200	+ 1,106

a/ In FY 1978 a total of $800,000 is included under Program Direction for printing costs of mileage guides.

b/ In FY 1979 $800,000 for printing costs are included within the $1.2 million request.

	(Dollars in Thousands)				
		FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
1. Vehicle/Systems Utilization	$ 88	$ + 6	$ 94	$ 1,200	$ + 1,106

1978 Program

The Vehicle/Systems Utilization programs are directed toward improving the energy efficiency in the use of transportation systems through eliminating Federal and State regulatory and institutional barriers, promoting the shift of passengers and freight to more energy efficient modes, and encouraging the adoption of energy saving operating and maintenance practices by motorists and commercial vehicle operators, with the objective of reducing vehicle fuel consumption by 10 percent below current levels by 1985. The FY 1978 funds provide for continuation of activity in driver awareness ($18,000), new car fuel economy ($25,000), voluntary truck/bus fuel economy ($15,000), regulatory agency proceedings intervention ($12,500), and urban and intercity freight ($17,500) activities. Specific FY 1978 efforts include completion of films on vanpooling, automobile operations, and truck operations, and three studies on intercity passenger transportation energy conservation strategies; continuation of an intermodal freight service demonstration fuel consumption analysis project; preparation of technical support for intervention in regulatory agency proceedings; distribution of vanpooling and commuter ridesharing educational materials and fourteen million automobile and light duty truck Gas Mileage Guides; initiation of the National Fuel Economy Challenge driving demonstrations; and completion of a driver aid and education test project.

Base Adjustment -

The FY 1979 Base Adjustment provides for an inflation adjustment to continue the Vehicle/Systems Utilization activities at the FY 1978 level.

FY 1979 Base

The FY 1979 Base level reflects the funding required to maintain the Vehicle/Systems Utilization efforts begun in prior fiscal years.

Program Changes

The FY 1979 program changes provide for printing and distributing twenty million Gas Mileage Guides (printing costs in FY 1978 were carried in the DOE program direction)($800,000); evaluation of consumer acceptance of Gas Mileage Guides and development of materials to publicize their availability and purpose ($73,000); expansion of collection and distribution of voluntary truck/bus energy conservation materials ($104,000); identification of strategies for overcoming institutional barriers to efficient intercity transportation and provision of technical support for DOE intervention in Federal and State transportation regulatory agency proceedings ($58,000); and provision of technical support for outreach programs to overcome institutional and knowledge barriers relating to commuter ridesharing, automotive vehicle operating and maintenance practices, and mass transit ($71,000). This level of funding will result in relatively significant progress being made toward elimination of regulatory and institutional barriers and in reaching a substantial audience with materials on transportation energy conservation practices. Progress will be made toward achieving 1985 energy saving goals.

CAPITAL EQUIPMENT

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 500
FY 1979 Request	1,500
Net Change	$ 1,000

	FY 1978 Enacted B/A	FY 1979 Base Adjustment B/A	FY 1979 Base B/A	FY 1979 Request B/A	FY 1979 Program Change B/A
1. Heat Engine Highway Systems	500	+ 1,000	1,500	1,500	-0-
TOTAL CAPITAL EQUIPMENT - Transportation Energy Conservation	500	+ 1,000	1,500	1,500	-0-

(Dollars in Thousands)

	FY 1978 Enacted	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Program Changes
1. Heat Engine Highway Systems	$ 500	$ + 1,000	$ 1,500	$ 1,500	$ -0-

1978 Program

To accelerate acceptance of the gas turbine engine by the transportation industry and provide necessary inputs for further development and commercialization, two demonstration programs have been initiated--one utilizing gas turbine-powered buses in urban environments, and one testing gas turbine-powered buses in intercity operations. These programs will generate performance and operational data under actual revenue service conditions. The FY 1978 funds provide for the purchase of five state-of-the-art heavy duty gas turbine engines and associated transmissions required to power the intercity and urban buses to be used in this demonstration program.

Base Adjustment

The FY 1979 Base Adjustment is a commitment resulting from the demonstration program initiated in FY 1978.

FY 1979 Base

The FY 1979 base level provides funds to acquire the six additional gas turbine engine/transmissions systems required for the conduct of the Urban and Intercity Gas Turbine Bus Demonstration Programs. Revenue services utilizing five urban gas turbine buses and four intercity gas turbine buses will be initiated in FY 1979.

CONSERVATION

FEDERAL
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 615
FY 1979 Request	1,200
Net Change	+ 585

	FY 1978	FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
1. Federal Energy Management Program	$ 615	$ - 415	$ 200	$ 500	$ + 300
2. Federal Vanpooling	0	0	0	700	+ 700
Total Operating Expenses Federal	$ 615	$ - 415	$ 200	$1,200	$ +1,000

FEDERAL ENERGY MANAGEMENT PROGRAM

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Changes
$615	$-415	$200	$500	$300

FY 1978 Program

This program is aimed at the development and implementation of Federal agency energy management plans primarily directed toward achieving more cost-effective, energy efficient buildings. In compliance with Executive Order 12003 development of the ten year plan for energy conservation in the Federal Government was initiated.

Base Adjustment ($-415)

The FY 1979 negative Base Adjustment results from the completion of specific program efforts such as the development of life cycle costing methodology and the Master Plan Development.

FY 1979 Base ($200)

The FY 1979 base level reflects the funding necessary to maintain efforts t the FY 1978 authorized level.

Program Changes ($300)

The FY 1979 program change relates to the requirement for technical assistance to review and evaluate agency's ten year energy conservation plans and the first annual report the respective agencies submit against that plan.

		(Dollars in Thousands) FY 1979			
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
2. Federal Vanpooling	$ 0	$ 0	$ 0	$ 700	$ + 700

1978 Program

Not Applicable.

Base Adjustment

Not applicable.

FY 1979 Base

Not applicable.

Program Changes

In FY 1979 a program will be continued to promote vanpooling by Federal employees using vans owned by individual employee-drivers and by third parties who will lease vans to Federal employee drivers. Specific activities will include development of an implementation plan, including management, site selection and vanpool driver/rider matching programs ($150,000); employee education to promote participation in vanpooling programs ($125,000); organizing, startup and administrative procedures, including training and technical assistance in establishing vanpool programs at Federal agency sites ($200,000); assistance in overcoming institutional barriers ($100,000); and technical assistance for vanpool owners and operators including developing an owner/operator manual, effecting arrangements for financing vanpool purchases and aiding Federal agency management in working with third party vanpool owner organizations ($125,000). This level of funding will provide the means and the impetus for establishing vanpooling programs using non-Federally owned or leased vans at 15 to 20 Federal employment sites with large employment rolls, resulting in important energy savings toward the NEP gasoline consumption reduction goal for 1985.

CONSERVATION
FEDERAL PROGRAMS

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 0
FY 1979 Request	8,990
Net Change	$ 8,990

	FY 1978 Enacted B/A	FY 1979 Base Adjustment B/A	FY 1979 Base B/A	FY 1979 Request B/A	FY 1979 Program Change B/A
CAPITAL EQUIPMENT					
1. Federal Vanpooling	$ 0	$ 0	$ 0	$ 8,990[1/]	$ + 8,990

1/ The Congressional Conference action on NEA prohibits the Federal purchase of vanpool vehicles.

STATE ENERGY CONSERVATION PR[illegible] 1 (EPCA)

FY 1979 Budget

Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enactment	$ 47,764
FY 1979 Request	47,800
Net Change	$+ 36

FY 1978				FY 1979					
Enacted		Base Adjustment		Base		Request		Program Change	
Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
	47,764		+36		47,800		47,800		0

(Dollars in Thousands)

	FY 1978 Enacted	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Program Changes
State Energy Conservation Program (EPCA)	$47,764	$ +36	$47,800	$47,800	$ 0

1978 Program $47,764

The State Energy Conservation Program, created by the Energy Policy and Conservation Act of 1975, is designed to obtain through the actions of State governments a reduction in the total energy consumption of 5 percent or more from the total consumption projected for a given State in 1980. The role of the Federal Government is to provide financial and technical assistance to States for the development and implementation of State energy conservation plans whose objective is the promotion of energy conservation and the reduction in the rate of growth of energy demand. Appropriated funds for FY 1978 included $47 million for the second year's implementation of State energy conservation plans for 55 jurisdictions. The remainder of the appropriation other than that specified for DOE staff resources, is used for pertinent contract assistance (technical assistance and evaluation).

Base Adjustment $ +36

The base adjustment reflects funding for contract support.

FY 1979 Base $47,800

The base amount for FY 1979 reflects a continuation of near the authorized amount for the program (requires NEA passage) and continues a level of grant funding to States commensurate with FY 1978 for the continued implementation of the State energy conservation plans.

Program Changes $ 0

There are no program changes from the FY 1978 base for this program.

BACKUP - FY 1979 CONGRESSIONAL BUDGET REQUEST
Conservation
State and Local Programs
Grant Awards to States

State Energy Conservation Program (EPCA)	FY 1978 Estimate BA	FY 1979 Estimate BA
Alabama	820,000	806,700
Alaska	277,800	275,500
Arizona	571,000	581,000
Arkansas	578,400	554,900
California	3,706,900	3,696,200
Colorado	577,000	631,600
Connecticut	632,900	718,100
Delaware	317,700	307,800
District of Columbia	339,500	327,200
Florida	1,337,800	1,576,400
Georgia	908,800	1,017,900
Hawaii	322,200	357,200
Idaho	335,900	348,100
Illinois	2,168,000	2,030,800
Indiana	1,275,500	1,071,700
Iowa	692,000	678,100
Kansas	690,000	587,500
Kentucky	773,000	768,400
Louisiana	1,196,600	835,200
Maine	365,600	386,800
Maryland	818,000	884,300
Massachusetts	1,156,700	1,153,700
Michigan	1,884,600	1,686,900
Minnesota	829,200	855,300
Mississippi	554,500	594,600
Missouri	871,200	986,900
Montana	331,300	335,500
Nebraska	471,500	464,900
Nevada	316,800	312,400
New Hampshire	339,000	346,700
New Jersey	1,246,700	1,400,800
New Mexico	415,400	402,600
New York	2,670,300	3,140,200

State Energy Conservation Program (EPCA)	FY 1978 Estimate BA	FY 1979 Estimate BA
North Carolina	1,108,300	1,098,700
North Dakota	299,200	317,700
Ohio	1,891,400	1,943,600
Oklahoma	699,800	661,300
Oregon	563,000	590,500
Pennsylvania	2,185,000	2,133,300
Rhode Island	341,000	363,700
South Carolina	609,300	674,500
South Dakota	305,800	324,700
Tennessee	872,200	895,600
Texas	2,837,500	2,234,400
Utah	405,200	412,400
Vermont	283,500	290,700
Virginia	992,800	1,028,000
Washington	754,500	798,200
West Virginia	522,400	508,300
Wisconsin	1,025,300	959,500
Wyoming	304,700	276,800
American Samoa	216,500	218,200
Puerto Rico	541,700	691,200
Guam	225,200	229,800
Virgin Islands	223,900	227,000
TOTAL	47,000,000	47,000,000

SUPPLEMENTAL STATE ENERGY CONSERVATION PROGRAM (ECPA)

FY 1979 Budget

Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enactment	$23,740
FY 1979 Request	10,000
Net Change	- $13,740

FY 1978				FY 1979					
Enacted		Base Adjustment		Base		Request		Program Change	
Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
	23,740		- 13,740		10,000		10,000		0

(Dollars in Thousands)

	FY 1978 Enacted	FY 1979 Base Adjustment	FY 1979 Base	FY 1979 Request	Program Changes
Supplemental State Energy Conservation Program (ECPA)	$23,740	$-13,740	$10,000	$10,000	$ 0

1978 Program $23,740

The provision for the Supplemental State Energy Conservation Program (SSECP) in the Energy Conservation and Production Act amends the State Energy Conservation Program (SECP). The SSECP has as its goals and objectives the same 5% or more reduction in State energy consumption as SECP. The provision for SSECP adds several additional requirements and an additional authorization of program funds. SSECP will provide grant funds in an amount totalling $23.5 million in FY 1978, with the remainder of the enacted amount ($500 thousand) to be used for contractual support for technical assistance and evaluation.

Base Adjustment $-13,740

The reduction of $13.74 million reflects the expectation of the adoption of a nation-wide Energy Extension Service Program in FY 1979 and the enactment of the NEA which includes several programs including the Schools and Health Care Facilities Program, the Local Government and Public Care Facilities Program and the Utility Insulation Service Program. Each of these programs are complimentary to the purposes of the required measures in the SSECP, thus allowing for a smaller request.

FY 1979 Base $ 10,000

The base amount for FY 1979 reflects a continuation of the same level of funding available in FY 1978 for the continued implementation of the supplemental State energy conservation plans.

Program Changes $ 0

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BACKUP - FY 1979 CONGRESSIONAL BUDGET REQUEST
Conservation
State and Local Programs
Grant Awards to States

Supplemental State Grant Program (ECPA)	FY 1978 Estimate BA	FY 1979 Estimate BA
Alabama	403,400	171,600
Alaska	137,700	58,600
Arizona	290,500	123,600
Arkansas	277,500	181,100
California	1,848,100	786,400
Colorado	315,800	134,400
Connecticut	359,000	152,800
Delaware	153,900	65,500
District of Columbia	163,600	69,600
Florida	788,200	355,400
Georgia	509,000	216,600
Hawaii	178,600	76,000
Idaho	174,100	74,100
Illinois	1,015,400	432,100
Indiana	535,800	228,000
Iowa	339,000	144,300
Kansas	293,700	125,000
Kentucky	384,200	163,500
Louisiana	417,600	177,700
Maine	193,400	82,300
Maryland	442,100	188,100
Massachusetts	576,900	245,500
Michigan	843,500	358,900
Minnesota	427,700	182,000
Mississippi	297,300	126,500
Missouri	493,400	210,000
Montana	167,800	71,400
Nebraska	232,500	98,900
Nevada	156,200	66,500
New Hampshire	173,300	73,800
New Jersey	700,400	298,000
New Mexico	201,300	85,700
New York	1,570,100	668,100

Supplemental State Grant Program (ECPA)	FY 1978 Estimate BA	FY 1979 Estimate BA
North Carolina	549,300	233.800
North Dakota	158,900	67,600
Ohio	971,800	413,500
Oklahoma	330,600	140,700
Oregon	295,300	125,600
Pennsylvania	1,066,600	453,800
Rhode Island	181,800	77,400
South Carolina	337,300	143,500
South Dakota	162,300	69,100
Tennessee	447,800	190,600
Texas	1,117,200	475,400
Utah	206,200	87,700
Vermont	145,300	61,800
Virginia	514,000	218,700
Washington	399,100	169,800
West Virginia	254,200	108,200
Wisconsin	479,800	204,200
Wyoming	138,400	58,900
American Samoa	109,100	46,400
Puerto Rico	345,600	147,100
Guam	114,900	48,900
Virgin Islands	113,500	48,300
	23,500,000	10,000,000

SCHOOLS AND HOSPITALS

FY 1979 Budget

Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enactment	$ 200,400
FY 1979 Request	300,500
Net Change	$ 100,100

FY 1978				FY 1979					
Enacted		Base Adjustment		Base		Request		Program Change	
Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
	200,400 *		+ 100,100 *		300,500 *		300,500 *		0

* Authorized under NEA

(Dollars in Thousands)
FY 1979

	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
Schools and Hospitals	$200,400	+$100,100	$300,500	$300,500	0

1978 Program $200,400

The Schools and Hospitals Program (authorized under the National Energy Act) provides matching grant funds to implement energy conserving operating and capital modifications in school and health care facilities. $20 million in FY 1978 will be used for preliminary energy audits, $36 million will be used for technical assistance, and the balance ($144 million) will be used for energy conserving projects. $400,000 in contract support is being used to develop technical and training materials, support guidelines development and train personnel.

Base Adjustment + $100,100

The FY 1979 Base Adjustment provides an additional $100 million for grants, as specified for the second year of funding under the National Energy Act. $100 million will provide assistance to approximately 292 million square feet of eligible buildings.

FY 1979 Base $300,500

The FY 1979 Base reflects the funding level authorized under the National Energy Act. Second year preliminary energy audit grants would drop to $5 million, technical assistance would increase to $45 million and the balance ($250 million) would be used for energy conserving projects. Funding of projects increases in FY 1979 as most of the preliminary auditing and some of the technical assistance will have been completed. $500 thousand for contract support will be used for monitoring and evaluation.

Program Changes $0

There are no program changes from the FY 1979 base for this program.

BACKUP - FY 1979 CONGRESSIONAL BUDGET REQUEST
Conservation
State and Local Programs
Grant Awards to States

Schools and Hospitals	FY 1978 Estimate BA	FY 1979 Estimate BA
Alabama	3,168,602	4,737,987
Alaska	2,806,841	4,278,467
Arizona	2,477,259	3,707,971
Arkansas	2,393,469	3,580,003
California	12,666,190	18,958,847
Colorado	3,052,210	4,587,421
Connecticut	3,206,372	4,810,544
Delaware	1,658,505	2,481,081
District of Columbia	1,716,736	2,567,917
Florida	5,719,933	8,565,613
Georgia	3,848,978	5,755,675
Hawaii	1,464,655	2,176,602
Idaho	2,089,456	3,143,691
Illinois	7,771,620	11,666,116
Indiana	4,435,964	6,658,155
Iowa	3,312,967	4,986,873
Kansas	2,769,082	4,158,711
Kentucky	3,208,433	4,805,723
Louisiana	3,219,893	4,814,330
Maine	2,399,653	3,619,444
Maryland	3,618,769	5,421,385
Massachusetts	4,699,882	7,051,366
Michigan	6,653,125	9,990,339
Minnesota	4,210,940	6,350,907
Mississippi	2,444,447	3,652,420
Missouri	4,100,026	6,152,635
Montana	2,290,420	3,459,729
Nebraska	2,542,578	3,829,258
Nevada	1,710,554	2,563,131
New Hampshire	2,184,155	3,291,539
New Jersey	5,485,653	8,228,038
New Mexico	1,965,672	2,940,690
New York	11,442,830	17,165,531

Schools and Hospitals	FY 1978 Estimate BA	FY 1979 Estimate BA
North Carolina	4,168,735	6,236,682
North Dakota	2,527,088	3,833,913
Ohio	7,376,947	11,067,466
Oklahoma	2,845,504	4,264,078
Oregon	2,507,811	3,745,085
Pennsylvania	7,998,278	11,997,696
Rhode Island	1,941,269	2,908,978
South Carolina	2,689,918	4,017,762
South Dakota	2,269,188	3,430,843
Tennessee	3,564,683	5,336,046
Texas	8,055,201	12,072,055
Utah	2,292,345	3,447,806
Vermont	2,063,660	3,115,149
Virginia	4,028,600	6,031,544
Washington	3,313,326	4,959,458
West Virginia	2,365,597	3,542,660
Wisconsin	4,331,152	6,516,747
Wyoming	2,029,891	3,064,678
American Samoa	991,656	1,467,101
Puerto Rico	2,707,931	4,047,609
Guam	1,031,302	1,526,570
Virgin Islands	1,128,696	1,678,755
Trust Territories	1,035,708	1,533,180
TOTALS	200,000,000	300,000,000

LOCAL GOVERNMENT BU[illegible]INGS

FY 1979 Budget

Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enactment	$ 25,200
FY 1979 Request	10,000
Net Change	$ 15,200

FY 1978				FY 1979					
Enacted		Base Adjustment		Base		Request		Program Change	
Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
	25,200		+ 7,300		32,500 *		10,000		- 22,500

* Authorized under NEA. An April 18, 1978 letter from Secretary Schlesinger to Congressman Yates states that the program should be funded at the $32.5 million authorized FY 1979 level.

(Dollars in Thousands)
FY 1979

	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
Local Government Buildings	$25,200	+$7,300	$32,500	$10,000	- $22,500

1978 Program $25,200

This program (authorized under the National Energy Act) provides matching grants to local government and public care buildings for preliminary energy audits and technical assistance. In FY 1978, $7.5 million will be granted for preliminary energy audits. Technical assistance grants in the amount of $17.5 million will be used for more detailed engineering audits, development of conservation plans and recommendations for energy conservation projects. $200,000 in contract funds will provide for training materials and support for program implementation (guidelines and grant application processing).

Base Adjustment + $7,300

The FY 1979 Base Adjustment provides additional funding to bring this program to its second-year authorized level under NEA.

FY 1979 Base $32,500

The FY 1979 Base reflects the funding level authorized under the National Energy Act, which calls for matching grant funds to be utilized as follows: $7.5 million for preliminary energy audits and $25 million for technical assistance.

Program Changes - $22,500

The FY 1979 program changes reflect a continuation of this program in FY 1979, but at a reduced level from FY 1978 and the FY 1979 authorized level. DOE is presently considering revising its FY 1979 request to allow for the FY 1979 authorized level of $32.5 million.

BACKUP - FY 1979 CONGRESSIONAL BUDGET REQUEST
Conservation
State and Local Programs
Grant Awards to States

Local Government Buildings	FY 1978 Estimate BA	FY 1979 Estimate BA
Alabama	397,567	159,325
Alaska	344,035	136,250
Arizona	310,449	124,338
Arkansas	300,204	120,286
California	1,587,319	635,737
Colorado	380,616	152,064
Connecticut	400,698	160,260
Delaware	207,981	83,326
District of Columbia	215,311	86,268
Florida	716,421	286,854
Georgia	482,902	193,517
Hawaii	185,120	74,456
Idaho	260,231	103,903
Illinois	970,584	388,060
Indiana	554,075	221,546
Iowa	412,379	164,603
Kansas	345,626	138,149
Kentucky	401,747	160,837
Louisiana	404,038	161,926
Maine	297,960	118,785
Maryland	453,023	181,345
Massachusetts	587,331	234,900
Michigan	830,576	332,018
Minnesota	522,928	208,483
Mississippi	306,983	123,079
Missouri	512,244	204,846
Montana	283,893	113,076
Nebraska	316,283	126,205
Nevada	214,089	85,690
New Hampshire	271,489	108,290
New Jersey	685,751	274,310
New Mexico	246,491	98,753
New York	1,430,226	572,066

Local Government Buildings	FY 1978 Estimate BA	FY 1979 Estimate BA
North Carolina	522,734	209,422
North Dakota	311,558	123,757
Ohio	921,914	368,725
Oklahoma	356,106	142,526
Oregon	315,140	126,389
Pennsylvania	999,756	399,897
Rhode Island	242,951	97,239
South Carolina	337,952	135,523
South Dakota	280,942	111,835
Tennessee	446,684	178,893
Texas	1,007,975	403,406
Utah	285,615	114,061
Vermont	255,992	102,004
Virginia	504,711	202,112
Washington	415,219	166,299
West Virginia	296,273	118,624
Wisconsin	539,392	215,357
Wyoming	251,825	100,234
American Samoa	125,995	50,806
Puerto Rico	339,920	136,254
Guam	130,951	52,788
Virgin Islands	142,516	57,292
Trust Territories	131,502	53,009
TOTALS	25,000,000	10,000,000

IMPROVED CONVERSION EFFICIENCY
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 58,280
FY 1979 Request	$ 77,000
Net Changes	$ +18,720

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. Heat Engines and Heat Recovery		$16,600		$ +13,000		$29,600		$29,600		$ 0
2. Combustion Systems		6,480		+ 5,420		11,900		11,900		0
3. Fuel Cells		35,200		+ 300		35,500		35,500		0
TOTAL OPERATING EXPENSES - Improved Conversion Efficiency	111 1/	$58,280	0	$ +18,720	111	$77,000	111	$77,000	0	$ 0

1/ FTP end of year ceiling at ERC's

INPROVED CONVERSION EFFICIENCY

	FY 1978 ENACTED	FY 1979 BASE ADJUSTMENT	FY 1979 BASE	FY 1979 REQUEST	PROGRAM CHANGES
1. Heat Engines and Heat Recovery	$16,600	+$13,000	$29,600	$29,600	$ 0

FY 1978 Program ($16,600)

The goal of the Heat Engines and Heat Recovery subactivity is to develop technology for maximizing energy savings in the utility, industrial, and residential/commercial market sectors. Energy savings opportunities are estimated to be in excess of 1.5 quads by 1985 and over 10 quads by the year 2000. Major objectives are:

o Improve fuel utilization in the industrial and residential/commercial sectors by developing advanced decentralized cogeneration systems that can supply both electric and thermal needs for the equivalent fuel energy now being used to generate just their electrical requirements.

o Develop advanced heat recovery component technology for producing useful work from waste heat (and minimizing thermal pollution), including the recovery and utilization of waste heat from federally owned facilities.

These objectives are to be accomplished by developing technology in Advanced Cogeneration Systems ($8,625) and Heat Recovery Component Technology ($7,975). Primary efforts include development of heavy-fuel gas turbine technology, fabrication of engineering prototypes of organic Rankine bottoming cycles for heat recovery from stationary diesel engines, and initiation of studies to identify the opportunities to recover and utilize waste heat rejected from federal facilities.

Base Adjustment (+ $13,000)

The base adjustment in Advanced Cogeneration Systems ($6,295) allows for the continuation of essential component technology development including the gas turbine combustor and thermal barrier coatings necessary for burning heavy liquid fuels by 1985. The base adjustment for Heat Recovery Component Technology ($6,705) will allow for expanded efforts in heat exchanger and low temperature technology development including hardware to implement the use of energy rejected from DOE facilities.

FY 1979 Base ($29,600)

The Heat Engines and Heat Recovery subactivity consists of two major areas of effort, (1) Advanced Cogeneration Systems and (2) Heat Recovery Component Technology.

Advanced Cogeneration Systems (14,920)

The industrial and residential/commercial sectors are expected to remain dependent on oil and gas fuels through the near-term. Studies have shown that cogeneration is one of the most promising concepts for improving the utilization of critical fuels within these predominately oil and gas consuming sectors. The development of efficient and environmentally clean powerplants which can be fueled from a variety of alternate fuels in the sizes appropriate to dispersed power applications is the major role of technology in cogeneration. Prime mover options which are currently available for cogneration are steam turbines, gas turbines, and diesel and gas engines. Of these, the only presently available system that can use coal or synthetic fuels directly is a fired boiler utilizing a non-condensing steam turbine. Gas turbine or diesel cogenerating installations, although dependent on distillate or gaseous fuels, can produce a significantly higher ratio of electrical energy per pound of steam generation than the non-condensing steam turbine system. Thus, these two directly fired engine options have become widely used in today's existing cogeneration systems. New externally fired engine options such as Stirling and exhaust fired Brayton cycles offer potentially complete fuel flexibility for future advanced cogeneration systems.

The FY 1979 Advanced Cogeneration Systems budget request concentrates on experimentally oriented efforts directed to achieve fuel flexibility in stationary engines for industrial cogeneration. Initiation of the experimental portion of the external combustion engine effort for residential/commercial total energy systems is also planned. In addition, FY 1979 funding increments will be used to complete key studies related to identifying the most promising technology options for advanced cogeneration systems.

Heat Recovery Component Technology ($14,680)

Considering the current total 52 quads of fuel energy usage by the utilities, residential/commercial and industrial sectors, it is estimated that approximately 28 quads are rejected to the atmosphere and rivers in the form of waste heat. Effective recovery and utilization of even a fraction of this reject heat could reduce our dependence on foreign energy imports, alleviate the associated balance of payments problem, and help reduce the cost of energy to the American public. Technology development is carried out in low grade heat recovery, high grade heat recovery, and heat exchanger technology.

The FY 1979 funding increase will permit expanded efforts in heat exchanger technology and to a lesser extent in low grade heat recovery. Continuation of the high grade heat utilization efforts begun in FY 1978 is anticipated at approximately the same level of effort.

Program Changes (-0-)

There were no program changes.

		FY 1979			
	FY 1978 ENACTED	BASE ADJUSTMENT	BASE	REQUEST	PROGRAM CHANGES
2. Combustion Systems	$ 6,480	$ 5,420	$11,900	$11,900	$ 0

FY 1978 Program ($6,480)

The primary objectives of this subactivity are to improve the reliability, efficiency, and fuel switching capability of present boilers and furnaces; develop engine combustion components capable of operation with high efficiency on conventional and coal derived fuels; develop practical combustion systems to utilize the fuel value of agricultural, forest, and industrial wastes and residues; and to develop and demonstrate the technology required to capture and utilize methane from coal beds. The two projects designed to accomplish these goals are Advanced Combustion Technology ($2,565) and Alternate Fuel Utilization ($3,915).

Base Adjustment (+ $5,420)

The base adjustment in Advanced Combustion Technology (+ $1,085) will be used to refine combustion modeling tools for simple engine design tradeoff evaluations and to expand ongoing development efforts for improved burner concepts. In the Alternate Fuel Utilization area (+ $4,335), the base adjustment will allow partial implementation of an expanded program to accelerate the substitution of agricultural and industrial wastes fuels, to continue studies on the engine combustion of coal derived fuels and the more rapid implementation of two coal bed methane utilization projects initiated in FY 1978.

FY 1979 Base ($11,900)

RD&D efforts are being conducted in two major areas: (1) Advanced Combustion Technology, and (2) Alternate Fuel Utilization.

Advanced Combustion Technology ($3,650)

The efforts within this area consist of applied research on advanced combustion engineering topics, which because of the need for research capabilities not generally available to the equipment industry and/or barriers presented by individual corporate investment criteria, require federal support for timely execution.

A new generation of automotive engines capable of operating within emissions constraints at higher efficiencies on conventional fuels and on coal derived liquid fuels is expected to be introduced beginning in the mid to late 1980's. DOE, in cooperation with the automotive industry, is conducting applied research for the timely development of these engines. Engine combustion technology is underway to increase fuel efficiency, control emissions, and broaden the range of usable fuels for automotive and stationary engines. The approach focuses on the application of advanced research capabilities to new prototype design concepts and is thus complimentary to the manufacturers' traditional approach of incremental modification of existing hardware lines. Relevance and technology transfer to the manufacturers development laboratories are accomplished by their direct involvement in program definition, execution, and review.

Improved oil and gas burners technology development is underway to increase efficiencies and allow alternate fuel utilization in oil and gas-fired furnaces and heaters in the residential, commercial, and industrial sectors. The improved oil burner effort is based on fuel prevaporization - premixing concepts to allow reduction of excess air. The improved gas burner effort is based on advanced burner designs such as pulse combustion which provide improved air flow control, enhanced heat transfer, and reduced flue temperature.

Alternate Fuel Utilization ($8,250)

The objective of this area is to ensure the existance of the fuel technology required for timely switching of residential, automotive, industrial, and agricultural sectors from premium fuels - finished petroleum fuels and pipeline quality natural gas - to substitute fuels.

Alternate fuel combustion efforts will allow timely substitution of alternate fuels for premium fuels. Technology development is divided into two areas: one dealing with agricultural and forest residues and industrial wastes; and the other focusing on liquid fuels derived from coal. Conservative estimates (ERDA CONS 1261-1 and 1973 U.S.D.A. Forest Service) indicate agricultural and forest residues and industrial wastes constitute an underutilized energy resource potentially capable of furnishing over 4 quads of energy on an annual renewable basis and in an environmentally sound and economically competitive manner. Near term utilization of this potential is being aggressively pursued. This utilization effort is closely coordinated with the Fuels from Biomass Program.

Coal derived fuels are the leading candidates to provide the bulk of liquid fuels (20 quads) for the mid-term (post 1980's) and far term. Energy intensive processing will be required to produce fuels similar to petroleum analogs unless this effort is successful in developing more efficient equipment to burn a lesser processed fuel. Energy savings amount to 20 percent or 4 quads. The FY 79 budget request will allow studies to be initiated in the areas of soot formation and the combustion chemistry of aromatic compounds. This effort is coordinated with on-going projects within the engine combustion technology effort.

Over 800 quads of methane are trapped in the coalbeds in this nation. Of this total, over 300 quads are estimated to be economically recoverable. At present, this energy resource is regarded primarily as a hazard to mining operations and no comprehensive effort has been made previously to capture and utilize this methane. In collaboration with other DOE divisions, this subactivity is implementing a comprehensive RD&D task for its collection and utilization. The coalbed methane utilization effort will promote the recovery and use of methane from coalbeds and contiminated sources by the private sector with a minimum of federal involvement. It is estimated that successful completion of this task would result in the commercial availability of 1.5 quads/year by 1985 and 3 quads/year by 2000. The FY 1979 budget request will allow more rapid implementation of this effort through parallel development and assessment of the identified utilization options and thus will accelerate commercialization of the technology.

Program Changes (-0-)

There are no program changes.

	FY 1978 ENACTED	FY 1979 BASE ADJUSTMENT	FY 1979 BASE	FY 1979 REQUEST	FY 1979 PROGRAM CHANGES
3. Fuel Cells	$35,200	+$ 300	$35,500	$35,500	$ 0

FY 1978 Program ($35,200)

The Fuel Cell subactivity objectives are to (1) help establish the operational and commercial feasibility of fuel cell systems; (2) generate a strong technology base for first, second, and third generation fuel cells in order to assure the lowest cost and highest reliability and efficiency of future systems; and (3) generate the capability for the reliable economic use of a broad range of fuels in fuel cell systems. The 4.8 MW Electric Utility Powerplant Development project ($16,500) will fabricate and test a 4.8 MW module at Consolidated Edison in New York City. The Phosphoric Acid Systems Development project ($13,000) will continue the development of fuel cell driven total energy system (40 KW) and the establishment of a viable industrial development base. The Molten Carbonate Systems Development effort ($3,000) will focus on the experimental testing of this second generation coal-using technology. Fuel Cell Applied Research ($2,700) will continue to investigate promising high risk/high payoff concepts on fuels utilization and advanced concepts.

Base Adjustment (+ $300)

The base adjustment provides for the reduction in funding requirements as the 4.8 MW powerplant (- $11,000) test and evaluation efforts at the host utility near completion; the continuation of efforts in Phosphoric Acid Systems Development (+ $1,000); the expansion of on-going efforts in Molten Carbonate Systems Development (+ $9,000) emphasizing the fuel cell section of the powerplant proceeding toward the rapid commercialization of this technology; and the increase of emphasis on technology development in key areas leading to the maturation of a complete prioritized set of topics in Fuel Cell Applied Research (+ $1,300).

FY 1979 Base ($35,500)

Fuel cells represent a new energy conversion device which is highly efficient, flexible, modular, and environmentally acceptable. The high efficiency and clean, quiet operation of fuel cell powerplants permit their location at the point of need. With the powerplant installed on-site, the heat produced in the generation of electricity can help meet the thermal needs of the consumer and a significant portion of the distribution and transmission losses associated with remote power generation are alleviated. More than 80 percent of the energy value of the fuel can be put to practical use with dispersed fuel cell powerplants compared to the approximate average of 30 percent for today's conventional power generating systems. For these reasons, the fuel cell offers an energy choice of interest to a broad sector of the economy in several applications. Fuel cells represent the only technology which directly converts fuel and air to electricity without the constraints of a Carnot or thermodynamically limiting efficiency. They have the potential of generating electricity with hydrogen based fuels ranging from petroleum and methane to coal and solid waste. Extensive analyses have indicated that the benefits to the nation of a successful fuel cell industry are significant. Fuel cells offer energy savings (275,000 barrels of oil per day by 1985 from first generation technology) by being utilized in such applications as electric utility peaking, intermediate and spinning reserve, industrial cogeneration, buildings total energy systems; and waste fuel recovery (e.g., industrial waste hydrogen, solid waste, and methane from coal seams). The fuel cell subactivity is divided into the four areas outlined below:

4.8 MW Electric Utility Powerplant Development ($5,500)

Fuel cell powerplants are a near-term option for electric utility power generation. Technical and economic assessments indicate that the fuel cell is a highly efficient, environmentally acceptable, and cost effective generating device. The purpose of this area is to establish the viability

and applicability of the current technology in a utility system, and thereby provide the information that will assist in its early commercial acceptance and subsequent introduction into the national generating capacity. The FY 1979 efforts encompass limited activities in three vital areas; product improvement, test of improvements in full-size fixtures, and development of manufacturing methods and techniques to support large quantity, reduced cost production. These areas have been selected for emphasis because they are directly responsive to the needs of a program addressing commercialization concerns and barriers.

Phosphoric Acid Systems Development ($14,000)

The objective of the Phosphoric Acid System Development area is to develop fuel cell systems for specific applications as the last step toward prototype demonstration and provide technology improvements to lower cost and increase reliability of these systems. Potential applications include: (1) fuel cell powered total energy systems for residential and commercial buildings; (2) fuel cell powerplants for use in industrial cogeneration, including the utilization of waste stream fuel supplies; (3) fuel cell powerplants integrated with urban, industrial, and/or agricultural waste conversion systems; and, (4) fuel cells for hybrid vehicle applications. The characteristics of high conversion efficiency, modularity, fuel flexibility, and minimum environmental impact would result in significant energy and environmental savings if fuel cells were commercially introduced into each of these applications. FY 1979 funding will continue ongoing efforts in these applications.

Molten Carbonate Fuel Cell Systems Development ($12,000)

The objective of the Molten Carbonate Systems Development effort is the earliest feasible commercial introduction of coal fueled, electric generators based on molten carbonate fuel cell technology.

Several recent studies (for example, the Energy Conversion Alternatives Study - ECAS) indicate that substantial benefits in resource conservation, environmental quality, and revenue requirements can be realized by installation of molten carbonate fuel cell generators rather than competing types of equipment. The primary characteristics responsible for such benefits are (1) the capability for operation on coal, (2) very low chemical and thermal pollutant output, (3) high conversion efficiency, predicted to be near 50 percent in the best study to date, and (4) the possibility of co-generation of heat and electricity for industrial plants. Benefits resulting from fuel cell installation occur only after significant numbers of installations have been made; but they then accumulate very rapidly.

The FY 1979 effort places major emphasis on the least advanced system components. This program could lead to operation of a coal-fueled, gas turbine-bottomed baseload generating plant of about 150 MW size in FY 1987, to be followed by a larger (600 MW) steam turbine-bottomed plant in FY 1989.

Fuel Cell Applied Research ($4,000)

The fuel cell applied research area encompasses both technology advancement and advanced concept investigation. Technology advancement efforts perform basic phenomenological research in areas where fuel cell development has shown that there are basic problems or technological limitations which adversely affect the cost, efficiency, reliability, and/or lifetime of fuel cells currently under development.

During FY 1979, the emphasis will increase on technology development in key technical areas that cut across a broad spectrum of fuel cells including phosphoric acid and molten carbonate devices. The applied research program will mature to cover a complete, prioritized set of research topics based on the technical analysis and management structure developed during FY 1978.

The advanced concept investigations seek to evaluate and select new concepts and technology for the next generation of fuel cell stacks and fuel processors. Each new concept will be closely examined so that not all of the technologies now being explored will be selected for development. Some concepts will be dropped, and in some cases it is expected that the applied research will provide the data required so that private industry will have the incentive to carry out the hardware development and demonstration.

Program Changes (-0-)

There are no program changes.

ENERGY EXTENSION SERVICE
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 7,500
FY 1979 Request	25,000
Net Change	$ 17,500

	(1) FY 1978 Enacted		(2) FY 1979 Base Adjustment		(3) FY 1979 Base		(4) FY 1979 Request		(5) FY 1979 Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. Energy Extension Service		$7,500		$ 0		$7,500		$25,000		$+17,500

(Dollars in Thousands)

	FY 1978 ENACTED	FY 1979 BASE ADJUSTMENT	FY 1979 BASE	FY 1979 REQUEST	FY 1979 PROGRAM CHANGES
Energy Extension Service (EXT)	$ 7,500	$ 0	$7,500	$25,000	$+17,500

FY 1978 Program ($ 7,500)

The purpose of the EXT is to encourage individuals and small establishments to reduce energy consumption and convert to renewable energy sources. The FY 1978 program provides for completion of the 18-month pilot effort begun in FY 1977 and transition to a nationwide program beginning in FY 1979. It includes funds for the remainder of the ten pilot state grants ($4,500) and for special activities ($600) the pilot states will undertake to facilitate the transition to the national program. In addition, small grants ($30 each) have been made to 45 other states and territories ($1,350) to observe the progress of the pilot states and to prepare for participation in the nationwide program. The remaining funds ($1,050) cover program support activities, such as evaluation of program effectiveness and technical assistance to the pilot states as they implement projects.

Base Adjustment ($ 0)

No adjustment requested.

FY 1979 Base ($ 7,500)

The FY 1979 base provides for continuation of the FY 1978 program for an additional year and defers initiation of the nationwide EXT. It includes continuation of ten pilot state grants ($4,500), special projects ($600), small grants to other states and territories ($1,350), and program support ($ 1,050).

Program Changes ($ + 17,500)

The FY 1979 program change reflects the Federal share of the increment necessary to expand the EXT from a 10 state pilot effort to a nationwide program involving 57 states and territories in FY 1979, as required by the EXT authorizing legislation (Title V, Public Law 95-39).

Of the total Federal request for FY 1979 ($25,000), the bulk is for grants to states and territories ($23,000) to be matched on a 50/50 basis by the grantees. This level was selected to permit the grantees to operate at the average annual rate of the ten pilot states (about $800 per state). On completion of the pilot program data will be available to assess whether a larger or smaller average annual rate per state is appropriate for subsequent fiscal years. The actual allocation of FY 1979 Federal funds by state and territory will be determined on the formula basis prescribed in the EXT authorizing legislation -- one-half divided equally among all grantees, one-half divided according to population.

The remaining Federal funds requested for FY 1979 ($2,000) are for program support, including program monitoring and evaluation, specialized consultants to assist the states in program implementation, and other technical assistance to grantees.

MARKETING

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 0
FY 1979 Request	480
Net Change	+$480

	FY 1978 Enacted		FY 1979 Base Adjustment		FY 1979 Base		FY 1979 Request		FY 1979 Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
MARKETING		0		0		0		480		+480

MARKETING ($000)

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
0	0	0	480	+480

FY 1978 Program ($0)

The Marketing Office assists program offices in developing market plans and provides market research assistance to energy conservation programs. Marketing management assistance is provided to program offices to improve promotional potential and increase program effectiveness. Marketing plans are developed which include defining objectives, targeting conservation messages to identified audiences, improving organizational effectiveness, identifying communication opportunities, and recommending market research. Since all FY 1978 funding is primarily personnel intensive, funding is located in the DOE Program Direction Budget.

Base Adjustment ($0)

FY 1979 Base ($0)

Program Changes (+$480)

The FY 1979 program provides in addition to 1978 activities, one general market survey to assess changing attitudes and behavior relating to energy conservation and a small scale marketing communication effort in support of the programs. The communication effort will include development of public service announcements, films, print advertising, and voluntary group outreach to inform and encourage implementation of specific energy conservation activities.

CONSE. ION
Appropriate Technology
MULTI SECTOR
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 3,000
FY 1979 Request	3,000
Net Change	$ 0

	FY 1978	FY 1979			
	Enacted B/A	Base Adjustment B/A	Base B/A	Request B/A	Program Change B/A
Total Operating Expenses					
1. Appropriate Technology	$ 3,000	$ 0	$ 3,000	$ 3,000	$ 0

APPROPRIATE TECHNOLOGY

FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Changes
$3,000	0	$3,000	$3,000	0

FY 1978 Program ($3,000)

The objective of this activity is to provide a program of small grants, agreements or contracts for the development of technologies and processes which are energy efficient, simple to operate and maintain, environmentally sound and appropriate for local economic and social conditions. A pilot program was continued during FY 1978 in the Far West Region and programs were initiated in the Northeast and Midwest regions.

Base Adjustment (0)

FY 1979 Base ($3,000)

The FY 1979 base level reflects the funding necessary to maintain the Appropriate Technology program efforts at the FY 1979 authorized level and three additional regions will be initiated.

rogram Changes (0)

Petroleum

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 2,926
FY 1979 Request	4,515
Net Change	$+1,589

	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Crude Oil Allocations	46	1,455	0	0	46	1,455	51	2,025	+ 5	+ 570
Crude Oil Pricing	45	1,471	0	0	45	1,471	50	2,490	+ 5	+1,019
TOTAL OPERATING EXPENSES - REGULATION	91	2,926	0	0	91	2,926	101	4,515	+10	+1,589

Petroleum ($000)

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
1. Crude Oil Allocations	$1,455	$ 0	$1,455	$2,025	$+ 570

FY 1978 Program ($1,455)

The FY 1978 program provides for regulation development activities and administration of the crude oil entitlements, first purchaser, transfer pricing, Canadian and crude oil allocation programs. Salaries and expenses amount to $1,215 to support 46 positions and $240 for contractural support.

Base Adjustment ($ 0)

There are no FY 1979 base adjustments to this program.

FY 1979 Base ($1,455)

The FY 1979 base level reflects the funding necessary to operate the above programs at the same funding as FY 1978.

Program Changes ($+ 570)

The FY 1979 program change includes an additional 5 positions; $+155 salaries and expenses; and $+415 for additional contractural support to undertake a major effort to revise and simplify the Department's regulations for carrying out the mandated provisions of the EPAA as amended by the EPCA for the crude oil allocation programs. A functional staffing comparison of FY 1979 planned utilization of manpower for these programs follow:

Function	FY 1978	FY 1979
Entitlements/First Purchaser/Transfer Pricing programs	12	14
Refinery Operations (inspections)	3	3
Canadian Buy/Sell crude allocation program	12	12
Regulation Development (ongoing programs)	7	7
Hearing support (administrative procedures	5	5
Executive direction	2	2
ERA data coordination & forms development	5	3
Regulation revision/reform	-	5
Total	46	51

Petroleum ($000)

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
2. Crude Oil Pricing	$1,471	$ 0	$1,471	$2,490	$+1,019

FY 1978 Program ($1,471)

The FY 1978 program provides for regulation development and administration of the crude oil pricing programs; the Mandatory Oil Import Program; and the statutory pricing provisions of the EPCA/ECPA. Salaries and expenses to support 45 positions are $1,188 and contractural support amounts to $283.

Base Adjustment ($ 0)

There are no FY 1979 base adjustments to this program.

FY 1979 Base ($1,471)

The FY 1979 base reflects the funding necessary to implement the composite price program in a manner which will allow for the necessary price incentives to increase domestic production and allow for inflation; to allow for other regulatory changes to the crude oil pricing program; e.g., amending the transfer pricing and reseller regulations; to provide sufficient capability to meet the current program level of regulatory changes and rulemakings (approximately 20) and implementation of the oil import programs including license control, allocation control, account control and technical analyses.

Program Changes ($+1,019)

The FY 1979 program change includes an additional five positions; $+422 for salaries and other expenses and $+597 for contractural support to revise and simplify the crude oil pricing regulations. The additional contractural support will also be used to conduct economic and environmental analyses of the impact of the crude oil pricing programs. A functional staffing comparison of FY 1979 planned utilization of manpower follows:

Function	FY 1978	FY 1979
Oil Imports program (administration of).....	24	24
Price regulation development.....	9	9
Hearings support (administrative procedures).	5	5
Executive direction.....	2	2
ERA data coordination & forms development....	5	5
Regulation revision/reform.....	-	5
Total	45	50

Multi Resource Petroleum Products and Natural Gas Liquids

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 5,133
FY 1979 Request	5,105
Net Change	$- 28

	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Petroleum Products and Natural Gas Liquids	145	5,133	- 64	- 736	81	4,397	91	5,105	+10	+ 708
TOTAL OPERATING EXPENSES - PETROLEUM PRODUCTS AND NATURAL GAS LIQUIDS	145	5,133	- 64	- 736	81	4,397	91	5,105	10	708

Multi Resource ($000)

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
1. Petroleum products and natural gas liquids	$5,133	$- 736	$4,397	$5,105	$+ 708

FY 1978 Program ($5,133)

The FY 1978 program provides for regulation development and administration of the price and allocation programs for petroleum products and natural gas liquids. In FY 1978 funds are available for price and allocation controls on natural gas liquids, kerojet aviation fuel, aviation gasoline, natural gasoline, propane and motor gasoline. Salaries and expenses amount to $4,271 for 145 positions and 162 manyears and $862 for contractual support to be used primarily for the development of environmental impact assessments for major propane or synthetic natural gas allocation actions.

Base Adjustment ($-736)

The FY 1979 base adjustment reflects the assumption that motor gasoline, aviation gasoline, kerosene-base aviation turbine fuel, butane and natural gasoline will be exempted from price and allocation controls. This will result in a decrease of 64 positions and 28 manyears at a cost reduction of $-736.

FY 1979 Base ($4,397)

The FY 1979 base will allow the implementation of price and allocation programs for propane and SNG feedstocks, among all regions and areas of the United States as mandated by the EPAA. Also, studies will be undertaken on supply and demand trends of motor gasoline and middle distillates, and economic analyses will be undertaken on the price of exempted products.

Program Changes ($+708)

The FY 1979 program change includes an additional ten positions accounting for $+270 for salaries and expenses; and an increase of $+438 for contractual support to undertake a reform and revision of the standby regulations and existing regulations to make them simpler, easier to comply with and adaptable to shortage and surplus product supply situations. A functional comparison of positions follows:

PETROLEUM PRODUCTS AND NATURAL GAS LIQUIDS

Function	FY 1978	FY 1979
Allocations - Headquarters	22	18
Regions	102	40
Regulations development	8	10
Hearings support (administrative procedures)	8	8
Executive direction	2	2
ERA data coordination	3	3
Regulatory revision/reform	-	10
Total	145	91

Multi Resource Compliance

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 38,785
FY 1979 Request	47,370
Net Change	$ + 8,585

	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Compliance	1,434	38,785	0	+4,942	1,434	43,727	1,434	47,370	0	+3,643
TOTAL OPERATING EXPENSES - COMPLIANCE	1,434	38,785	0	+4,942	1,434	43,727	1,434	47,370	0	+3,643

Multi Resource ($000)

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
2. Compliance	$38,785	$+4,942	$43,727	$47,370	$+3,643

FY 1978 Program ($38,785)

The FY 1978 program reflects a significant strategy change in the compliance programs as a result of the Department's approval of several programmatic recommendations made by a Compliance task force review. Primarily, the strategy change was a redirection of available resources to large potential violators and a shift away from small businesses in the petroleum industry. Also, implemented in FY 1978 are several administrative recommendations such as utilizing computer audit techniques, streamlining the case resolution process. Funding includes $34,287 for salaries and expenses for 1399 positions and 1,286 manyears for direct compliance activities, $810 for contractual support to update case tracking systems, compliance manual and targeting systems. Funding also includes 35 positions and $918 for the Office of the Administrator, ERA and administrative and logistical support staff for the ERA; $3580 for rent, communications and utilities for ERA.

Base Adjustment ($+4,942)

The FY 1979 Base Adjustment include the FY 1979 payraise ($+2,460); full annualization of 1,399 manyears ($+2,087), cost of living increase for space rental, communications, etc. ($+395).

FY 1979 Base ($43,727)

The FY 1979 base program will allow the continuation of all enforcement efforts initiated in FY 1978 for the audits of 11 major refiners, and the allocation of manpower using a cost/benefit approach to other areas of the petroleum industry. The specific planned allocation of positions is shown following program changes.

Program Changes ($+3,643)

The FY 1979 program change reflects an additional $3,643. These funds are requested for computer audit services and additional manyears of effort for both the major refiner and all other enforcement programs to carry out the recommendation of the task force. Also, included is a slight increase to the contractural support for targeting systems and full funding of the ERA Federal Energy Guidlines. This funding will not be used to hire full time permanent positions.

COMPLIANCE PROGRAMS COMPARISONS
FY 1978 and FY 1979

PROGRAM	1978 Base Annual Positions	1978 Planned Annual Positions	1979 1/ Budget Positions	1979 2/ Planned Positions
Regions				
Importers 3/	18	4	8	6
Independent Crude Producers	258	148	219	177
Crude Oil Resellers	42	28	46	51
Major Refiners	393	495	612	495
Small Refiners	69	128	69	148
NGL (independent)	156	72	50	68
Propane Resellers	37	72	14	63
Propane Retailers	84	52	59	57
Resellers (other)	172	130	0	0 4/
Data Verification	0	0	50	50
Regional Total	1229	1129	1127	1115
Headquarters				
Special Counsel for Intensified Major Refiner Effort	0	117	37	117
Staff to deal with willful & civil violations & unique, novel, or complex violations	0	32	39	33
Other ongoing HQ functions	162	121	150	134
Headquarters Total	162	270	226	284
TOTAL COMPLIANCE	1391	1399	1353	1399

1/ OMB FY 1979 allowance.
2/ Planned use reflects establishment of Special Counsel and updated cost-benefit information.
3/ Manpower involved in auditing the import activities of refiners or resellers is attributed to those programs rather than to importers.
4/ Reseller violations not resolved by end of year will be pursued to completion.

Multi Resource Private Grievance and Redress

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 2,370
FY 1979 Request	3,060
Net Change	$ + 690

	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Private Grievance and Redress	78	2,370	___	0	78	2,370	95	3,060	+ 17	+ 690
TOTAL OPERATING EXPENSES - PRIVATE GRIEVANCE AND REDRESS	78	2,370	0	0	78	2,370	95	3,060	+ 17	+ 690

Multi Resource ($000)

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
3. Private Grievance and Redress	$2,370	0	$2,370	$3,060	$+ 690

FY 1978 Program ($2,370)

In FY 1978 the program under the authority of the Federal Energy Administration Act of 1974 (PL 94-293) provides for activities including analysis and decision on all applications for exception and appeals filed with the DOE with respect to any regulatory or other mandatory programs of the Department, excluding those falling under the jurisdiction of the Federal Energy Regulatory Commission (FERC). A total of 3,135 applications are projected to be received by this program in FY 1978 with an average case time of 92 calendar days each. An estimated 2,500 of the applications will be resolved by decision and order, while 300 applications are projected to be dismissed. Salaries and expenses amount to $2,080 to support 78 positions and $290 for reimbursement of administrative expenses of the Temporary Emergency Court of Appeals. At this funding level the anticipated backlog at the end of the fiscal year will include 1,027 cases.

Base Adjustment ($0)

There are no FY 1979 base adjustments to this program.

FY 1979 Base ($2,370)

The FY 1979 base level reflects the funding necessary to operate the above program at the same funding as FY 1978.

Program Changes ($+690)

The FY 1979 program changes include an additional 17 positions; $+480 for salaries and expenses for these positions and $+210 for reimbursement of the Temporary Emergency Court of Appeals. In FY 1979 receipt of applications is expected to be slightly higher than FY 1978, but the average case time will be reduced to 56 calendar days. This should result in reducing the backlog to 570 cases by the end of the fiscal year. The distribution of staff years by type of cases follows:

Type of Cases	Average Staff Years
Exceptions	54
Appeals	14
Special Redress Relief	1
Other National Office	16
Regional Program	10
Total	95

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STRATEGIC PETROLEUM RESERVE

FY 1979 Budget
Summary of Changes
(Budget Authority In Thousands of Dollars)

1978 Enacted	$3,174,617
1979 Request	4,244,770
Net Change	$1,070,153

	FY 1978 Appn. Level		Base Adjustment		FY 1979 Base		FY 1979 Request		FY 1979 Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. Fill & Leach Operations		$ 73,000		$- 73,000		$ 0		$ 0		$ 0
2. Petroleum Acquisition & Transportation		2,703,469		41,425,811		4,129,280		4,129,280		0
3. Standby Operational Storage		0		+ 3,290		3,290		3,290		0
4. Site Design & Construction		347,918		- 347,918				75,000		+ 75,000
5. Planning		7,215		+ 4,985		12,200		12,200		0
6. Site Acquisition		43,015		- 43,015		0		25,000		+ 25,000
Total SPR		$3,174,617		$+ 970,153		$4,144,770		$4,244,770		$+100,000

Strategic Petroleum Reserve

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
1. Fill and leach operations	$73,000	$-73,000	$ 0	$ 0	$ 0

FY 1978 Program ($73,000)

The FY 1978 program provides for continued fill operations and the leaching of new storage capacity associated with the 500 MMB Reserve. Activities in this program include electrical services, oil quality/quantity assurance, brine and water analysis, and solution mining of new cavern space.

Base Adjustment ($-73,000)

The FY 1979 base adjustment reflects full funding in prior years for fill and leach operations connected with the 500 MMB Reserve.

FY 1979 Base Program ($0)

None

Program Changes ($0)

None

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
2. Petroleum acquisition and transportation	$2,703,469	$1,425,811	$4,129,280	$4,129,280	$ 0

FY 1978 Program ($2,703,469)

This activity includes the funds necessary to purchase 193 MMB of petroleum and its transportation to the SPR storage sites. Transportation costs include overseas and coastal shipping, barging, shipment by pipeline, port handling, marine terminal services, temporary storage, and other transportation and handling charges.

Oil will be acquired through normal Federal procurement procedures with the Defense Fuel Supply Center acting as DOE's purchasing agent. The Crude Oil Entitlements program regulations have been revised to permit suppliers of oil for the SPR to earn entitlements to price-controlled domestic oil, thereby permitting acquisition of petroleum for the SPR at or near the National Composite Average Price for crude oil.

The funds required to purchase and transport petroleum for the SPR were determined by estimating the National Average Composite Price for crude oil in fiscal years 1978-1981. This cost projection per barrel takes into account the rise in the National Average Price due to the United States' increasing use of imported oil. These prices also include: (1) a projected annual 5.5 percent increase in world oil prices; (2) the effect of the enactment of the proposed crude oil equalization tax; and (3) an allowance of $0.50 per barrel for increased transportation costs related to the use of U.S. fleet tankers in compliance with the Cargo Preference Act of 1954, 46 USC.

Base Adjustment ($1,425,811)

The base adjustment to the FY 1978 program is for the purchase of an additional 57 MMB of petroleum. Plans call for the purchase of 250 MMB of crude oil; 180 MMB in FY 1979 and the remaining 70 MMB in FY 1980.

FY 1979 Base Program ($4,129,280)

The fiscal year 1979 Strategic Petroleum Reserve budget for oil acquisition and transportation is based on the following:

Fiscal Year	Quarter	National Average Composite Price ($/Barrel)	SPR Purchases (MMB)	Budget Authority ($ millions)
1979	1	$15.75	45.0	708.75
	2	15.85	45.0	713.25
	3	16.21	45.0	729.45
	4	16.31	45.0	733.95
1980	1	17.53	17.5	306.77
	2	17.53	17.5	306.77
	3	18.01	17.5	315.17
	4	18.01	17.5	315.17
			250.0	4,129.28

Funds requested in FY 1979 are necessary as they contribute to the purchase and transportation of oil for the 500 MMB Reserve, as authorized by Congress.

Program Changes ($0)

None

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 197 Change
3. Standby Operational Storage	$ 0	$3,290	$3,290	$3,290	$

FY 1978 Program ($0)

No standby operations were performed in FY 1978 since storage of oil at SPR sites was not complete in FY 1978.

Base Adjustment ($3,290)

The FY 1979 Base Adjustment provides the funds necessary to operate and maintain SPR storage sites after they are filled. It includes quality control, operational inspections, major repair and replacement of property and equipment, site security, and execution of drawdown plans, as required.

FY 1979 Base ($3,290)

The FY 1979 base for standby operational storage was derived from site feasibility studies.

Program Changes ($0)

None

	FY 1979	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
4. Site Design and Construction	$347,918	$-347,918	$ 0	$75,000	$75,000

FY 1978 Program ($347,918)

The FY 1978 program provides for the design and construction of a 500 MMB SPR. Funds appropriated in FY 1976 and
FY 1978 provide the resources to develop underground storage sites in the Gulf Coast for the 500 MMB Reserve.

Base Adjustment ($-347,918)

The FY 1979 Base Adjustment reflects full funding in previous years for storage facility development associated with the 500 MMB Reserve.

FY 1979 Base ($0)

None

Program Changes ($75,000)

This Program activity includes all costs associated with SPR site preparation, including design of all surface and subsurface facilities, construction or rehabilitation of solution-mined salt caverns and conventional mines, purchase of initial spare parts, procurement of construction and related materials and equipment, and contractor services.

Funds requested in FY 1979 will be used to initiate the development of facilities for the storage of 250 MMB of petroleum as part of the expanded SPR. This increment provides minimum first year funding for a construction program to prepare salt dome or other underground sites for oil storage. Specifically, these funds are for facility design, purchase of long lead-time equipment and material, and initial construction of facility at sites not yet selected. Site selection will be made after on-going technical studies and environmental assessments have been completed.

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
5. Planning	$7,215	$4,985	$12,200	$12,200	$ 0

FY 1979 Program ($7,215)

The FY 1978 Program includes planning activities to specify and analyze the major issues pertinent to creation and use of SPR; specifically, designed and managed to optimize their value; what method will be used to monitor, control and use the Reserve; what foreseeable environmental, economic and social impacts the creation, maintenance and use of the SPR will have on the United States economy; and the size and availability of industrial petroleum inventories. Other planning functions include the evaluation of SPR storage alternatives and use plans in conjunction with all other contingency actions during emergency supply interruptions.

Funds are also included in this activity to perform environmental assessments and planning. The activity insures that design, construction, and operation of storage facilities are accomplished in an environmentally acceptable manner. This program activity is necessary for compliance with the requirements of all Federal permits and the National Environmental Policy Act. In addition, this function coordinates all SPR activities with Federal, State, and local authorities regarding construction and operating licenses, permits and regulation compliance.

Base Adjustment ($4,985)

The Base Adjustment reflects additional planning activities associated with the implementation of the 500 MMB Reserve and strategic and environmental analyses for a 1 billion barrel reserve.

FY 1979 Base ($12,200)

The FY 1979 base level reflects the funding necessary to sponsor 25 specific feasibility, planning and management studies.

Program Changes ($0)

None

Strategic Petroleum Reserve

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
6. Site Acquisition	$43,015	$-43,015	$ 0	$25,000	$25,000

FY 1978 Program ($43,015)

The FY 1978 Program provides for the acquisition of storage sites for the 500 MMB SPR. Funds appropriated in FY 1976 and FY 1978 provide the resources to acquire underground storage sites in the Gulf Coast for the 500 MMB Reserve.

Base Adjustment ($-43,015)

The FY 1979 Base Adjustment reflects full funding in prior years for site acquisition connected with the 500 MMB Reserve.

FY 1979 Base ($0)

None

Program Changes ($25,000)

This program activity includes all costs incurred for the purchase of storage sites, including land purchase, right-of-way costs and condemnation costs. The proposed costs for land acquisition are based on the best information available at the time of submission. Site appraisals currrently underway by the Corps of Engineers and negotiations with the owners of the sites are essential before precise costs can be determined for each site.

Funds requested in FY 1979 will be used to initiate site acquisition for the expanded SPR, specifically, for the purchase of two sites to be used as part of the second 500 MMB of SPR storage capacity. These sites, as yet undetermined, are estimated to cost $0.10 per barrel of storage capacity. Final Environmental Impact Assessments must be completed before final site selection is completed.

MATERIALS ALLOCATION
FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 150
FY 1979 Request	$ ...
Net Change	$ -150

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Materials Allocation	...	150	...	-150	...	...	...	...	...	...

	(Dollars in Thousands) FY 1979				
	FY 1978 Enacted	Base Adjustment	Base	Request	Program Changes
1. Materials Allocation	$ 150	$ -150	$...	$...	$...

1978 Program $ 150

To fulfill the requirements specified in the Energy Policy and Conservation Act (EPCA) of 1975, by assisting industry in establishing priority authority for essential and critical materials. The major thrust of the FY 1978 program is to cooperate closely with the Department of Commerce and General Services Administration in familiarizing energy contractors with the Defense Materials and Priorities Systems, assist in the processing of applications, and in developing a system to resolve conflicts arising between project contractors and their suppliers through a one-time priority analysis of contractor data.

Base Adjustment $-150

Program objectives fulfilled the responsibilities discussed in the Bureau of Domestic Commerce (BDC) Delegation Number Four, through six training programs held to inform energy contractors of the availability and procedures of the program as well as finalizing and publishing the regulations in the Federal Register.

Multi Resource Emergency Preparedness

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

FY 1978 Enacted	$ 5,690
FY 1979 Request	10,590
Net Change	$ + 4,900

	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
Emergency Preparedness		5,690		-5,000		690		10,590		+9,900
TOTAL OPERATING EXPENSES - EMERGENCY PREPAREDNESS	28*	5,690	0	-5,000	28*	690	62*	10,590	+ 34*	+9,900

* Positions and associated costs budgeted under Policy and Management.

Multi Resource ($000)

	FY 1978	Base Adjustment	FY 1979 Base	FY 1979 Request	FY 1979 Change
Emergency Preparedness	$5,690	$-5,000	$690	$10,590	$+9,900

FY 1978 Program ($5,690)

The FY 1978 program under the authority of the Energy Policy and Conservation Act (EPCA), Emergency Preparedness is responsible for developing the necessary contingency plans to withstand an abrupt curtailment of crude oil and petroleum product imports, and to maximize national security and minimize the economic impact of supply shortages. The staff develops and maintains petroleum conservation measures, gasoline and diesel fuel rationing systems, standby allocation regulations and a refinery yield program to be ready for activation on an emergency basis. In FY 1978, $5,000 will be used for the development of a gasoline and diesel fuel rationing plan and other contingency plans and regulation analyses. The remainder ($690) will be used for the development of additional conservation measures and to update the refinery yield model.

Base Adjustment ($-5,000)

The FY 1979 base adjustment assumes the development of the rationing plans for submission to Congress in FY 1978.

FY 1979 Base Program ($690)

Funding will provide minimum updating of existing conservation measures.

Program Changes ($+9,900)

The FY 1979 program changes reflect the operational capability of the Emergency Management Information System (EMIS) with full state participation in developing and utilizing the system ($+7,310) as proposed in the NEP; updating/testing of contingency plans ($+1,400); providing assistance and review of contingency plans developed by States to ensure their compatibility with Federal measures ($+1,280).

INFORMATIO. ALYSIS

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

1978 Enacted	$17,368
1979 Request	$18,523
Net Change	$ 1,155

	(1) FY 1978		(2) FY 1979		(3) FY 1979		(4) FY 1979		(5) FY 1979	
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
1. Information Analysis	282	17,368	0	1,177	282	18,545	279	18,523	-3	-22

	(Dollars in Thousands) FY 1979				
	FY 1978 ENACTED	BASE ADJUSTMENT	BASE	REQUEST	PROGRAM CHANGES
1. Information Analysis	$17,368	$1,177	$18,545	$18,523	-$22

1978 Program ($17,368)

Information Analysis has three component areas including Modeling and Forecasting, Impact Analysis, and Industry Systems Analysis.

Modeling and Forecasting develops and maintains a capability to analyze energy production, consumption, and prices at different levels of sectoral detail and aggregation, in the short-, mid-, and long-term, by product or energy source, and by geographical detail or consuming sector of the economy. Projections are made which show the effects of alternative assumptions about the macro-economy, geological resources, energy policies and programs, and other features of interest.

Impact Analysis develops and maintains a capability to conduct studies on and provide analysis of the macro- and microeconomic impact of the changing energy situation. Proposed energy initiatives and alternatives are evaluated and assessed quantitatively by geographic region and sector of the economy over time to allow informed policy inspection and decision making based on economic impact assessment analysis.

Industry Systems Analysis provides substantive information on electric and natural gas supply and consumption to DOE, in order to assure continuous reliability and adequacy of power and natural gas, and maintain a centralized, up-to-date source of information. The Regulatory Information System (RIS) collects and processes gas and electric information required in regulatory matters from the various respondent utilities.

Principal products in FY 1978 include the 1977-1990 Projections of Energy Supply and Demand and their Impacts in the EIA Annual Report to the Congress (April 1978) and applied analysis tasks for Congressional committee, the Department and other Executive Branch Agencies.

Base Adjustment ($1,177)

The base adjustment to the Information Analysis program reflects the 7.05 percent FY 1978 pay increase for 282 man-years, a 1.0 percent adjustment for within-grade increases and promotions, and an estimated 6.0 percent inflation for contracts and all other object classes.

FY 1979 Base ($18,545)

The FY 1979 base program provides for funding to support continuation of FY 1978 authorized projects at the same commitment level, with no new starts.

Program Changes (-$22)

The FY 1979 program change reflects $992,000 for contract enhancements in the Modeling and Forecasting area with a staff reduction of one. The contract enhancement reflects an increased emphasis on access to EIA analytic capabilities through more extensive documentation, streamlining of computer operations, and external review and assessment. There will also be additional resources devoted to the development and use of long-range energy analysis capabilities.

In the Impact Analysis area, there is a reduction of 9 positions and $1.212 million which means that individual program offices within DOE will assume more responsibility for carrying out specific impact analyses. The lower level of resources will also postpone the development of EIA capabilities for dealing with energy-related investment, which plays an important role in longer range analysis, and for geographically disaggregated impacts to the state level.

There is an increase of $198,000 and 7 positions for the Regulatory Information System to help fund the development and implementation of a state program to fulfill both the Federal and State regulatory requirements in a cooperative development program.

The net effect is a reduction of $22,000 in Information Analysis.

COLLECTION AND DISSEMINATION

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

1978 Enacted	$19,623
1979 Request	$32,582
Net Change	$12,959

	(1)		(2)		(3)		(4)		(5)	
	FY 1978		FY 1979							
	Enacted		Base Adjustment		Base		Request		Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
2. Collection and Dissemination	411	19,623	0	1,111	347	20,734	417	32,582	+6	+11,848

(Dollars in Thousands)

	FY 1978 ENACTED	1979 BASE ADJUSTMENT	1979 BASE	1979 REQUEST	1979 PROGRAM CHANGES
2. Collection & Dissemination	$19,623	$1,111	$20,734	$32,582	$11,848

1978 Program ($19,623)

Provides for continued operation of central clearinghouse to identify and develop energy information requirements, sources, and holdings throughout public and private sectors and to prescribe and implement structures and systems for organizing and accessing data and information now aggregated in disparate facilities as "energy" material.

Provides for the acquisition of data bases from non-DOE sources (other agencies, industry, associations, etc.) as well as those collected by DOE directly, for critical evaluation of the data quality and usefulness, primary data development, and for access to the NEIS and the PIES model by DOE, other executive branch agencies, Congress and the Public.

Provides for developing and implementing a limited scope, annual system for reporting financial information for a sample of about 27 energy companies.

Provides for obtaining oil and gas reserves data by a survey of operators. Selected oil and gas fields will be audited by engineering teams to obtain independent estimates of reserves to determine the accuracy, validity, and credibility of reserve estimates and develop "in-house" capability to assess oil and gas reserves of the Nation.

Provides for a limited scope data validation effort that will have validated 14 of the more than 250 Federal energy data systems and standardized about 5 percent of the 26,000 data elements and terms by the end of FY 78.

Base Adjustment ($1,111)

The base adjustment to the Collection and Dissemination program reflects the 7.05% FY 1978 pay increase for 347 man-years, a 1 percent adjustment for within-grade increases and promotions, and an estimated 6 percent inflation for contracts and all other object classes.

FY 1979 Base ($20,734)

The FY 1979 base program provides for funding to support continuation of FY 1978 authorized projects at the same commitment level with no new starts.

Program Changes ($11,848)

The FY 1979 program change reflects significant contract enhancements in three areas. The Financial Reporting System will be increased by $3 million and will provide for development and implementation of a limited scope, annual system for reporting financial information and operating statistics for a sample of 27 energy companies. The system will provide information on accounting and reporting procedures, financial organization, and the vertical/horizontal nature of the large petroleum companies. The legislative requirement for a quarterly report will also be satisfied. Expansion primarily to coal and uranium companies will also be initiated. Energy Consumption Data will be increased by $5.5 million. A residential energy consumption data collection program collecting data on fuel type, house structure, income and energy consuming appliances will be implemented. In addition, design and planning for commercial and industrial consumption surveys will be initiated. About $4 million will be added to the Oil and Gas Information System. This will fund more in-depth Data Validation studies, more field visits to fields and companies, and greater geological detail.

There is a decrease of $1.4 million in contracting for the Data Validation program and the National Energy Information System. Increased contracting for PIES access will total about $250,000 and will provide a production version of PIES for PIES access by non-DOE users, and scenario runs in response to Congressional requests. The primary impact of a $400,000 increase for the National Energy Information Center will be to provide for information services and support for regional and state energy information requirements.

There will be an increment of 6 positions for the Collection and Dissemination program with a corresponding increase of approximately 70 man-years of effort. There will be three significant additions. The emphasis in Data Validation will be switched from a contract to an in-house effort. The Energy Consumption Data effort will be enhanced to monitor designs and planning for the residential, industrial and commercial sector programs. There will be augmented analysis of data collected for the Oil and Gas Information System.

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ADP SUPPORT TO OTHER FUNCTIONS

FY 1979 Budget
Summary of Changes
(Budget Authority in Thousands of Dollars)

1978 Enacted	$11,071
1979 Request	$12,300
Net Change	$ 1,229

	(1) FY 1978 Enacted		(2) FY 1979 Base Adjustment		(3) FY 1979 Base		(4) FY 1979 Request		(5) FY 1979 Program Change	
	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A	Pos.	B/A
3. ADP Support to Other Functions	83	11,071	0	708	83	11,779	80	12,300	-3	+521

(Dollars in Thousands)

	FY 1978 ENACTED	1979 BASE ADJUSTMENT	1979 BASE	1979 REQUEST	PROGRAM CHANGES
3. ADP Support to Other Functions	$11,071	$ 708	$11,779	$12,300	+$ 521

1978 Program ($11,071)

The FY 1978 budget provides for the continuing operations of the computers transferred from the FEA and the FPC; data collection; forms design and clearance; and the systems design, development and maintenance efforts required to support: the Economic Regulatory Administration, the Federal Energy Regulatory Administration and the Assistant Secretaries for Conservation and Solar Applications, Intergovernmental and Institutional Relations, Policy and Evaluation, International Affairs and Resource Applications.

These include: Enhancements to the Propane Information System, the Mandatory Oil Import System, the systems to promote and monitor Federal conservation programs, and industrial energy conservation programs; operation of the Comprehensive Human Resources Data System (CHRDS), the Transfer Income Model (TRIM), the Refinery Yield Model,, the ongoing regulatory systems, including motor gasoline, contingency plans refinery cost audit, and monitoring of selected decontrolled products, the Utility Load Management Rate Policy Program, the Commercial Transportation Efficiency programs and systems to support the design of electric utility rates; and data base design and development for systems related to conservation policy and program development and evaluation, and the applicance programs.

Base Adjustment ($708)

The base adjustment to the ADP Services to Other Functions program reflects the 7.05% FY 1978 pay increase for 83 man-years, a 1% adjustment for within-grade increases and promotions, and an estimated 6% inflation for contracts and all other object classes.

FY 1979 Base ($11,779)

The FY 1979 Base Program provides for funding to support continuation of FY 1978 authorized projects at the same commitment level with no new starts.

Program Changes (+$521)

The FY 79 program changes reflect a reduction in support to the Assistant Secretary for Conservation and Solar Applications ($-671). The decrease will result in a reduction in support to the following programs: Industrial Monitoring; Cogeneration; Conservation/Industrial; Conservation/Residential; and EPCA State Grants. Reduced ADP support will also be realized for the miscellaneous DOE programs ($-2001). Programs for which support will be reduced include: Coal Supply and Regulation; Electricity; Consumer Affairs and Special Impacts; and International Energy Agency support. The increase for this area is for Support to Regulatory ($+3,193). Enhancements are planned to support computer requirements of the Crude Oil Allocation Program; the Petroleum and Natural Gas Liquid Allocations program; the Petroleum and Natural Gas Liquids Pricing program; the Crude Oil Pricing program; the Emergency Preparedness program; and the Private Grieveances and Redress program.

OPENING STATEMENT

Senator BYRD. Normally, the committee requires copies of all opening statements at least 1 full week in advance of hearings. However, no statement at all had been received this morning. We realize Secretary Schlesinger and the Department have been busy revising certain budget estimates these past few weeks, but it is difficult to understand why a prepared statement could not be presented to the committee in advance of the hearings.

Dr. Schlesinger, welcome before the committee. If you have a prepared statement, we will insert it into the record.

Secretary SCHLESINGER. Yes, sir.

[The statement follows:]

STATEMENT OF JAMES R. SCHLESINGER
SECRETARY OF ENERGY

Mr. Chairman and Members of the Committee, I am pleased to be present today to testify on behalf of the Department of Energy's Fiscal Year 1979 budget request, including a new series of initiatives and budgetary reductions we are proposing.

We meet to discuss this budget in a period of energy transition for our Nation. The shift away from oil and natural gas as this Nation's primary energy resources is inevitable, and its timing becomes increasingly critical with each new estimate of future world oil production. At the present time, world production worldwide is about 60 million barrels per day; although earlier estimates were higher, we presently doubt that world oil production will exceed 70 million barrels a day in the period ahead.

In the face of growing demand, these figures underscore the need for adaptation in American society before the early or mid-1980s, when the worldwide shortage in petroleum availability will make itself felt. At that time, the principal oil exporting nations are likely to have severe difficulties in supplying all the increases in demand expected to occur throughout the 1980s in the U.S. and other countries.

When this occurs, unless our Nation has planned wisely and well, it will face difficulties as severe as anything we have experienced since the 1930s. Avoiding these difficulties will demand the best of every American.

Our society will require both increased energy

supplies and decreased energy demand if we are to surmount an increasingly unfavorable energy balance. Our energy policy must utilize both renewable and nonrenewable energy resources, both decentralized and central station energy sources, "soft" and "hard" path approaches -- in short, every energy option that can be pursued prudently. The recent coal strike of the coal mines once again has underscored the absolute necessity of a broad range of energy sources. Once again, our Nation has experienced first hand the difficulties which regional imbalances or overdependence on a single source of supply can create.

Energy policy for the future, therefore, must recognize the following central principles:

- o Conservation can improve the efficiency of the capital stock of homes, buildings and transportation systems to achieve a significant reduction in demand growth. Through the incentives and regulatory authorities in the National Energy Plan, coupled with technological improvements, demand growth can be reduced to below 2 percent by 1985.

- o New pricing policies for oil and gas can increase domestic production without excessive consumer burdens and adverse economic impacts. In particular, incentives should be geared toward new discoveries and development of unconventional sources of energy.

- o Taxes and regulatory authority, as well as research development and demonstration are necessary to

stimulate conversion from oil and gas to use of more abundant energy sources, such as coal and nuclear energy. And the price mechanism must be used as an integral part of this strategy to ensure that American industry begins this shift now. New technologies need to be perfected to convert coal to synthetic oil and gas products.

- Technologies must be developed to tap the inexhaustible resources of the sun, the oceans, and waste products. The development of renewable and inexhaustible sources of energy will be necessary if the world economy is ultimately to survive in the face of dwindling fossil fuel resources.

- In developing new technologies, research, development and demonstration alone are not sufficient. We must go beyond R&D with incentives and other Federal measures aimed squarely at bringing energy technologies to the state of commercial readiness at their earliest possible time.

National policy, therefore, reflects the belief that we must deal not only with the development of those inexhaustible resources that will be of increasing importance as we move into the twenty-first century, but also with assuring that the Nation can arrive at the year 2000 without fundamental changes in the nature of our society or the economic system under which this country has flourished.

Mr. Chairman, this policy also implies a greater stress on the introduction of technologies that can provide alterna-

tives to oil and gas in the near-term, while still permitting our economy to grow. Correspondingly, the Department is deemphasizing some of the longer term programs which were priority items for its predecessor agencies.

Instead, the Department is moving to place more emphasis on those aspects of the supply picture that are of greatest near-term concern -- keeping the Nation's natural gas pipelines full, accelerating commercialization in the near-term of solar energy and other renewable resources and finding substitutes for liquid fuels as petroleum stocks dwindle. As part of this approach, the National Energy Plan contemplates and provides incentives for a substantial shift from oil and gas to coal for those stationary sources, such as industry and utilities, capable of burning coal, while providing a growing proportion of our liquid fuels supply for the transportation sector. And ongoing work which I shall discuss shortly builds on this effort to ensure that the near-term and long-term supply picture is balanced, with coal, nuclear power, oil and gas, and renewable resources all playing a significant role.

This growth in total energy production and the substitution of fuel sources must be reached, to the maximum extent possible, from domestic sources. The current difficulties of the American dollar are well known. The U.S. balance of trade deficit last year was approximately $27 billion, much of that caused by the increased importation of foreign oil. Therefore, as we pursue the mix of regulatory requirements, pricing incentives and technology development that must guide national energy policy, each of these

elements must be directed toward the greatest possible maximization of domestic production, both of existing and of unconventional sources of energy.

Mr. Chairman, the energy position of the United States will be a test of our political and economic system as the Nation passes through a severe period of transition. During the past year much progress has been made. A Department of Energy is now in operation. The Administration has proposed an Energy Plan, recognizing that there would be differences of opinion on many specifics of that plan, but also recognizing that everyone must work together if the Nation is successfully to come through this period of transition.

In this effort, we must all shed some of the attitudes we may have held in the past. There will be no single solution to our energy problems. It will not be nuclear; or solar; or coal derived synthetics; or biomass energy. Instead, the Nation will need a set of measures which together will contribute to the solution of the United States' energy problem. We, as a Nation, will have to work together to allocate available resources to bring to bear a whole range of technologies, regulatory mechanisms, and tax and pricing approaches to make this transition as quickly and as effectively as possible.

NEW PROGRAM INITIATIVES

The budget which the President submitted to you in January represents a significant step toward meeting the national objectives I have outlined and in moving toward

a balanced request with programs which reflect changing emphases in dealing with our energy problem.

In addition, the President is transmitting a budget amendment which incorporates a number of supply initiatives, along with reductions in the Department budget in other areas, to provide a package that does not increase the Department's budget. These initiatives are part of an ongoing effort, begun with the National Energy Plan last year. In that plan, it was indicated that supply initiatives would be forthcoming. At the time the National Energy plan was released, we had hoped to have a planning and pricing framework in place well before the present time. However, progress on the energy bill has been slow, and in January I indicated that new supply initiatives would be forthcoming during the year, as an adjunct to the National Energy Plan. The budget amendment being transmitted this week complements the President's 1979 budget.

This restructuring of the FY 1979 budget will help move us toward our shared goal -- to ensure that a full range of supply options capable of making a meaningful contribution to total U.S. energy supply by the mid to late 1980s is available. As new efforts are initiated to strengthen supply, it is equally important to reduce funding for programs or activities that are no longer necessary.

The Administration is proposing a series of initiatives involving synthetic liquids and solids, additional gas supplies and a variety of renewable technologies. These initiatives, in turn, are part of an effort that will culmi-

nate early next year in a National Energy Supply Strategy (NESS). These efforts underway on both the near-term and long-term supply strategies reflect a logical continuation of the Administration's commitment to ensure that new approaches to our energy problem are continuously sought as we better understand the elements required to cope with these problems effectively.

Before highlighting the FY 1979 DOE budget submittal, I would like to discuss briefly the specific supply initiatives which are being formally submitted by the President.

Three initiatives are proposed to develop the capability to substitute synthetic liquids and solids for crude oil:

-- a tax incentive to stimulate demonstrations of domestic shale oil production;

-- regulations that provide oil shale and other synthetic liquids the same entitlements treatment as imported crude oil;

-- funding of design studies leading to the initiation of one or two plants for the production of synthetics from coal in FY 1980.

In the gas supply sector, two initiatives are proposed to contribute toward keeping the gas pipeline, distribution and end-use system efficiently utilized:

-- an accelerated technology development program to stimulate earlier and more extensive production of

unconventional natural gas from geopressurized zones;

-- accelerated construction of several commercial-scale, high-Btu coal gasification facilities achieved through regulatory changes and/or loan guarantees.

Nine individual initiatives are proposed to accelerate commercialization of renewable technologies which can pay off in the near term. The package consists of:

-- increased research on solar energy from photovoltaic cells;

-- commercial scale demonstrations of wind machines;

-- production of gas and liquid fuels from biomass;

-- prepackaged small hydropower plants, demonstration of low-head hydro systems, and feasibility studies for hydropower at existing dams;

-- small-scale technology grants to entrepreneurs;

-- a dispersed energy systems demonstration program;

-- design awards for passive solar heating and cooling;

-- a solar training and education program; and

-- leveraging of Federal purchases of solar heating and cooling systems.

In keeping with the President's commitment to control Federal spending, the budget initiatives are to be accom-

plished within the FY 1979 DOE budget total proposed to the Congress in January through decreases in other areas of the DOE budget.

1979 REQUEST

The FY 1979 request which was initially submitted to you totals $12.6 billion in budget authority, an increase of $2.3 billion over 1978. Since the proposed increases will be met with decreases elsewhere in DOE's budget, these totals are unaffected by the proposed budget amendment incorporating the supply initiatives. Revenues, primarily from uranium enrichment services, total $1.4 billion, including increased revenue projected to result from a provision proposed in the Department's 1979 Authorization Bill to establish a fair value charge for these services. Accordingly, total resources of $14.0 billion will be available to DOE in 1979. This supports a wide variety of activities, including:

- $4.2 billion for the Strategic Petroleum Reserve Program
- $2.7 billion for technology efforts associated with developing new sources of energy supply or new energy technologies
- $2.8 billion to support the Department's defense program functions
- $1.9 billion for producing enriched uranium, delivering energy from Federal power marketing agencies and operating the Naval Petroleum Reserves, which is offset by projected uranium enrichment revenues of $1.2 billion

- o $1 billion for energy conservation programs including grants to assist schools, hospitals and low income citizens and State and local government in implementing energy conservation practices, and
- o $170 million for regulation and information activities.

The programmatic content of this budget is different from the energy-related budgets presented to you in prior years. Whereas previous ERDA budgets emphasized technology development solutions to energy supply and conservation efforts, this DOE budget is built on a mix of technology, regulatory and incentive programs to achieve the same end, and recognizes the tax incentives included in the National Energy Plan.

Within this framework are a series of major policy imperatives that shaped this first DOE budget and the development of the new initiatives which I discussed earlier, including:

- o acceleration of construction for additional strategic petroleum storage capacity
- o expanded conservation and grant programs to decrease end-use demand and improve the efficiency of energy utilization
- o development of regulatory and incentive programs which rely on market factors to achieve energy objectives, yet provide basic safeguards to the American consumer

- o aggressive efforts to develop our fossil, solar, geothermal and nuclear energy supply technologies in a manner which supports environmental and non-proliferation objectives

- o identification and allocation of departmental staffing to meet the most important agency objectives, and

- o maintenance of a strong research, development and production capability to meet priority defense requirements.

These items are of critical importance to achieving the President's objectives and to understanding the thrust of our budget request. I would like to discuss briefly each item in somewhat greater detail.

STRATEGIC PETROLEUM RESERVE

A major objective of the Department is the preparation of contingency plans for the acquisition and allocation of scarce energy resources in periods of supply disruptions. The President believes that an extended interruption of petroleum imports would have an unacceptably severe impact on the Nation's economy, particularly by the early 1980's when the world demand for petroleum -- even at full production -- is expected to exceed supply.

Development of an adequate strategic petroleum reserve, therefore, is an essential part of the Nation's energy planning. The budget includes $4.2 billion for completing the acquisition of oil for the first 500 million barrels

previously authorized, and initiating design and construction activities for storage of an additional 250 million barrels of oil leading to the goal of one billion barrels by 1985. We plan to have the first 500 million barrels of oil in storage by the end of 1980. The 1979 request takes into account the recently enacted 1978 supplemental request for oil purchases.

CONSERVATION AND GRANT PROGRAMS

Conservation is a cornerstone of the President's energy policy. The program proposed in the National Energy Act and supported in this budget will foster the identification of energy conservation opportunities and help the American consumer to adopt energy conservation practices. The achievement of the conservation goals included in the National Energy Plan requires creation of the proper economic environment to motivate Americans to act in an energy-conserving manner, and the availability of materials, processes and equipment which will permit the consumer to fulfill his conservation needs.

The DOE regulatory and grant programs are an important element in creating the proper climate for motivating energy consumers to act in an energy-conserving manner while our conservation technology programs develop the appropriate means to satisfy our energy-saving needs. Both approaches enhance our conservation opportunities by increasing the efficiency of energy consumption at its point of utilization or reducing the demand for energy-consuming activities. Our budget includes slightly more than $1 billion for conservation activities in 1979 compared to less than $700 million in

1978. Funding is increased by $223 million for grants to State and local governments for technical assistance and for insulation services for schools, hospitals and the homes of low income citizens - especially the elderly and handicapped. Specifically, we expect to weatherize more than 850,000 homes with an annual energy savings of about 15 percent for each home. Although total petroleum savings may be small, these savings will be a significant help to individuals in low-income brackets. This is an important step on the road to conservation at the individual homeowner level.

In addition, the Department will actively seek to enhance the average citizen's understanding of conservation by expanding the Energy Extension Service to all 50 states. The remaining $80 million of our requested increase is for technology-oriented research and development efforts, including cogeneration, automotive propulsion and fuel cells.

The Department is concerned about coordinating and streamlining the Administration of its current grant programs. We have embarked on a review of the State energy role and activities with the objective of defining more clearly the best methods of assisting State and local efforts. Once this review is completed, we anticipate submitting legislation to enhance the effectiveness of these programs.

DEVELOPING ENERGY SUPPLIES

The 1979 budget provides $2.7 billion for research and development directed toward increasing energy supplies

and continues the emphasis on development of non-nuclear resources, to meet future energy requirements.

This shift reflects our belief that a broadening range of strategies and sources must receive more attention. In particular, we must make more extensive use of our fossil fuel reserves if we are to meet future energy requirements and reduce the level of oil imports. While coal comprises 90 percent of this country's fossil fuel reserves, it meets only 18 percent of our energy needs. This imbalance is due, in part, to the previous existence of relatively cheap oil and natural gas, and to the less convenient form of coal and its greater environmental impacts.

Our budget, strengthened by the proposed initiatives, includes a wide range of R&D projects and technical demonstrations to convert coal into more convenient gaseous and liquid forms, and to reduce the environmental impacts of direct burning. Demonstrations are underway to verify the reliability and economics of coal gasification, fluidized bed combustion, and production of liquid feedstocks and boiler fuels. The initiatives proposal will accelerate efforts to produce synthetic liquids and solids and high-Btu gas from coal. DOE has also assumed greater responsibility from the Environmental Protection Agency for development of coal cleanup and advanced flue gas desulphurizaton techniques to ensure our ability to deal with the entire spectrum of coal mining, burning and cleanup.

Viability of our long-term energy supplies also requires that we continue to develop and utilize nuclear

power. The DOE budget includes funds to address important problems associated with this major energy source. Our breeder reactor research and development programs will emphasize alternate reactor concepts which have enhanced nonproliferation characteristics to permit us to fully exploit the energy content of our uranium and thorium reserves. The Fuel Cycle budget includes major programs for the earliest possible development of a waste repository for terminal storage, evaluation of fuel processing alternatives and provision for development of interim storage for domestic spent fuel.

Finally, the Department will expand its effort to develop and assist in the commercialization of renewable technologies in such areas as solar, wind energy for use by utilities, fuels from biomass, low head hydro and dispersed energy systems. We intend to move aggressively in developng these and other renewable technology options confirming the Department's belief that renewables must and will be a major factor in moving toward resolution of our Nation's energy problem.

REGULATION AND INFORMATION ACTIVITIES

The National Energy Plan presented a careful balance of incentives and regulation to create a market environment which would enhance economic, societal and energy objectives. In addition to creating a market environment which encourages fuel switching and conservation practices, DOE regulatory activities protect the American consumer against unwarranted energy price increases and assure the equitable distribution

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of energy supplies. These activities have taken on increased importance since the rapid escalation in energy prices over the past four years. Increased energy costs have been responsible, in part, for more frequent case filings at DOE's Federal Energy Regulatory Commission, creating an unacceptably large backlog. This backlog has delayed important decisions on applications to increase the Nation's energy supply and improve the deliverability of its energy distribution system, results which we can ill afford. In addition, the FERC backlog has resulted in millions of dollars of potential consumer refunds being held by utility companies because final ratemaking determinations are delayed. Similarly, the recently initiated effort to complete auditing the largest oil refiners to ensure compliance with price and allocation regulations has created a significant increase in our regulatory workload.

I would emphasize, however, that these regulatory activities must be carried out with minimum procedural burden and a reduction of red tape for affected industries. A Department-wide task force, under Deputy Secretary John O'Leary, is examining this problem and will recommend reforms where needed.

We all understand the necessity for a complete and reliable information base to support the Department's policies, especially those concerned with regulatory activities. This information function is also experiencing increased requirements, particularly associated with obtaining reliable data on petroleum reserves, pricing and competition in the larger energy companies, and energy consumption

patterns in the residential and commercial sectors of our economy. The DOE budget reflects these needs.

DEFENSE

DOE has a major role in assuring the long-term effectiveness of this Nation's military posture and the budget includes a strong program of research, development and production to support national security requirements. The budget provides for the levels of scientific, technical and production capability necessary to meet our defense responsibilities.

The 1979 appropriation request for this activity totals $2,829 billion in new budget authority; an increase of $317 million over 1978.

This concludes my overview of the major items affecting the Department's 1979 budget request and the supply initiatives amendment. This amended budget request is an integral part of the Administration's strategy to resolve our energy problem. As the President has indicated, energy is probably the most important domestic problem we shall have to address during the next several years. Resolution of the energy problem will test our vision, our creativity and our courage. Future generations will judge our strength of purpose and our resolve in meeting this challenge. They will judge us not by our statements, but by our actions; whether we used the years immediately ahead to provide a safe and secure energy future for our Nation and for all mankind.

I look forward to working with you to ensure that we successfully address this challenge.

Senator BYRD. Please introduce your associates at the witness table, and highlight your opening statement for the committee. We're generally familiar with the regular fiscal 1979 budget proposal, but details are skimpy on the proposed budget amendments that we're told have been prepared for the Congress. I trust that your presentation will include a summary of these budget provisions and that you will be prepared to discuss them with the committee.

If you have any printed material to support these revisions, we will include that material in the record at this juncture as well.

Please proceed.

Secretary SCHLESINGER. Thank you, Mr. Chairman.

I am puzzled that the statement was not available to the members of the committee. I believe that it was brought here. I will insert that statement into the record, Mr. Chairman.

Senator BYRD. When you say it has been here, what do you mean?

Secretary SCHLESINGER. I was just checking when you mentioned that it had not been available. It was delivered this morning.

ENERGY SUPPLY INITIATIVES

You raise a question, Mr. Chairman, about the budget amendments, and those budget amendments are included in this document called "Energy Supply Initiatives." I will give you this document for possible inclusion in the record, as you wish.

Senator BYRD. Yes, it will be included in the record.

[The information follows:]

INTRODUCTION

This document presents a set of supply initiatives designed to improve the Nation's capability to commercialize new energy supply technologies. These initiatives will be funded from offsetting adjustments within the Department's budget and will build upon the National Energy Plan to ensure a balanced supply picture beyond the mid-1980's.

The National Energy Plan set forth a pricing and fiscal framework under which industry and individuals could make investment decisions aimed at substantially reducing the demand for U.S. oil imports through conservation and fuel substitution. These demand restraint initiatives, however, cannot permanently maintain imports at a satisfactorily low level. The U.S. must also begin efforts now to develop a wide range of commercially-viable new technologies which can help increase production of the Nation's abundant domestic resources in the 1980's and beyond.

Inherent in the National Energy Plan's program for reducing energy demand and imports was the need for a set of initiatives to increase domestic energy supply. To this end, a comprehensive energy supply strategy is currently under development. This study, known as the National Energy Supply Strategy (NESS), should be ready next winter. To ensure public involvement and participation in the NESS study, the Department of Energy will undertake a major outreach program to include state and local governments, the Congress, special interest groups and the public at large. The NESS will serve as the basis for the second National Energy Plan, which will be presented to Congress in early 1979.

Although there is currently a small and temporary excess of world oil productive capacity, the U.S. is still importing at great expense nearly half of its oil -- far more than during the 1973-74 embargo. As world oil consumption approaches world oil production limits, it is almost certain that oil will become even more scarce and expensive during the 1980's. Despite the high likelihood of oil price increases during the 1980's, the U.S. can influence the path of these price increases through its national energy policy. The non-OPEC countries can moderate future oil price rises through an increase in the production of oil or oil substitutes, as well as through a reduction of oil consumption. Any such reduction in the demand for OPEC exports not only displaces expensive imported oil, but also increases the likelihood of relatively lower oil prices in the future. Such reductions could yield multi-billion dollar savings in foreign energy payments and thus represent a major contribution to the economic health and national security posture of the United States.

In their current state of technical advance, many new energy technologies are not economic at today's oil prices, but will become cost effective at the oil prices that are likely to accompany a worldwide limitation in crude oil production capacity. The initiatives described below will develop the capability to deploy a number of supply technologies if world oil prices rise rapidly in the future. While it is impossible to determine the exact timing and magnitude of any future oil shortage, these initiatives will serve as an insurance policy against rapid oil price increases. Even if oil prices stay low, the investments in these measures have a relatively small cost for the critical insurance they provide.

The proposed supply initiatives fall under four categories: synthetic liquids and solids, new sources of natural gas, renewables, and the removal of institutional barriers.

For synthetic liquids and solids that can be substituted for petroleum, three initiatives are proposed:

-- a tax incentive to stimulate demonstrations of domestic oil shale production;

-- regulations that provide oil shale and other synthetic liquids the same entitlements treatment as imported crude oil;

-- initiation of design studies leading to the construction of one or two plants for the production of synthetic fuels from coal in FY 1980.

For increased natural gas supply and more efficient distribution of supply, two initiatives are proposed:

-- an accelerated technology development program to stimulate earlier and more extensive production of unconventional natural gas from geopressurized zones;

-- accelerated construction of several commercial-scale, high-Btu coal gasification facilities achieved through regulatory changes and/or loan guarantees.

To accelerate commercialization of renewable technologies which can pay off in the near term, nine individual initiatives are proposed:

-- increased research on photovoltaic solar energy;

-- commercial scale demonstrations of wind machines;

-- production of gas and liquid fuels from biomass;

-- prepackaged small hydropower plants, demonstration of low-head hydro systems, and feasibility studies for hydropower at existing dams;

-- grants to individuals for innovative, small technology systems;

-- a dispersed energy systems demonstration program;

-- design awards for passive solar heating and cooling;

-- a solar training and education program;

-- a requirement that Federal purchases of solar heating and cooling systems be matched by sales in the private sector.

Finally, new initiatives are needed to help overcome institutional barriers to the expansion of domestic supply. In the past, legal, institutional and regulatory barriers, as well as the problems associated with public acceptance of new technologies, have been given insufficient attention. A concerted effort is required by the Federal government, State and local authorities, private industry and environmental and other public interest groups to define these problems and to help resolve them. This effort must be harmonized as fully as possible with the interests of local communities in public health and safety and environmental protection.

Therefore, to address institutional supply barriers, two initiatives are proposed:

— a program to provide financial assistance to States, Indian tribes and communities for mitigating the adverse social and economic impacts resulting from energy resource development;

— the establishment of a system within DOE to overcome institutional barriers and speed regulatory decisions.

The tax and budget initiatives described above are recommended for immediate adoption. Pending energy tax legislation can be amended to accommodate the tax action, and the FY 1979 Departmental budget proposal now before the Congress can be modified to accommodate the expanded technology programs. Increasing FY 1979 funds required for these initiatives would be covered by decreases in the DOE budget. The Administration has already presented its impact assistance proposal. The regulatory initiative on synthetic liquids is being promulgated in the Federal Register.

All of these supply initiatives require extensive lead times -- for both technical advances and institutional adjustments -- to develop the capability for widespread commercialization and then build the productive capacity to make a meaningful contribution to supply. These initiatives, therefore, are an important step toward meeting the energy challenges of the 1980's as well as the development of a comprehensive National Energy Supply Strategy.

SUMMARY OF SUPPLY INITIATIVES
(Dollars in Millions)

FY 1979 DOE Budget Amendment:	Increases in Budget Authority
o Oil shale tax credit	N/A
o Regulations to provide oil shale and other synthetic liquids entitlements treatment	N/A
o Unconventional natural gas	$ 10
o High Btu coal gas loan guarantees	20
o Photovoltaic research	30
o Wind machine demonstrations	20
o Gas and liquid fuels from biomass	10
o Low-head hydro power program	20
o Appropriate technology grants	5
o Dispersed energy systems demonstration	5
o Passive solar heating and cooling	5
o Leveraging Federal purchases of solar	N/A
o Solar training and education	5
TOTAL	$130

NOTE: In addition to the above FY 1979 increases, a FY 1978 reprogramming of $33 million for design studies of synthetic liquid and solid demonstration plants will be made available to support the synthetic liquid and solid initiative.

SUMMARY OF PROPOSED REDUCTIONS
(Dollars in Millions)

	Reductions in Budget Authority
o Light water reactor technology	$ -10
o Waste management facilities	-51
o Advanced technology and assessments projects	- 5
o National uranium resource evaluation	-10
o Vanpooling	- 9
o Clean boiler fuel demonstration (Coalcon)	-45
TOTAL	$-130

SHALE OIL PRODUCTION

BACKGROUND: In Colorado and Utah, there are major deposits of high quality oil shale. Although "nearly ready" for many years, Western oil shale is not being produced commercially because of unfavorable economics and environmental uncertainties. Currently, the most probable range of raw shale oil production costs is from $15 to $25 per barrel depending on the technology, financing terms and environmental controls.

Shale oil capital requirements are high: approximately $1.0 to $1.25 billion for a 50 thousand barrel per day plant. Commercial production of shale oil also faces other constraints from stringent air quality requirements, water effluent limits, and limited water availability in the Colorado/Utah area. Stringent environmental controls could add substantially to the costs of production.

PROPOSAL: To accelerate shale oil development, two initiatives are proposed:

- The Administration will work with the energy conferees to modify the shale oil tax credit currently pending in the NEA tax conference. The Administration proposes to limit the credit to the first 10 thousand barrels per day of production from commercial plants placed in service by 1987. The credit will then continue throughout the life of qualifying plants or 20 years, whichever is shorter. The Administration will also discuss with the conferees a provision to phase out the credit when world oil prices exceed the cost of shale oil to U.S. refiners.

- DOE will issue regulations to provide shale oil (and other synthetic liquids) with the same entitlements treatment as imported crude oil.

DISCUSSION: Both initiatives will facilitate commercial production by placing shale oil in a competitive price range with fuel oil, particularly in mixtures with conventional residual fuel oil. Together, the limited tax credit and the new entitlements treatment will reduce the effective costs of oil-

shale production by $7 to $8 per barrel for initial plant production. As a result, firms which are actively developing technologies will have powerful incentives to proceed with the initial modules (10 thousand barrels per day) of commercial-scale plants. These smaller plants will result in substantially higher production costs than later commercial-scale plants. Five producer groups currently seem capable of initial plant construction (three using surface-retorting and two using in situ methods). If all five groups respond to the tax credit, shale oil production would be 50 thousand barrels per day or more by 1987. The total capacity of the five full-scale plants would be on the order of 250 thousand barrels per day.

Although these initiatives will reduce the expected prices for shale oil produced from these demonstration plants to levels approximating the cost of imported oil, the production economics of shale oil and the ultimate potential for domestic production are difficult to predict. Variations in the quality of the shale, performance of the extraction technology, financing terms, and environmental controls can alter the required price of individual projects by several dollars per barrel. Shale oil, however, will become more competitive in commercial-scale plants.

The cost of the tax credit in reduced revenues to the Treasury would be approximately $1 billion through 2000. If the world price were to exceed the cost of shale oil, the proposal to phase out the tax credit under that condition would reduce the ultimate Treasury loss.

The limited credit will encourage controlled development of shale oil production. DOE environmental research and assessment activities (pollution characterization, monitoring and identification of health effects) will expand to keep pace with increased oil shale development. These efforts will attempt to mitigate any adverse environmental impacts at the one-module plant scale before full-scale plants are built.

SYNTHETIC LIQUID AND SOLID COMMERCIAL DEMONSTRATION

BACKGROUND: Domestic coal can provide a potentially large supply of the liquid and clean solid fuels which will be needed in the late 1980's and the 1990's. Synthetic liquid and solid technologies have not yet emerged on a commercial scale in the U.S. In South Africa, however, advanced versions of processes used in Germany during World War II now produce high-cost synthetic gasoline from coal.

Several new processes are under development in the U.S. for production of lower-cost synthetic fuels. The most advanced include solvent refined coal (SRC I, a solid, and SRC-II, a liquid), H-Coal and Donor Solvent.

On a commercial scale, the liquids made from these new processes would cost an estimated $20 to $35 per barrel. Since these costs clearly exceed current world oil prices, government assistance is essential to advance synthetic coal liquid and solid processes to the point of commercial readiness.

PROPOSAL: To develop the capability to produce synthetic liquids and solids from coal as rapidly as technically feasible, the following initiatives are proposed:

- o Process design studies will begin for four or five bonafide coal liquid and coal solid demonstration plants. The studies will cost approximately $6 to $8 million each, and will start in FY 1978 and conclude by mid FY 1979.

- o At this point, the SRC processes are at a more advanced stage of development than other processes currently under development in the United States. If the process studies and parallel negotiations on cost sharing are successful on the SRC processes, DOE would proceed to detailed design for two plants using the funds currently in the President's FY 1979 budget ($23 million) and in FY 1980 would move into the procurement and construction phases on one or two plants. If the above conditions are not met by either one or both of the SRC technologies, DOE would be in a position to finance one or more of the other proposals in FY 1980. This approach will assure expeditious development of synthetic coal technology within the funding levels provided in the FY 1979 budget.

DISCUSSION: These initiatives will demonstrate the economic and technical viability of producing synthetic liquids and solids from coal. If the program meets its scheduled goals, the first demonstration modules will be on line by 1983 and commercial-scale plants could be on line by 1987. The preliminary process design studies will assess whether proceeding to detailed design and construction makes technical and economic sense. The decision to proceed will await completion of the process design studies.

Electric and gas utilities are discussing the possibility of purchasing a portion of the output from the SRC I and SRC II plants during the early years of their operation.

Major benefits will accrue from demonstrations of synthetic fuels production technology. If world oil prices rise moderately to the point at which synthetic fuels are competitive, production could be initiated rapidly -- many years sooner than without such a program. This would reduce oil imports through direct displacement and place a downward pressure on world oil prices by reducing the demand for OPEC exports. In addition the coal solids technology offers a promising, cost effective means for meeting environmental standards.

UNCONVENTIONAL NATURAL GAS

BACKGROUND: Natural gas from geopressurized zones has great but uncertain potential. However, it is not now produced commercially because of technical and environmental problems, unfavorable economics, and the uncertain nature of the resource base. The private sector is not expected to develop geopressurized methane resources in the near future because of these uncertainties.

PROPOSAL: The potential commercial application of geopressurized methane will be accelerated by expanding the current Federal R&D program ($10 million in FY 1979) as follows:

- o Increase the number of geopressurized wells drilled in FY 1979 by two (from two to four) to reduce the time required to complete the planned 3-year feasibility study of this resource.

- o Initiate further supporting work on the geopressurized methane resource to provide the information base for eventual commercial development.

DISCUSSION: The accelerated drilling program will demonstrate the feasibility of developing geopressurized gas resources sooner and will provide technical and economic information to aid energy planning and private development. If this initial feasibility drilling program proves successful, subsequent demonstrations would provide critical data on reservoir productivity, both rates and lifetimes, as well as information about environmental issues, including brine disposal and surface subsidence.

An expanded technology program will accelerate development of the resources and could have a large payoff for a relatively small level of Federal involvement. Even if optimistic estimates are too high, the program will provide better information concerning the resource base and production costs that is essential to energy planning.

HIGH-BTU COAL GAS

BACKGROUND: High-Btu coal gas could become an important domestic source of energy. Several commercial projects have been promoted actively, but no plants are actually being constructed. Slow progress is attributed primarily to siting delays and a lack of private financing as opposed to any specific problems with the basic technology.

A commercial-scale, high-Btu coal gas project represents a large investment ($1.6 billion for a 250 million cubic foot per day plant). If unforeseen technical or other obstacles prevent completion of a plant, the debt repayment burden could seriously erode the corporate net worth of project sponsors. In addition, rolled-in pricing is necessary to assure the marketability of the relatively high cost gas from these plants.

The capability to accelerate commercialization of high-Btu coal gas provides a hedge against scarce, expensive oil. To develop the capability well in advance of higher-priced oil, however, requires that the government modify the marketability and non-completion risks and remove some institutional barriers confronting the first commercial plants.

PROPOSAL: On a case-by-case basis, DOE will review commercial-scale high-Btu coal gas projects to determine the need for:

- o Intervention before FERC to argue for tariff protection against non-completion, or

- o Federal loan guarantees ($20 million in FY 79, total to be determined).

DOE will develop criteria and procedures for this case-by-case review; issue regulations and request simplification of existing authority to guarantee loans promptly; and develop a strategy for intervening before FERC. Such efforts would supplement a favorable FERC action on rolled-in pricing for these projects.

DISCUSSION: This initiative will ensure that risks currently associated with high Btu coal gasification are modified selectively (for several commercial-scale plants). Market risks, caused by the high cost of high-Btu gas, will be addressed by support for a favorable FERC ruling on rolled-in pricing. The risks of noncompletion will be addressed through loan guarantees or by tariffs that will insure that investors are adequately protected. For example, FERC could modify conventional tariffs to include a non-completion guarantee; alternatively it could treat, on a contingent basis, the costs of the first few plants as research and development expenditures (an extension of FPC Order No. 566). Under a selective approach, tariff modifications can be made to fit the special risks of each project and its sponsors.

In particular, case-by-case determinations shall be made whether and how the ratepayers of a particular pipeline or utility consortium should bear the cost of any project failure. In some circumstances, loan guarantees may be the most effective and equitable method of insuring against project risk. This initiative demonstrates that the Federal Government would be willing to provide that insurance when appropriate.

The cost of insuring against the risk of noncompletion is expected to be moderate. Noncompletion is highly improbable and there are likely to be assets to offset noncompletion costs. In addition, many of the potential reasons for noncompletion would probably stop the project before substantial project costs were incurred.

High-Btu coal gas can be an important cost-effective source of future supply. In the residential sector, for example, high-Btu coal gas already competes favorably with electricity. For other sectors, this initiative can insure that the U.S. will obtain the technical and institutional capability to build additional capacity rapidly. With higher oil prices, additional capacity would save the U.S. economy as much in reduced imports as it would cost in the near term to build several plants.

PHOTOVOLTAICS

BACKGROUND: Photovoltaic (solar-electric) cells convert sunlight directly into electricity. They have a wide range of potential applications, since electricity can be used to meet all types of energy demands. Moreover, photovoltaics can be used either for dispersed or central power generation. However, costs must be reduced substantially before photovoltaics are competitive for residential applications with electricity from conventional sources.

PROPOSAL: DOE will expand the current focus on flat plate silicon cell technology to include new technologies -- such as those utilizing amphorous materials, photochemical

conversion and advanced concentrator concepts. This proposal will increase FY 1979 funding of the four major research competitions initiated in FY 1978, and fund unsolicited proposals in advanced concentrator performance, cost reduction concepts and electrolyte semiconductor cells. It will also increase funding of advanced thin film materials, initiate an R&D program to provide starter grants for novel high risk conversion concepts, and initiate a program to improve the stability and reliability of thin film devices ($30 million in FY 1979).

DISCUSSION:

Together with the current program, these efforts are designed to reduce the costs of photovoltaic arrays to $.50 per peak watt by 1986,or $1.50 to $2.00 per peak watt for total systems costs. By comparison, total systems costs today are $20 per peak watt. These reductions in array costs, plus expected reductions in the cost of associated storage, structural and power conditioning equipment, should make solar competitive with residential electricity at approximately 7 cents per kwh in 1986 in regions with generally sunny weather.

WIND

BACKGROUND:

Wind energy conversion systems have the potential to produce electricity for utilities and central power stations, as well as for dispersed applications. For utilities, a fourfold cost reduction is needed; for small machines and other dispersed applications, a twofold cost reduction may be adequate.

PROPOSAL:

For large (1-2 mw) utility-scale machines, this initiative will introduce a significant amount of market competition, market testing and user acceptance into the current program. Two competing manufacturers (rather than one as presently planned) will be selected to design, fabricate and field test a prototype of the next generation of wind machines. If these machines meet performance expectations, the Federal government will purchase six more units for the purpose of obtaining manufacturing and operating experience. The proposed initiative will also provide increased funds for test machines which the Government and the utility partners will evaluate in terms of economic, environmental, systems integration and other perspectives. If the evaluations of the prototypes to be developed under this amendment prove favorable, DOE will consider efforts to stimulate their widespread use.

This initiative will also provide for the purchase and installation of at least 50 small (1-15 kw) wind machines for a test program that would lead to early resolution of rate schedule and operational problems with electric utilities and with State and local governments. Efforts will also begin to accelerate design and development of more advanced small systems aimed at single family and rural applications.

The total cost of this initiative would be $20 million in FY 1979. Of that amount, $13 million would be for the large wind machines and $7 million for small machines.

DISCUSSION: Together with the current program, this initiative is aimed at reducing costs for large utility-scale machines to about 3 cents per kwh by 1985, at which point a sizeable commercial market should be realized. The costs of these large wind systems may ultimately be reduced below 2 cents per kwh. The development of a new generation of small wind machines, together with the proposed NEA tax credit, should speed commercialization in the utility, agricultural and dispersed residential markets.

GAS AND LIQUID FUELS FROM BIOMASS

BACKGROUND: Direct combustion of biomass is already economic and substantial quantities are consumed now in the forest products industry. Technologies for converting biomass to alcohol fuels are relatively well known and some States are already experimenting with gasohol programs. However, biomass also offers the potential for the production of other gas and liquid fuels, using processes that are likely to pose fewer envrionmental hazards than those for producing synthetic fuels from coal.

PROPOSAL: This initiative will accelerate research and foster innovative approaches to convert wood and other forms of biomass directly into methane or liquid fuels. It will place initial emphasis on basic thermochemical processes for the de-oxygenation of cellulose. This effort should open up new approaches for the synthesis and extraction of hydrocarbons from biomass feedstocks. These direct conversion processes will primarily produce fuel oils, residual oil, gases, and other products that closely resemble products now derived from petroleum refining and petrochemical processing ($10 million in FY 1979).

DISCUSSION: Since these processes are not well understood at the present time, the economics are uncertain. However, some of the more promising thermochemical approaches may result in costs that are equal to or lower than other comparable synfuels processes. Biomass technologies could become economic at an earlier time in regions of the country where low-cost waste products would be used. The potential cleanliness of these processes should reduce the possibility of encountering siting problems. The initiative will include active participation by USDA in both planning and implementation.

LOW-HEAD HYDRO

BACKGROUND: During the last several decades, many small hydropower plants in New England and elsewhere have been retired from service because they were unable to compete with lower priced electricity generated by other means. Now that energy prices are increasing, it is frequently

cost-effective and desirable to rebuild these and other dam sites and install modern, efficient turbo-generators. Due to their small size, these sites have not attracted widespread interest on the part of utilities. Pending provisions of the NEA, however, require utilities to purchase power at fair rates from small producers. Since the sites are likely to be developed under disparate conditions, a variety of institutional barriers must be overcome. In addition, power generation costs must be reduced to ensure viability.

PROPOSAL: This initiative will accelerate the commercialization of small hydro turbines by the domestic turbine industry through funding at least two manufacturers to develop packaged turbogenerators. Additional funds will provide loans for feasibility studies to determine the technical, economic and environmental merit of about 100 existing dam sites (loans would be forgiven if a project at that site proves to be infeasible). Also, utilization experiments will be conducted to demonstrate project viability under alternative technical and institutional conditions. Total funding would be $10 million for feasibility studies, $5 million for turbogenerator development, and $5 million for utilization experiments ($20 million in FY 1979).

DISCUSSION: Together with the existing program, this initiative is aimed at reducing the cost of retrofitting existing dams by about 20 percent. Electricity from small hydro projects could economically meet peak demands at some sites, and hence reduce conventional capacity requirements. On streams that are intermittent, the hydropower would simply save fuel for the utility system rather than displace capacity. By 1990, up to 4000 mw could be installed.

APPROPRIATE TECHNOLOGY

BACKGROUND: This program is aimed at developing new ideas for small-scale systems that conserve energy or produce energy from renewable resources. A pilot program to tap this innovative potential was developed in 1978 and implemented in several western states. The first set of proposals under this pilot program were analyzed recently, and expansion of the program is warranted.

PROPOSAL: This initiative will provide sufficient funds to expand the appropriate technology program to all ten Federal regions. The program will encourage individuals and small businesses to develop and prove the feasibility of a variety of small-scale technologies that rely on low-cost, locally available materials. Emphasis will be placed on technologies that may not be universally applicable, but which are appropriate to markets characterized by unique regional, institutional and end-use conditions. Grants are limited to $50,000 each ($5 million in FY 1979).

DISCUSSION: This initiative will allow development of several hundred innovative ideas in all parts of the Nation. Some will be suitable for direct use; others may require follow up or evaluation through other DOE programs.

DISPERSED ENERGY SYSTEMS DEMONSTRATION

BACKGROUND: There are many technologies and small-to-intermediate scale energy systems that do not fall into traditional DOE program categories. For example, more flexibility is needed to demonstrate concepts developed under the appropriate technology grants program, and to fund proposals for energy systems on a neighborhood or sub-municipal scale.

PROPOSAL: Building upon the appropriate technology small grants program and the existing buildings and community systems program, this initiative will provide for demonstrations and evaluations of decentralized technologies utilizing dispersed energy sources. Emphasis will be placed on systems that minimize energy waste and that utilize innovative combinations of known technologies. Possible demonstrations may range from self-sufficient, neighborhood-scale solar heating/storage systems to integrated renewable energy systems for business or industrial use. Examples of technologies that might be demonstrated are aerobic digestion, electrical and thermal storage and waste heat recovery. The demonstrations program will attempt to encourage adoption of such technologies for applications as diverse as industrial parks, commercial/residential neighborhoods or entire communities. Funding would be $5 million in FY 1979.

DISCUSSION: By evaluating the suitability of these technologies under a variety of geographic, institutional and socioeconomic conditions, this initiative will speed commercialization of innovative, decentralized energy systems.

PASSIVE SOLAR HEATING AND COOLING

BACKGROUND: Passive solar buildings capture solar heat with devices such as greenhouses or south-facing windows with overhangs, and store the heat in masonry walls or floors, rocks, or roof ponds. These devices are intended to capture and radiate solar energy into the building for heating or to remove heat from the building for cooling. The potential energy savings are considerable. Since passive solar devices are often integral to the building structure, they are difficult to define for tax credit purposes. Active solar equipment, however, will be eligible for substantial tax credits under the NEA.

PROPOSAL: This initiative will stimulate and publicize innovative, practical passive solar designs through financial awards to architects and builders. Competitions will be held nationally and regionally;

they will be structured to include members of the architectural and building communities as well as local government authorities. Projects will be judged on the basis of architectural innovation, marketability and energy savings. Funding for this program would be $5 million in FY 1979.

DISCUSSION: Combined with conservation, passive solar designs can cut energy demands 50 to 80 percent compared to today's designs. The high visibility of the awards competition will not only increase general awareness of passive solar techniques, but should accelerate their adoption by the building industry in all geographic regions of the country.

SOLAR TRAINING AND EDUCATION

BACKGROUND: The solar heating industry has grown from almost nothing five years ago to a level of annual sales exceeding $200 million. The growth of the solar industry could be constrained over the long term by a lack of skilled installation and maintenance personnel.

PROPOSAL: This initiative will establish training programs which will be operated by labor unions, community colleges, trade associations and other qualified groups. Funds will be used to purchase learning aids and materials necessary to acquire knowledge and hands-on skills, and to train instructors who will thereafter include solar skills and/or designer training in their regular curriculum. The trades affected include plumbing, sheet metal work and other occupations connected with conventional heating, ventilating and air conditioning systems ($5 million in FY 1979).

DISCUSSION: This short-lived program is designed to "teach the teachers." When Federal support is terminated, these activities should be self-sustaining. The program should help remove a significant barrier to the solar industry's rapid growth.

LEVERAGING FEDERAL SOLAR EXPENDITURES

BACKGROUND: The Federal government intends to provide a significant impetus to the solar energy industry by making large purchases of solar equipment. It is important that this program not only provide a Government market for solar equipment, but also encourage a private market.

PROPOSAL The NEA is expected to authorize $100 million over three years for the Federal government to purchase solar heating and cooling systems for Federal buildings. DOE is reviewing the possibility of restricting these purchases to vendors whose sales to the government are matched by a specified percentage of sales to the private sector.

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DISCUSSION: DOE will begin discussions immediately with representatives of solar industries, Federal agencies, and other interested parties to determine the feasibility of leveraged purchasing. In developing such a program, special care will be taken to promote competition. No budget increment is required for this program.

ENERGY IMPACT ASSISTANCE

BACKGROUND: The President announced on May 4 a new program of assistance to States, Indian tribes, and local governments to meet needs for public services arising from large-scale energy development. Although not part of this initiatives package, this program will aid in reducing institutional difficulties arising from development of new energy supplies.

A large share of new energy development will occur in isolated areas of the West and rural portions of Appalachia. As development is initiated, demands for new public services increase. In contrast, public revenues typically do not increase until development is well-advanced and production commences. This budget deficit, as well as the needs for planning for expansion, can overwhelm the financial and human resources of the small communities now located in these undeveloped areas.

Existing Federal programs do not address the financing needs of these communities, while State and private efforts have proved inadequate. With the exception of assistance programs to communities impacted by development in the coastal areas, existing Federal programs have eligibility requirements which often restrict participation by communities impacted by energy growth. The lack of Federal program coordination requires communities to sort through a bewildering array of requirements in order to obtain assistance. Lack of information on projected resource development restricts communities' ability to influence and respond to energy development decisions. State and private industry efforts to address energy development impacts have been only partially successful.

PROPOSAL: New legislation will provide:

- Annual grants over 5 years to States and Indian tribes to be used to plan for orderly development, and to establish revolving funds to meet front-end financing needs for public facilities, services and housing ($135 million for FY 1979; $725 million in total). The total funding level includes both this initiative and funding under Section 306 of the National Energy Act.

- A total of $15 million annually for 5 years to support Federal loan guarantees, with an interest rate subsidy to assure a borrowing rate equivalent to the average municipal borrowing rate.

- States and tribes will be responsible for projecting

local energy development, assessing expected impacts and developing financial plans for meeting community needs.

- o States and tribes will be required to provide matching funds and will be expected to encourage private involvement.

In addition, the Federal government will consult States, local governments, and Indian tribes before major Federal energy development decisions are made and will make data on public and private development plans available. The Department of Commerce will coordinate all Federal assistance programs to impacted communities.

DISCUSSION: The impact assistance program is designed to provide flexible Federal financial assistance to the States and tribes which can be used to meet the diverse needs of impacted communities for planning and front-end financing. To encourage the development of institutional capacity, the States and tribes would be responsible for projecting development, identifying and prioritizing related impacts, and developing financial strategies for impact avoidance and mitigation. The matching grants, the planning requirements and allocation formula would provide incentives to the States to institute mechanisms such as severance taxes and facility siting laws to encourage industry participation in addressing such impacts.

A loan guarantee program would be provided at the Federal level to assist communities in financing public service needs. Funding for the program would be used for interest rate subsidies to reduce the effective borrowing rate to the average municipal rate.

To improve the planning and management process, State, tribal and local officials will be given a greater opportunity to influence Federal energy development decisions. Timely and consistent information will be provided on projected energy development. The initiative will also substantially increase coordination of impact assistance from existing Federal programs.

EXPEDITING THE REGULATORY PROCESS

BACKGROUND: Timely development of domestic energy resources already has been delayed by barriers created in public and private institutions. Uncertainty, confusion and delay encountered in siting, constructing and operating new energy facilities has been increased by the growing complexity of regulatory processes at the Federal, State and local levels. Poor coordination among regulatory bodies produces conflicting and duplicative requirements, schedules and information. Frequently, time-consuming and expensive delays (which contribute to inflation) occur in bringing needed energy projects on line.

PROPOSAL: DOE will establish a central point of contact for assisting in the resolution of institutional impediments to specific energy projects.

DISCUSSION: DOE would work with the public and private sectors to anticipate, identify and find solutions to regulatory barriers, which unnecessarily impede the development or operation of energy projects. In this trouble-shooting role, DOE would address procedural or administrative problems which reside between and among Federal or State agencies and between government agencies and the private sector. DOE would act as a coordinator and as a communications channel to mediate disputes, propose alternative solutions and assist participants in focusing on substantive issues. DOE would not usurp or influence legally established regulatory authorities or processes. In general, this DOE participation would be based on requests for assistance.

PROPOSED REDUCTIONS

The supply initiatives which impact on the FY 1979 budget will be financed by reductions of $130 million in the Department of Energy's FY 1979 budget request. A brief summary of these reductions follows:

Light Water Reactor Technology -$10 million

The purpose of this program is to improve the productivity and safety of existing light water reactors. The reduction would allow continuation of work on safety, generic reliability technologies and programs primarily directed toward nonproliferation objectives. Work on improved plant availability by shortening fueling outages and flow-induced vibrations, as well as construction modularization, will be eliminated. Negotiations are underway with EPRI to increase its program in these areas.

Waste Management Facilities -$51 million

This project provides for the construction of tanks and associated facilities for storage of defense waste at Savannah River. Updated production requirements and several new process changes have resulted in a forecast of reduced defense nuclear waste at Savannah River through the late 1980's, allowing for the reduced scope of this project.

Advanced Technology and Assessment Projects -$ 5 million

The purpose of this activity is to provide the capability to identify promising advanced technology and assessments projects. Actual projects to be undertaken will be determined in part by the evolving character of the DOE R&D program. The revised request will provide a satisfactory level of funding to initiate the required analysis.

National Uranium Resource Evaluation -$10 million

The purpose of this program is to evaluate domestic uranium and thorium resources. Current assessments indicate that the $30 million increase requested for FY 1979 can be reduced without a significant negative impact on this important work.

Vanpooling -$ 9 million

These funds would have been used for purchase of commuter vans for the Federal Employee Vanpool Program. The Congressional Conference action on the National Energy Act prohibits such purchase.

Clean Boiler Fuel Demonstration (Coalcon) -$45 million

Unobligated balances available as a result of the technical infeasibility of this coal conversion project will be applied against FY 1979 appropriation requirements.

TOTAL REDUCTION -$130

ADD-ON ITEMS

Secretary SCHLESINGER. Some of those budget initiatives bear on the work of this committee. I think, the high Btu gas loan guarantee program, the appropriate technologies program, and the dispersed energy systems demonstration are add-on items that fall within the purview of this committee.

There are a number of reductions that also would bear or fall within the purview of this committee. Those reductions are part of a $130 million budget amendment, which includes funding of some energy initiatives and reductions of other programs of the Department.

Mr. Chairman, I think that the main point that I should stress in relation to my statement is the vulnerable position of the United States with regard to future energy supplies. We have become almost 50 percent dependent on external sources of petroleum. That flow of petroleum was substantially reduced during the embargo of 1973-1974.

As a way of reducing vulnerability, we would like to have, first, an emergency insurance program, which falls within the purview of this committee; and that program is the strategic petroleum reserve. That is the largest single part of the appropriations of the Department of Energy, amounting to something in excess of $4 billion this year, or about two-thirds of the appropriations that are requested from this committee.

We hope by the early 1980's to have in place a billion barrels of oil. As a consequence, we could ride out a substantial cutoff of oil without major damage to our economy or to our social fabric.

NATIONAL ENERGY PLAN

In addition to this short-term insurance against the possibility of cutoff, we are engaged in a massive effort, the so-called national energy plan. The plan is designed to gradually reduce our relative dependence upon petroleum and, to a lesser extent, natural gas, through two types of measures. One is to achieve a higher degree of fuel efficiency in our society, a movement toward fuel efficiency that will be encouraged in part by the higher price of energy and in part by recognition of the vulnerability of the American society.

We can achieve much higher degrees of efficiency in all the aspects of our life—transportation, industrial use, and in our household use.

In addition, we wish to shift to alternative sources of supply which are more abundant. Most notable is coal, to which you have referred. We expect, over the years ahead, to gradually move toward increased reliance on coal, either in the form of direct burning or in the form of conversion of that coal either into gaseous or liquid form.

As we look out toward the next two decades, the greatest vulnerability our society has, Mr. Chairman, is in our supply of fuel liquids. We have proposed moving ahead with the SRC–I and SRC-II projects. If successful, the first commercial train will be on line in approximately 1983. That is included among the initiatives which are represented in this document.

In addition, we have proposed a loan guarantee program for coal gasification. This will permit our gas utilities to move ahead with Lurgi plants. And each of these plants will represent a substantial supplement to supply. In this way we will be better able to make use of our coal. There are also other ways of doing this; including burning coal more cleanly through fluidized bed combustion.

In addition, Mr. Chairman, there is the possibility of more rapid use of nuclear power, and the administration has presented to the Congress a nuclear licensing reform bill which will enable us, we believe, to help a utility move toward start-up of a plant in 6 to 7 years time, instead of the 10 to 12 years time which is presently required.

The fundamental point is that we must have additional energy supply. At the present time oil and natural gas represent 75 percent of our total usage. By the end of the century, we expect to have reduced our dependence on oil and natural gas. At that juncture oil and natural gas will still provide something on the order of 50 percent of our total fuel usage. So conservation and shifting to alternatives does not mean that we will not need additional incentives and production of oil and natural gas.

Most of the DOE's conservation programs are under the juridiction of this subcommittee this year. The administration is requesting slightly more than a $1 billion for these programs. Conservation represents the cheapest way of augmenting our fuel supply. In many cases, we can augment our fuel supply through conservation for as low as $1 or $2 per barrel. Those are important endeavors as the United States moves toward greater fuel efficiency.

Generally speaking, Mr. Chairman, the composition of our budget has shifted toward the shorter term requirements for liquid and for gas, and for gaseous forms of coal, and away from the principal focus in the past of providing new technologies for electric power production. Over the next 30 years, Mr. Chairman, we will have adequate technologies for electric power production. Getting plants on line will require effort on the part of all of us, including simplification of the regulatory processes, not only in the Federal Government, but with the States as well. Therefore, since we have no near term problem with electric power production technologies, the composition of the budget has shifted in the direction of all our nearer term problems.

REGULATORY PROGRAMS

Mr. Chairman, we have inherited a substantial regulatory framework. In some ways this regulatory framework must be simplified, and to the extent that it continues to exist, it must be directed toward encouraging domestic production. Some of that is contained in the initiatives included in this document. We are encouraging the FERC to work toward the creation of Lurgi plants by favorable tariff treatments of new R. & D. activities by the gas utility industry that will make use of the implicit subsidies in the regulatory program for the development of domestic resources.

The alternative to that, Mr. Chairman, is to use that subsidization power to import liquefied natural gas, in which case the im-

plicit subsidy is going to foreign production rather than to the development of the domestic output.

In the area of oil production, Mr. Chairman, we have suggested moving toward world oil prices because at the present time the regulatory framework of the United States represents a subsidization of each barrel of oil that enters the United States. It is plain, I think, that we are not going to move toward either energy independence or a greater degree of invulnerability by continuing to subsidize energy imports.

The regulatory framework which falls within the purview of this committee is being transformed. I trust that we will move toward much greater regulatory simplification, that we will be able to dispose of those regulatory cases that we inherited from 1973 to 1976 after the embargo, and that the framework for regulation can be dramatically eased and simplified for the producers. I think that will be a benefit to the country. It will also be a benefit to the budget, in that it will permit us to substantially reduce the manpower engaged in our regulatory activities.

Mr. Chairman, we all recognize that the Nation faces an energy problem. I hope that we can work together with this committee to solve that problem and to permit the country to pass through what is a difficult transition.

SRC DEMONSTRATION PLANTS

Senator BYRD. Thank you, Mr. Secretary, for a fine statement.

You referred to SRC–I and SRC–II. It was rather common knowledge that a major part of the Department of Energy supply initiatives first presented to OMB involved about $192 million for two solvent refined coal demonstration plants. The Department's recommendation then was to go with SRC–I and SRC–II.

Why did that proposal fail?

Secretary SCHLESINGER. I think that the principal issue, Mr. Chairman, has been the pacing of our budgetary expenditures. Mr. Chairman, I believe that the proposal received, in terms of agreement on a concept, a very high degree of success. The budgetary adaptations which lie before you, of course, reflect something else, and that is some slippage of construction start for both of those facilities. But we trust that we will be able to complete those two facilities in 1983, a slippage of perhaps 4 to 6 months.

At this juncture we are planning to include construction funds in the fiscal year 1980 budget for those facilities, providing that both of those facilities pass the technical and financial tests. Indeed, we have no technical question about SRC–II. There is one nagging problem with regard to SRC–I which must be satisfied. We have the $23 million that we have put into the 1979 budget. We are asking for reprograming of 1978 funds so that some time midway in fiscal year 1979 we will be in a position to move ahead with this project. We will have done the appropriate design work on these plants.

Senator BYRD. So we're back to the same $23 million request for SRC demonstrations in the fiscal year 1979 budget.

Now, you mentioned possible reprograming of 1978 funds. How much are we talking about here?

Secretary SCHLESINGER. We are proposing reprograming $33 million for the design studies in 1978, Mr. Chairman. And, of course, there is the $23 million in the 1979 budget to which you referred.

Senator BYRD. Isn't it widely acknowledged that SRC is a mature process that is ready and waiting for demonstration?

Secretary SCHLESINGER. That is our judgment, Mr. Chairman. I do not know whether that is universally acknowledged, but that is our judgment in the Department.

Senator BYRD. Will there be a process review procedure before going forward with the design work?

Secretary SCHLESINGER. No, sir. We are going ahead to the design with the reprogramed moneys to which you refer.

Senator BYRD. Do you feel that the $23 million will adequately finance both of the demonstration plant programs, the SRC–I and the SRC–II?

Secretary SCHLESINGER. With the $33 million reprograming of this year's funds, Mr. Chairman, we should be able to complete the design work. We will not be able to move forward on the accelerated basis that we originally suggested in our proposal to the Office of Management and Budget, and there will be a 4- to 6-month slippage.

We have, as you suggested, Mr. Chairman, the technology in hand. I think that everyone recognizes this is a mature technology. We need, however, some period to design the specifics of this plant, and that is something that will be carried forward during the course of the next year.

FUNDING SRC DEMONSTRATION PLANTS

Senator BYRD. Why are we going to have to wait until the fiscal year 1980 budget to proceed with the construction plans?

Secretary SCHLESINGER. The President has carefully evaluated the changed economic climate in which we are today. He, like all Americans, is concerned about inflationary pressures and about the size of the budget deficit.

For those reasons, he did not wish to send up a supplemental to our budget for 1979, but instead, we have the zero budget amendment which lies before you.

I think it's a question of inflation, his need to control the budget as he sees it.

Senator BYRD. Don't we meet ourselves coming back when we admit that energy prices contribute greatly to inflation on the one hand, and then on the other hand we forego the request for funding for energy programs that, in the long run, will help to relieve our country of its energy problem and have a favorable impact on the inflationary problem?

Secretary SCHLESINGER. It certainly would have a long-term favorable economic impact, Mr. Chairman. We are faced with the dilemma that we always face—controlling near-term expenditures in order to control aggregate demands in its totality, as opposed to the desirable specifics of individual projects.

That is what the budgeting process is all about.

Senator BYRD. Are you saying then that this project is being delayed for budgetary reasons rather than for technological reasons?

Secretary SCHLESINGER. It is, I think, the judgment of most of our technical people, Mr. Chairman, that we could probably accelerate this project by, say, 4 or perhaps 6 months.

We are being constrained, quite naturally as everybody is constrained, by the notion of budgetary priorities.

Senator BYRD. Is there a difference of opinion here between the Department and OMB?

Secretary SCHLESINGER. Any differences of view on that point, Mr. Chairman, have been resolved by the President.

Senator BYRD. That doesn't answer my question, and I'm not one that lets anybody off the hook very easily.

Is there a difference of opinion here between the Department and the OMB?

Secretary SCHLESINGER. Mr. Chairman, we requested a larger level of funding for these projects that you mentioned. The Office of Management and Budget was reluctant to see that larger level of funding go forward. I think that we have compromised our views. In the past, the Office of Management and Budget has taken the position that we must have either SRC–I or SRC–II, and that we would have to make a choice between the two.

Now we are in a position in which the OMB agrees that both projects can go forward if they pass the technical and financial tests.

We would have preferred at one point to proceed more expeditiously, but we recognize quite clearly the concern about overall budgetary levels. We understand the clear indication by the President that budgetary spending and the problem of inflation must be controlled.

DOE REQUEST TO OMB

Senator BYRD. What were the departmental figures? What was the amount of the departmental request that went to OMB?

Secretary SCHLESINGER. The amount of the departmental request for adjustment in 1979 was $192 million for both projects.

Senator BYRD. And OMB opposed both projects and finally came around to the very accommodating position of saying, well, choose one or the other, as I understand it.

Am I correct? And I must say, that I congratulate you and thank you, for the consistency of your support for both projects and your efforts to sustain funding for both projects.

But as I understand it, then, the matter was referred to the President for a decision and depending upon the technology with respect to SRC–I and some testing, I suppose, that's still to be done, the decision has been to support both projects, but to delay the requested funding for construction until the fiscal year 1980 budget.

Secretary SCHLESINGER. Yes, sir.

Senator BYRD. Which would mean that you'd have a target date for the opening of operations in 1984, rather than 1983.

Secretary SCHLESINGER. I think that we can still make the 1983 date. I am informed by staff, Mr. Chairman, that we had hoped to complete early in 1983. We will now complete late in 1983. But, indeed, as you suggest, it could slip into 1984.

It's about a 4- to 6-month lag.

Senator BYRD. Provide this committee with a schedule of funding and authorization requirements that would keep these budgets on an accelerated schedule.

Would you please do that?

Secretary SCHLESINGER. I shall, sir.

[The information follows:]

FUNDING REQUIREMENTS TO DEMONSTRATE ON AN ACCELERATED SCHEDULE TECHNOLOGY FOR SYNTHETIC LIQUID AND SOLID FUELS FROM COAL

Considering the delays already encountered in the initiation of the SRC program, DOE's current estimate of the funding required to maintain the schedule proposed to the OMB is a total of $150 million in fiscal year 1979. This estimate consists of the $23 million already requested in the fiscal year 1979 budget and additional funding of $127 million. The delays in initiation of process design activities in fiscal year 1978 account for the reduction in the additional amount needed from the $192 million proposed to the OMB.

DOE's current estimate of the Government's share of total funding required to maintain acceleration of this project is:

[Millions]

	Fiscal year 1978	Fiscal year 1979	Fiscal year 1980–84
SRC–I	$6.0	$50.0	$509.0
SRC–II	6.0	100.0	459.0

ENERGY POLICY DEVELOPMENT

Senator BYRD. Now, at some point I think we're going to have to determine who decides energy policy—you or OMB. And I'm on your side. I think it's utter nonsense to keep talking about energy independence but refuse to take the necessary steps to achieve that goal.

So if you'll supply these figures, it may be that we're going to have a close look at them and, hopefully, it might be helpful if there's reason for us to do so.

Again, I want to thank you, Mr. Secretary, for the fight that you've made. I know something about what's been going on here behind the scenes and I think you've been right, although others were right from their vantage point.

I don't want to cast any aspersions on OMB; they're trying to do their job. But I think we here have to take a look at the problem from the perspective of the long-run and the overall interests, not only of inflation and budget policy, but also from the standpoint of our energy problem, which is basic to all of these things, basic to our economy and basic to our national security, and basic to our fight on inflation.

HIGH BTU GAS DEMONSTRATION PLANTS

Now, Mr. Secretary, the budget includes $42 million to move forward with a high Btu gas demonstration plant in fiscal year

1979. There is also $8 million to evaluate other processes that are apparently also being considered for a demonstration plant.

Does this mean that the Department is still actively considering two high Btu gas demonstration plants?

Secretary SCHLESINGER. Mr. Thorne?

Mr. THORNE. Mr. Chairman, we are still considering the proposals by Conoco and the Illinois consortium for the high Btu gas demonstration plants. There have been technical difficulties with those processes to gasify eastern coals. The projects probably will not move forward as anticipated in the budget until those technical difficulties are resolved.

The $8 million that you referred to is for other technologies or advanced technologies, and the two are not in competition.

Senator BYRD. As to the first demonstration plant, which involves competition between the Illinois Coal Gasification Group and Conoco, is it still the Department's intention to make the final process selection next January, before completion of a full phase I design effort?

Mr. THORNE. Mr. Chairman, as I mentioned earlier, there are technical difficulties in the gasification process, and it would be imprudent for me to say that we could still maintain that schedule for the decision between the two competing processes in early January of next year. It may be somewhat later than January of next year, perhaps closer to a year from now, before we would be able to make that decision.

Secretary SCHLESINGER. Mr. Chairman.

Senator BYRD. Yes.

Secretary SCHLESINGER. I would think that, as our views have evolved on this subject, that we do not see a significant enough gain in economics in the second-generation facilities, and one of the reasons that we have gone with the loan guarantee program is that we believe that the first-generation facilities can provide us with the supplements to supply in the near term, without the cost penalties, and that we are looking toward the third generation of technology to dramatically reduce these costs of coal gasification.

Senator BYRD. The committee has received a letter from several Senators and Representatives from Illinois, Ohio, Pennsylvania, and Kentucky. They think we should appropriate $10 million in construction funds to start engineering work on a second high-Btu gas demonstration plant.

Now, you've already addressed your remarks to the question with reference to two plants. What's your feeling as to the request that we received from these other Members of the Congress? Do you have any advice you can give us?

Secretary SCHLESINGER. My advice, Mr. Chairman, would be not to add to the budget, that what we should attempt to do in this country, it seems to me, is to provide the financial support and the incentives to the gas utility industry to proceed with construction of those technologies that we know we can use at this juncture, namely, the Lurgi technologies.

Senator BYRD. The Lurgi technologies?

Secretary SCHLESINGER. Yes, sir. Now, an advanced version of that technology, namely the slagging Lurgi, is competing with the Cogas process——

Senator BYRD. The Cogas?
Secretary SCHLESINGER. Yes, sir.

LOCATION OF DEMONSTRATION PLANTS

Senator BYRD. Now, let me be sure I understand you. Is the committee to understand that there are two high-Btu gas demonstration plants in the works?
Secretary SCHLESINGER. Yes, sir.
Senator BYRD. How would the location of these plants be determined?
Secretary SCHLESINGER. I'm sorry, Mr. Chairman?
Senator BYRD. How will the location of the plants be determined?
Secretary SCHLESINGER. Let me state, by the way, that there are two plants that are authorized, but only one has been funded. On the basis of suggested sites proposed by industrial consortia with which we deal, the suggested locations go to departmental review to see whether they are appropriate.
Senator BYRD. Are there any indications at this point as to where one or both of the plants might be located?
Mr. THORNE. Yes, sir. In the proposals provided by the Illinois consortium, as well as the other proposal, they have indicated specific sites associated with the coal beds in that region. At this time, we would not anticipate any different site, other than what is contained in that proposal.
Senator BYRD. Where is that?
Mr. THORNE. I do not know specifically.
Senator BYRD. Does anyone know?
Mr. THORNE. The Conoco proposal is in Noble County, Ohio. The ICGG proposal is in Perry County, Ill.

LOW BTU GAS DEMONSTRATION PLANTS

Senator BYRD. Yesterday, the Department announced that two firms have been chosen to begin contract negotiations for design of an advanced demonstration plant to convert high-sulfur coal to synthetic fuel and gas, primarily suited to electric utilities. This is better known as the low-Btu demonstration program. The press release announcing the selection of these two firms states that the design of each process to be demonstrated will be $2½ million and $3 million in cost.
Since there is only $3 million in the fiscal year 1979 budget request for this program, is it the intention of the Department to ask for an additional $3 million so that both processes can be designed?
Secretary SCHLESINGER. Sir, we will start with fiscal year 1978 funds, and we have enough funding in the 1979 budget to continue the funding for the 2 years at the $2½ to $3 million level for each project.
Senator BYRD. For each project?
Secretary SCHLESINGER. Yes, sir.
Senator BYRD. So that those processes——
Secretary SCHLESINGER. We have ample funding, sir.

Senator BYRD. Once designed, is it the intention that we go forward with construction and operation of both processes, that the Department do this?

Secretary SCHLESINGER. I think at this stage that it would be premature to make that judgment. I think that we want to evaluate the two processes, Mr. Chairman.

Senator BYRD. Mr. Secretary, I have had quite a few minutes to ask questions. I'd like to hear from my colleagues before I proceed further.

Senator Leahy?

ALTERNATIVE ENERGY SOURCES

Senator LEAHY. Thank you, Mr. Chairman.

My questions focus primarily on domestic energy use and development of alternative energy sources, such as low-head hydro and bioconversion. One-third of the energy consumed in this Nation is consumed for domestic purposes. But, in addition, one-third of our people live in rural America. They live either in small communities or on farms. Small-scale, decentralized technologies are proving especially economical and cost efficient in these areas of our country.

In addition, individual households in our cities, including those of low-income families and elderly citizens, could also benefit from the development of these alternative energy sources. Small-scale energy development also holds promise for small business and industrial development, both in the cities and in the small communities.

Now, I recognize that traditionally large consumers of energies, such as metropolitan areas and industry, may not benefit directly from the development of alternative energy sources; but every bit of conventional fuel that's saved, whether by conservation measures or replaced by unconventional sources, means much more conventional fuel for the general supply.

Now, our energy supply situation is in serious question. We can't afford to overlook the savings to be gained from the wise development of these alternative fuel sources. So, we've had this in mind—just to state my own feelings on this. Last year, Mr. Chairman, I introduced legislation to establish a rural energy office. Representative Charlie Rose introduced companion legislation in the House and discussed this with Secretary Schlesinger and others at the time.

RURAL ENERGY OFFICE

That legislation was incorporated into the law that created the new Department of Energy, and the language directed DOE to explore the energy needs of rural residents as they pertain to basic necessities like transportation, home heating and cooling, and electric generation.

DOE is also required to gather comprehensive data on these needs as part of its planning and reporting responsibilities.

My question, Mr. Secretary, is: Does the fiscal year 1979 budget request include funds for the rural energy office? And if not, why not?

Secretary SCHLESINGER. It does not.

Senator LEAHY. Why not?

Secretary SCHLESINGER. Some of the needs of the rural areas, of course, are incorporated under conservation generally. We have almost a 50-percent increase in the 1979 budget for conservation activities, from something like $690 million to over $1 billion.

Senator LEAHY. Mr. Secretary, I can't hear you. I'm getting noise from a fan or something up here.

Secretary SCHLESINGER. There is a $300 million increase for conservation activities. That will be spread generally across the land for rural and urban areas, as well. We are working closely with States and municipalities in our outreach program.

I will insert into the record those things that have been done with regard to the rural areas.

RURAL ENERGY NEEDS

Senator LEAHY. The concern I have, Mr. Secretary, is that we had very, very specific language in the legislation creating the Department of Energy. It was put in that way rather than have those of us—and there were quite a few who sponsored the legislation—rather than having us make an attempt to get a rural energy office separate from DOE because of the overlapping and sometimes conflicting energies expended there. We did it to put it into DOE with the idea that it would be a significant part of the office. It would not be there simply because it was in the language, but it would be small enough for everything else.

Conservation, I think, is extremely good, but conservation of energy in one part of the country may be of a different nature than in another part of the country. Certainly, in an urban area, conservation of energy might be mass transportation; in a rural area, that might not work at all.

But again, our language directed DOE to explore or to stay abreast of the energy needs of rural residents as they pertained to basic necessities like transportation, home heating and cooling, electric generation, and so on. And I would like, along with the material that you're going to submit for the record regarding energy matters in rural areas, the specific outline—I realize you're in a shakedown process—the specific outline of what will be done on the rural energy office.

Secretary SCHLESINGER. Yes, sir.

Senator LEAHY. How it will be set up; how it's going to function; just what kind of authority it would have.

Secretary SCHLESINGER. Yes, sir. That shall be done.

[The information follows:]

RURAL ENERGY ACTIVITIES

The Department understands the importance of the energy problems faced by today's farmers and rural dwellers. Rising energy costs have major impacts on farm incomes. Farmers and farm production are vulnerable to short-term shortages of particular fuels, such as natural gas, propane, diesel fuel, and gasoline. Moreover, the Department realizes that the burdens of rising energy costs and short-term fuel shortages are felt most acutely by the rural poor. The DOE strongly supports the coordination of rural development activities among Federal and State agencies. Toward that objective, research programs in the DOE are being coordinated with Department of Agriculture (USDA) through a Memorandum of Understanding (MOU). The MOU covers the following areas, each involving a working group of DOE and USDA personnel:

- 0 conversion to electricity on farms
- 0 biowaste projects
- 0 energy conservation in agriculture
- 0 inventory of agriculture energy R&D project
- 0 R&D electric and hybrid agricultural and personal use vehicles
- 0 finance and incentives for house insulation and solar applications (the Farmers Home Administration)
- 0 R&D on solar applications for agriculture, forestry, and rural areas
- 0 cooperation on energy extension and outreach, using the State agricultural extension services.

DOE will also coordinate with the newly formed USDA Office of Energy. Some DOE programs which are especially relevant to rural populations include:

- 0 National Energy Act (NEA) Provisions for Expansion of

DOE Weatherization Program. The weatherization program is aimed at providing weatherization assistance to low-income households. Because a significant percentage of rural residents have low incomes, rural benefit from the expanded program will increase proportionately

- Propane Allocation. DOE allocates supplies of some petroleum products to ensure priority users receive sufficient supplies. Since the time propane was first allocated, its use for agricultural production (along with Department of Defense) has received the highest priority allocation, that is, 100 percent of current requirements not subject to an allocation fraction. Most of the propane used in agricultural production is consumed in crop dryers.
- Sale of Electric Power to Rural Electric Cooperatives. DOE is responsible for disposing of energy derived from its five Federal power marketing agencies. Preference is given to public power systems, including rural electric cooperatives. This preference clause is especially important to rural areas because it enables cooperatives to purchase cheap hydro-electric power from the Federal power marketing agencies and distribute it to their customers at rates lower than rates for customers of private utility companies. This fact among other things has encouraged the electrification of rural areas. The activities of DOE also affect rural areas through the regulation of wholesale rates.
- Ethanol (Alcohol Fuels). Ethanol is among the non-petroleum liquid fuels which can be derived from resources available in abundance in rural America. These include many types of feedstock, including

agricultural crops, crop residues, and forest biomass.

The Department of Energy is firmly committed to resolving as quickly as possible cost and other issues such as supply potential, most appropriate applications, commercialization applications, and the need for Federal incentives for alcohol fuels.

0 Energy Extension Service (EES). A 10-State pilot program scheduled to expand to a nationwide program in FY 79, the EES concept of direct assistance to consumers stems from the Cooperative Extension Service (CES) model. Seven of the 10 pilot States are providing service with assistance from CES. A significant component of the EES is directed toward rural consumers and agricultures. For example:

- Alabama will provide information on energy conservation techniques to low income families, and will provide demonstrations on livestock housing facilities, waste heat use on dairy farms, drip irrigation and solar grain drying systems.
- Connecticut will assist greenhouse operators to reduce energy consumption.
- New Mexico will provide weatherization assistance to 1,000 elderly and handicapped rural residents and a work/study program for 30,000 4H youths.

Finally, the Department recognizes that agriculture has critical energy demands which must be met, or else we risk losing valuable agricultural production. The supply programs now under development, will provide more security of supply and reduce the likelihood of sudden energy shortages. The

low population density of rural areas means that these areas have a higher absolute need for transportation, which limits the opportunities for energy conservation through mass transit. Some improvements in the agricultural sector are possible, however, and the DOE, jointly with USDA is conducting research on electric and hybrid agricultural and personal use vehicles which may provide less energy intensive solutions.

Although DOE does not have an Office of Rural Development, the newly formed Assistant Secretaries Working Group for Rural Development has the potential of providing the necessary guidance for coordinating rural development strategy.

FUELS FROM BIOMASS

Senator LEAHY. I have, Mr. Chairman, a number of other questions, but if I could I would just hit one area and then yield back.

The city of Burlington, Vt.—I don't mean this necessarily as a parochial question because it's my hometown—the city of Burlington, Vt., our State's largest city, has a municipal electric plant. It provides about the lowest rate, I think, of electricity anywhere in New England. It's meeting 20 percent of its power needs by burning wood. That's culled wood. It's just scrap wood.

In addition, over 55 percent of all Vermonters are supplementing their home heating needs by burning wood in wood stoves of one sort or another.

I don't have the figures for the other States, but I understand especially in the Northeast the rate of wood stove installation has been comparable.

I have three basic questions related to wood and biomass:

What is DOE doing to coordinate work with the Forest Service's efforts in the area of bioconversion and wood supply? What is DOE's Office of Consumer Affairs doing to provide information such as proper installation of wood stoves? And given the fact that our forests, both publicly and privately owned, are most likely to be a significant source of biomass for energy, what does DOE plan to do to study the environmental impacts?

Would you like to have a shot at that?

Secretary SCHLESINGER. We have a cooperative effort with the Department of Agriculture as part of our biomass program. I will insert detailed answers to those three questions in the record, Senator Leahy.

[The information follows:]

JOINT DOE/FOREST SERVICE PROJECTS

The DOE fuels from biomass program is currently working with the USDA Forest Service on three projects for the production and collection of biomass.

The Forest Service and the DOE are managing a cooperative effort involving the construction and evaluation of a prototype machine called a "mobile hog", to harvest forest residues for fuel. This machine could allow large segments of the forest products industry to use wood residues for fuel and thereby reduce their reliance on fossil resources.

DOE is also working with the Forest Service on silviculture research to provide maximum energy content at minimum cost. The genus *Populus* shows great promise. The two agencies are currently developing propagation materials and production systems for a strain of genetically improved *Populus* to be used on energy plantations. In addition, the biological factors which limit the efficient establishment, management, and harvest of these trees are being investigated.

The purpose of the third joint project is to determine the commercial feasibility of producing and processing trees which have been chemically stimulated to generate increased amounts of resin. This resin can be recovered as a byproduct of processing the wood for other uses, and substituted for certain petrochemicals used as feedstock materials.

ENVIRONMENTAL IMPACTS OF BIOMASS

Environmental development plans (EDP's) are the basic framwork for planning and managing the environmental requirements of energy technology development. An EDP has been prepared for each solar technology. A copy of the EDP for the fuels from biomass program is attached. This document identifies the potential environmental and socioeconomic impacts of biomass production and conversion. The plan also maps out necessary research areas and coordinates the scheduling of this research with the technology's development and its public utilization.

[The document, DOE/EDP-0005, March 1978, is retained in the committee files.]

OFFICE OF CONSUMER AFFAIRS

In the interest of providing expert technical advice on topics such as the proper installation of wood stoves, the Office of Consumer Affairs refers such requests to either an appropriate program office having expertise and responsibility for commercial applications or to the Technical Information Center, the Department's central information repository.

BIOMASS POTENTIAL

Secretary SCHLESINGER. Generally speaking, we are quite enthusiastic about the possibilities of biomass. There has been some suggestion that we have a national biomass institute. For the reason that you suggest, I think that we want to regionalize these matters because the biomass available in New England is quite different from the Southeast, which is quite different from the Northwest. There are opportunities that are unique and specific to particular regions rather than just dealing with biomass in general.

Senator LEAHY. But in developing an indigenous biomass capability for an area, I think the consumer response would be pretty substantial.

Secretary SCHLESINGER. Yes, sir. That is moving over most of the country.

Senator LEAHY. Thank you. Thank you, Mr. Chairman.

ENERGY LEGISLATION

Senator BYRD. Mr. Secretary, I want to take this occasion to say that I feel that you have done a good job under extremely difficult circumstances. We've been a long time in getting you started up in your department. You have really done, I think, an exemplary job

in connection with the energy legislation that has been in conference for so long.

I want to take this occasion to pay tribute to you and to the conferees, actually on both sides, who have labored with this thorny problem for so many months. I have always expressed the hope and belief that eventually a piece of legislation dealing with national energy policy would emerge from this conference, possibly one that would be an improvement over the one that the administration sent up, and possibly one that would be an improvement over either of the acts passed by both Houses.

I know you're still working in this field with the conferees and I continue to be hopeful that you and the majority of the conferees will persevere to the point that we get this conference report back to the respective bodies for their consideration.

The Senate goes in at 11:30 this morning. I'm going to ask Senator Leahy if he would mind chairing this hearing, and I understand that we'll go on into the afternoon after a lunch break.

I would like to call on Senator Young at this time before I leave, however, to ask any questions and make any statements that he would like to make, and then follow him with Senator Bellmon.

RECORD OF SECRETARY SCHLESINGER

Senator YOUNG. Thank you, Mr. Chairman.

Mr. Secretary, you seem to go from one tough job to another, Director of the CIA to the Secretary of Defense, and now this assignment.

I imagine that this is about one of the toughest of all, isn't it?

Secretary SCHLESINGER. Yes, sir.

Senator BYRD. And he's been a good man at every one of those jobs.

Secretary SCHLESINGER. I thank the chairman for his kind comment.

Senator YOUNG. Like the chairman said, I think that you've done a commendable job.

Senator BYRD. Keep up your fight with OMB. [Laughter.]

STRATEGIC PETROLEUM RESERVE

Senator YOUNG. You mentioned a stored reserve of oil. Is that $4 billion worth?

Secretary SCHLESINGER. Yes, sir.

Senator YOUNG. The request for appropriations in 1979 is for $4,255,000,000. In 1978, it was just under $4 billion. This represents approximately 33 percent of our total energy budget.

Will much of that oil be stored above ground?

Secretary SCHLESINGER. No, sir. Most of that will be stored in salt domes. We already are filling in Louisiana and Texas.

The Congress has indicated that we should have some storage dedicated to high import regions, particularly for New England. I believe that there's 10 million barrels of the billion barrel reserve scheduled for New England storage.

The Hawaiian delegation has pressed for a site located in Hawaii. Those latter sites, I think, probably will have to be above ground. We hope for the most part to store underground.

Senator YOUNG. Is there much loss storing it underground, more so than storing above ground?

Secretary SCHLESINGER. No, sir. The technology is quite good here. The oil is floated on top of water and the loss in storage is calculated to be less than 1 percent, sir.

COAL CONVERSION

Senator YOUNG. We don't seem to be doing as much as we might do to save oil by converting from oil to coal, of which we have billions of tons.

There are all kinds of problems, mostly environmental. But one of them is that we have two big airbases in our part of the country with about 17,000 and 18,000 people at both bases. They once burned lignite coal, but for convenience, they switched to oil and natural gas, now I can't get them to switch back to lignite coal again.

Can your office give me any help or any suggestions as to how I might succeed?

Secretary SCHLESINGER. We will join you in interviewing with Secretary Brown, Senator, and see whether we can help move those airbases back toward coal or lignite.

Senator YOUNG. It would not only save oil, but I think it would save money. I think coal is much cheaper to burn than oil.

Secretary SCHLESINGER. That is an example of the many opportunities which we have. In many places in Pennsylvania, which is rich in coal, as is your own State, the facilities have switched to oil in recent years.

Those facilities should be shifted back toward coal. We believe that when we have the legislation on oil pricing the financial attractiveness of coal should increase relative to oil. That will be a greater inducement to making the shift back to coal.

Senator YOUNG. We could easily be heating more homes with electricity and save oil.

Secretary SCHLESINGER. Yes, we could.

Senator YOUNG. Especially in our area with cheap power.

Secretary SCHLESINGER. In terms of total energy consumption, electric heating, particularly through resistance heating, is a very expensive way of heating in terms of Btu's. It saves oil, indeed, but it requires an increase in Btu's.

So one of the great advantages of natural gas is that it is an almost ideal fuel for home purposes and we hope to have adequate supplies of natural gas for home use in the future.

We hope to see additional use made of solar energy. While electric power use does save on our imported oil bill, it does require a very large number of Btu's compared to alternative ways of heating homes.

Senator YOUNG. In an area like ours where we're loaded with coal, it isn't much of a problem.

Secretary SCHLESINGER. Yes, sir.

ENVIRONMENTAL CONSIDERATIONS

Senator YOUNG. The power-generating companies claim that they have more of a problem now starting a big coal generating

plant than they've had before. It takes a longer period of time for them, from the drawing board until the plant goes on-line.

Most of their problems are caused by environmental requirements, and, of course, some other regulations.

What can we do to improve that situation?

Secretary SCHLESINGER. I think the most important thing that we can do, Senator Young, is to stabilize environmental requirements.

One of the biggest disincentives to industrial or utility firms going into coal is the fear that environmental requirements may be ratcheted upward. Therefore, there are uncertainties associated with the environmental regulatory process which tends to bias decisions away from coal.

I think that that is the most important thing that we can do at this juncture. Just the process of evaluation is taking years. One of our States takes 9 years to approve plants without any direct involvement of the Federal Government.

The Congress has passed many laws for laudible objectives but the objectives of some of those laws conflict with one another to the extent that we have conflicting objectives that must be absolved through regulatory processes. This is time consuming and it is ultimately costly to the consumer.

I think that we can do a better job, as you've indicated.

Senator YOUNG. A good example of that, with reference to the Garrison Dam in North Dakota, a huge dam that generates an awful lot of power, the Corps of Engineers wants to put in more generators, which would increase the generating capacity by about 50 percent, but it would disturb some fishing below the dam.

So that seems to be one of the major objections that is holding it up now.

But a good example which you pointed out that other interests seem to be more influential than those that want more energy——

Secretary SCHLESINGER. Yes, sir. I think that we have seen in recent years a very clear trade-off that must be made between energy and the environment. We have examined that in great detail. But we are no closer, I think, to resolving that trade off so that we can get ahead with these projects than we were 3 or 5 years ago.

COMBINED CYCLE PROJECT

Senator YOUNG. I seem to feel that the environmentalists are getting tougher in place of getting more reasonable.

Are you familiar with the entrained gasification combined cycle project which has been developed jointly with the Northern States Power Co.? For all our concerns with environment and clear air, this project seems to hold great promise. I understand indications are it would result in the pollution-free use of lignite coal and that the process is very economic.

Why hasn't the Department of Energy pushed this project, since it was declared the most effective by Fluor Engineering, in a report to the Electric Power Institute?

Mr. THORNE. We are pursuing the project, Senator Young. We have felt that we should not start work on a plant until we have completed work on a hot flow model of that plant.

That work is currently underway with Northern States. It is scheduled to be completed at the end of August 1978. When we have the model, we will know what to do about further recommendations regarding the plant itself. But we are proceeding in the exploration of that particular option, Senator.

Senator YOUNG. Were funds for such a project included in your budget as submitted to the Office of Management and Budget?

Secretary SCHLESINGER. No. That was not included.

Senator YOUNG. Did you request funds for it?

Mr. THORNE. No, we did not, sir. The R. & D. work is being funded as a part of the entrained flow coal gasification technology.

Secretary SCHLESINGER. That is, there has been no specific line item funding. It is funded out of base research funds available to the Department.

Senator YOUNG. Do I understand that you'll be able to fund it with funds that you now have?

Secretary SCHLESINGER. We are funding the study at this juncture. We do not know what the results will be when the study is completed.

Senator YOUNG. Is this a money problem, that we can't go ahead with it faster?

Mr. THORNE. No, sir, it is not a money problem. We believe that if the model turns out as expected, that we'll be able to fund the program within existing authorities.

LIGNITE RESEARCH

Senator YOUNG. For a number of years, the Office of Coal Research and now the Department of Energy have been financing a lignite research project at the University of North Dakota. It's my understanding that a decision has now been made to discontinue funding of the small process development unit at the university. From all reports I understand that this project provided a good deal of very valuable data in lignite coal.

Indications are that, with the possible discontinuance of this contract, that you propose to continue to support lignite research at the University of North Dakota through a research contract dealing with the chemistry of coal liquefaction. I believe that such a proposal had been submitted to you from the university. When do you anticipate reaching a decision on their proposal?

Secretary SCHLESINGER. As you indicated, we are engaged in discussion with the university regarding this project. We will be discussing this particular project on May 25, at the Grand Forks energy research center. We will expect to complete the work in—what would you say, 6 weeks?

Mr. THORNE. Six weeks.

Senator YOUNG. I hope you could expedite that as much as possible. You know that the University of North Dakota has been engaged in lignite research for quite some time.

Secretary SCHLESINGER. Yes, sir. As the existing project comes to a close, we are looking forward to further work with the university.

COAL RESEARCH CENTERS

Senator YOUNG. The surface mining legislation which passed Congress almost a year ago, authorized establishment of 10 coal research centers. The act itself located one of these centers in Alaska, but the other nine have not been specifically sited. It was very disappointing when your budget for fiscal year 1979 contained no funds to initiate this program. I'm sure other members of the committee were equally disappointed.

Has any progress whatever been made, even tentatively, for selecting sites under this act?

Secretary SCHLESINGER. As you've indicated, Senator Young, those regional coal centers were authorized last year and no funding has been requested. We have established a task force which is setting the criteria for the selection of the institutions to be designated, and we are working with the National Academy of Engineering on the selection procedures.

Senator YOUNG. Do you have any estimate as to the level of funding which would be required to initiate all or even a part of this program?

Secretary SCHLESINGER. I do not have that available at the moment, Senator Young. I think we may be able to submit something for the record for you.

[The information follows:]

FUNDING FOR COAL RESEARCH CENTERS

Due to pressing needs for funds, DOE will not make a request for budget authority in fiscal year 1979 for coal research centers. The request for fiscal year 1980 is not being considered within the Department.

Secretary SCHLESINGER. I think that to the extent that this involves fiscal year 1980 funding, that budget, of course, has not been settled on through negotiation with the OMB. We can give you some estimate as to the required level of funding. I believe that the authorization to which you referred was for $30 million.

Senator YOUNG. Thank you, Mr. Chairman.

FUNDING FOR HYDROELECTRIC PROJECTS

Senator LEAHY [presiding]. I wonder if I might ask a couple more quick questions here.

In the area of hydroelectric, Mr. Secretary, DOE requested $8 million for fiscal year 1979. I'm wondering how that money is going to be used, whether it's earmarked exclusively for low-head projects, and how it fits in with the $10 million appropriated for fiscal year 1978.

Secretary SCHLESINGER. At the outset of this hearing I was discussing the energy supply initiatives. The energy supply initiatives added to the $8 million that were originally included in the 1979 budget request.

Senator LEAHY. An additional $12 million?

Secretary SCHLESINGER. An additional $20 million, sir. We will insert into the record a statement as to our intention as to how that money will be spent, sir.

[The information follows:]

LOW-HEAD HYDROELECTRIC PROGRAM

The $20 million energy supply amendment for low-head hydroelectric development is tentatively allocated as follows;

1. Site-specific feasibility study loans, $10 million.
2. Equipment package development program, $5 million.
3. Utilization experiments program, $5 million.

This amendment would provide market-pull provisions for low-head hydroelectric development by providing loans to dam owners for feasibility studies at about 100 existing dams in fiscal year 1979. An individual loan would be forgiving if the Secretary determines that the results of the feasibility study are unfavorable. It is anticipated that a similar number of studies will be financed in fiscal year 1980. Such site-specific studies would determine the technical, economic, and environmental merit of hydroelectric retrofit projects and provide individual dam owners with the necessary information to apply for Federal or privately financed construction loans and procure the required construction permits and licenses. The results of these studies would also be used by DOE to identify existing dams most amenable to testing and demonstrating new equipment and construction techniques for hydroelectric generation in the 50kW-15mW range. It is expected that these feasibility studies would encompass nearly all regions of the United States at sites with wide variety of streamflow, generation capacity, and end-use electricity conditions.

This amendment is intended to provide a $10 million increment beyond the funding authorized by the National Energy Act conference. This amendment would also provide funds to support an accelerated equipment package development program and a utilization experiment program designed to develop and verify low-cost hydroelectric facility designs and concepts. The previous $8 million request provides for maintenance of research, development, and demonstration activities initiated in fiscal year 1977 and fiscal year 1978 to provide DOE with data to confirm and demonstrate the economic and environmental viability of low-head hydropower development using conventional equipment and techniques at existing dams. In contrast, the proposed amendment would allow aggressive development and testing of low-cost or innovative equipment and techniques to reduce economic and other barriers which prevent the development of sites considered to be marginal or uneconomic using existing equipment. The proposed amendment would increase the fiscal year 1979 planned budget for equipment packaged development from $1.6 to $6.6 million and the planned budget for utilization experiments from $6 to $11 million. The development of standardized turbine-generator units is expected to reduce the cost of the average retrofit project from an average of $1,200 to about $1,000 per installed kilowatt of capacity, resulting in reduced construction costs to the developer and reduced electricity costs to the users of the output of the data.

Construction will be initiated on three utilizaton experiments (followed by 10 to 15 projects in subsequent years) and equipment will be tested and verified under a spectrum of technical and institutional characteristics to demonstrate the broad range of conditions under which hydroelectric development is feasible and desirable. Successful experiments will result in reduced capital and operating costs for future hydroelectric developers and enable the retrofit of dams otherwise excluded from development because of site-specific technical, economic, or environmental constraints.

WIND MACHINE DEMONSTRATION PROJECTS

Senator LEAHY. Also, on the question of your energy supply initiatives, you speak of wind machine demonstrations. How much of that is going to the development of small windmills? I know we see these gigantic things that are sort of aimed for a municipality or a particularly large installation. How much would go for small wind machines?

Secretary SCHLESINGER. $7 million.

WEATHERIZATION PROGRAM

Senator LEAHY. On weatherization, I understand you're requesting about three times the amount of funds for fiscal year 1979 as those appropriated for fiscal year 1978. How many units has the Department of Energy actually weatherized thus far this year?

Secretary SCHLESINGER. I would have to check the record. What we do is to provide grants in aid to the States and the States do the weatherization.

[The information follows:]

As of the quarter ending March 31, 1978, over 11,000 homes have been weatherized with fiscal year 1977 DOE grant funds. This represents weatherization activities over a 4-month period. DOE funds did not reach the local level until December 1977.

Secretary SCHLESINGER. We do not weatherize directly, Senator Leahy. For 1978–79, we expect to weatherize 1¼ million homes through the States. We'll have to break that out for you, what has been done and what is expected to be done.

Senator LEAHY. My concern is that the Community Services Administration weatherized about a quarter of a million homes with $64 million in a time period. There's a question just how many homes DOE has weatherized so far. There's been a discussion of taking the money out of Community Services Administration for weatherization and putting it in DOE. And if that is done, I wanted to make sure that indeed the weatherization would take place, because so far it's been apparently quite successful in the Community Services Administration.

I'm not so concerned about where it's done, but that it be done. So if we could get a breakdown by how many actually have been weatherized and how many you anticipate weatherizing.

Secretary SCHLESINGER. Yes, sir. We will provide the substance of the program for the record. I think that the original motivation for moving from CSA to DOE is that this is part of the national energy program, conservation of fuel resources, which is more of an energy program than an income maintenance program. That is why the consolidation was proposed.

[The information follows:]

Based on information provided by the Community Services Administration they have completed 225,000 homes to date over a 4-year period. They anticipate the completion of 400,000, with the expenditure of fiscal year 1978 funds, at a cumulative cost of approximately $213 million. DOE has completed, in a 4-month period, more than 11,000 homes to date and projects a cumulative total of 393,500, including fiscal year 1978 funds, at a cost of $92.5 million.

Senator LEAHY. I agree with you that it's the energy saved that's important, not the question of whether it's a jobs program or not. But in CSA there's a network that's apparently getting it done. Is that a network that DOE should take over or is it a network that, if we move that out of CSA to DOE, will it be done as effectively? Will it be done with the same kind of units? That's the issue I want to raise.

I'm particularly interested in what the bottom line is; in other words, how many units actually get weatherized.

Secretary SCHLESINGER. Those are good questions, Senator Leahy. We subscribe that we can do the work as efficiently, perhaps more efficiently, than HEW has in the past. I think that that will have to depend upon our review of the evidence, which we will be happy to review together with you.

Senator LEAHY. I appreciate that.

SOLAR ENERGY BUDGET

On DOE's budget—I realize this is something that may have been brought up before I came in, and I know that Senator Burdick has some questions on solar energy and others do here. But does DOE's budget show an increase or a reduction in the area of solar energy this year?

Secretary SCHLESINGER. That depends upon the way you want to measure it.

Senator LEAHY. Why don't you tell me how you measure it?

Secretary SCHLESINGER. We have included both the tax credits which we have proposed to the Congress and the expenditures. The tax credits amount to 25 percent of solar installation in the home or in the factory. We expect $100 million would have been spent this year if that legislation had already passed the Congress. Between now and 1985, we expect tax credits and associated expenditures in excess of $1 billion. If one adds those expenditures to appropriations, there is a substantial growth in the solar energy program. Also, there is a $70 million add-on in the recently submitted supply initiatives

Senator LEAHY. In the programing?

Secretary SCHLESINGER. In the initiatives which lie before you, which would bring solar appropriations well above the level of last year, even if one disregarded outlays or tax credits.

Senator LEAHY. Turning to the tax credits—you talk about this $1 billion into the eighties. What percentage of that would be tax credits?

Secretary SCHLESINGER. All would, sir.

Senator LEAHY. All? That's in addition to any appropriations?

Secretary SCHLESINGER. Yes, sir. And, of course, it is hard to judge. If a fashion for the use of solar energy is established, that could be much larger than the $1.2 billion.

Senator LEAHY. Thank you.

Senator BURDICK [presiding]. Senator Bellmon?

HIGH-ENERGY PHYSICS

Senator BELLMON. Thank you, Mr. Chairman.

Mr. Secretary, this has been kind of an uneventful morning. Would you mind if we spice it up just a little bit? [Laughter.]

Secretary SCHLESINGER. It depends on what you have in mind, Senator. [Laughter.]

Senator BELLMON. I'll tell you what I have in mind.

Senator LEAHY. It sure caught my attention, Henry.

Senator BELLMON. On the 14th of March, earlier this year, in 1978, Dr. Deutch, Director of the Office of Energy Research, testified to us before the Appropriations Subcommittee on Public Works. I want to read you part of his testimony. It's on page 30 of his statement. Here's what he said:

> This is a time of great discovery and exploration, especially in the realm of the quark. The excitement and promise in high-energy physics hasn't been as great since the 1950's. Phenomena displaying explicit properties of charm have been revealed through the copious production of d-mesons at SLAC, as opposed to the hidden charm that's characteristic of the J/Psi particles. Confidence in the quark concept was further extended this past year by discovery at the Fermi Lab of the

epsilon particle, an ultra-heavy member analogous to the J/Psi particles, but at about 3 times the mass of the J/Psi or ten times the mass of the protons.

Just as the JPSI signals the existence of a fourth charm quark, the epsilon is believed to be the presence of a fifth type of quark.

Now, do you know what that means? [Laughter.]

It means that here's a guy trying to snow Congress. I just was curious if you had any other interpretation.

Secretary SCHLESINGER. No, sir. I think that this lies in what has been a disputed area of high-energy physics, that what we are doing here through the Department of Energy now as through AEC and ERDA before it, is to explore the very nature of matter. We are dealing with different types of particles of infinitesimal mass, and we are beginning better to understand what makes up the universe in this way.

It is an appropriation of Government funds so that man may better understand his universe. I do not pretend to understand these minute particles myself. I am perhaps slightly more familiar, through osmosis, than you are with them. But I cannot give you a full-scale treatment.

Senator BELLMON. Do you feel that Dr. Deutch or any other people should be able to explain this sort of business in more lay language so that we can understand what's going on?

Secretary SCHLESINGER. Yes, sir. I think that Dr. Deutch is eminently qualified to do that.

Senator BELLMON. We wrote him a letter and asked him for an explanation, and tried to get very specific. I think maybe what he's told us is of great significance. But I think it goes over most people's heads. So I asked him to give us a record of the accomplishments in terms of barrels of oil, tons of coal, MCF gas, or whatever.

We got back a reply which was dated April 18, and when you go down through it—it's called Status of Energy R. & D.—you find a column called 1977 production. The first entry, says negligible, then, negligible, not available, not available, not available, negligible, negligible, clear on through.

There are several pages of this. There's one entry here, enhanced oil recovery, where we're getting 260,000 barrels a day. But as near as I can tell—and I'm sure I don't have it exactly right—Dr. Deutch is spending in his department part of a $4.1 billion energy supply budget item, and also a portion of a $1.2 billion basic research budget item. I don't know how much the total is. And Dr. Deutch and his department have been at it for a good long while. And yet, we don't seem to have much to show for this very substantial investment of taxpayers' money.

PAYOFF FROM HIGH-ENERGY PHYSICS

My question is: Does the Department of Energy have any kind of a base line you're working from, so that you can measure the results we're getting from these enormous expenditures?

Secretary SCHLESINGER. There are two areas, Senator Bellmon. The first is that area, including high energy physics, to which we respond in terms of man's scientific curiosity. In that area, we have no way of measuring the payoffs. It is a reflection, I think, of man's

inquisitive nature. I do not believe that area can be measured by payoff.

The second problem that you address however, are these technology-related items, which, of course, represent the great bulk of the Department's expenditures in R. & D.

Let me assert categorically that we do not have a good base line, that I have been vastly disturbed by the absence of such a base line, of a notion of the time phasing, of payoffs, and the size of the payoffs for particular lines of R. & D. endeavor. I have instructed our staff to establish this. As compared, for example, with the Department of Defense, we do not have a well orchestrated time phased R. & D. program that estimates payoff time phasing, and consequently, puts us in a better position to allocate resources amongst R. & D. alternatives.

Senator BELLMON. My reason for asking the question is that President Carter more than a year ago declared "the moral equivalent of war" on the energy problem, and I'm not sure that the Department of Energy listened or got the message.

We're chasing after charmed quarks, or whatever you're doing down there. But I'm curious to know if we're really zeroing in on getting us some crude oil or some gas or some coal in production in any reasonable time in the future. Do you feel that the Department is targeted at helping to solve the immediate energy crisis?

Secretary SCHLESINGER. It's targeted in that direction. Once again, I beg to exclude the area of high energy physics and allied disciplines that are responsive to a different set of criteria.

In many ways, I am disappointed in the degree of progress that we have achieved to date.

Senator BELLMON. Can you tell us: Do you have an objective, say, for the year 1984 as to how much additional energy we're going to have in our pipelines or on our electrical lines as a result of the investment we're making?

Secretary SCHLESINGER. Yes, sir. We can give you that data. I do not have it in hand.

[The information follows:]

ADDITIONAL ENERGY RESULTING FROM DOE R. & D. INVESTMENT

The question of how much additional energy the Nation is going to have in 1984 as a result of R.D. & D., highlights the problem of timelags in major energy investments. Most large energy facilities such as, electric powerplants, synthetic fuel plants, refineries, or even new oil fields, take on the order of 5 or 10 years to design, obtain permits, construct, and start operation.

With the exception of demonstration plants now in the planning or construction stage and a few smaller scale technologies, for example, enhanced oil recovery and industrial coal gasifiers, DOE's fiscal year 1978 and fiscal year 1979 R.D. & D. investments will not result in significant energy production in 1984 or 1985. The vast majority of our energy in 1985 will come from R. & D. and investments made many years earlier. Of particular note is nuclear power. The Government R. & D. of the 1950's and 1960's has led to a nuclear industry which is projected to supply 8.5 percent of total domestic energy production in 1985. Government R. & D. on other energy supply technologies was limited during the 1950's and 1960's so most of the other innovations embodied in 1984-85 energy supply systems will be based on private R. & D.

The Department's energy supply initiatives identify capability demonstration activities in synthetic fuels and renewable technologies which could result in incremental supplies of 150,000 to 200,000 barrels of oil equivalent per day in the mid-1980's. The low-head hydro and wind initiatives could provide up to 4,000 mW of

electrical power by the late 1980's if technical, economic, and institutional problems are overcome.

The Department is currently reviewing the market potential of a variety of other new technologies as part of its commercialization and strategy planning efforts. These will build on the studies and analysis done by ERDA and will provide DOE with the basis for setting its own objectives. These objectives need to reflect the uncertainties involved in predicting market impacts due to uncertainties in the characteristics of the technologies themselves, those of their competitors and the world energy situation generally.

DEPARTMENT OF ENERGY BUDGET

Senator BELLMON. One of the reasons I raised the question is when the Department of Energy was brought together from very many other agencies, the stories went out saying that Congress had created this vast new bureaucracy and given it about a $14 billion budget. And that if we'd taken this same money and invested it in coal mines or oil well drilling or something like this, we could get a lot for a good return on this investment.

I think, at least in my State, the Department's going to come under increasing attack unless we can show that we're getting some results.

Secretary SCHLESINGER. I think that that is a comment which is frequently made.

Let me underscore, since Oklahoma, Texas, and the Southwest, generally, is part of the country that historically has been quite concerned with national security, that two-thirds of our budget is related to national security directly, not within energy supply. The $4 billion plus that we are spending for strategic petroleum reserves, the $3 billion that we are spending on the design, production, and certification of nuclear weapons are major expenditures, and all of that amounts to something in excess of $7 billion in our $12 billion budget.

We are spending approximately $3 billion on energy research and development. The largest area of expenditure historically has been nuclear.

We have attempted to adjust the nuclear budget. I think that it's fair to say that the response of the Congress has not been to help us reduce those expenditures, but to augment those expenditures in the nuclear area.

I think that a lot of the fuss that one hears on this subject is not directed to the $12 billion we are spending and which Congress is inclined to increase. It is directed toward the $104 million that we spend on our regulatory program. That regulatory program is not universally popular in this country. Indeed, it is probably less universally popular in Oklahoma than it is generally throughout the country.

I urge that we keep in mind what the quantities are, that there is really no objection to the $12 billion, that there is a good deal of controversy about the $104 million spent on regulatory matters. I would urge also, Senator Bellmon, the point of view that if Congress were to eliminate the $12 billion expenditure, then it would not divide it in the form of $3 per barrel of oil. Instead, it would find some alternative way in the Federal budget to make those expenditures.

OIL SHALE PRODUCTION

Senator BELLMON. On page 17 of your statement, you comment that while coal comprises—this is down at the bottom—90 percent of this country's fossil fuel reserves, it meets only 18 percent of our energy needs.

I'm a little curious, do you count oil shale as a fossil fuel reserve?

Secretary SCHLESINGER. A well taken question. I do not believe that has been included in these calculations. I think that we have used only those kinds of reserves which are currently contributing to domestic supply.

Senator BELLMON. We're getting literally nothing out of our oil shale reserves at the moment. How much of this budget is targeted at bringing oil shale into production?

Secretary SCHLESINGER. Approximately $30 million.

Senator BELLMON. $30 million.

Secretary SCHLESINGER. May I add to that, though, Senator, once again, in the energy supply initiatives we have proposed two things: First, that the tax credit of $3 per barrel be applicable to any project up to 10,000 barrels.

Senator BELLMON. Any project?

Secretary SCHLESINGER. Any oil shale project up to 10,000 barrels. Second, that full entitlements treatment be given for oil shale production.

We have had discussions with a number of oil firms. They believe that with those kinds of inducements, they will get into oil shale production.

Now that is not a budgetary item, Senator. It is one, however, which will engage the energies of the private sector in moving on with oil shale production.

We share your objectives.

Senator BELLMON. Well, now, there are some other problems other than economics relating to oil shale production.

Secretary SCHLESINGER. Yes, sir, environmental problems are significant.

Senator BELLMON. Do you feel that tax incentives and perhaps price entitlements will make it possible to overcome these other problems in order to get into production of oil shale?

Secretary SCHLESINGER. I cannot give you that assurance, Senator. My comment to Senator Young is applicable here. Somehow or other, we must stabilize environmental requirements because if there are continuing uncertainties, the regulatory requirements in this area will be ratcheted upward. This is a substantial disincentive to the kinds of investments by industry which would be necessary to generate a substantial oil shale activity in the United States.

Senator BELLMON. Do you happen to have in mind what you estimate to be the quantity of oil in our oil shale deposits?

Secretary SCHLESINGER. The estimate, I think, runs about 2 trillion barrels.

Senator BELLMON. 2 trillion? How long would this last the country at our present rate of usage?

Secretary SCHLESINGER. Let me answer that some of this is fairly high grade deposits, some of it rather low-grade deposits.

I think in the high grade deposits, we're talking on the order of approximately 600 billion barrels. Our present consumption of oil is 7 billion barrels a year in the United States.

If one were to extract half of oil in the oil shale, then obviously, we have about a 45-year supply, if we could produce at the rapid rate, of something approaching 20 million barrels a day.

Senator BELLMON. So it is significant.

Secretary SCHLESINGER. A very significant resource, yes, sir.

Senator BELLMON. Yet, we're spending only $30 million.

Secretary SCHLESINGER. We believe that the appropriate way to deal with this problem is to engage the private sector in full entitlements treatment plus tax credits which would be substantial. That tax credit would amount to, I believe, on the order of $7 a barrel subsidy for shale oil production. That is a very attractive proposition.

I believe some of the major oil companies would be prepared to move ahead on that basis. I do not have that confidence in the Government's ability to manage large-scale industrial ventures of its own. I would prefer to be economical in that area.

OIL SHALE PROGRAM DIRECTION

Senator BELLMON. Is the $30 million targeted primarily at dealing with these environmental questions that might hold us up?

Secretary SCHLESINGER. It deals with a number of alternative technologies which the Government is exploring on its own lands in the West. There are four technologies under exploration.

Senator BELLMON. Not with the environmental problems?

Secretary SCHLESINGER. How much are we doing on environmental work?

Mr. THORNE. There is a general environmental assessment going on in the oil shale areas by the Government. The level of funding is probably in the neighborhood of hundreds of thousands of dollars rather than millions.

Concurrently with that, however, base line environmental studies are done by the private sector on their own lands.

Senator BELLMON. So you're convinced then that the environmental issue will not delay oil shale development once the economic incentive is there.

Is that your answer?

Mr. THORNE. That's my general feeling. I think the environmental question, however, could very well put a ceiling on the ability to exploit the oil shale.

Senator BELLMON. At what level?

Secretary SCHLESINGER. It's been estimated, Senator Bellmon, and this is, of course, a matter of opinion, that the environmental question will place a ceiling of about 2 million barrels a day on production.

At this juncture, I am not in a position to justify that estimate.

We will insert something in the record.

[The information follows:]

ENVIRONMENTAL CONSTRAINTS ON OIL SHALE PRODUCTION

To date, a programmatic environmental impact statement has not been developed for oil shale commercialization processes (in-situ, modified in-situ, and aboveground

retorting) which would evaluate the magnitude of environmental constraints and concerns that would, in turn, put a production ceiling on oil shale. However, assessments have been made based on expected atmospheric emissions, performance of control devices, and regional atmospheric transport and dispersion models, which suggest that oil shale development in the Piceance Creek Basin, Colorado, would have limited production capability. These estimates are based on unsubstantiated data and inadequate atmospheric models of the region, so there is a good deal of uncertainty surrounding the accuracy of such assessment. DOE is presently developing the preparation schedules of a number of environmental impact statements (EIS's) with respect to the site specific and process specific implications of the oil shale technologies. The EIS's will serve as the environmental input into DOE's decisions regarding technology scale-up and eventual commercial deployment.

SECONDARY AND TERTIARY RECOVERY

Senator BELLMON. Another resource which seems to me is not being adequately dealt with is the oil that's in place in the old fields where primary recovery has about run its course.

I can't find the amount of money that's in the budget for secondary and tertiary research.

Secretary SCHLESINGER. $47 million, sir.

Senator BELLMON. $47 million?

Secretary SCHLESINGER. Once again, Senator Bellmon, the great incentive to industry will come not from direct Government expenditures which deal primarily with techniques, but appropriate incentives.

As you know, we have had a rulemaking in preparation for final issuance with regard to enhanced oil recovery, and that this has become tangled up, if I could put it that way, with the progress or slow progress on the national energy plan.

Senator BELLMON. The rulemaking deals with price?

Secretary SCHLESINGER. Yes, sir. As I mentioned earlier, with regard to techniques, we are spending $47 million in association with industry.

Senator BELLMON. Do you have an estimate of how much oil might be recovered from the oil fields if the known technologies can be applied?

Secretary SCHLESINGER. Which technologies?

Senator BELLMON. Known secondary and tertiary recovery technologies could be applied.

Secretary SCHLESINGER. My recollection is that we might augment our recovery rates by about 5 percent in 1985 and 7 percent in 1990 due to tertiary recovery.

By 1985 we would hope to be producing one-half million barrels of oil through tertiary recovery which would not otherwise be produced. Secondary recovery, by and large, is well established in the industry.

Senator BELLMON. Except there are some secondary recovery techniques that are not economic at the present time.

INCENTIVES FOR SECONDARY AND TERTIARY RECOVERY

Secretary SCHLESINGER. That is right. As the Senator is aware, we have been discussing with the industry certain incentives associated with the national energy plan that would augment the attractiveness of secondary recovery.

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Senator BELLMON. Has the administration considered using the same sort of tax credits that are planned for oil shale to assist in the tertiary recovery projects?

Secretary SCHLESINGER. I think we have considered that. If we move, Senator Bellmon, toward world prices and if the future of oil supply and demand is what we have anticipated it to be, then there will be substantial financial attractiveness simply from those world prices for a much harder effort by industry in tertiary recovery. At the moment, we have not exhausted our potential just from the operation of the price mechanism. Consequently, we do not need to go to direct tax credit subsidization.

Senator BELLMON. I'm aware of one field. It's called the North Burbank in Osage County, Okla. There are about 600 million barrels of oil still in place that can only be recovered by the use of detergent. It has to be pumped down and literally washes the oil out. The estimates are that it would cost about $18 a barrel to recover that oil. So, for all practical purposes, it's out of reach at the present time. And I don't believe going to the world oil price is going to help projects of that kind.

Secretary SCHLESINGER. I think that is correct, Senator. If we go to the world oil price, it will amount to $13.50-$14 a barrel. But that does not cover the costs that you mentioned.

We would anticipate, however, that the world oil supplies will tighten up substantially in the early 1980s, and that our projection would carry world oil prices in constant dollars above $20 a barrel, which would make recovery of these fields commercially viable without any direct tax assistance or tax credit assistance.

Senator BELLMON. The problem is that even after the price becomes attractive, it's going to take several years to drill the additional wells and make other preparations, even to build the chemical plants. There's not enough of these chemicals available at the present time.

So, I'm not sure but what we might—I believe we'd be well advised to try to go ahead and make arrangements now to trigger the beginning of those kinds of projects, because it will be 5, maybe 10 years, before any significant production is realized.

Secretary SCHLESINGER. I think that is a very good suggestion, Senator. Let us review that and get back to you on it.

I think that there are a number of areas of this sort that are in the process of exploration. I don't think we've reached any final conclusions. I think that your point about the necessity of producing chemicals raises questions about how to put that capacity in place, whether to employ the Defense Production Act, or what have you. But I think it's an excellent area for further work.

ENERGY SUPPLY STRATEGY

Senator BELLMON. Mr. Chairman, I'm taking too much time. I'll finish with this one question.

What really troubles me is that I'm perhaps as convinced as any member of the Congress that we are in a terribly critical energy situation that deals, not just with having gas at our filling station, but it has to do with the rate of inflation and the stability of our whole economic system. And what troubles me is—and I've con-

fronted, not you, necessarily, but other Secretaries and other witnesses about the energy appropriations, and it doesn't seem to me that the message is really getting through that this is a critical problem, and we should be not only thinking about the year 2020 or whatever, we should be thinking about almost next week. And I don't know that this budget reflects any sense of urgency.

Secretary SCHLESINGER. I share your views wholeheartedly, Senator. In the first place, we are in a process of transition from research establishments which focused on the longer term. One of the things that we have done is to try and move back to the fuel liquids problems in the 1980s. In the past, ERDA has had a longer term perspective, and that perspective, as in all bureaucracies, changes gradually, and there's a carryover from the past which we will attempt to dissipate.

With regard to some of the technologies, let me point to the so-called national energy supply strategy, the NESS, which we are in the process of formulating. The first product, of course, was this quick work which we did with regard to immediate alterations for fiscal year 1979, to get some projects, which we know we want to go with, started. The national energy supply strategy deals with precisely the kinds of questions that you have raised. We expect that that strategy will be worked out by September.

In part, this budget reflects some movement toward shorter-term, more pressing problems, but it has not gone far enough. We will attempt to move further in the future.

Senator BELLMON. I notice your chart you had displayed a moment ago showed a $26 million decline in the amount of funds you've asked for the energy supply function. When you add the 6 percent or so inflation factor to that function, the actual reduction is more like $150 million. This would seem to me that you're certainly not placing the emphasis on the supply area, where I think it ought to go.

Secretary SCHLESINGER. The chief item in that cut, Senator, is the breeder reactor. Once again, we're attempting to move toward nearer term requirements. We have ample energy electric power production technologies. The breeder reactor has tended to absorb much of the Government's efforts in the past.

As we shift away from that, I think that the program will acquire an overall composition which is much more satisfactory from your standpoint and from mine.

Senator BELLMON. I notice that for enhanced oil recovery, you've budgeted $46 million; for oil from shale, $29 million; and that the enhanced oil recovery budget is an increase of $60 million—in dollars, which is actually a decline, so far as real purchasing power is concerned.

Again, I'm trying to make the point that it looks to me like you're not really focusing on these potential sources that could help us in the near term.

Secretary SCHLESINGER. I trust that we have funded those R. & D. activities amply, given what we have on the table today. There is such a thing as forcefeeding of R. & D. activities, and the result of this is not additional productivity, but just additional outlays.

I think that in any of these activities, we are better off engaging the private sector, rather than attempting to do it by the Govern-

ment. There is knowledge, and there is ability in the private sector, and Government can be ancillary to that process. But I do not think that we should begin to replace the private sector.

Senator BELLMON. I agree with what you said.

Mr. Chairman, I have some more questions. Let me yield for a moment.

Senator BURDICK. Go right ahead.

EFFECTS OF PRICE ON OIL PRODUCTION

Senator BELLMON. Mr. Secretary, on the point you made, then, and maybe this is past the point of visiting and starting to meddle, but if that is the objective of the administration and of the Department, why has the Department and the administration not used to a greater extent the authority which we gave the Department in Public Law 94-163, passed in December of 1975, to go ahead and let the prices of oil rise as time goes on? You've really held the price virtually constant since this law was passed; yet, there's provision in here for improvements.

Secretary SCHLESINGER. Can I take just one instant to point out that on enhanced oil recovery, the $47 million that we're spending is augmented by $100 million that industry is spending in joint arrangements, so that it's about $150 million.

Senator BELLMON. Well, Mr. Secretary, since you've gone back to that, my thought was that even though—let's take our own field—this may not be the best example—if it is going to cost $18 a barrel to get that oil out of the ground and if the price is not going to go to $18 soon—I doubt that it is—it looks to me like you might be able to use a little more money to go into sort of a working partnership, as you suggest you may be doing, and make it economic to go ahead and produce that oil far more quickly than will be the case if we wait for the market to react. Then, if the market does become better, simply withdraw from the operation as the economics would justify the company continuing its investment.

Secretary SCHLESINGER. That is a suggestion that we will have to consider, Senator. We have done the same thing. We're counting on the same phenomenon in the oil shale area and expect the growth of market prices gradually to make shale oil commercially viable.

Senator BELLMON. What makes the old oil fields look attractive to me is this: We know the oil's there, and the wells are drilled, the pipelines are laid, the equipment's in place. And if the economics would allow the investments, then, I would think we could very quickly begin to get a fairly substantial increase in our production from these oil fields.

Secretary SCHLESINGER. I don't know how quickly we'd get a substantial increase, but I think that you're quite right. This is an opportunity that we may not have sufficiently explored, that there is a tendency, I suspect, within the Government, to look for novelty. Oil shale is a novel development that's been around for 25 years. Just recovering a higher percentage of oil in conventional deposits has less romance associated with it. It's less of a technical breakthrough. Therefore, there may be a tendency to neglect it. Let us take a further look at that and be back to you.

CRUDE OIL PRICING

Senator BELLMON. Now, will you tell us why you haven't raised the price of crude oil?

Secretary SCHLESINGER. I believe in the deliberations on that question, Senator, that Congress indicated that it was prepared to, first, follow the rate of inflation, and second, that the Administration—at that time, the FEA—might, but was not required to, go as high as a 10 percent annual increase.

As a result, we have followed the rate of inflation so that the real price of oil has not diminished, but as you indicated, it has not been augmented. The composite has been raised. The ceiling has been raised by our inclusion of Alaskan oil in the totality, since Alaskan oil has a wellhead price that is quite low—$4 or $5 a barrel after transportation costs. The effect of this is to provide additional room under the ceiling.

Your question is: Why don't we come up to the ceiling? The answer to that is that we are engaged in negotiations over the National Energy Act. We are attempting to persuade all parties of the advantages of the recommendations in the National Energy Act. In connection with it, we have suggested a variety of proposals for administrative relief which would accomplish much of what you are suggesting.

So, let us get on with the passage of the National Energy Act.

Senator BELLMON. Well, Mr. Secretary, we could debate that for a little while, but maybe we'd better pass on and deal more with the appropriation.

NATIONAL ENERGY POLICY

We were promised—the Congress was promised some time back—that we would get a phase II, so far as national energy policy was concerned. I'm curious to know what's happened. It seems like phase II may have somehow or other fallen through the cracks.

Secretary SCHLESINGER. These are the projects that we are prepared to recommend to the Congress, partly requiring budgetary support in fiscal year 1979, and some which do not require budgetary support. This is a response to the request from Congress for supply initiatives. It is a forecast of a longer study which I mentioned earlier, the so-called NESS, which we hope to publish in September.

Senator BELLMON. Well, this budget that we have before us does include some money for phase II, as I understand it.

Secretary SCHLESINGER. Yes.

PROGRAM FUNDING LEVELS

Senator BELLMON. About $20 million for high Btu coal gas loan guarantees?

Secretary SCHLESINGER. Yes, sir. This is an attempt to engage the private sector with Government loan guarantees so that we move on with these gasification programs.

Most of the funding for the plants' construction would, of course, be private.

Senator BELLMON. Also, you have $30 million for photovoltaic research. Yet, GAO has said that additional money probably won't do any good because the industry is overloaded with back orders now.

Is that true?

Secretary SCHLESINGER. I'm not familiar with that GAO comment, Senator. There are different views that are taken with regard to photovoltaics.

Our original budget submission had lower appropriations for photovoltaics than a year earlier. I think that the general assessment has been that more money could be used. Once again, this is an area of technology that we are eager to spur.

Senator BELLMON. You look upon it as offering some hope for us in the near-term?

Secretary SCHLESINGER. I would trust that by the middle 1980's, we could get the cost per peak watt down to about 50 cents, and at that juncture, it becomes quite useful for disbursed sites, possibly even including homes, disbursed homes.

In order to compete with central power stations, the cost per peak watt would have to be reduced to 10 to 20 cents, and that is further along, probably the 1990's. I think these types of investments in solar energy provide more of a longer term payoff than an immediate payoff.

Senator BELLMON. Well, as I go through the list, gas and liquid fuels from biomass, $10 million, low head hydropower programs, $20 million—this really doesn't seem like a major thrust. It looks like almost a bunch of nickels and dimes that aren't going to produce very significant results.

Secretary SCHLESINGER. If you will look at the table of contents, many of these areas do not involve budgetary outlays. Shale oil production, for example, requires entitlements relief and it requires tax credit relief, up to 10,000 barrels, but it does not require a budgetary outlay.

I would hope that we are producing something on the order of one-half million barrels a day sometime in the early to mid-1980's. They will not require any additional budget outlays if we go that route. Synthetic liquid and solid commercial demonstrations are the start of a planning process in which the cost of the plants in constant 1977 dollars will be about $600 million each. The Government share would be about 80 percent for the SRC–II plant, the first commercial train, 75 percent, or slightly higher for the SRC–I plant.

ENERGY SUPPLY OBJECTIVES

Senator BELLMON. I have not had a chance to study this energy supply report you've given us. Do you give us in here the objectives that you have so far as increased supply is concerned?

Secretary SCHLESINGER. No, sir, but we will supply that for the record.

[The information follows:]

POTENTIAL PRODUCTION USING SECONDARY AND TERTIARY RECOVERY TECHNOLOGIES

The production of oil by present enhanced oil recovery (EOR) methods is about 260,000 barrels per day. Estimated production by industry at upper tier crude oil

prices is about 600,000 barrels per day in 1985. DOE sponsored programs are designed to encourage and accelerate EOR production through an industry-Government coordinated research program with a goal of additional production of about 800,000 barrels per day above the expected 1985 level without the program.

Secretary SCHLESINGER. We are exploring technologies and there are uncertainties in that area.

Senator BELLMON. It's my opinion that Congress, and I think this committee, would be very forthcoming if you could give us some realistic hopes that by additional investments we could get an increase in our production. Even if you get 500,000 barrels of crude oil a day by 1983, that is not going to make much of an impact on our crude oil import bill.

We're now bringing in over 8 million barrels a day, as you know.

Secretary SCHLESINGER. That's right. It would cut the imports by about 7 or 8 percent.

Senator BELLMON. Yet we have enough oil in oil shale and coal probably to last the country 500 years. I can't understand why we can't get it into production.

ENERGY IMPACT ASSISTANCE

Another point I want to raise, you include $150 million for energy impact assistance. The money is for community planning, sewers, and so forth in boom towns created by coal gasification plants and other developments.

I can't understand why we're going to need $150 million for that particular item in fiscal year 1979, since I doubt there will be any billion dollar synthetic fuel plants on line in the near future that would need this kind of impact assistance.

Secretary SCHLESINGER. The impact assistance is directed toward community facilities in the energy supply impacted States such as Colorado, Montana, and Alaska.

I don't know to what extent it would apply to Oklahoma; $120 million of that is to establish State revolving funds which could easily impact in these areas as they are required to build schools, hospitals, infrastructure facilities.

If we are to go to 1.2 billion tons of coal, of which a substantial part will have to be increases in the production of Western coal, given the thinly populated areas of the West and the inadequate infrastructure, I believe that these things are necessary.

We have worked very closely with the Governors who fear the impact on their States attributable to a dramatic increase in domestic energy production.

Senator BELLMON. So you would say most of that money, then, is aimed at the coal-producing States and not at the construction of huge new plants to produce oil or gas from coal or from shale.

Secretary SCHLESINGER. Yes, sir. As opposed to oil, coal mining is very intensive in its labor requirements. Please let me expand on this for the record.

[The information follows:]

ENERGY IMPACT ASSISTANCE

A recently completed study of energy related impacts identified significant community impacts now occuring as a result of energy development in rural areas. The magnitude of these impacts is likely to increase substantially if we move forward

with development of our domestic energy resources. The recent study outlines the federal programs available to provide assistance to energy impacted communities. It concludes that funding levels are insufficient and eligibility requirements are such that gaps exist. The proposed Hart/Randolph bill, in conjunction with section 306 of the Coal Conversion bill, addresses the Federal responsibility for impact mitigation.

The $150 million identified will not be included in the DOE budget but will be requested by the Department of Commerce. It was only identified as an integral part of our supply initiatives.

The funds will be used to mitigate the impacts of energy development, particularly coal and uranium mining. Impacts resulting from exploration, extraction, related conversion or processing, or major federally funded development projects such as uranium enrichment, nuclear waste disposal and synthetic fuel demonstrations, will also be eligible for these funds.

NUCLEAR WASTE MANAGEMENT

Senator BELLMON. Also, I notice that for the nuclear waste management facility, that you've deleted about $51 million. Because of the enormous public concern about nuclear waste management, it would seem to me here's an area where perhaps a greater investment rather than a reduction would be in order.

What is the explanation?

Secretary SCHLESINGER. A greater amount of activity is necessary, Senator. We produced a plan approximately 60 days ago, and we will deliver that plan to your office.

As you know, there has been some resistance to moving ahead with these facilities. Until we get a site accepted in a State, we cannot begin to make those investments.

This reduction reflects a revised method of handling the waste generated at DOE facilities.

Senator BELLMON. How much money will be available for nuclear waste management facilities if we agree with this $51 million?

Secretary SCHLESINGER. I'll have that answer in a moment, sir.

Mr. THORNE. Senator Bellmon, I might add that the reduction in waste management is solely oriented toward the Savannah River Plant waste tanks. The reason for the deferral of funds is that their operations, both in handling the waste and in the evaporation of the waste, do not require tanks on the same schedule as was prescribed by the budget.

Because of operating efficiencies, this money is being removed from the budget at this time.

Secretary SCHLESINGER. For commercial waste management, Senator, the 1979 estimate is the same as the January budget—about $180 million.

Senator BELLMON. The hangup there, then, is to find a place to permanently dispose of these wastes.

Secretary SCHLESINGER. Yes, sir.

Senator BELLMON. Mr. Chairman, that's all I have.

ENTRAINED COAL GASIFICATION MODEL

Senator BURDICK. Mr. Secretary, we're going to adjourn here in a few minutes because we have to convene again at 1 o'clock, but I want to ask two miscellaneous questions.

The first one is to deal with the project that you referred to a while ago. I believe that Northern States Power is one of the sponsors.

Having a legal background and not a scientific background, the project seems very appealing to me. As I understand the process, coal, cheap coal, any other kind of coal, is converted to gas. Gas runs turbines and turbines produce power.

And your testimony a few minutes ago was that you're working up a model. Is the model a prelude to a pilot plant? Tell me how far you go when you say "a model."

Secretary SCHLESINGER. The model evaluates whether or not the process is indeed a workable technical process. At that juncture we would have to decide whether or not to go ahead with the pilot plant.

I believe that that decision has not been made as yet.

Senator BURDICK. I think you testified that your model may be completed sometime this year. Is that correct?

Secretary SCHLESINGER. Yes, sir, August 1978.

Senator BURDICK. And if that model proved out to be satisfactory, what does the timetable show for proceeding with the pilot plant?

Secretary SCHLESINGER. We would allocate $3 million in fiscal year 1979 for the purpose of plant design.

Senator BURDICK. I think this is one of the most exciting things to come along the pike. If you can improve the output, as I understand it, you get more value from your fuel this way and you get cleaner air, if the theory is correct.

Secretary SCHLESINGER. Yes, sir.

PUBLIC INFORMATION ON SOLAR ENERGY PROJECTS

Senator BURDICK. One other miscellaneous question. I have countless calls and letters from my constituents about solar energy projects.

We know from the testimony already offered this committee that hot water heating is feasible, home heating, not so sure. But so many people are so enamored with this type of heating that they're investing in some unworkable schemes.

As a matter of fact, the Wall Street Journal a few months ago showed how people are being ripped off.

Is your Department doing anything about having bulletins or manuals to indicate what is feasible and what is practical at the present time for the average homeowner?

Secretary SCHLESINGER. Yes, sir. But the responsibility for separating the fly-by-night operators is something that's done by better business bureaus.

We can say what is technically required. We have a substantial body of literature in that area.

Senator BURDICK. Do you have it in pamphlet form or bulletin form now? Can somebody write in and you can send it to them?

Secretary SCHLESINGER. Yes, sir.

Senator BURDICK. I think it would be very helpful because people want to believe what they want to believe, but I don't want them to be misled.

Secretary SCHLESINGER. Yes, sir.

Senator BURDICK. That's enough for general questions. We'll get into more serious questions at 1 o'clock.

SUBCOMMITTEE RECESS

So we'll be in recess until 1 o'clock.

[Whereupon, at 12:05 p.m., the subcommittee recessed, to reconvene at 1 p.m. the same day.]

(AFTERNOON SESSION, 1:10 P.M., TUESDAY, MAY 16, 1978)

DEPARTMENT OF ENERGY

STATEMENT OF JAMES R. SCHLESINGER (Resumed)

Senator HUDDLESTON [presiding]. The subcommittee will come to order.

We'll continue the hearing that was begun this morning. We're delighted to have Secretary Schlesinger still with us. Dr. Schlesinger, I'll begin with some general questions. I hope as we go through this afternoon we don't get into too much duplication from this morning's session.

Undoubtedly, there will be some overlap, but we'll try to avoid that as much as possible. I don't know whether it makes a whole lot of difference.

INCREASED FUNDING FOR SOLAR ENERGY

On Sun Day, earlier this month, the President went out West and announced a plan to spend an additional $100 million on solar energy, with the funding to come from other energy programs within your fiscal 1979 budget. But it was not until yesterday that the Department was able to come up with any details for financing that plan.

Did the President's announcement catch the Department off balance?

Secretary SCHLESINGER. No, sir.

Senator HUDDLESTON. To what extent did you participate in the announcement or the decision that led to the announcement?

Secretary SCHLESINGER. I was on Air Force One at the time that the decision was made. The details of the $100 million proposal have been discussed for some time. What delayed the provision of the initiatives to the Congress, Mr. Chairman, was that, outside of the field of solar energy, we had a number of initiatives that were not resolved until last Saturday. They include the SRC plant, which you are undoubtedly familiar with, and I suspect that you may question me on. But that will not be repetitious of this morning because Senator Byrd was talking about a plant in West Virginia, so this will be complementary.

Senator HUDDLESTON. All right. We're going to delve into that, I'm certain. [Laughter.]

Secretary SCHLESINGER. I think if you go through the list of items in here, you'll see those that had been resolved on the aircraft and those that had to be resolved subsequently.

Senator HUDDLESTON. Then before the announcement was made, you already had in mind where the $100 million was coming from?

Secretary SCHLESINGER. Yes, sir.

ENERGY SUPPLY STRATEGY

Senator HUDDLESTON. For several weeks before that announcement by the President, the Department and the White House had apparently been agonizing over a Department budget proposal to add nearly $400 million to the 1979 budget and launch a national energy supply strategy. The emphasis in that proposal, as we understand it, was more on short-term fossil fuel development than on long-term solar energy.

What happened to that energy supply strategy?

Secretary SCHLESINGER. The Department had proposed an additional $360 million in spending, but that was part of the supply initiatives. The supply initiatives have been discussed since January on the Hill. The national energy supply strategies, of which this is a prelude, are something that we do not anticipate completing work on before September.

If one examines the funding here, approximately 45 percent of the $360 million was to go to solar, about 55 percent outside. Those proportions have been more than reversed in what we have now.

I did stress this morning that the big element in the request was $192 million for SRC's I and II. We have no budget add-on for that. What we do have is an agreement in concept with the Office of Management and Budget that we do not have to choose between those two projects. If we have the technical capacity we will proceed with both projects.

We will proceed on the basis of reprograming $33 million of fiscal year 1978 funds and we have provided for $23 million in the 1979 budget. With these funds we can do the design. Construction funds will be deferred until fiscal year 1980. The impact of this will be a slip of the program of something on the order of 4 to 6 months, but I think that agreement in concept is more important than the timing of the budgetary expenditures.

Senator HUDDLESTON. Even with that dedication of funds, is there a possibility that you're losing the near-term emphasis of your program?

Secretary SCHLESINGER. No; I think that the program remains essentially the same. In terms of the balance of the budget requests, of course, it shifts, but the fact that we will have a 4-month or a 6-month slip on SRC's I and II hardly changes the emphasis.

We do not move at the most accelerated possible pace on those two plants, but we do move them expeditiously. We had anticipated plant start-up in the early part of 1983. We would expect now that plant start-up would be in the latter part of 1983. But they both will provide technologies for oil replacement in the later 1980's.

FUNDING SRC PROJECTS

Senator HUDDLESTON. Is this stretch-out due to budgetary considerations or is it the state of the technology?

Secretary SCHLESINGER. In regard to SRC–I, there remains one technical problem that we have not yet fully resolved. That involves the filtration system. It's a new filter that has been developed by Kerr-McGee. We believe that that filter will work. But we have not demonstrated that as yet.

Aside from that one technical problem, we do not anticipate technical difficulties with either of these plants. Obviously, the pacing depends upon the overall budget priorities at present.

Senator HUDDLESTON. If the crude oil wellhead tax is not enacted, and it seems to me that might be a possibility, then your budget for the strategic petroleum reserve would be reduced by some $337 million, according to DOE figures, while still maintaining the same delivery schedule.

Why couldn't we take those savings and apply them to SRC's I and II at the accelerated schedules?

Secretary SCHLESINGER. Mr. Chairman, in no way am I eager to provide any temptation to Members of the Senate not to pass the crude oil equalization tax.

Senator HUDDLESTON. Do you have an evaluation of its possibilities at this point?

Secretary SCHLESINGER. We are always optimistic, Mr. Chairman.

Senator HUDDLESTON. You're not making any policy based on even the possibility that it might not pass?

Secretary SCHLESINGER. You have the recommendations of the President with regard to budgetary priorities. I'm here to support those recommendations.

Senator HUDDLESTON. I think we may be faced with that situation and we need to develop a policy regardless of whether you're willing to accept the possibility at this point.

Secretary SCHLESINGER. I think we should check our figures on that, Mr. Chairman. I believe that as now contemplated, the crude oil tax would be imposed on the first of January, which is into the next fiscal year.

Under any calculations, therefore, there would be some savings.

Senator HUDDLESTON. Now, let's talk about the commitment on design.

Is it then your intent that both plants will, in fact, be built?

Secretary SCHLESINGER. It is my intent, yes, sir.

Senator HUDDLESTON. Good.

Secretary SCHLESINGER. As I mentioned before, the Office of Management and Budget, which previously had taken the position that we should choose either SRC–I or SRC–II, now takes the position that both plants might go forward and that the question is whether or not they pass financial and technical muster during the design period.

So I think that the inclination is to go forward.

Senator HUDDLESTON. With all dispatch.

Secretary SCHLESINGER. Yes, sir.

ENERGY IMPACT ASSISTANCE

Senator HUDDLESTON. Mr. Secretary, in your energy supply initiatives document, I notice that you include $150 million for energy impact assistance, a badly needed program, I think, and one which I have supported.

I'm a little confused as to why it appears in the DOE budget, however. It was my understanding that this program was to be administered by the Economic Development Administration.

Secretary SCHLESINGER. That is correct, sir.

Senator HUDDLESTON. And the Department of Commerce.

Secretary SCHLESINGER. It is not a DOE budget request, but in the summary of supply initiatives, it was shown for completeness. It is in the Commerce Department budget.

Senator HUDDLESTON. Listed as an expenditure but not in your budget request.

Secretary SCHLESINGER. Yes, sir.

Senator HUDDLESTON. My first 10 minutes are up.

Senator Bayh?

REGIONAL BIOMASS CENTERS

Senator BAYH. Mr. Secretary, I again appreciate your coming back this afternoon. Senator Huddleston and I have had about three different hats to wear today and it's good that your making it possible for us to wear this very important one.

I don't want to be redundant, relative to this morning's discussion, but I gather that you made reference to the possibility of a biomass institute being established some place in the country.

Could you give us——

Secretary SCHLESINGER. What was said in response to a question by Senator Leahy was that each of the various regions has different biomass potential, that biomass possibilities tend to be specific to a region. The Northeast, which was the focus of Senator Leahy's question, has possibilities different from the Southeast. They, in turn, differ from the Midwest and the Northwest. Therefore, we must think in terms of regionalization of biomass efforts rather than some central uniform institution that would miss the local opportunity.

Senator BAYH. Do you concur in that assessment?

Secretary SCHLESINGER. Yes, sir.

Senator BAYH. I do also. I think biomass has a great potential. But we are dealing with different potentials in different areas. I suppose the potential that exists nationwide is garbage.

If you are approaching this from a regional perspective, is it fair to ask at this time how many regional centers you would expect to utilize in this program?

Secretary SCHLESINGER. I think that would probably be premature, Senator. I would hate to get in concrete on that kind of thing. We have five or six regions of the country.

Senator BAYH. When will you have proceeded far enough along that you can begin to make some determination in this regard, so that interested areas and interested institutions can make their interest known?

Secretary SCHLESINGER. We should do it during the balance of this year, Senator.

Senator BAYH. Will the program operate on a competitive basis so that everyone will have the chance to get into the competition?

Secretary SCHLESINGER. Yes, sir.

ALCOHOL FUELS

Senator BAYH. As you know, I am very much interested in the potential of fuels from renewable resources, such as liquid fuels or alcohol. You and the Senator from Kentucky had a dialog on a

different kind of liquid resource. We know alcohol can be made from renewable resources.

Senator HUDDLESTON. We have an abundance of that, too, Senator. [Laughter.]

Senator BAYH. Regardless of what side of the river you're on, we have a lot of it. I have been a bit disappointed, as I'm sure you know, about the lack of our country's efforts—not just your Department's efforts—in the area of alcohol fuels. And I'd like to get your thinking on this. It's a relatively new area, in technical terms, to think of mass reliance on alcohol fuels.

I don't want to put words in your mouth, but I recall reading or hearing of your making a statement that alcohol fuels would be a good solution for the farmer, but not necessarily a help for the country as far as energy supplies are concerned. And I think you or someone else in the Department has used a $13 to $17 per million Btu cost estimate.

Could you tell us if that is an accurate quotation; and, if so, how did you reach that conclusion?

Secretary SCHLESINGER. We estimate that the costs run about $13.20 or to $17.10 per million Btu in constant dollars. That would amount to something on the order of $70 a barrel. It is approximately three or four times the cost of crude oil at the present time.

I think in order to make gasohol work that we're going to have to substantially narrow the cost differentials. That will require considerable effort. We're interested in the long-term potential in this area, but at this juncture there is a very substantial difference in price.

The money that is included in the budget for research on alcohol fuels is about $20 million. There are some problems that would have to be resolved in the case of methanol, which is produced from coal. The advantage of methanol is that it is at this juncture cheaper than producing ethanol from grain. In producing fuels from coal, we have the possibility of going directly to gasoline, and that may be preferable to just adding methanol to a fuel.

With regard to ethanol, I have mentioned the present problem with regard to costs. We discover that the biomass is already being used for fuel purposes. In Hawaii, for example, we discovered that the fermentation that we were going to do with the debris from sugar cane was already being burned locally for the production of electric power. So there was no reason to add an additional phase in the cycle.

Quite obviously, we have a problem at the present time, but have somewhat alleviated it in recent months, I believe, of surplus farm production. While this would provide immediate relief in that regard, it is not clear that this is a cost-effective way at this juncture to pursue augmentation of our fuel supply.

I think that about summarizes it.

FUNDING FOR ALCOHOL FUELS PROGRAMS

Senator BAYH. The cost estimates, I assume, were arrived at by estimates based on existing processes, those by which commercial alcohol is distilled now. Is that a fair speculation?

Secretary SCHLESINGER. Partly that, and partly by examination of methanol plants used for gasoline production.

Senator BAYH. I assume that the estimate does not consider developments such as the enzymatic hydrolysis process developed by Dr. Tsao of Purdue University, which cuts the cost by half. That is not being utilized commercially now; it's a recent breakthrough.

Secretary SCHLESINGER. I am unfamiliar with that. I shall look into it.

Senator BAYH. I guess my concern is that you describe the situation accurately, as it is now, but that if we are to explore the real potential of this energy source we have to invest the resources necessary and provide incentives for further development and exploration of the horizons of opportunity. This is true not only for the development of advanced fermentation and distillation systems, such as the Tsao process, but applies also to the area of energy crops. We have found, from past experience, that our agricultural research people have a fantastic capacity to grow crops with specific characteristics. We have never asked them to come up with a crop that could meet, say, cellulose or Btu requirements.

You say there's $20 million in the present budget?

Secretary SCHLESINGER. Yes, sir, for alcohol fuels.

Senator BAYH. How does that compare, Mr. Secretary, with research in other liquid fuel areas, such as enhanced oil recovery, oil shale, coal liquefaction, methanol?

Secretary SCHLESINGER. It's a little less than half of enhanced oil recovery. With regard to oil or fuel liquids from coal, that depends. Obviously, the SRC-II plants would in the future alter the balance. But at the present time, they are not too much in balance.

Senator BAYH. Could you get us the comparisons for the record?

Secretary SCHLESINGER. Yes, sir, we will provide a list for the record.

[The information follows:]

FUNDING FOR LIQUID AND ALCOHOL FUELS

The President's fiscal year 1979 budget request includes the following funding requests for research and development of liquid fuels:

	Budget authority
	(Thousands)
Coal liquefaction	$125,066
Enhanced oil recovery	46,700
Oil from oil shale	30,225
Alcohol programs	18,600

Senator BAYH. There's no way to expect you to have the answers to a similar comparison, say, over the past 5 years. I would assume that only a miniscule amount of research money and effort has gone into alcohol. This leads me to believe that we really are considerably short of where we can be if we would put adequate resources into this area.

I am glad that you are going to adopt a regional center approach, so we can exploit, in the finest sense of the word, the biomass potential of the various regions.

In the oversight hearings——

Secretary SCHLESINGER. May I add, Senator Bayh, that this, among other subjects, is being examined in what we call the na-

tional energy supply strategy, which I mentioned to the chairman. We hope to complete work on that some time around September.

Quite obviously, alcohol fuels is one of those things that should be looked at in terms of a long-term supply strategy.

Senator BAYH. Certainly. I certainly hope it would be.

ALCOHOL FUELS PROGRAM

In the oversight hearings that I chaired in January, we had the Department of Energy and the Department of Agriculture up, and had a very good give and take. As I recall the hearings, your representative stressed that the alcohol fuels program is going to be divided into two major elements, one for immediate action, which would advise you, I assume, in relationship to the national energy supply strategy; and the second aimed at the longer range.

Have you made any progress since January in being able to define the scope of these studies on alcohol?

Secretary SCHLESINGER. I do not know that at this juncture. Let me insert a comment into the record.

[The information follows:]

ALCOHOL FUELS STUDIES

The immediate action elements consist of a series of near-term studies designed to resolve key issues obstructing decisions on commercialization. Special attention will be given to assessing the potential of new technologies and processes, which claim to be able to substantially reduce costs of alcohol production and improve energy efficiencies. The information gathered from these studies will provide key input into the Department's national energy supply strategy, so that decisions on commercialization can be made as soon as possible.

The Department is currently finalizing the scopes of work of these contract studies, and initiation of these studies is scheduled to occur within the next month. Over $600,000 is being budgeted by the Department to carry out these immediate action policy studies.

Senator BAYH. Fine.

Will this be a September decision—I'm trying to anticipate when commercialization decisions are going to be made, or will that be put off until later?

Secretary SCHLESINGER. It might or might not, depending upon the results of the evaluation.

Senator BAYH. Thank you.

GASIFICATION TECHNOLOGIES

Senator HUDDLESTON. Mr. Secretary, would you explain for the record the difference between first, second, and third generation of gasification technologies?

Secretary SCHLESINGER. I will take a flyer at that. First generation is what is here today. Primarily, this is a substantial improvement on the Lurgi technologies that were used by Germany in World War II and used elsewhere in the world. There is no question about our confidence in that technology. There is some dispute about what would be the relative price of gas that emerged, whether it would be $3.20 or $3 per Mcf. But we know that we have the technologies in hand.

In this regard, we have proposed two ways of dealing with the need to get these plants, for which we have the technologies on

line. One is through tariff treatment by the FERC, which would give favorable tariff treatment to consortia developing these as R. & D. demonstration plants. The other is through Federal loan guarantees, for which this committee is requested to appropriate $20 million in fiscal year 1979.

The problem for the first generation is not a technical problem; it is an institutional problem. A consortium wishes to build such a plant. It goes to the bank and asks for a billion dollars. The bank says, show us a working model of this plant. They respond that there are none in this country; you have to go overseas. The bank immediately gets somewhat skeptical.

We do not have a first of the kind on line in this country. It's more complex than that because, in view of the fact that we do not have the first plant in this country and that this is a regulated industry, the bank then says to the gas utility, can you guarantee to us that your State will provide you with appropriate tariffs if you build this plant? They say, no, we've had no experience in this area with State public utility commissions.

The bank at this point has begun to lose interest. The purpose here is to provide the institutional support for the construction of these facilities that we know technically we can build. So that technology is here now.

Second generation technology, of which an illustration is Hygas, is designed to improve efficiency over the first generation. Our inclination of late has been to diminish emphasis on the second generation, which is designed to achieve a marginal improvement in efficiency, and to avoid the delays and the technical risks associated with finalizing that technology, and attempt to get some of these first generation plants deployed.

The third generation plants would have a very substantial increase in efficiency, therefore a substantial drop in costs. So we would hope to jump from the first to the third generation. In the case of the second generation, the gains in efficiency are marginal, and the technical risks and the costs associated with solving those technical risks are substantial; and as a consequence, our interest has begun moving back to deploying what we can do now.

This is something of a change from the inclination of ERDA, which was one of the predecessor agencies of the Department of Energy. I think it's fair to say that ERDA had a strong preference to continue doing R. & D. We would prefer, if we can, to focus our R. & D. dollars where the payoff is the highest, and to move ahead with supply augmenting options, such as the first generation Lurgi plants.

COAL GASIFICATION PLANTS PROGRAM PLANNING

Senator HUDDLESTON. According to figures we've seen, the improvement in efficiency from first to second generation goes from 44.6 to 61.2 percent, which seems to be somewhat more than marginal. Is that accurate?

Secretary SCHLESINGER. We'll have to take a look at those figures, Senator, and see whether they are consistent with our own. We had been projecting something like a 10 percent or 5 percent reduction in costs of production. Therefore, financially the step up

to the second generation becomes marginal. Whether the technical efficiencies achieved are as substantial as your figures indicate is something we'll be back to you on.

Senator HUDDLESTON. The question is: Is this switch based on the actual technology again, or is it based on budget constraints?

Secretary SCHLESINGER. It's based upon our judgment that we should start getting these plants on line. What we are attempting to do is to create and demonstrate a series of options in the early 1980s so that when the oil problem, the oil crunch, inevitably strikes this country sometime in the decade of the 1980s, that we have the technical options and the capability rapidly to deploy additional plants.

The only political consideration that has been involved with regard to the Lurgi plants is, as you will recall, 2 years ago there was vigorous opposition in the House of Representatives to any subsidization of these synthetic technologies. At that time, however, the Senate approved them.

Senator HUDDLESTON. Well, now, has this taken into consideration the difference in the types of coal that can be utilized by the different processes? Lurgi technology is not adaptable to Eastern coal.

Secretary SCHLESINGER. Yes, sir, and it is for that reason that we continue to support second-generation technologies, because of the caking problem. One can use Lurgi on Western coals, but as yet we have not resolved that problem for Eastern coals. The Hygas process for example, would be useful for Eastern coals, and we continue to be interested in that technology, if we can solve the technical problems.

That will help us in the East, but we do not see reason not to deploy these Lurgi plants in the West, awaiting the resolution of those technical problems on the second generation.

I should emphasize that we have not abandoned second generation and moved toward first generation. There's been some shift in emphasis, but we are interested in both technologies.

COAL LIQUEFACTION

Senator HUDDLESTON. What kind of activity in the coal liquefaction area can we expect to see in the near future? Is there going to be more emphasis or less emphasis? How are we moving on that?

Secretary SCHLESINGER. We are moving with three different technologies: the SRC–II process; the so-called H-coal; and donor solvent. SRC–II has been developed by Gulf in collaboration with the Government. The donor solvent is Exxon in collaboration with the Government. H-coal is Ashland.

At this stage of the game, the SRC–II technology is in hand. For that reason, we are prepared to move ahead with the demonstration facility. We would start on the first commercial train, with spending of fiscal year 1980 budget construction money.

We will need to explore each of these technologies. Each of them has its advantages. We believe the donor solvent, for example, gives a higher fraction of the lighter end of the barrel to be used for gasoline; whereas, SRC–II will be useful primarily as a substitute for residual oil. Each of these products is broken up, and

SRC–II provides some gasoline, some middle distillate, some residual. The proportions are different.

I think the mix of these kinds of capabilities will depend upon the technology and the demands in the future. I think we want to prove all of them out. We want to proceed with both H-coal and donor solvent, although we do not have that technology in hand at this juncture.

Senator HUDDLESTON. It is your intention and your plan to proceed with these liquefactions?

Secretary SCHLESINGER. Yes, sir.

Senator HUDDLESTON. Do you have any estimates or goals that you're setting for the future as to what percentage of our total liquid fuel supply might come from liquefaction?

Secretary SCHLESINGER. We have played around with that, and I hesitate to do anything more than to suggest some possible numbers. But we have thought that, by the end of the 1980's, we might be able to obtain as much as 10 percent of our overall requirements from these synthetics. Quite obviously, by the early 1980's, we will merely have demonstrated the technology, so it will require considerable effort on our part.

Liquified coal is only one of those technologies that might be contributing to our total liquid fuel supply. Senator Bayh has mentioned gasohol, which could be part of the mix. We're looking at oil shale. At this juncture, we cannot tell the ultimate composition of the mix, but we would hope that, as we approach 1990, we can produce something on the order of 10 percent of our total from these synthetics.

Senator HUDDLESTON. Is our research-development program going to be adequate to achieve that kind of result?

Secretary SCHLESINGER. I think the question does not involve so much our R. & D. program, Mr. Chairman; I think that is adequate.

Whether in the 1980's, as we prove out these technologies, we will be able to rapidly deploy the necessary industrial base is the unanswered question, rather than the question regarding the adequacy of R. & D.

Senator HUDDLESTON. Senator Bayh?

Senator BAYH. I suppose, then, Mr. Secretary, at that stage of the game it's incumbent upon all of us who are around and involved in the decisionmaking process to find a way to increase the incentives to get involved in the industrial community process.

Secretary SCHLESINGER. Yes, sir. I think we will feel that pressure to a much greater extent at that time, as we recognize the President's call for the moral equivalent of war, about a year ago, which meant that we had to evolve a national consensus. I don't think we've evolved that consensus yet. I don't think that in our visceras we've recognized the magnitude of the problem.

By the middle 1980's the world will be in very dire straits with regard to oil supply, and as a consequence, we will feel that pressure to come to a national consensus more keenly than today.

FINANCIAL ASSISTANCE TO PUBLIC UTILITY COMMISSIONS

Senator BAYH. There is a very strong consensus, I think, in my state, in one area that's not directly related to what we're talking about here, but I wanted to ask this question before we go further.

I was just out home, and I must say a lot of my constituents are very unhappy and distressed at the way in which they feel they've been put upon, discriminated against, by some of the utility companies, with the imposition of this fuel adjustment clause that keeps popping up on all of the utility bills out there.

Now, I understand we made moneys available to the Economic Regulatory Administration's utility consumer office, and that 12 States have been designated as grantees. Indiana was one of those States. We had a terribly hard winter. From what I've been told, that money hasn't arrived, and the concern is that the Indiana Public Service Commission is going to be hearing a series of rate cases in the next few months. A lot of consumers are concerned that if the money isn't there, they won't be adequately represented before the Public Service Commission.

Do you know anything about how much money has been designated and why we haven't had it made available yet?

Secretary SCHLESINGER. I am unfamiliar with that, Senator Bayh, and I will check on it and get back to your office. During the coal strike there were very severe problems in Indiana, Ohio, and a number of the other affected States. They were importing power, and tended to import the highest-cost power from their neighbors. They imported power at the highest marginal cost, and this, of course, is quite a shock to the utility ratepayers in those affected States.

Senator BAYH. The very severity of the winter made the costs go up, and then, to be hit by this fuel adjustment tax or cost on top of that has put a lot of people into the red. Some of them just haven't been able to pay their bills yet, and they don't want to be confronted with having their service terminated.

So, if you could get that information, I'd be very appreciative.

[The information follows:]

INDIANA UTILITY CONSUMER OFFICE GRANT PAYMENT

Authorized by title II, section 205 of the Energy Conservation and Production Act (Public Law 94-385) to provide States with funds to establish and/or operate utility consumer offices to represent consumer interests in proceedings before utility regulatory commissions, the Federal Energy Administration awarded a $200,000 grant to Indiana on September 28, 1977.

There were some initial administrative problems at the Department of Energy (DOE) that delayed payment to Indiana under a letter of credit. The State requested a $13,000 allocation against its letter of credit with DOE on January 16, 1978. They received a check in this amount from the Department of Treasury on February 14. No other requests for payments have been received by DOE to date.

While the DOE money has been received by the State, we have been told that there are internal problems within the State which blocked their expenditure of a major portion of the DOE grant funds.

The Attorney General of Indiana has vetoed the expenditure of grant funds for subgrants to consumer groups who are registered lobbyists on the ground that the award of subgrants to such groups would conflict with a State statute on lobbying activities.

ENTITLEMENTS PROGRAM

Senator BAYH. Let me ask you to give us some additional information, Mr. Secretary, on the announcement that I read—I think it was last Friday—that the Economic Regulatory Administration had adopted a new rule for treatment of liquid synthetic fuels under the entitlements program.

Secretary SCHLESINGER. Yes, sir.

Senator BAYH. The way I understand it—what is it, about $2 a barrel for oil shale? How is this subsidy going to be applied to the different kinds of liquid synthetic fuels?

Secretary SCHLESINGER. The rulemaking made all of these synthetics eligible for entitlements treatment. Gasohol could be one, oil shale, and the like. At this point, we subsidize domestic refineries, and therefore, imported oil to the tune of about $2.06 per barrel. Every barrel of crude that comes into the United States has that kind of subsidy associated with it. That's by way of a footnote. It is not the road to energy independence. We are seeking to eliminate that subsidy in its entirety.

But at this juncture, if you do not have entitlements treatment, then, you must compete with the unsubsidized price of a barrel of oil, which is a couple of dollars below the world market price. By being made eligible for entitlements treatment, these synthetics are able to compete fairly with the world price of oil, with incoming imported oil at $13.50 a barrel.

The way it works is that, at the present time, a refinery receives entitlements for its imported crude, $2 a barrel. A producer of synthetics, once he's been approved by the ERA, would receive a similar entitlement to approximately $2 a barrel for each barrel of synthetic crude or substitute that he produces.

Senator BAYH. Does ERA make this determination for each kind of fuel, or are different kinds of fuel treated differently?

Secretary SCHLESINGER. I think, if I understand the distinction, that it's the former. What we are interested in, of course, is technically that this is an appropriate substitute for imported crude, one way or another:

Senator BAYH. I may be wrong, but from reading the press—I may have lost some of the facts there—I got the impression that oil from oil shale was going to be treated differently than other liquid substitutes for oil. Is that correct?

Secretary SCHLESINGER. No, I don't think so. I think that all of the substitutes are eligible for entitlements treatment. The only difference is the application procedure. I think that the newspaper story may have emphasized oil shale because that would be more familiar to some of its readership.

Senator BAYH. The Btu equivalent of whatever the liquid is, compared to oil? Would that be the yardstick that's used? Or what yardstick?

Secretary SCHLESINGER. I think it is Btu equivalent, yes, sir.

CANADIAN GAS PIPELINE

Senator BAYH. Could you give us a progress report, Mr. Secretary, on the Canadian gas pipeline? Some of us are very anxious to get this project moving. It's been a long, difficult process, involving

the ultimate in negotiating skills with you, Ambassador Enders, and others. Can you tell us where we are on that right now, please?

Secretary SCHLESINGER. Yes, sir. We have made progress. There are two countries involved. The Canadian legislature, the Parliament, has now passed the enabling legislation. They are drumming their fingers waiting for us to pass the natural gas bill. The natural gas bill has, as I think you know, been hung up in conference.

It is, I think, indispensable to get the substantive elements of that natural gas bill, including pricing of the natural gas and the feature of rolling in the transportation costs, in order to assure private financing of that line. Right now the financial community is waiting, as it has for some months now, as well as the proponents of the pipeline, for the resolution of the natural gas conference.

Senator BAYH. Let us be optimistic. Let us assume that shortly this will be resolved. Suppose by July 1 that everything is wrapped in a nice neat little package. Then how long do you estimate it would take to get the natural gas rolling?

Secretary SCHLESINGER. We would hope to see the so-called Canadian bubble moving over that pipeline by 1980, and that Alaskan gas would come down the pipeline in 1983.

The Canadian bubble reflects the advanced building of the southern portion of that pipeline, and there is excess gas available in Alberta, which would then be sold in the United States. Some gas could be flowing as early as 1980. The proponents had hoped that that would occur by the end of 1979, but the passage of time has meant some slippage.

Senator BAYH. Do you have any estimate of what that gas is going to cost delivered in the United States, what it will have to cost in order to make it worth——

Secretary SCHLESINGER. The cost per Mcf varies over the life of the pipeline. We can give you the scale of costs. But my recollection is that, in constant 1975 dollars, that we are talking about something on the order of $2.75 per Mcf. Now, that includes transportation, processing, and the cost of the gas itself. In current dollars in 1983, it's around $4.50, I would estimate.

The whole scale of prices, indeed the general scale of prices, as a result of inflation will have moved up considerably. In dollars that we know at the present time it will be about $2.75. That will be rolled in with cheaper gas that is being sold under old contracts. This is a way in which we use the regulatory system as a method of subsidizing domestic projects that augment our energy supply. If we did not roll in Alaskan gas, there's some question whether the pipelines could be built at all, and for that reason we need to have that natural gas legislation.

Senator BAYH. Do you think the Alcan people will be able to put together the financial package, or are we going to have to provide some Federal loan guarantees? What's your estimate on the financing?

Secretary SCHLESINGER. I have every expectation that they will be able to provide private financing for this line. They will need the legislation. They will need to have the certainties associated with the legislation before they go to the relevant financial houses.

Each month that passes, the cost of the pipeline will increase by $15 million. Since we've lost 4 or 5 months here, the cost of the pipeline is now up $75 million. At some point, I think that the rising costs associated with inflation and escalation may endanger the private financing of the line. But at this date, private financing remains doable.

Senator BAYH. Thank you.

COAL RESEARCH

Senator HUDDLESTON. Mr. Secretary, back to your efforts on coal research. Does the fact that the percentage of the DOE budget devoted to coal research has declined—it's now less than 5 percent in the fiscal 1979 budget—represent a lack of determination in the field of coal research?

Secretary SCHLESINGER. No, sir, absolutely not. Coal is our priority fuel. Making coal burn is vital to the future of the country.

I think if you examine what has happened to our budget, we have had about a billion dollars add-on. Almost half of the total growth has been either in defense-related activities or in the strategic petroleum reserve. I think that these have to be treated on their own merits. Because of the growth in the requirements of the strategic petroleum reserve, the share of other elements of the budget has tended to slip in percentage terms. But we should look at these things in terms of the absolute level, rather than in terms of the share of the budget.

The strategic petroleum reserve will be a requirement to be faced for the next 3 or 4 years, and then will disappear as a funding requirement. Of course, at that juncture, as it disappears, all of the other components of the budget will rise in percentage terms.

MAGNETOHYDRODYNAMICS

Senator HUDDLESTON. In magnetohydrodynamics we see a budget item that's increased from $34.9 million to $68.8 million from 1977 to 1979. What's the reason for this large increase?

Secretary SCHLESINGER. Mr. Chairman, I think it reflects in part the enthusiasm and largess of the U.S. Congress.

Senator HUDDLESTON. Generosity. It does not reflect a change in the R. & D. priority, does it?

Secretary SCHLESINGER. No, sir. I think that magnetohydrodynamics has always been an attractive concept. We've been working on it for 20 years. We have joint projects with other countries. It would dramatically increase the efficiency of our power generation from something on the order of 35 to 40 percent to as high as 50 percent. It's an attractive concept.

The problem is that we have to this date not been able to make the technology work.

TASK FORCE TO STUDY COAL PROBLEMS

Senator HUDDLESTON. Mr. Secretary, let's get at another area that may not be quite as esoteric as the research into gasification and liquefaction, but nevertheless is at least as important in terms of our actual ability to utilize or further utilize coal. There are a

number of rather formidable constraints on the production and use of coal, from the labor-management relations problems to the environmental and transportation problems, in addition to the technological constraints that we have.

Could you explain the function and the time frame of the new interagency task force that has been established to study these constraints for greater use of coal?

Secretary SCHLESINGER. I think, Mr. Chairman, that the reference is to the Presidential commission which we are in the process of establishing. The Presidential commission is designed to look at the institutional difficulties.

Senator HUDDLESTON. I think there are two different approaches that are being made. I think the President said he was going to establish a commission after the coal strike, and I understand he's in the process of doing that now.

Secretary SCHLESINGER. Yes, sir.

Senator HUDDLESTON. This probably will be related more to the labor-management problems of production. But as I understand it, the administration has formed an interagency task force in response to direct appeals made to President Carter by Senator Jackson, due to report back by about 1985.

Secretary SCHLESINGER. This is the OMB task force, Senator. The OMB, pursuant to Senator Jackson's request, is to collect information from the various agencies.

Senator HUDDLESTON. I was wondering what part your agency is playing.

Secretary SCHLESINGER. We're providing information on all our activities.

Senator HUDDLESTON. They have been in touch with you about it?

Secretary SCHLESINGER. Yes, sir.

Senator HUDDLESTON. Will you be the lead agency in this task force?

Secretary SCHLESINGER. I think the OMB has the lead, sir.

Senator HUDDLESTON. What about DOE's role in the presidential commission referred to a moment ago, subsequent to the strike?

Secretary SCHLESINGER. One of the possibilities that has been mentioned is that several of the Cabinet officers, including myself, be ex officio members of that commission. The commission, as you've indicated, must deal with the long-term institutional problems in the coal fields. These have never heretofore been satisfactorily handled. Labor relations in the coal fields are historically abysmal. There must be a change in the institutional setting if the country is to increase its reliance on coal.

We're interested in stability in the fields. We're interested in improving productivity, which has been declining in recent years. That is the focus of the commission.

There will be I don't know how many commissioners—five, seven, nine, something on that order—plus a number of representatives of the Government.

ADMINISTRATION ENERGY IMPACT ASSISTANCE

Senator HUDDLESTON. Regarding section 306 energy impact assistance, in view of the President's statement on energy impact assistance in his speech out in Denver on Sun Day, do you believe that the administration will have any objection to this committee's funding the section 306 housing program contained in the National Energy Act at its full $60 million for fiscal year 1979, assuming that we have an energy bill?

Secretary SCHLESINGER. Well, of course, I think that that should be within the $150 million that the Administration has suggested for the totality.

Senator HUDDLESTON. It should be part of that program?

Secretary SCHLESINGER. Not separate from it.

Senator HUDDLESTON. In addition to it? Well now, as approved by the conferees, section 306 calls for direct transfer of funds from DOE to the Farmers Home Administration. Have you made preparations for carrying out that process?

Secretary SCHLESINGER. Mr. Miles?

Mr. MILES. I don't think those arrangements have yet been made, Mr. Chairman.

Senator HUDDLESTON. It will involve personnel slots being transferred and a number of other things to implement the program, as I understand.

Mr. MILES. The Farmers Home Administration has a very extensive field organization, Mr. Chairman. The DOE does not. It would be unlikely that there would be a transfer of people involved. It would more likely be the use of their field structure to carry out this particular program.

OPERATIONS PLANNING BY COAL COMPANIES

Senator HUDDLESTON. Section 306 also provides that coal companies might be required, if requested by the governor, to prepare a report of their planned operations. This is to give the DOE information as to what impact may be forthcoming. Has there been any effort made to develop the regulations that might be necessary to implement that section?

Mr. MILES. Not that I'm aware of. We'd be happy to inform the committee and amplify that in the record.

[The information follows:]

IDENTIFICATION OF COMMUNITIES AFFECTED BY ENERGY DEVELOPMENT

The Intergovernmental Steering Group, under the direction of the Department of Energy, has recently completed a report to the President on energy impact assistance which identifies the needs of communities impacted by energy development. Timely information regarding the size, timing, and location of the development was identified as one of the crucial elements in planning for and managing development. The proposed Hart/Randolph inland assistance bill also has an information related provision which calls for energy development related information by all key Federal agencies to be given to State and local governments. It is crucial that the information systems called for in these two bills be well coordinated. The Department of Energy, Interior, Commerce, Agriculture, and others, which have access to energy production and impact plans, will jointly establish an informational system for use by those State and local governments where energy development and impacts will occur. We at the Department of Energy are currently identifying the energy information available for use by State and local governments and will aggressively

participate with the other Federal Departments in establishing the information dissemination program called for by the two impact assistance bills.

Secretary SCHLESINGER. I think that it has been regarded as a responsibility of the governors, that the structure of the assistance program has been to funnel the money to the States, both for planning grants and for revolving funds.

Senator HUDDLESTON. I believe DOE has to develop some regulations on that. You haven't addressed that yet, and I assume you're not expecting it to be forced upon you any time soon.

Secretary SCHLESINGER. We will check on that.

[The information follows:]

REGULATIONS FOR IMPACT ASSISTANCE

The President, in his May 4, 1978, announcement of his impact assistance proposals, indicated that he was not opposed to section 306. He did indicate that funding for the 306 program would result in reduced funding for the new program as administered by the Economic Development Administration. DOE is currently evaluating the information needs of energy impact areas and working to define an appropriate information system.

The regulations for section 306 of the coal conversion bill will be written by Farmers Home Administration of the Department of Agriculture. DOE does, however, intend to coordinate with FHA in the drafting of the regulations, particularly in the areas of Federal coordination and energy information sharing.

ENERGY LEGISLATION

Senator HUDDLESTON. Do you have any estimate as to when we're going to have an energy bill, Mr. Secretary?

Secretary SCHLESINGER. If we were to have one this year, we should have one soon, Mr. Chairman.

Senator HUDDLESTON. By when? This week? Ten days?

Secretary SCHLESINGER. I would hope that the natural gas agreement will get the support of the necessary number of votes on the House side in the near future. At that juncture, Senator Long has indicated that it could be as little as several weeks before the conference on taxes might be able to turn out the tax component. It will be a long time wending that legislation through the Senate, and then subsequently through the House.

Senator HUDDLESTON. Are you prepared to begin implementation as rapidly as it can be passed? It sounds like we haven't addressed some of these things. It sounds like the folks who came to pray for rain didn't bring an umbrella.

Secretary SCHLESINGER. We have been in a readiness posture, for example, to introduce the regulations for the coal conversion bill, for 4 months. Some of the final polishing of those regulations will have to depend upon the final action by the Congress. In many cases we have made advance preparations. In some cases it is difficult to make those advance preparations until such time as we know the shape of ultimate legislation.

COAL CONVERSION TECHNOLOGIES

Senator HUDDLESTON. Back again to the coal conversion situation. Other than the difficulties with the technologies, what does DOE regard as the major barriers to the commercialization of coal conversion technology?

Secretary SCHLESINGER. The chief barriers are inexperience, the novelty for industry to work with these new technologies. They prefer to cling to what is familiar. Therefore, when they compare low Btu gas with burning oil imported from abroad, the decision remains fairly easy to go on burning oil.

I think as there's a keener appreciation in industry for the kinds of prices and of the availability of oil in the 1980's, and at the same time we manage to convey great familiarity with these new technologies, that they will begin to move out.

Right now, they are financially marginal and very few firms have the impulse to move into a technology that is financially marginal and also unfamiliar and requires a learning curve.

Senator HUDDLESTON. Of course, another substantial shortage of crude oil would perhaps give some impetus to that development; would it not?

Secretary SCHLESINGER. Yes, sir.

Senator HUDDLESTON. In that light, has the Department ever considered recommending a mandatory decrease in our imports to force development?

Secretary SCHLESINGER. Yes, sir. We have examined that with some care and the problem with a self-imposed shortage is that given the characteristics of demand, that prices would move up quite rapidly.

We could impose price controls under conditions of shortage, but after a period, I believe that control mechanism would become somewhat frayed. The inflationary consequences of a dramatic substantial decrease in the availability of crude could be substantial, and we have been apprehensive in that respect.

We prefer to raise prices directly through the crude oil equalization tax to the world price level, rather than to create artificial pressures for raising prices through an induced shortage.

The economic impacts of the former are far more easy to absorb than the latter.

Senator HUDDLESTON. Certainly price control is not new to us in the energy field, and we don't really cope with a shortage in this country until we have one.

Secretary SCHLESINGER. Yes, sir.

Senator HUDDLESTON. It seems that a combination of the two, enforced shortage with price restraint, might accomplish what we need as far as developing other technologies and other sources. It might also use up all of our domestic supply, of course.

Secretary SCHLESINGER. I think that if one wanted to move in that direction, it might be better. It might be preferable to announce long-term allocation programs for those industrial segments that one intended to move toward coal technologies, rather than impacting the overall economy.

I think, given that objective, there are other ways to accomplish that goal. That runs parallel to what the Congress intends to do in the coal conversion bill.

MARKETS FOR SYNTHETIC FUELS

Senator HUDDLESTON. Are there any particular markets that lend themselves to synthetic fuels more than others that you have identified?

Secretary SCHLESINGER. Yes, sir. And we'll provide a list for the record.

[The information follows:]

MARKETS FOR SYNTHETIC FUELS

Synthetic fuels lend themselves to particular markets. For example, middle distallate and jet fuel requirements are best served by oil from oil shale while liquids derived from coal, due to their aromatic content, are more suited for upgrading to motor gasoline or naphtha-type products. Coal liquids or solid SRC products can also be used as a low-sulfur substitute for coal in existing utility boilers. Alcohols, sometimes as blends, are better suited for motor fuels or for turbine applications.

Due to economics of scale, low-Btu gas produced from coal is most applicable for small direct heat applications in the stone, clay, and glass industries, while medium-Btu gas is more likely to be used in large facilities in the steel, chemical, and petroleum refining industries. High-Btu gas can replace natural gas in any residential, commercial, or industrial application.

COAL RESEARCH CENTERS

Senator HUDDLESTON. Who's developing the program of coal research laboratories authorized under the Surface Mining Act? Does the Department of Energy have any role in that or has that been covered this morning?

Secretary SCHLESINGER. I think that was covered. You're referring to the 10 universities? Yes.

Senator HUDDLESTON. Mr. Secretary, there's a large number of questions, most of which we will submit to you. If you can stay with us another 15 minutes or so, we'll try to wrap up some of them.

ENERGY SUPPLY PROJECTIONS

Senator HUDDLESTON. The Department of Energy's information administration just this month released its projections of energy supply and demand. These projections would tend to reinforce the criticism of the General Accounting Office which says that some of the projections in the national energy plan were not realistic.

What impact do you think that the bleak energy supply projections of the EIA will have on the national energy plan?

Secretary SCHLESINGER. I hope a favorable impact. The EIA projections were drawn up on the basis of present law without the impact of the national energy plan. The national energy plan will be beneficial.

We've had some slippage in the impact. Originally, we thought that the plan would save us about 4½ million barrels of oil per day as compared to what would otherwise be the case in 1985. The legislation has in a number of respects been weakened. But we would expect that it would save us on the order of 2½ million barrels of oil.

As consequence, we would expect to be importing something on the order of 9 million barrels a day in 1985 rather than the

projected 7. But it should be an inducement and a goal to passage of the national energy plan.

Senator HUDDLESTON. The EIA predicts that oil imports will range from 9.1 to 12.5 million barrels a day in 1985.

Secretary SCHLESINGER. That is in the absence of the passage of the national energy legislation.

Senator HUDDLESTON. With the passage, then, does the goal of 6 million barrels a day remain realistic?

Secretary SCHLESINGER. I think that we probably, if one looks at this legislation, have lost a couple of million barrels a day savings. Depending on whether you use the 6-million barrel base or the 7-million barrel base, you're looking at 8 or 9 million barrels a day in 1985.

National energy legislation should not be just something that ends with the NEA. We should be looking for other ways to reduce our oil imports as the years go by. The start of the supply initiatives should make some contribution.

Senator HUDDLESTON. Well, the report notes that its projections reflect only the impact of existing conservation programs.

Secretary SCHLESINGER. Yes, sir.

Senator HUDDLESTON. Do you anticipate any new conservation programs or more vigorous enforcement?

Secretary SCHLESINGER. Yes, sir. None of the five National Energy Act bills are included by the EIA in these calculations. The conservation bill, the coal conversion bill, the utility rate reform bill, and the tax legislation should have a substantial impact on conservation.

Senator HUDDLESTON. And do these projections factor in the anticipated increase in domestic production?

Secretary SCHLESINGER. Yes, sir.

Senator HUDDLESTON. For this period of time?

Secretary SCHLESINGER. Yes, sir. The EIA is slightly more pessimistic about oil production in 1985 than the national energy plan. Something on the order of 400,000 barrels a day, I believe.

ENERGY BUDGET

Senator HUDDLESTON. Now some budget matters in general.

The budget before the subcommittee, of course, is a big one involving a $1.5 billion increase, or about 31 percent. However, the bulk of that budget and most of the increase over the current year is for the strategic petroleum reserves.

If we look at that part of the budget that is directed to conserving energy resources and expanding energy production we see only about $2 billion for 1979, an increase of some $420 million, or a little more than 25 percent.

Since all of the energy programs funded in this bill are essential to the near-term goals of the national energy plan, do you believe that the budget before us is fully adequate?

Secretary SCHLESINGER. Yes, sir.

CONSERVATION PROGRAMS

Senator HUDDLESTON. It meets all your stated goals? Aside from the strategic petroleum reserve, the major program emphasis in

the budget is to increase the conservation programs. Conservation activities before the subcommittee total more than $900 million. That's up about 52 percent over the current year.

The bulk of that increase is for grant programs to foster low income home weatherization and State conservation efforts.

In your judgment, how effectively does this conservation budget address the national energy plan goal of reducing total energy growth demand below 2 percent by 1985?

Secretary SCHLESINGER. We have made substantial improvement with regard to conservation in the last year. Just over a year ago there was a tendency in industry to believe that there was a lock-step relationship between the growth of energy supply and the growth of the economy. For each 1-percent growth in the economy there was a 1-percent growth in energy demand.

As we look over the data for the last year, that relationship has changed from 1 to 1, to ⅔ to 1, which represents a very substantial increase in conservation, in the effectiveness of fuel usage.

We expect that that will continue between now and 1985 and that we are at least within striking distance of holding growth of energy requirements to 2 percent.

We had, I guess, about a 4½ percent growth in the GNP last year, with energy usage up about 2.1 percent.

COAL PROGRAMS

Senator HUDDLESTON. Looking at the various other aspects of the budget, we've talked about coal a lot already. But the 1979 total for both coal technology and production is $612 million. That's a real increase of little more than $17 million, about 3 percent, which is not enough to keep up with inflation.

How does this square with the national energy plan and priorities for making coal readily available and environmentally clean?

Secretary SCHLESINGER. It's about a 6-percent growth. It has more or less stayed up with inflation.

Senator HUDDLESTON. Well, we had a reduction in liquefaction and a reduction in gasification. We have a reduction in direct coal combustion. We do have an increase in investments in plants to demonstrate technology. It looks like it's a fairly constrained budget.

Secretary SCHLESINGER. I think that it reflects a growth of the budget to a rapid extent in recent years and that we have some growing up of the programs to do to utilize the availability of funding.

Senator HUDDLESTON. Would you say that the Department is just as eager to push for development of new technology for further utilization of coal as Congress has demonstrated it is by the appropriations it's made?

Secretary SCHLESINGER. I would say so, in general. I think that if we go back to the issue of gasification, to take one example, that the issue is getting on line plants that are going to cost $800 million apiece or a billion dollars apiece and that we must create an institutional setting in which private capital feels the impulse to build these plants.

I don't think that there is a desire to do this at public expense. I think that what we are doing in the area of loan guarantees, the impact of which is not reflected in expenditures in terms of altering the regulatory framework, is to get these plants on line. This reflects a joint eagerness on the part of the Congress and the administration to see that this comes about.

I think that the use of the entitlements program to provide greater incentives to move toward incentives is something that can be done without budgetary appropriations. It reflects our joint interest.

Senator HUDDLESTON. You have within your authority a means of developing programs where investments can be returned to the Department that would give more leverage to the various companies that are going to enter into these high costs of development?

Secretary SCHLESINGER. Yes. What we provide in a loan guarantee, for example, is the extension of the credit of the Federal Government, and that contingent liability automatically decays under this system. As that credit is no longer required, it is no longer available to these firms.

NATURAL GAS RESEARCH AND DEVELOPMENT

Senator HUDDLESTON. The natural gas research and development budget, is down from about $31 million to $26 million. Is this a slowdown of this near-term program on natural gas?

Mr. THORNE. No, sir. It's not a slowdown in the program. What it really reflects is movement to the low- and medium-Btu programs, more out in the private sector; in other words, commercialization of that technology. Continuation of the high-Btu pipeline gas, high-Btu demos in the Hygas process remains essentially the same.

Senator HUDDLESTON. I'm not talking about coal gasification now. I'm talking about natural gas stimulation.

Mr. THORNE. The enhanced gas program?

Senator HUDDLESTON. Yes.

Mr. THORNE. Yes, sir. The enhanced gas program is more directly related toward assessment, particularly in the Devonian shales and the tight sands, to determine, first, the technologies of better fracturing in order to release the gas, and secondly, in the recovery of it.

Senator HUDDLESTON. It's been reduced now from $31 million to $26 million.

Secretary SCHLESINGER. At the same time, Mr. Chairman, the legislation on natural gas before the conference contemplates the deregulation of both Devonian shale and geopressurized methane. I think deregulation here provides a much more powerful incentive than with coal seam gas, a much more powerful incentive than $2 or $3 million of Federal funding. Our objective continues to be to engage the energies of the private sector.

Senator HUDDLESTON. What are the prospects in this area? Are they encouraging?

Secretary SCHLESINGER. I think Devonian shale is quite encouraging. We do not have the technology, as yet, in geopressured methane. There is some augmented spending in the supply initiatives which is designed to assess the character of the resource. We do

not know, as yet, whether there is a trillion cubic feet potential gas supply or 600 million or 100 million. Estimates vary all over the lot.

I would say that as supplies of conventional natural gas diminish, and the impulse to move into this area increases, that we should have the technology producing within a decade.

OIL SHALE PRODUCTION

Senator HUDDLESTON. What about oil shale production? Are you making any progress?

Secretary SCHLESINGER. In oil shale production, we include some of those items in these lists. We have had extended conversations with a number of the oil companies. They are prepared to move ahead if they are given a tax credit, which was in the Senate bill, for the first 10,000 barrels of production, as well as full entitlements treatment. Both of those are proposed in these supply initiatives.

The effect of this is to provide, for the first 10,000 barrels, an effective subsidy of about $7 a barrel.

Senator HUDDLESTON. But you believe there is potential on oil shale?

Secretary SCHLESINGER. Yes, sir.

WEST COAST OIL GLUT

Senator HUDDLESTON. The budget proposes a high level of funding, more than $170 million, to maintain maximum production from the Naval Petroleum Reserves in California. In view of the current oil surplus on the west coast, coming from Alaska, wouldn't it be better to constrain production at the Elk Hills reserve?

Secretary SCHLESINGER. Since Senator Stevens has come here, I would not prefer now to suggest whether we should constrain production of Alaskan oil or at Elk Hills.

The problem we have is to solve that west coast surplus, both short term and long term. The long-term solution is to get pipelines moving oil from the Pacific coast into the interior of the country where we are short of oil. Sometimes I say we don't have an oil glut, we have a transportation deficit. I think there's a fair amount of truth in that, although that sounds like a rationalization.

In the short term, we are examining a package of adjustments, particularly in the entitlements area, that will further alleviate the problem of California crude. But we must recognize that California crude, under circumstances in which we have some excess of supply, is a marginal crude. It is very heavy, high-sulfur crude, and where we have Alaskan crude or foreign crude available, it is not particularly attractive to refineries, even at reduced prices.

But we should take a number of steps in the regulatory area to provide relief for California crude. We certainly should get on with the job of building the pipeline.

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ELK HILLS OIL PRODUCTION

Senator HUDDLESTON. The law requires maximum production at Elk Hills, I believe; doesn't it? Are you offering any suggestion that that be changed to allow for flexibility?

Secretary SCHLESINGER. I beg your pardon, sir?

Senator HUDDLESTON. Have you made any suggestions that the law requiring maximum production at Elk Hills be changed so that you'll have flexibility if you need it?

Secretary SCHLESINGER. Yes, sir. We submitted legislation to provide us with flexibility.

Secretary HUDDLESTON. You have not determined yet what the production level ought to be?

Secretary SCHLESINGER. We believe we should move at maximum production at Elk Hills. That is a superior form of crude, as compared to the heavy, high-sulfur content crude which is typical of much of California's output.

Senator HUDDLESTON. Senator Stevens, do you have some questions of the Secretary?

PRIORITIZING RESEARCH AND DEVELOPMENT ACTIVITIES

Senator STEVENS. Mr. Secretary, I understand that Senator Bellmon went into this a little bit; we've had discussions before about prioritizing energy research. In fact, I think I sent comments to you from the GAO and the OTA assessment. Being a member of OTA, I'm rather concerned about this prioritizing. What's DOE doing to respond to the comments of GAO and OTA about the prioritizing of R&D?

Secretary SCHLESINGER. The Department came into existence on October 1. The submission of the budget for fiscal year 1979 came in mid-August or late August, so the budgets were originally submitted by the predecessor agencies. When the Department came into existence, I instructed the staff to move in the direction of time phasing and measurement of potential payoff of our various investments in technologies, akin to the R&D prioritizing that we have had at the Department of Defense. That is not yet completed.

In talking to Senator Bellmon this morning, I indicated that I shared his judgment, and consequently the judgments of the agencies to which you refer, that in the past we have tended to sprinkle money on projects without any clear notion of when and how great potential payoffs might be.

We are gradually making adjustment. I believe we made some adjustment this year. But it is inadequate, from my standpoint, and I trust that next year's output, which will be the first full budget prepared by this Department, will be much more consistent with the kinds of goals that you have stated, and which we share.

RESEARCH AND DEVELOPMEMT CARRYOVER FUNDS

Senator STEVENS. You had carryover funds last year, didn't you, on R&D? How much was carried over?

Secretary SCHLESINGER. About $25 million.

Senator STEVENS. Out of how much? Only $25 million? I saw a figure that was far beyond that.

Mr. MILES. Let me supply that for the record. There was one area that this committee reduced the budget by $50 million, for an anticipated unobligated balance; but that was only for those programs that came under the jurisdiction of this committee and not all the R&D. Of that amount, about $30 million was unobligated. But there were unobligated balances in other areas of R&D that I'd have to supply for the record, Senator.

[The information follows:]

Fiscal year 1977 unobligated balances for research and development activities under the jurisdiction of the Interior and related agencies appropriation

[In thousands of dollars]

	Total balances, research and development
Energy—Operating expenses and capital acquisition:	
Coal	$104,780
Petroleum	4,762
Gas	1,974
Multiresource conservation	1,453
Total, energy	112,969

OBLIGATION OF FUNDS

Senator STEVENS. I'll take a look at those. My understanding was that there were substantial carryovers in the Department in R. & D. I saw a comment in one of the journals about that.

In terms of this budget, do you feel it's realistic to expect that you can commit the funds you requested within the next fiscal year?

Secretary SCHLESINGER. Yes, sir. The problem that we've enjoyed—or suffered from—in prior years is that Congress has been very generous in adding on to certain types of technologies in which we had no program to match the additional funding provided by the Congress. In some cases, we engaged in catch-up.

ALLOCATION OF FOSSIL FUEL FUNDING REDUCTION

Senator STEVENS. Pardon me, if this question was already asked: With regard to the $50 million reduction in fossil fuels, the committee asked that the allocation be submitted for our approval, and it was anticipated nearly a year ago that this reduction would be allocated before the fiscal year began. I'm told that only half the reduction has now been allocated. Is that right?

Mr. MILES. That is correct.

Senator STEVENS. What happened to the rest?

Mr. MILES. The remainder of that allocation has not been made. There are a number of candidates in the fossil areas that are being reviewed. There appears that during the course of the year there may be and will almost certainly be the slippage of the additional $25 million that the committee identified. But these are not certain yet.

We're hopeful that within a fairly short period of time we'll have a pretty good projection of our obligations for the remainder of the year, and hopefully, at that time, we'll be able to supply the committee with a list of the items that we'll add to total $50 million.

Senator STEVENS. There is a request to submit for the record a detailed table displaying by major program area the total funds available and the amounts obligated for 1977 and 1978 to date, to show the unobligated balance carried forward into 1978 for programs funded in this bill.

We'd like that to indicate the estimated obligations for the balance of the current fiscal year and the unobligated carryover into 1979 by major program area.

I saw, Mr. Secretary, a comment somewhere indicating that we had overloaded your department with R. & D. funds and that we should not have put them all in there.

Secretary SCHLESINGER. I think that that has historically been true, and the thrust of the comments in the committee to this juncture, Senator, has been in the direction of adding on additional funds, not whether we could effectively spend that which we have requested.

Senator STEVENS. I'll see if we can assist you in that regard.

AVAILABILITY OF URANIUM IN ALASKA

Let me shift gears. I sent you a letter about the D–2 problem in Alaska, and then followed up with a letter concerning the impact of uranium, and the comments I have made before about uranium. I haven't had any response to the uranium request for analysis from the Department as to the availability of uranium and its impact on our D–2 legislation.

Do you have an ongoing relationship with that Alaska Lands Bill as far as the Department of Energy is concerned?

Secretary SCHLESINGER. No, sir.

Senator STEVENS. You're not involved except by request? How can I get you involved, is what I'm asking. It seems to me we're about ready to close the door on a lot of uranium that people are worried about, and we don't know how much we're closing the door on.

Secretary SCHLESINGER. We will assess that and include a comment in the record, Senator.

[The information follows:]

At the present time, uranium reserves in Alaska are only found in a deposit located on Prince of Wales Island. While production from this location took place in the past, there is no mining under way at the present time. Given the variety of geologic environments present in Alaska and the limited amount of exploration that has taken place for uranium in Alaska, it is quite possible that significantly greater uranium resources than presently known exist in the State. At present, however, no reliable estimates exist of the likely magnitude of Alaskan uranium resources. Estimates will be available in 1982 when assessment of priority areas in Alaska is completed by the NURE program, with the balance of the State being assessed by 1984.

Other than the uranium deposit on Prince of Wales Island, efforts to date have not uncovered any significant commercial deposits in Alaska. However, a number of encouraging results have been achieved, and these are being followed up by private industry exploration.

As part of the National Uranium Resource Evaluation (NURE) program which is directed to comprehensively evaluating the uranium resources potential of the United States, the Department of Energy is conducting an evaluation of the uranium resource potential of Alaska. This program involves airborne radiometric surveys, water and stream sediment reconnaissance sampling, geologic studies and field evaluations and, where appropriate, drilling to assess the favorability. Resource data acquired through these activities will be compiled to form a detailed uranium resource assessment of Alaska.

Our preliminary assessment of Alaska indicates the following favorable areas for the occurrence of uranium occur within D–2 lands in Alaska, by categories shown on the BLM 1974 land status map.

	Square miles
Withdrawals for possible inclusion in the four national systems (D–2).....	34,560
Dual withdrawals for D–2 and native village deficiency	650
Dual withdrawals for D–2 and native regional deficiency	1,120
Total	36,330

MOPPS STUDY

Senator STEVENS. All right.

What happened to the MOPPS study? Am I getting into a touchy area here? I just had a nasty letter from a friend of mine saying I ought to ask you a question about that. There was something published in the register that said the document contains erroneous information that's being revised. It said we should remove it from our shelves and destroy it.

What happened?

Secretary SCHLESINGER. The MOPPS study has been bequeathed, if that is the appropriate term, to the Assistant Secretary for Policy and Evaluation, whose comments I will now let you have. [Laughter.]

Mr. ALM. Let me comment just briefly on the notice which you saw. The study is under review within the Department at this time. We've also had it reviewed by a number of outside panelists, people from very reputable institutions, such as Resources for the Future.

As soon as the reviews are completed, the report will be made available. The report has been available already under Freedom of Information Act requests.

Senator STEVENS. Did you really send out—it's not you, the Superintendent of Documents, I guess—

Mr. ALM. Yes, the Superintendent of Documents inadvertently sent copies out prior to the publication date of of the Department. The Department informed him of this situation, and the particular notice was their notice and not ours. We were somewhat surprised when we saw the notice.

Senator STEVENS. I think I now have the full scenario. But what are the revisions? Are you really in a fourth phase of revising the MOPPS study?

Mr. ALM. The revisions at this point are mainly of a technical nature, reflecting the comments of both the outside reviewers and the departmental reviewers. There are no significant changes from editions that people have already seen.

[The following additional information was subsequently submitted to the committee:]

The market oriented program planning system (MOPPS) was undertaken last year by the Energy Research and Development Administration to help in setting its energy research, development and demonstration priorities. Although ERDA prepared a number of draft reports of this study a final report was not completed before ERDA was incorporated into the Department of Energy.

To facilitate a departmentwide review prior to public release, a draft final report was prepared. This draft includes an integrated summary and reports on the following four market sectors: Residential/commercial, transportation, industrial, and intermediate energy supplies. In addition, environmental constraint analyses and external review comments on the technology data have been summarized. This departmental review draft was inadvertently released to external depository librarians before it was circulated within the Department. Copies were in fact marked

"Review Draft." When the Department discovered that this review draft had been circulated it requested the Government Printing Office to remove it from circulation. The GPO prepared a standard notice which indicated that the report contained "erroneous information." Since the Department had not yet reviewed the draft, it had not drawn any conclusions that the report did in fact contain erroneous information.

In response to congressional and Freedom of Information Act requests, the Department has supplied a limited number of copies of the review draft. There has been no attempt to suppress the report, only to assure that it is given a thorough departmental review prior to widespread dissemination.

The Department's review of the draft is now nearing completion. It is expected that the draft will be published as a final report with only minor changes. A copy of volume I of the review draft is being submitted to the committee staff for its use.

NATIONAL CENTER FOR APPROPRIATE TECHNOLOGY

Senator STEVENS. I don't know if I'm asking the right question. What happened to the National Center for Appropriate Technology?

Secretary SCHLESINGER. That is an outside group that the Community Services Administration is providing funds to, Senator.

Senator STEVENS. Well, I'm under the impression that you did fund it as well.

Secretary SCHLESINGER. Yes, sir.

Senator STEVENS. But here's a copy of a letter from our consumer affairs advisory agency that requests a congressional inquiry of the National Center's activities, funding arrangements, and budgets, to see where the problem lies. The indication is that the National Center for Appropriate Technology did not live up to its mandate.

Do you have any postgrant review? They're a grantee of yours, right?

Secretary SCHLESINGER. Yes, sir. We usually monitor those contracts and if the performance is unsatisfactory the contracts are cut off. We shall check on this particular one, Senator Stevens, and provide a statement in the record.

[The information follows:]

DOE SUPPORT OF NATIONAL CENTER FOR APPROPRIATE TECHNOLOGY

The National Center for Appropriate Technology (NCAT) is not a grantee of the Department of Energy. The San Francisco operations office as regional program manager of the pilot appropriate technology program contracted with NCAT to evaluate 40 proposals submitted by community development organizations for community action projects. That effort was satisfactorily completed in March 1978. At present DOE through the Office of Conservation and Solar Applications is negotiating with NCAT to assist the borough of North Slope, Alaska, in developing a training and maintenance program for the power generator used by the villages in the borough. This contract is being negotiated and will be administered as a standard DOE contract. It is DOE's intent to utilize NCAT particularly in the appropriate technology program to the maximum extent practicable and feasible with each contract (or grant) following normal DOE procurement practices.

PRODUCTION AND SEVERANCE TAXES

Senator STEVENS. All right. Thank you very much.

My last question will be about the energy bill. I had the privilege of being in on a meeting with the President this morning, and I made the comment to him that if that energy bill passes the way it stands now, I think I'm going to go into the computer business. At least I'm going to take everything I can and put it into the comput-

er business, because I don't see how you're going to be able to keep track of the pricing of the gas, particularly our Alaska gas.

I'm informed that that proposal that's circulating now— and my question to you is whether you support this proposal, if this is the case—indicates that all severance taxes and production taxes of producing States would be incrementally priced to the extent that they're an increase over the present taxing level, except for Alaska. In the case of Alaska, all severance taxes and production taxes would be incrementally priced.

Is that the Department's position?

Secretary SCHLESINGER. That is not my recollection. My recollection is that the treatment of the severance tax issue was that any increase in taxes would be incrementally priced, and that this was a substitute for the proposal that there be no increase in taxes, the substitute being that any increase in taxes be incrementally priced.

Senator STEVENS. I can understand that if it was equally applied. But my understanding is that Alaska has been singled out and that all production taxes and severance taxes for Alaska will be incrementally priced.

Secretary SCHLESINGER. No, sir. I have no recollection on what you're saying. Let me check on that and get back to you.

Senator STEVENS. Even if I'm wrong and this applies for all and there is equal treatment for all States for production taxes and severance taxes, if I understand the proposal, it means that every consumer that receives a cubic foot of Alaskan gas is going to get an indication of how much there is, in addition to existing production and severance taxes.

In other words, let's just assume that we've got a total of 10 percent now. If it goes up to 11 percent, that 1 percent severance tax has to be passed on incrementally on every consumer's bill. Am I wrong?

Secretary SCHLESINGER. No, sir. Incremental pricing is difficult enough to achieve technically without including those kinds of burdens. My understanding of the proposed system is that any costs that are to be incrementally priced are put into a general category of funding which is passed on to the pipeline. That totality will be divided amongst industrial consumers; and that one would not split out particular elements of incremental pricing, whether it comes from stripper wells or LNG or severance taxes or processing plants in Alaska or what have you; that all of it would be passed on, and that this would be a surcharge above the normal cost of gas.

Senator STEVENS. I understand that. What happens in the event of curtailment, and the industrial users are eliminated?

Secretary SCHLESINGER. If the industrial users were to be eliminated—and we would certainly not see that to be any likelihood given the present allocation of gas and distribution of gas resources—the burden would be placed upon the remaining users, who would be householders.

But at this juncture, we are using a relatively small proportion of our total gas for the support of residences. We hope to use all the gas that we can possibly produce in industry as a substitute for burning of imported oil.

CANADIAN GAS PIPELINE

Senator STEVENS. Well, I don't want to belabor it. And I apologize, Mr. Chairman, indeed, for coming in late and taking this time. But I didn't support the selection of the pipeline system selected by the administration until there was no alternative, and now I do, as I say, because there is no alternative as far as the Alaska gas is concerned. We have to have this pipeline through Canada.

I'm informed that the condition of the energy bill is such that, should it become law, it will delay the construction of our pipeline substantially, because of the pricing mechanisms that are in that bill.

Now, I've chatted with you and other members of the Administration and members of the conference. But it seems to me that, having put us in the position that we have no alternative but to deal with two countries in terms of financing the pipeline, there ought to be greater emphasis placed upon the impact of that bill. And the proposals that I've seen circulated to compromise the energy conference as far as the Administration is concerned—that's 10 percent of the gas in the country, as I understand it, in 1983, if it gets here.

Secretary SCHLESINGER. Yes, sir.

Senator STEVENS. What's going to happen if it doesn't get here?

Secretary SCHLESINGER. It ought to get here.

Senator STEVENS. If I'm correct, if I am informed correctly, the provisions that are in that bill are such that the financial community of New York and the financial world have indicated it places substantial strains upon the probability of financing it privately.

Secretary SCHLESINGER. In the development of those proposals, we urged, first, that the conference move rapidly, because every month of delay costs us $15 million. Second, that there be rolled-in pricing. Without it, the private financing could not take place. Third, that the decisions be made legislatively, without being passed on to the ERC.

In addition to that, Senator, we have talked to the pipeline sponsors. The pipeline sponsors indicate that they are quite satisfied with the outcome of the legislation. I think if one talks to the financial community, the pipeline sponsors, and the producers on the North Slope, that one is going to get slightly different interpretations, because their interests are not all coincident.

The pipeline sponsors indicated that they're satisfied with the proposals. We have certainly urged that every consideration be given in that regard. We have strongly supported rolled-in pricing because this is a way of using the implicit subsidization of our regulatory framework to enhance domestic production of energy supplies.

ALASKA GAS PRICING

Senator STEVENS. I thank you for that support, and I'm sure it's been very helpful. I think there is a difficulty, though, if I understand it—and I do understand that the sponsors of the project are willing to live with the bill, as a compromise coming out on natural gas. You didn't mention the fixing of the price. I understand a

ceiling price is stated in the legislation as far as Alaska gas is concerned.

Secretary SCHLESINGER. Yes, $1.48.

Senator STEVENS. I really don't think that as a State we can stand by and allow legislation like that, if I understand it correctly—and my staff and I have checked it. We're informed that Alaska would be the only State whose severance taxes and production taxes would be incrementally priced.

Secretary SCHLESINGER. That is news to me, Senator. I share your concern and I will have to check. That does not jibe with my recollection.

Senator STEVENS. I would hate to be a Senator from Alaska and have a bill go to a constituent of the Senator from Kentucky which indicated that they were paying, you know, $1.48 per cubic foot of Alaska's gas, plus they were paying 10 percent for Alaska's taxes, and ask for his assistance in connection with the Alaska Lands Bill or any other bill that pertains to my State.

It seems to me that someone's devising a means to put Alaska on a different basis from the producing States as far as the billing of gas to major customers is concerned.

Secretary SCHLESINGER. I will have to check that, Senator. I would be embarrassed to appear before you and say that that indeed was the case.

Senator STEVENS. I need your help. I appreciate it very much. Thank you very much.

ALLOCATION OF FOSSIL FUEL FUNDING REDUCTION

Senator HUDDLESTON. Thank you, Senator Stevens.

Just a last housekeeping proposition here. Getting back to the 1978 R. & D. reduction, the Department's failure to allocate all of this reduction makes it extremely difficult for the committee to consider the fiscal 1979 budget, because the 1978 base is still in doubt on some programs. When will you be able to allocate the balance of this reduction?

Mr. MILES. We believe in about 2 weeks.

Senator HUDDLESTON. That may fit within our schedule. We expect to be marking up the fiscal 1979 bill in less than a month, if we stay on schedule.

Secretary SCHLESINGER. Staff should work with the committee staff and just tell them where we are. I think we can probably resolve most of the problems that you would have even before a formal submission. There may be one or two cases in which uncertainties remain, but I think we can resolve most of those problems, Mr. Chairman.

Senator HUDDLESTON. I think the committee would need that about 2 weeks in advance of the actual markup, which would give you about 2 weeks, if you can accomplish that.

Mr. MILES. We will.

Senator HUDDLESTON. Thank you very much, Mr. Secretary.

Secretary SCHLESINGER. Thank you, Mr. Chairman.

SUBCOMMITTEE RECESS

Senator HUDDLESTON. And your associates. The subcommittee will be in recess until 10 a.m. tomorrow, when we will continue with the Department of Energy budget.

[Whereupon, at 3 p.m., Tuesday, May 16, the subcommittee was recessed, to reconvene at 10 a.m., Wednesday, May 17.]

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1979

WEDNESDAY, MAY 17, 1978

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met a 10:05 a.m. in room 1224, Everett McKinley Dirksen Office Building, Hon. Mark O. Hatfield presiding.

Present: Senators Hatfield and Bellmon.

DEPARTMENT OF ENERGY

ECONOMIC REGULATORY ADMINISTRATION

STATEMENT OF DAVID J. BARDIN, ADMINISTRATOR, ECONOMIC REGULATORY ADMINISTRATION

ACCOMPANIED BY:

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ALBERT H. LINDEN, JR., ASSISTANT ADMINISTRATOR FOR ENERGY DATA

CHARLES S. SMITH, ASSISTANT ADMINISTRATOR FOR ENERGY DATA VALIDATION

OPENING REMARKS

Senator HATFIELD. The subcommittee will come to order.

Today we are to resume hearings on fiscal 1979 budget estimates of the Department of Energy. Yesterday we conducted a budget overview session with Secretary Schlesinger. Today we will pursue more detailed questions on the budget request for energy conservation, the Economic Regulatory Administration, and, if there is time, the Energy Information Administration.

For purposes of today's hearing, we will consider the coal utilization and utilities conservation programs as part of the Economic Regulatory Administration, where they are administered. These were originally budgeted under production, distribution, and demonstration, and under energy conservation respectively.

ECONOMIC REGULATORY ADMINISTRATION

Let's go first to the Economic Regulatory Administration. The fiscal 1979 budget request for ERA is almost $99 million, an increase of $14.7 million over appropriations to date for fiscal 1978.

Mr. Bardin, welcome before the committee today. We appreciate your first appearance. We will ask you to include a biographical sketch in the record along with your prepared statement.

[The statement follows:]

PREPARED STATEMENT OF DAVID J. BARDIN

Administrator
Economic Regulatory Administration
FY 1979 Appropriations Hearings
May 17, 1978

Mr. Chairman and Members of the Committee, I appreciate the opportunity to appear before you today in support of the FY 1979 Department of Energy budget request for the Economic Regulatory Administration.

The Economic Regulatory Administration was established pursuant to Section 206 of the Department of Energy Organization Act, and is responsible for establishing and implementing programs authorized by the Emergency Petroleum Allocation Act (EPAA) of 1973, as amended; the Energy Supply and Enviromental Coordination Act (ESECA) of 1974, as amended; the Energy Policy and Conservation Act (EPCA); the Energy Conservation and Production Act, as amended; the Federal Power Act (EPA); the Natural Gas Act; and other related legislation and Presidential Orders.

In carrying out the authorities which were delegated to the Administrator of ERA by the Secretary, we have established certain priorities for ERA to serve the national interest:

ERA will eliminate unnecessary regulations; simplify regulations which are cumbersome and thereby place an unnecessary burden on the industry and the public; and adopt regulations which are consistent with current market conditions and necessary to protect the public interest.

ERA will enforce existing Federal energy laws firmly and fairly. The energy sector will be regulated to fulfill the Congressional mandates which are vital to the welfare of the American public; namely, to assure the availability of petroleum products at fair and equitable prices.

ERA will plan for energy emergencies that might interrupt or diminish energy supplies.

ERA will develop regulations which provide incentives for the development of synthetic fuels and alternate energy sources.

ERA will, through its intervention authorities support and advocate actions by the utility industry to conserve energy and improve power generating efficiency.

Mindful of these priorities, in general terms the ERA has Departmental responsibility for oil pricing and allocation programs, the oil import program, the coal conversion program, and other regulatory programs designed to enhance energy conservation and the modernization of electric utility rate structures to promote efficient use of facilities and equity to the consumers. ERA also administers controls on the importation and exportation of natural gas, intervenes in proceedings before the Federal Energy Regulatory Commission, as well as Federal and State regulatory bodies, establishes priorities for curtailment of natural gas and plans for and oversees emergency allocations during periods of shortages.

These responsibilities and the programs required to implement and enforce them are extremely complex yet vital to the

short- and long-term energy problems faced by this country. Most of the programs administered by the ERA are mandated by statute rather than discretionary.

To place the specific activities included in this budget into an organizational context, Chart A shows the ERA organizational components in the Department of Energy. The organizational elements and functions were approved in late January. They are the Office of Special Counsel for Compliance, the Office of Enforcement, the Office of Regulations and Emergency Planning, the Office of Fuels Regulation, the Office of Utility Systems, and the Office of Operations, Planning and Evaluation.

FY 1979 BUDGET

The FY 1979 budget request includes $89.2 million for ERA programs which are reflected as specific activities under the DOE mission structure. Chart B shows how the FY 1979 DOE mission structure translates into the ERA organization and the location of the program prior to the formulation of the Department of Energy. Chart C provides a summary breakdown of ERA's total request.

Certain activities included in the budget cut across present organizational lines since the budget activities were formulated prior to the activation of DOE. Funds to support the ERA program for FY 1979 are included in five DOE mission areas as follows:

MISSION	BA	PURPOSE OF FUNDS
Conservation	$15.7 million	Contract support grants or State financial assistance.
Emergency preparedness	$10.6 million	Contract support, or State financial assistance.
Energy Supply-Production Demonstration and Distribution	$2.9 million	Contract support.
Regulation	$60 million	Salaries, travel, and other expenses, contract support
Policy and Management	($10.1) million	Salaries, travel, and other expenses for ERA personnel in Energy Supply-Production; Demonstration; Conservation; and Emergency Preparedness

Conservation

$15.7 million is requested in FY 1979 for ERA Utility programs in this mission. The amounts requested will be used for contractual support and financial assistance to State Public Utility Commissions and nonregulated utilities. The activities

in the utilities sector which are described below include: Utility Demonstrations, District Heating, Rate Reform and Consumer Offices. The Residential/Commercial sector of the budget includes one ERA activity, the Utility Insulation Service Program. These activities provide for Federal intervention and/or technical assistance to State and public utility commissions and nonregulated utilities to encourage the adoption of modernized rate structures, insulation and other conservation service programs to be offered to residential customers, and systems which will supply heat co-produced with electricity to nearby communities for space conditioning, water heating or industrial purposes. A detailed description of each activity follows:

Utility Demonstrations

The major objectives of the Utility Demonstrations Program are: (1) to demonstrate to utilities and to utility regulators the viability and customer acceptance of innovative electric rates; (2) to gather empirical data as to the impacts of such rates on customer and class electricity consumption patterns; and (3) to transfer nationwide the results of comprehensive analyses of these data.

The President's budget submission for fiscal year 1979 includes no request for project funding for the Utility Demonstrations Program. It is anticipated that funding through fiscal year 1978 (approximately $9.2 million) will be sufficient to meet multi-year funding commitments. During fiscal year 1979, four of the five remaining demonstration projects will be completed, and the remaining project will be concluded during the third quarter of fiscal year 1980.

District Heating

District heating is supplying heat, co-produced with electricity in utility power plants, for use in nearby communities for space conditioning, water heating, or industrial processes. The energy saving potential of this concept, which is recognized in the President's 1977 National Energy Plan, has been shown to be significant, as has its potential widespread applicability.

The District Heating program is a "new start" in fiscal year 1979 in terms of a discrete budget activity. The budget request for the program is $625,000. Work is already underway to identify specific geographic areas where district heating economics are favorable and where institutional barriers are manageable. When this assessment is completed, funds will be provided to selected State or local regulatory agencies for development of detailed site-specific implementation plans for two types of plants: new plants not constructed, and existing plants suitable for retrofitting.

Rate Reform

The primary objective of the rate reform program is to support and encourage State regulatory agencies and nonregulated utilities in instituting utility ratemaking practices that are equitable and that encourage energy conservation and efficient production, thereby reducing the cost of utility service and conserving fuel. The technical and institutional feasibility of improved rate designs is being empirically established through the Utilities Demonstration projects which are now being analyzed to establish the net benefit of these techniques for utility systems.

Implementation will be accomplished through a three part Federal assistance program employing financial aid, technical consultation, and expert evidentiary testimony. This approach allows the Department of Energy to tailor its assistance to the needs of each individual State. All three forms of assistance focus on the economic, institutional, and technical constraints to the institution of improved utility ratemaking practices.

The President's budget request for fiscal year 1979 for the Rate Reform Program totals $12,228 million. It is anticipated that the implementation projects funded in FY 1978 will, upon approval of the President's budget request, be continued. If some of these projects are not continued, due to inadequate performance or State assumption of total costs, the funds so saved will be reallocated to other projects. Approximately 18 intervention actions are also planned for the fiscal year. Finally, technical assistance will continue through the conduct of approximately 15 onsite efforts by technical teams, as well as a continuation of the workshop and information transfer aspects of the program.

Utility Insulation Service

The objective of the Utility Insulation Service Program is to reduce the estimated annual energy consumption in the residential sector by encouraging State Public Utility Commissions to require their utilities to offer a comprehensive insulation service to their residential customers. Upon passage of the NEA, utilities will be required to provide residential customers with information on energy conservation measures such as insulation and weather-stripping. Utilities would also arrange for the installation and financing of residential conservation measures by other businesses and lending institutions.

As in the Rate Reform Program, the insulation program will provide for implementation funding, technical assistance, and intervention in evidentiary hearings. Standards for the manufacture of installation of energy conservation measures, mandated by the NEA, will be developed for this program by the Assistant Secretary for Conservation and Solar Applications with whom close coordination is being maintained.

In fiscal year 1979, the Presidential budget request of $1 million for Utility Insulation Services will be utilized to provide for further financial assistance through cooperative agreements to implement residential insulation programs, as well as for additional intervention capability (Federal cost, $50,000) and technical assistance (Federal cost, $150,000).

Utility Consumer Offices

The Utility Consumer Office Program is conducted pursuant to Section 205 of the Energy Conservation and Production Act. The objective of this activity is to support the establishment and operation of State offices to assist electric utility consumers in presentations before public utility commissions.

State Utility Consumer Offices are empowered to make general factual assessments of the impact of proposed regulatory actions upon all affected consumers; assist consumers in the presentation of their positions before utility regulatory commissions; and advocate, on the consumers' behalf, positions which are most advantageous to consumers, taking into account developments in rate design reform.

Program guidelines which were issued in FY 1977 will be used during FY 1979. Generally, they define eligible consumer groups as those of not less than three individuals representing a consumer interest which must be able to substantially contribute to a full and fair determination of the issues. Since FY 1977, 12 States have been provided with funds to support Utility Consumer Offices at a total Federal cost of approximately $2 million.

EMERGENCY PREPAREDNESS

The FY 1979 funds request for this mission is $10.6 million. This amount is for contract support or financial assistance to States for participation in the Emergency Management Information System (EMIS). In FY 1979, we intend to restructure the emergency regulations that will among other things, provide appropriate signals to energy users to conserve oil and to convert to more abundant domestic fuels In conjunction with our standby gasoline rationing and conservation contingency plans. Emergency pricing and allocation regulations will provide a mechanism for the Nation to best cope with a major supply interruption, minimizing economic disruption, and providing equity for users of petroleum products.

The gasoline rationing plan will be developed for Congressional approval in FY 1978. This is the first step in bringing this plan to standby readiness. Most of the important pre-implementation actions for the rationing plan will occur after approval of the plan by the Congress.

ENERGY SUPPLY - PRODUCTION, DEMONSTRATION AND DISTRIBUTION

Under this mission, $2.9 million is requested to implement the Coal Utilization Programs which are an integral part of the National Energy Plan. These funds will be used for contractural support for the development of enviromental impact assessments. Salary and other expenses are included under the Policy and Management mission. Funds are also requested for processing the remaining ESECA activities, and the anticipated implementation of provisions of the NEA presently before Congress. Upon implementation of the NEA we expect several hundred petitions for exceptions and appeals from utilities and industries seeking to burn oil and gas.

REGULATION

Under this mission $60 million is requested for FY 1979. This mission includes five ERA line items: (1) Crude Oil Allocation; (2) Crude Oil Pricing; (3) Petroleum Products and Natural Gas Liquids; (4) Compliance; and (5) Private Grievances and Redress.

Crude Oil Allocation, Crude Oil Pricing, Petroleum Products and Natural Gas Liquids

The first three ERA line items include a combined request of $9.6 million. In FY 1979, ERA will continue operations of these programs and regulation development associated with the price and allocation programs for crude oil and certain petroleum products. The ERA offices administering these activities are Fuels Regulation and Regulations and Emergency Planning.

In administering the price control system, we will implement the principal policies set forth in the NEP by: (1) limiting

price increases for currently flowing oil to the amounts necessary to maintain current production; and (2) providing the maximum incentives to bring on new production.

We will also continue to allocate Canadian crude oil to northern tier refineries and monitor petroleum supplies to ensure availability of supply to all regions of the country. The Entitlements, Buy/Sell, Transfer Pricing, First Purchaser, Oil Imports and Crude Oil Resale Programs will be administered and modifications will be made as required by the NEA.

In the product area, in FY 1979, we will analyze the feasibility of decontrolling other petroleum products, such as butane. We also plan to revise our regulations to make them more consistent with the current market conditions and more understandable. We will also revise the current regultions to provide greater incentives to extract NGL's from natural gas streams,to provide a realistic pricing mechanism which supports the conservation objectives of the NEP, and to conform current regulations to normal business practices.

Finally, an ongoing effort will continue throughout FY 1979 to remove impediments which discourage the marketing and use of synthetic fuels and refinery feedstocks, such as gasoline/ alcohol blends and whale oil.

Compliance

The Compliance activity requests $47.4 million in budget authority for FY 1979, including $40.9 million operating expenses for the Office of the Special Counsel and the Office of Enforcement, $2.5 million for the FY 1979 pay raise, and $4 million for space rent, communications, and utilities. This represents an increase over FY 1978 of $8.6 million. The majority of the increase is to support the intensified effort begun in FY 1978 to audit the major refiners for the period November 1973 through December 1976, and for the pursuit of potential violations through a cost/benefit use of resources.

In FY 1979, the Office of Enforcement will be focusing on a cost efficient disposition of open cases. At the same time, new audits will be opened, using evolving targeting criteria. In general, cost benefit analysis is likely to continue to support relatively lesser concentration on programs downstream in the petroleum industry and relatively greater concentration on programs upstream, such as independent crude producers and smaller refiners. The absence of a request for funds for the reseller-other program for FY 1979 assumes that motor gasoline will be decontrolled, and that significant embargo period audits will have been completed in this program prior to the beginning of fiscal year 1979.

In FY 1979, 15 additional intensified audits will be undertaken by the Office of Special Counsel for the period November 1973 through December 1976. Audit and enforcement followup will be maintained for the remainder of the 34 major refineries. With full implementation of the proposed crude oil equalization tax in FY 1981, the enforcement activities associated with the crude oil and petroleum product pricing and allocation programs are expected to be reduced significantly by the end of FY 1983.

Private Grievances and Redress

This activity requests $3 million in FY 1979. Funds requested will support a projected greater workload in cases as a result of intensified enforcement efforts.

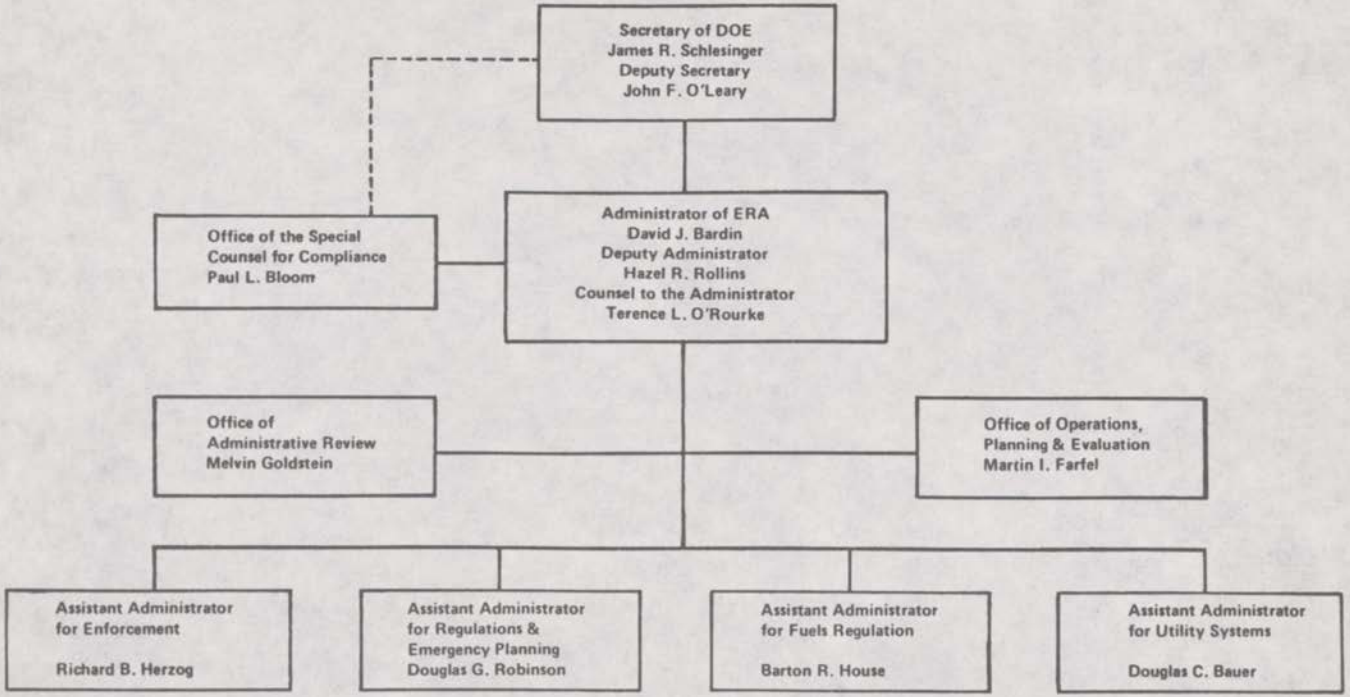
Mr. Chairman, this concludes my statement for the record. I will be pleased to respond to any questions which you or members of the Committee may have.

List of Charts:

A. ERA Organization Chart
B. Crosswalk of ERA Missions/Organization/Former Agency
C. ERA FY 1979 Budget

(CHART A)

U.S. Department of Energy
Economic Regulatory Administration



(CHART B)

FY 1979 Congressional Budget Submission
Crosswalk of ERA Budget Activities and Former Agency

Mission/Activity	ERA Organization	Former Agency & Program
Energy Supply-Production Demonstration & Distribution Coal Utilization Industry Coal Utilization, Utility	Fuels Regulation	FEA, Energy Resource Development
Conservation Utility Demonstration District Heating Consumer Offices Rate Reform Utility Insulation Service	Utility Systems	FEA, Conservation & Environment
Regulation Crude Oil Allocation Crude Oil Pricing Petroleum Products and Natural Gas Liquids	Fuels Regulation & Regulations and Emergency Planning	FEA, Regulatory Programs
Compliance	Special Counsel & Enforcement	FEA, Regulatory Programs
Private Grievances & Redress	Administrative Review	FEA, Executive Direction & Admin.
Emergency Preparedness Emergency Preparedness	Regulations & Emergency Planning	FEA, Regulatory Programs DOI, Office of the Secretary
Policy and Management Support Program Direction and Management	Fuels Regulations (Natural Gas & SNG)	FPC, Bureau of Natural Gas
	Regulations & Emergency Planning (Natural Gas &SNG)	FPC, Bureau of Natural Gas
	Utility Systems (Power Supply and Distribution)	FPC, Bureau of Power
	Utility Systems (Power Supply and Reliability)	FEA, Energy Resource Development

(CHART C)

FY 1979 Congressional Budget Submission

ERA Programs ($ In Millions)

	FY 1978 B/A	FY 1979 B/A	Change B/A
Energy Supply — Production, Demonstrations and Distribution			
Coal Utilization, Industrial	2.3	1.9	– .4
Coal Utilization Utilities	1.4	1.0	– .4
Total- Energy Supply, Production, Demonstration & Distribution	3.7	2.9	– .8
Conservation			
Utility Demonstration	1.4	.0	– 1.4
District Heating	.0	.6	+ .6
Consumer Offices	1.9	1.9	+ .0
Rate Reform	11.0	12.2	+ 1.2
Utility Insulation Service	1.6	1.0	– .6
Total-Conservation	15.9	15.7	– .2
Regulation			
Crude Oil Allocation	1.4	2.0	+ .6
Crude Oil Pricing	1.5	2.5	+ 1.0
Petroleum Products and Natural Gas Liquids	5.1	5.1	.0
Compliance	38.8	47.4	+ 8.6
Private Grievance and Redress	2.4	3.0	+ .6
Total-Regulation	49.2	60.0	+ 10.8
Energy Preparedness			
Emergency Preparedness	5.7	10.6	+ 4.9
Grand Total-ERA	74.5	89.2	+ 14.7

Biographical Sketch

DAVID J. BARDIN
ADMINISTRATOR
ECONOMIC REGULATORY ADMINISTRATION

David J. Bardin is the Administrator of the Economic Regulatory Administration. He is responsible for administering programs for the compulsory conversion by industry from oil and gas to coal, improvement of electric utility efficiency, importation of natural gas and petroleum, enforcement of the petroleum pricing and allocation regulations, and planning for energy emergencies.

Mr. Bardin became Administrator of the ERA upon establishment of the Department of Energy on October 1, 1977. Before that, he served as Deputy Administrator of the Federal Energy Administration.

From 1974 to 1977, Mr. Bardin was commissioner of the New Jersey Department of Environmental Protection, State Historic Sites Preservation officer, and liaison officer with the Federal Bureau of Outdoor Recreation. He also served on the Governor's Cabinet Energy Committee, the Governor's Committee on Emergency Services, and the Delaware River Basin Commission.

Between 1970 and 1972, Mr. Bardin assisted the attorney general of Israel on public utility, administrative and environmental law. From 1972 to 1974, he was a self-employed attorney and consultant in Jerusalem and Washington, counseled the Israel National Council for Research and Development and the Environmental Protection Service of Israel, and lectured at Bar-Ilan Law School and Tel Aviv University Law School.

From 1958 to 1969, Mr. Bardin worked for the Federal Power Commission as a trial attorney (until 1965), assistant general counsel for legislation, rulemaking, and research (1965-67), and deputy general counsel (1967-69).

Mr. Bardin was born June 2, 1933, in New York. He received an A.B. from Columbia College in 1954 and an LL.B. from Columbia University in 1956. He served in the U.S. Army from 1956 to 1958 and is married with four children and two cats.

INTRODUCTION OF ASSOCIATES

Senator HATFIELD. Please introduce those you have with you, and you may highlight or brief your full statement.

As you know, we do have a tight schedule today, so we're asking the witnesses to use the briefing technique if they will.

Mr. BARDIN. Thank you very much, Mr. Chairman. I appreciate your welcome and certainly would be delighted to insert my biography and accede to the excellent proposal of simply highlighting the testimony.

At my right and your left is the Deputy Assistant Administrator of the Economic Regulatory Administration, Hazel R. Rollins. At her right is the Acting Director of the Office of Budget of the Department of Energy, Mr. Delmar Mayhew. At my left is Mr. Martin Farfel, Acting Director of the Office of Operations, Planning, and Evaluation of the ERA.

Senator HATFIELD. Welcome to each of you.

ORGANIZATION OF ECONOMIC REGULATORY ADMINISTRATION

Mr. BARDIN. We have provided staff with an organization chart of the Economic Regulatory Administration. The assistant administrators of various component groups and the special counsel, or their representatives are here in the room and will be available to answer questions.

The extent of our budget request you have correctly stated, Mr. Chairman. I would like, however, to take the highlight time to run through the organization chart in order to give you some first-hand feel, on the occasion of our first appearance before the subcommittee since the establishment of the Department, on how we are organized and how the funds will be distributed within ERA.

The Administrator reports to the Secretary and the Deputy Secretary having special cognizance over the regulatory function among others. The Office of Special Counsel for Compliance, which you see to the left of the Administrator's box, is responsible for the catchup effort to initiate and conclude the audits involving the prices charged for petroleum and petroleum products by the largest integrated refining companies. The 34 largest companies in the industry have been assigned to the Special Counsel, and we are targeting a 2-year effort to catch up on the issues of overcharges and enforcement of the laws and regulations for the period of the 1973–74 embargo.

The Office of the Assistant Administrator for Enforcement is responsible for the remainder of the enforcement programs involving smaller refiners, very substantial firms in many cases which buy and sell crude oil, independent producers of crude oil, and marketers of petroleum products.

This office has a major challenge also, to catch up and close out the history of audits and possible overcharges and abuses of the laws and regulations. Our fundamental policy is to get that job done, focusing on large firms and large overcharges or cases of willful violations.

The Office of Assistant Administrator for Regulations and Emergency Planning is concerned with the development of new regulations and modifications to regulations, including the program to simplify regulations administered by us, as well as the program for planning for possible future emergencies such as embargoes or other supply interruptions, and the development of measures such as the possible need for gasoline rationing in the future.

The Assistant Administrator for Fuels Regulation manages the coal conversion program, the remaining programs for allocation of those petroleum products that are under controls, and the programs with regard to natural gas imports which were transferred to the Secretary of Energy by the Department of Energy Organization Act.

Finally, the Assistant Administrator for Utility Systems is responsible for intervention before the State regulatory bodies to promote the modernization of electric utility rate structures so as to achieve economies in fuel use and economies in capital use. He is responsible for work on reliability of electric power utility systems, voluntary coordination with the electric utility industry, as

well as the actual exercise of emergency connection powers involving the electric utility industry.

This is an abbreviated statement of the functions of the ERA, Mr. Chairman. But in the interest of time, I would like to open myself to your questions.

ALLEGATIONS OF RULEMAKING IMPROPRIETIES

Senator HATFIELD. Thank you very much, Mr. Bardin, for your excellent summary.

Before we get into some of the more specific questions that have been prepared by staff, I'm sure you're familar with this story that appeared in the Washington Star last night, May 16, headlined "Oil Lobbyist Says He Was Told of Federal Proposals." quoting a lobbyist from the American Petroleum Institute. The story, as reported in the press by Associated Press, apparently is based upon a memorandum from the American Petroleum Institute, which alleges that ERA regulatory proposals are often reviewed in advance by the API; and even an ERA response to a congressional inquiry, in this case from Senator Kennedy, was sent to the API for review.

Would you care to comment on these allegations?

Mr. BARDIN. Thank you, Mr. Chairman, I would. It is certainly contrary to the policy of the Department of Energy and of the Economic Regulatory Administration within it to submit correspondence with Members of Congress or others to review by the American Petroleum Institute or any other trade association, or to give advantages to one trade association in the public participation process with regard to the development of regulations.

I have seen a document which purports to be this lobbyist's summary of his accomplishments for the months of January, February, and March of this year. I don't know to what extent that this is merely a puffing up and to what extent it is accurate. I'm checking with our staff on these points.

I think there are several issues that are worth noting: One, there must be public participation in the rulemaking process. Certainly industry, regulated industry, and an association of regulated industries, such as the American Petroleum Institute, is not only a tolerated, but also a welcomed participant in the process through which we thrash out the secondary legislation which you in Congress instruct us to develop as a result of the primary legislation that you enact.

There are times where, in addition to the formal written comments in response to the notice in the Federal Register and to the oral presentation at our hearings, when technically competent people ought to be solicited for information as to the particular issues that concern them.

But the staff in ERA does not have instructions to clear drafts with the gentleman or the institute in question, and I don't consider that proper. There are cases where the administrator may feel that some particular issue ought to be raised with an individual or group of people before we really come to analyze it, and we try to strike the proper balance.

The Assistant Administrator for Regulation and Emergency Planning, Douglas Robinson, has been working for some time

trying to sharpen up the requirements we impose upon ourselves in maintaining a set of files which will accurately reflect the information we have secured from many bodies.

Now, going to the specific API items, there are some items there which really reflect public processes. For example, participating in advisory committees to the Department of Energy, in response to public notice, with transcripts or summaries prepared. I don't think there is any particular problem with this procedure, but, the notion that full texts of regulations might be going directly to some preferred industry group causes me great concern. It's something that we have to get to the bottom of.

Senator HATFIELD. You are pursuing this matter in an investigatory manner to satisfy yourself and this committee and other parties that there is a balance of fairness and that undue influence by industry is being guarded against; is that correct?

Mr. BARDIN. I am pursuing this matter, yes, sir.

Senator Hatfield. I think it would be well if you would keep the committee posted on the developments in this case on a timely basis.

Mr. BARDIN. We will be happy to do so.

COAL SUPPLY ESTIMATES

Senator HATFIELD. I have a series of questions, Mr. Bardin. I will ask that you submit response in writing to some of them, because I will ask only a selected series of questions in different subject fields here.

Who was responsible for estimating and forecasting coal supplies for electric utility plants during the recent coal miners strike? And I might add as a second part to that question, could you tell us why these predictions were so far off the mark? As I remember, there were predictions of critical shortages that just didn't materialize.

Mr. BARDIN. Responsibility for the data itself was with the Energy Information Administration. The principal responsibility with regard to the use of the data for coal and electricity would be the Economic Regulatory Administration.

I think there are two interesting points to focus on here. First, as to the data, we ran a system which was built upon data from last summer and which took the stockpile estimates from the utilities as reported to the Government, and then compared them to the use in the immediate previous period, the previous week. This is the classical way in which these numbers have been collected and reported for a long time, going back to predecessor agencies of the Department of Energy. It is a fine system.

We were just trying to figure out roughly where the industry stands in anticipation of a coal strike or in the early days when there is still a reasonable stockpile. You may say that the utility has 100 days of coal. But that means that there is a stockpile that is estimated to contain so many tons of coal compared to the previous week's burn, and you make a long division and it comes out to 100 days. It is a little distorted as the year goes by, because while you burn more in the summer due to air conditioning and more in the winter due to heating, lighting, and all the rest, you burn less in the spring and the fall. So the previous week's burn is not always characteristic.

But when you get near the bottom of the stockpile, this statistical information begins to be problematical for many different reasons.

It does not convey on the side of the numerator all the facts you really want to know about the stockpile. We found, for example, the coal at the botton had been there many years and through oxidation had lost some of its caloric values. Also it had mixed with debris, stones, and mud, which makes it less useful.

On the other hand, you may be taking steps to change your burn. If you run your nuclear powerplants more and rely less on coal, the previous week's burn becomes relatively meaningless. To the extent that you can import power through your interconnections, you get a different story.

COAL PROJECTION

Now, what happened generally in this area was that for a period of time in the middle range of the coal strike, the stockpiles were going down at the rate of about 1 week's worth of coal for each week that went by, or at least 6 days' worth of burn for each week that went by. We got to the point where the most seriously affected part of this Midwestern area, we call it the East Central area, received in the middle of February just over 300,000 tons a week of coal for the utilities, while they were burning perhaps 12 times as much. So they were almost doing no replacement.

But after that, they imported more power. Some of the powerplants that were burning coal, as they approached a 20 days supply or a 26-day supply or 19, were actually shut down in favor of reliance on nuclear and imports, and in favor of taking chances on reliability. So, we had one plant which had an infinite number of days supply after that.

The meaning of this projection of days supply really had to be sharpened up.

In our work during this coal strike with the utilities and the State regulatory commission, our staff developed some additional concepts which we think will be more helpful the next time in describing just where we stand.

The second critical point on projection is in addition to extrapolation, we tried, just by talking to utility dispatchers and the coal people, to find out just what was going on. We got the system working to the point where we had pretty good projections for, say, a week ahead of time on what was really going to happen.

We as a nation, government and, even more so, the utilities, the energy companies, the transportation people, the Department of Transportation and ICC in the Federal Government, set ourselves a challenge of the supply strategy, to try to bring up that 300,000 tons of coal. That supply strategy worked very well.

Going right to the heart of your question about accuracy of forecast, I'd say it worked better than anybody had any reason to hope for or feel confident of back in late February. By the end of the coal strike, that 300,000 tons a week had been increased to 1.5 million tons a week, coming in from mines which were operating in various parts of the country. To make that work, utilities had to burn coal which was different from what they normally burned,

different qualities, different characteristics form the planned-for burn. The operating people in the utilities had to do some experimenting. In many cases, these loaders had to mix their traditional supplies with these new, different supplies. They had to take some chances on slagging and effects on their units.

Transportation arrangements had to be worked out, cooperative arrangements among utilities who were better off to relinquish a supply in favor of those who were worse off.

All of these measures, worked remarkably well. We did not, for example, have an outage, a forced shutdown of a major powerplant due to burning these different mixtures of coal supply. It was, I think, an extraordinarily successful effort on the part of the energy community in this country, for which they deserve our gratitude. They responded with innovativeness. They rose to the challenge, and they did better than I think anybody in the industry thought they could, although it's characteristic of the capacity I think this country has, to respond to a very difficult challenge by a host of individual actions that produce positive results.

We are fortunate. Incidentally, we did not actually have to exercise the emergency regulatory powers that the Department has and the Secretary has delegated to the Economic Regulatory Administration. These accomplishments were done by energy companies, transportation companies and with a great deal of help from the State Governors' offices and the various agencies of the Federal Government that are involved in transportation.

Senator HATFIELD. Do I understand that you are saying part of what appeared to be a poor forecast was because of extraordinary response from the people involved in the energy field; at least that is part of the cause? Is that what you're saying?

Mr. BARDIN. That is what I am saying. When I met with industry officials in February, they didn't know they could get that much done. Now, of course, there is an element of luck in it. We could have had a forced outage of major units and it could have caused a lot of trouble. We had utilities which were operating under reliability constraints which were much more severe than they would normally be willing to accept. The chances of a major power blackout in one of those cities was far higher than normal.

Senator HATFIELD. I also believe I understood you to say that out of this experience, you have looked at the whole forecasting procedure, its mechanics and techniques. If you were faced with this same problem next time, I would imagine you might want to go to a series of options, if such and such circumstances occurred, that this would be the projection; and if you had other circumstances, a different projection; rather than getting locked into a general overall projection. Do I understand that?

Mr. BARDIN. That's correct. We would have a formula kind of projection, rather than one that simply turns on the numbers of days of coal supply left in the coal pile. We would interpret the coal pile in conjunction with interpreting the imports, the availability of nuclear, et cetera.

GENERAL ACCOUNTING OFFICE REPORT ON COAL UTILIZATION

Senator HATFIELD. Mr. Bardin, you are familiar with the July 25, 1977 GAO report as it relates to coal utilization. It indicated that the FEA had accomplished very little in the industrial portion of the coal utilization program. They gave a number of examples. One such example was of the 143 utilities directed to construct coal-fired generators. All but one were planning to do so anyway. Now, what's your response to this criticism?

Mr. BARDIN. I am familiar with the criticism, although I must confess I don't have the details of the report in mind. But the general response is, we think that it is a criticism well taken. A great deal of paperwork in the past has recorded or sanctioned what would have happened in any event.

We have had some accomplishments with the existing program. But our judgment is that, to really move the country away from oil and gas toward coal or any other substitute which avoids the oil and gas route, we need the National Energy Act. Each house of Congress has already approved it and the conference has agreed on it. That will switch the entire burden of proof from the system we now have.

We run a program where the Government is undertaking entirely too much case-by-case review, with the burden of proof on the Government. Under the National Energy Act, we will have a presumption, a congressionally mandated presumption, against the burning of oil and gas in any of these new plants. The burden will be on the proponent of constructing an oil or gas-burning plant to demonstrate why he should. Also, there will be a number of other interesting features that are worth mentioning.

We will not give them an answer merely yes or no on all oil or no oil. If we are persuaded that it is not feasible to burn 100 percent coal or 100 percent oil or 100 percent of any alternative, we can come up with halfway houses. We might have to agree that some oil needs to be burnt in a plant, but it could be done in combination with coal, so there are those opportunities.

There will be opportunities to locate a utility facility in a different area for environmental reasons. We can see that you can't burn coal in a given location and therefore there's a good case for burning gas if it's got to be located there. And we'll say, wait a minute, you have an interconnected grid; you could locate this plant elsewhere.

My basic answer, therefore, Senator Hatfield, is that the solution to the criticism is the solution that Congress is well advanced on taking through the new legislation of the National Energy Act for coal conversion.

EFFECT OF TAX ON REGULATORY PROGRAM FOR COAL CONVERSION

Senator HATFIELD. Well then, moving on that comment, in the framework of regulatory programs that are directed toward switching toward coal-fired generators, if the tax penalties and incentives for industrial users to convert to coal are enacted, will this regulatory program still be necessary? And conversely, if these provisions are not enacted, do you foresee a larger regulatory effort that's required?

Mr. BARDIN. The two programs certainly support one another. In my judgment, we have an enormous task in the context of the American economy. The Government has a difficult role to play in getting this job done. It is not an easy one. It is a painful one. Businessmen are making decisions all along.

But I say to businessmen that, if I were in their shoes, I would figure that, no matter what Congress does this year, we are at the threshold of a long-range process. So if they are planning a facility that is going to be on line for 20 years or 40 years for their company, they ought to be anticipating that Congress will come back to this problem again if it is not satisfied with the outcome of the implementation of this year's legislation. And it will become progressively harder and harder to burn the dwindling fuels where it is possible to turn to the more abundant or even renewable resources.

Having said that, in direct answer to your question, I don't think the tax alone will carry the program. It will help greatly in the management of the regulatory program. If we have no tax this year, then it puts a greater burden on the regulatory side. It means more intrusion of Government into specific decisionmaking, which would be unfortunate in terms of the efficiency of both achieving the congressional objective and keeping business productive in this country.

But we are just going to have to try to do that. We are not going to get as much of a result without the oil and gas user tax, should that be the decision, as we would with the oil and gas user tax.

UTILITY RATE REFORM DEMONSTRATIONS

Senator HATFIELD. Mr. Bardin, let's turn a moment to the utility issue now and utility rate reform demonstrations. You have not requested money for such demonstrations; but you feel there's funding adequate to meet the 16, I believe, that you have projected.

How much of this money have you obligated to date and how much is remaining?

Also, could you give us a general update on the status of these demonstration projects, and especially as you might be able to assess at this time the public's general response or reaction to variable rate structures by utilities, and other such issues that may have been brought forth by the demonstration projects.

Mr. BARDIN. We believe that the demonstration projects are having a very positive effect and that they are proving and have proven some significant points. We've obligated most of the funds and will complete most of these projects this year. We have some finishing up to do next fiscal year on three projects, as I recall, with add-on funds left for that purpose.

The public response has been positive, and the response of the regulatory community has been positive. It is a question of how quickly we can capitalize upon the momentum achieved thus far and translate into action all of the major consuming areas.

Some of the State commissions have already taken the steps to dramatically modernize their rate structures. There are exciting studies and proposals going on in commission after commission.

On a related issue, your Oregon Public Utility Commission and the Pacific Power & Light proposal on insulation shows the kind of progressive thinking that's going on in the regulatory community on both the utility side and the State commission side. They are proposing to lend the homeowner the cost of insulation at a zero interest rate, to be paid back when the house is sold. Therefore, there is easy financing through the purchase money mortgage. It could be 1 year later; it could be 40 years later. As I understand the proposal, all the consumers in the service area, in effect, pick up the tab for the interest. It is cheaper therefore, from the point of view of the consumer, to realize the benefit of insulating his home thereby reducing the use of electricity for the space heating, than it would be to build that next incremental powerplant capacity that much sooner.

So the general situation as we see it is positive. We have States who have moved ahead. We have utilities around the country who understand the opportunities. There is still some hesitancy, still some concern about the intrusion of new ideas or pressure from Washington.

Under the National Energy Act proposal, our role will be continued technical support and assistance to the States in putting together their own reforms of their rate structures. But we will not have the last word. If we feel that they're not moving quickly enough, or need direct and decisive help, that will have to take the form of an intervention on a much larger scale than we've been able to do in the past.

I've got to tell you frankly that the funding in the budget before you does not fully cover the larger scale interventions. That would have to be dealt with supplementally after the National Energy Act becomes law.

PACIFIC POWER & LIGHT CO.

Senator HATFIELD. You mentioned the Pacific Power & Light Co's. proposal for conservation, weatherstripping, and so forth. Have you had a chance to read the details of that proposal?

Mr. BARDIN. I have not reviewed the details. I simply reviewed the general financing approach.

Senator HATFIELD. I've discussed this briefly with Secretary Schlesinger. I'd appreciate very much if you would read the details of that proposal, and then give me a general assessment of how you would envision that getting departmental approval, say, with the National Energy Act.

[The information follows:]

PACIFIC POWER & LIGHT CO.'S INSULATION PLAN

Under the Pacific Power and Light insulation plan, all utility ratepayers would be required to pay the costs of insulating some electrically-heated homes. The ratepayers would pay for free home energy audits, water heater jackets, and insulation financing. The cost of the insulation materials and installation, per se, would also be borne by the general ratepayers, but the homeowner would be obligated to repay this sum to the ratepayer when he sells his house.

The rationale for this plan is that it is less expensive to save a kilowatthour in the Pacific Power and Light service area than to add an incremental kilowatthour of electricity supply. This is true irrespective of how the kilowatthour is saved. The underlying assumptions, then, are: (1) That insulation should be subsidized by the general ratepayers, (2) and that the utility stockholder should earn a return on investment in insulation.

The principal advantage of such a plan is that it will likely be highly successful, since the homeowner will tend to view the service as free. It is particularly important that no front-end capital is needed by the individual homeowner.

There are, nevertheless, potentially serious problems with this approach. First, homeowners who have already insulated will be required to subsidize those who have not. Second, do-it-yourself projects and other cost-reducing approaches to insulation will be discouraged. Third, the utility company could develop considerable leverage over the insulation business, and perhaps over the related home improvement business as well. And fourth, because the service is free, noneconomic decisions will tend to be encouraged.

For these and related reasons, the House, Senate, and Conference Committee versions of the National Energy Act (NEA) all established prohibitions against the type of program proposed by Pacific Power and Light. Although grandfathering of existing programs is allowed, and case-by-case prospective exceptions are also possible, the intent of the Congress is evident. Any decision as to the admissability of the Pacific Power and Light proposal under NEA must be reached in light of the specific legislative language of NEA, together with the Conference Report. Since neither is available at this time, it would be premature to establish an official position on the proposal.

UTILITY INSULATION SERVICE

Mr. BARDIN. I'd be delighted to do that, Senator. But that gets into the question of the utility insulation service, which is also part of the conservation effort, handled in part by ERA and in part by the Assistant Secretary for Conservation. ERA is responsible for the utility aspects.

Senator HATFIELD. You indicated that most of the funds have been obligated. For the record, would you provide us with the exact number of dollars? If you don't have it immediately handy, that's all right. We can accept it for the record.

Mr. BARDIN. My staff has met with the Pacific Power and Light people. We'll be happy to supply the details on that for the record, including our departmental——

Senator HATFIELD. Obligated and unobligated funds on this particular program. I think in your statement you said most of the funds——

Mr. BARDIN. We'll give you a more specific breakdown in dollars.

[The information follows:]

UTILITY DEMONSTRATIONS OBLIGATIONS

Of the total $9,285,000 budgeted for the utility demonstrations program, a total of $8,340,000 has been budgeted as of May 24, 1978. The balance of $945,000 will be obligated before the end of this fiscal year after completion of program evaluation of three remaining projects.

RATE REFORM ACTIVITY

Senator HATFIELD. Could you also at this time give us an assessment on your rate reform activity? I note that in the budget you have asked for a little over a $1 million increase over the current fiscal year. And as I understand this activity, it involves intervening in utility commission rate cases. Therefore, it's a little early, I assume, to get any definitive information as a result of this kind of activity, to make a complete assessment.

I would like to know, though, if you feel that it is a useful kind of activity, even at this time. And then I understand, again, that you estimate that 22 pilot projects will receive support funding. Do you plan to increase the number of these projects in the future, or

do you feel that there are a sufficient number at this time for adequate analytical purposes?

Mr. BARDIN. This is a very important program. It was started over 2 years ago. It has thus far been conducted in terms of generic testimony under general principles which the State commissions would do well to consider. In my judgment, there will be more work, in a number of States, in generic hearings. In State after State, we are scheduled to participate in these generic hearings.

But we will have to go beyond that, and that goes to the part of my previous answer as to the effect of the National Energy Act. The National Energy Act, the portion that the conferees have agreed on, again, does establish Federal principles, and calls for progress from the point of view of the Federal Government, toward the restructuring of the utility rates. The technique is that of guidance, advice, consultation, and intervention. The intervention portion, in my judgment, will require us to go beyond the generic type of presentation. In a number of cases, we will have to participate with other interested persons at the State level in presenting some specific recommendations to the State as to how to translate the principles of the questions into particular rates.

Frankly, the answer to your last question has to be negative. We do not have enough in this budget to carry out the whole mission. The background is that this budget was put together in terms of the National Energy Act as originally proposed. The changes that have been made in the congressional deliberations are not reflected here. I would think that this intervention area is clearly one in which we anticipate that there would be new authorization as part of the National Energy Act itself. The conferees have agreed to that. And I need to come back to you with specific proposals of the extent to which we will expand the use of the funds within this budget.

The budget which is before you probably has to be considered in light of the changed emphasis. The assumption when this budget was prepared was that the Federal Government would actually adopt regulations that the States would have to abide by, and that the Federal Government would assist the States in organizing themselves to carry out those missions.

The judgment of the Congress in the conference has been to take another direction, in which guidelines are to be established by the Federal Government for consideration by the State public utility commissions but not regulations mandating adoption of specific rulemaking principles. We will have to shift more to the intervention program and expand the program that you have before you in the budget as prepared.

Senator HATFIELD. Beyond the 22.

Mr. BARDIN. Beyond the 22.

CRUDE OIL ALLOCATION PROGRAM C

Senator HATFIELD. Under the crude oil allocation element of your petroleum program, you refer to significant legislative requirements as one of the reasons, at least, for the one-third proposed increase.

Could you enumerate or list for us the so-called legislative requirements?

Mr. BARDIN. We are shifting on a number of scores. Some have to do with the preexisting oil price and allocation programs, some with the National Energy Act, some with our overall regulatory simplification program. We've already decontrolled half of the products of the oil industry. There are substantial changes that ought to be made in this regulatory program as we bring in the crude oil equalization tax as a technique to bring our oil pricing into realistic balance with what is the real cost of the incremental or decremental barrel to our economy in order to save oil.

We will be holding a hearing later this month on the preliminary stage of some of those changes as a notice of inquiry. We don't have a proposed rule. But we want to share with the public—not just one trade association, but with the public at large—some of our thoughts.

We think that there may well be a way of running the crude oil programs which will avoid the multiplicity of layers of control and yet give us a better handle on the integrity of this system in which we are controlling oil prices in the country under congressional mandate at this time. We have to asure ourselves that those laws are carried out, but carried out in a way which allows the most flexible flow of oil amongst large and small companies and the minimum of interference with the market purchasing mechanisms.

So these are some of the areas in which we think there could be opportunities for a pretty substantial restructuring of the system. At the same time, we have to have a set of regulations which we could impose to deal with all types of contingencies which may occur. We're moving in one direction to decontrol, which is the appropriate response to the present supply circumstances, but in the case of some interruption of our foreign supply, which accounts for virtually half of the oil that we use in this country today, we're going to have to go back to controls.

The regulations that have evolved to date on the crude oil front, and I might say this is true of the products also, simply are not the appropriate regulations for dealing with a supply shortage. The regulations that were adopted back in 1973 and 1974 simply have been progressively changed and changed to reflect supply abundance.

So we have to have on the shelf a set of standby regulations to be able to use. Our philosophy is to develop those standby regulations by the same kind of process that includes public participation which would go into developing regulations which we are actually going to implement now. This would include notices to the public, comments, public hearings, drafts circulated to the world at large, and consultation with the congressional committees, as well as the interested citizens, State governments, and industry groups. All of that will be a major effort.

On the standby regulations, we have now put out what we call a short-term fix, some of the most urgently needed changes, and that is out for public comment now. This ought to be done either by the end of this fiscal year or early in the next.

But we're also anxious to work on some pretty substantial changes which would address all of the complaints and all of the

concerns about the effectiveness of the program we ran the last time, to try to have on the shelf the best program we can design for the next emergency.

CRUDE OIL EQUALIZATION TAX AND WORKLOAD

Senator HATFIELD. Do you make a relationship between your workload and how it would be affected by a crude oil equalization tax?

Mr. BARDIN. I believe we have done that, Senator Hatfield. Under the crude oil equalization tax, the basic concepts are that we would assist in regulatory development, and the compliance function would be with the Treasury Department.

PROGRAM DISTORTIONS

Senator HATFIELD. You also mentioned, Mr. Bardin, in the testimony about the elimination of major program distortions as a goal for your fiscal 1979 year. What kind of distortions are you referring to, and whom do they affect?

Mr. BARDIN. We've run into quite a number of problems. Since we were talking about crude oil before, let me take one from that area, then I'll switch to an example from the product area.

We run a program called the entitlements program to help equalize the cost of oil to various consumers in the country. Some oil is price-controlled at $5 a barrel. Other oil is priced at $13–$14 a barrel. The happenstance of the program should not determine how much Americans have to pay for gasoline or heating oil, petrochemical feedstock, or what have you. This program simply achieves an equilization, which is today around $12 a barrel. It's done on the basis of the weighted average cost of each category of oil to the refining industry, old oil, at $5, stripper oil at controlled domestic prices, foreign oil at uncontrolled import prices.

There is a distortion taking place in the marketplace with regard to quality differentials. Yet, unrelated market oil, the quality of the oil, the amount of sulfur or freedom from sulfur bears on its value, the viscosity bears on its value, location also does, as well as closeness to refinery markets, and the rest.

We have frozen into our present regulations a band of implicit quality differentials which happened to exist in 1973, and we do not allow any play for them.

To be more specific, the oil that is imported from abroad has values, unregulated values, reflecting the present band of differentials around a center, at the $13–$14 level. But the old price-controlled oil in this country has a much narrower band of quality differentials which is frozen at the price that prevailed in 1973. There's been more than a doubling—almost a tripling—of costs since then.

We need to design some mechanism that allows appropriate play for the quality differential factor and avoids the distortion. The distortion can actually lead a refiner to forego using an appropriate domestic supply of oil in preference to a foreign supply. And, that's counterproductive.

Another example, on the product side, which I certainly hope we can eliminate this fiscal year, is the so-called gasohol problem.

There are people in the Midwest who are interested in taking ethyl alcohol and blending it with gasoline, say, a 10-percent/90-percent basis, to come up with a gasohol mixture, a trademark of the State of Nebraska. It turns out that the regulations, while they do not control the price of ethyl alcohol, tend to prevent the costs of ethyl alcohol from being passed through to consumers.

This poses a number of problems, and one of them being that we wouldn't recognize the alcohol as a product cost of the gasoline. So, the regulations, on their face, do not allow the dealer to pass through to his customers the cost of the ethyl alcohol, which is higher than the cost of the gasoline, over and above the cost of the gasoline in the mixture, simply because the ethly alcohol is a nonpetroleum product.

We've given some temporary relief, and we have a rulemaking under consideration to provide a permanent solution.

That is another example of a distortion. There are, unfortunately, quite a few others which ought to be addressed systematically in the next fiscal year for all of those areas where it is necessary to continue regulating these products.

ENERGY EFFICIENCY OF GASOHOL

Senator HATFIELD. Speaking of the gasohol, do you feel that it is energy-efficient in its concept and its application as far as net energy is concerned?

Mr. BARDIN. That is problematical and is being debated. I think, from a national strategy point of view, one of the first questions is: What are they using to distill? Now, if they are using coal or wood, there are probably some very good reasons why we ought to look very favorably on that as far as the energy balance is concerned. Of course, there are lots of other issues that have to be addressed, too.

If they are using oil or natural gas, it's different. One of my concerns would be whether they are using low-priced natural gas to run the distillery and producing what looks like favorable economics to the businessman but would not look like a favorable energy balance to you and me.

We have, on this score, adopted a new regulation in the last few days, which deals with another distortion problem on synthetic substitutes for petroleum generally. Gasohol with ethyl alcohol would be eligible, but so would any other petroleum substitute.

We found that the equalization program that I described previously, effectively brings down the cost of foreign oil to this average level. It's now worth something like $2 a barrel of equivalent subsidy.

Now, if you're trying to introduce a substitute on the market, instead of competing against $14 a barrel foreign oil, which is what you should be competing against, you're competing against $12 a barrel foreign oil. Alternately, the crude oil equalization tax would take care of that. It would bring the oil price to $14, and then the substitute, which will not be subject to the tax, will be able to compete on a fair basis.

In the meantime, we've adopted a rule which would allow the American manufacturer of a petroleum substitute to receive the

same kind of entitlements benefit as foreign oil is getting, whatever that happens to be, so it will eliminate this competitive imbalance that's involved there. We are going to do that on a Btu basis, on a caloric value basis, and we're going to specifically take account of the question you raised, namely, is it as energy-efficient? The applicant will have to show us what energy source he's using, and we will have to assure ourselves that it does, in fact, meet the strategic interests of this country.

Senator HATFIELD. I want to commend you, Mr. Bardin, on your new focus, or the increased focus being brought to bear on this whole idea of net energy, which I think has sometimes, at least in the past, not been given sufficient attention in some of our programing and some of our activity.

Mr. BARDIN. I have appreciated your thoughts on the subject from the first time we met and discussed it.

EFFECT OF DECONTROLS ON BUDGET REQUEST

Senator HATFIELD. Let's turn a moment to part of your budget on petroleum products and natural gas liquids, which seems to be essentially the same as last year's level of spending, and that, in light of the fact that you expect—I think we all at least expect—that all refined petroleum products will be decontrolled by fiscal 1979. Your budget reflects virtually no difference from fiscal 1977 and 1978, when many products were under control.

Why do you need this level of money in your budget under those circumstances?

Mr. BARDIN. We will be phasing down throughout fiscal 1979 as efforts to decontrol are pursued. In order to achieve decontrol, we will have to put resources into the very decontrol effort itself. That is happening now in fiscal 1978, but a good bit of it will have to continue in 1979 to finish.

As you can appreciate, decontrol requires a thorough going analysis, a process of public hearings. Under the new DOE Organization Act, we are required to participate in a second set of hearings before the Federal Energy Regulatory Commission, in which we present testimony in order to be in the position to send the energy action to the Congress.

Finally, we have resources requested for at least two areas. One has to do with propane, that along with natural gas liquids for SNG plants at the moment, do not seem to be promising candidates for decontrol because of the competing demands on supply and the fact of greater pressure on the domestic supply. There are major proposals for importation of propane.

A number of countries in the Middle East are now working to exploit the propane natural gas liquids export potential of their natural gas. We will have more cases there, and there are going to be choices that will have to be made.

Another point is the natural gas imports activity, which will have to assimilate some of the resources that show up under the name of the petroleum products. This is an activity that was transferred from the Federal Power Commission on October 1 to the Secretary and delegated to ERA, but is not reflected in the budget.

The standby regulations that I mentioned before are the final point. There will be standby regulatory work for petroleum products, even though we will not be regulating the product. So where you'll see the major personnel cutback is in the field activities. If motor gasoline is decontrolled, as we hope, we will not have to have people allocating motor gasoline amongst the companies around the country.

REVISION OF REGULATIONS

Senator HATFIELD. In overhauling these regulations in the view of making them simpler, how will you simplify these regulations, and is this in the context of long-term goals that you have set? Is this a step toward them? And this year or next year will there be another step? What is your sequence?

Mr. BARDIN. Yes, sir. It's going to take us a couple of years, I would think, to do the overhaul job. Hopefully, this will be a period of completing decontrol where the supply situation convinces us and the Congress that it's appropriate so that we won't have to overhaul those regulations and just simply let them lapse.

That's the critical point in all of our planning.

Some of the overhaul on the standby regulations is very simple. We are suffering distortions now and confusions and a great deal of extra burden and work for us and for the industry, simply because we are using the 1972 base period. The world has passed 1972 by. Our goal is on the one hand, to achieve decontrol so that we have market forces working without regulation, and on the other hand, to write new standby regulations. The most efficient way would be to write a relatively simple set of regulations, which in the calm light of reason we develop now and not in an emergency circumstance. We must develop regulations that people understand and are ready to live with and that have some mechanism to assure ourselves that if controls have to be put into place again, they will not be based on the 1972, which is clearly outdated, but they won't even be based necessarily on 1977 or 1978. They will be based on a period which is relevant, live, and current, when and if that happens, God willing, it will be a long time before that actually happens.

OFFICE OF SPECIAL COUNSEL STAFFING

Senator HATFIELD. All right. I have a whole series of questions now in the area of multiresource compliance. The first one is on the overall observation here of your budget requests of some $23.8 million, which is twice the level of 1977. How much staffing does this provide to the Office of Special Counsel for auditing of major refiners?

Mr. BARDIN. We're providing for a staffing level of 612 positions for the Special Counsel's Office. In addition, we are turning to contract assistance to supplement that effort.

The contract assistance is geared to the concept that we have a catchup effort to do and that we want to drive hard over the next years. It does not make sense, in our judgment, to hire a very large number of auditors for a temporary period.

So what we have done, is go through a competitive bidding process with controls that I personally think are extremely tight on

the conflict-of-interest situation. I think Paul Bloom, the Special Counsel, has been very successful and we are very proud of the way he dealt with that. We have selected the eighth largest accounting firm in the country, which does not have a conflict-of-interest problem on this effort. We have also awarded a contract for additional computer services to help in this analysis.

We have provided $2 million to begin that contract effort out of this fiscal year's funds and we are going to need an additional $13.8 million for the full effort. Of that additional $13.8 million effort, some ought to be in this fiscal year and some in 1979.

Senator HATFIELD. For the contracts.

Mr. BARDIN. For contract work.

There is the opportunity for supplemental funding in this fiscal year for part of it which you will be considering in the supplemental appropriation bill. We're going to have to discuss the remainder with you, whatever the remainder is, of that $13.8 million.

Senator HATFIELD. But the 600-plus that you referred to would be, then, part of your permanent staff that would be an ongoing——

Mr. BARDIN. They would be Federal employees, yes, sir. And they would supervise the audit. The outside auditing will be a couple of hundred man-years a year and the people working on that would be under the supervision of Government enforcement personnel.

Senator HATFIELD. It's conceivable, then, that after the period of this catchup is finished, that level might even be reduced because the supervision of auditing through the contracts would no longer be required of those permanent employees.

Mr. BARDIN. When we have caught up, we certainly would expect a reduction in future fiscal years, a reduction of the Federal manpower devoted to this compliance effort.

Senator HATFIELD. The noncontract Federal effort?

Mr. BARDIN. Yes; the noncontract Federal effort. This will be for the reason you state, plus some of the auditing work that we do inhouse will have diminished by then with the contract.

Senator HATFIELD. We're going to enshrine this part of your testimony this morning and review it when we open the capsule down the road a few years.

Mr. BARDIN. We'd like you to do that, and I want to point out to you, in the case of the other portion of our compliance budget, that's the Office of Enforcement, that we already show in the case of the resellers program—that is, the people who buy products for hire and sell to the retailer—that we're proposing in fiscal 1979 no effort beyond finishing up the cases in question.

That goes back to the issue of decontrol that we just described. We're assuming decontrol. We're therefore saying in our budget request to you for fiscal 1979, let's phase that out. Let's make that commitment now. And that commitment, too, ought to go in subsequent fiscal years to a diminished level.

We do have a catchup problem in the case of the small refiners, the crude oil resellers, the crude oil producers, as well as the largest oil refiners. This is a matter that we in the ERA and the Office of General Counsel of DOE and the Department of Justice

are very much involved in. These cases, have simply got to be resolved.

We have to get ourselves in a position where we can look you in the face and tell you, the laws that you pass, the regulations that were adopted have been conscientiously administered. We have made a complete good faith effort to enforce them. Here are the results, win, lose, or draw. Here are the overcharges, refunds, and criminal cases, if there are criminal cases, that have come to trial and fruition, and now we have to go on to other things.

There will be other programs, there will be other issues to enforce in many other areas. We must bring this program to an appropriate level, which means the end of looking at the past.

We're not ready to do that yet, but we hope that we will be ready within a couple of years.

FUNDING FOR POSITIONS

Senator HATFIELD. Perhaps you could further explain in this area of person power that we're talking about, some of your summary schedules.

You have here two columns, one showing budget positions and another showing planned positions. Which column do you propose to fund?

This is headed up, "Compliance Program Comparison."

Mr. BARDIN. Our present plant, Senator Hatfield, is the last column, the planned positions.

Senator HATFIELD. Planned positions?

Mr. BARDIN. It reflects, for example, the decision that special counsel needed more positions in the headquarters leadership role as part of the effort.

Senator HATFIELD. But, as I understand it, OMB approved the 1,353 figure. You're planning to fund the 1,399 figure man-years.

Are you suggesting that you're going to fund over the level of OMB approved figures? If so, I'd like to know how you do that.

Mr. BARDIN. We do have a total budget—in other words, OMB approved the total budget with their thought that it involved this much effort on compliance. We've decided to take our total budget and allocate more resources to the compliance effort. OMB does not, in fact, restrict us on the use of the total budget.

Senator HATFIELD. In other words, when you presented your budget to OMB, you computed your total figure in relation to man-years as 1,353, which got the overall approval of OMB.

Now, as I understand, you're saying that in a recomputation, you want to go to the 1,399 level, which would stay within the same overall dollar budget.

Therefore, you feel that you have that flexibility with OMB. Is that what I hear you saying?

Mr. BARDIN. That's basically it. The Secretary submitted a proposal to OMB a few months ago. Since then, there has been a departmental evaluation and a decision at the secretarial level that the compliance effort must receive more resources and more attention.

The Secretary has lived within the total budget, the total number of positions that were first discussed, but has shifted, as you see, some additional positions into compliance.

This is, of course, done with OMB's knowledge and approval. There are two different time points involved. It is not a question of OMB versus the Department of Energy. It is a question of where we stood when we first put the budget together, working together with OMB, and where we stand now.

Senator HATFIELD. Man-years versus positions, too. You've dealt yourself a good, flexible card there, haven't you? Unlike, let's say, when you're dealing in man-years here, you've already created a certain element of flexibility that doesn't exist.

For instance, take the Forest Service budget, which has OMB personnel ceiling limitations. You have to count bodies there, I think more than we count anything else. This is a good way. I like your technique here. I think it could well be applied to some of these other agencies that run up against that impossible agency we call OMB.

I like your new technique. It's at least a technique new to me. We ought to pass that word to the Forest Service. [Laughter.]

THIRTY-FOUR LARGEST REFINERS

The justification indicates that the compliance effort will focus on 34 refiners.

Now, Mr. Bardin, how did you go about selecting those particular refiners and have they been publicly identified at this point?

Mr. BARDIN. The 34 are the largest integrated refiners in the country. They were selected on the basis of the size factor. They were selected, I think, certainly before I came in, in the previous administration.

They have been publicly identified. We decided to use a preexisting definition because our staff was already organized in those terms. It was a question of shifting more resources into that effort.

Senator HATFIELD. You have 11, I believe. You have initiated 11. You're going to have 15 in a second series. When do you expect to complete the total of 34? Or when will you begin to?

Mr. BARDIN. Let me give you a general answer, and then ask Paul Bloom, the special counsel for compliance, to supplement that.

The mandate to the special counsel said as follows: He is to initiate and complete audits of the 15 largest of these companies. He is then given various kinds of flexibility on how many more companies' resources time will allow him to pursue. We can do at least three more, but we're hoping to do a good deal more than that. He may, however, use the classical discretion in enforcement work of selecting issues or selecting portions of it. It does not have to be a comprehensive audit as to each aspect of every one of the other refiners.

He has begun. He has begun with considerable distinction in the intensified audit of the first couple of companies. And I think it would be useful if you would permit me to ask Mr. Bloom to give a brief sketch of how that's going to progress.

Mr. BLOOM. Senator——

Senator HATFIELD. Would you please state your name for our reporter?

Mr. BLOOM. Yes; I'm Paul Bloom. My title is special counsel for compliance in the ERA, Department of Energy.

As Mr. Bardin has stated, I have been instructed by the Secretary of the Department of Energy very specifically, in the first phase of my activity, to complete the intensified regulatory audits of all pricing and allocation activities of the largest 34 integrated refiner companies within 2 years of the activation of my office. That is defined, as to those largest 15, to include the identification and initiation of all appropriate enforcement actions. I'll come back to that in a moment if I may, because it has a very significant manpower impact.

To clarify some of the numbers: The 35 majors were determined on the criterion that Mr. Bardin suggested, of size, that is, those that had more than 75,000 barrels per day domestic refinery capacity. The further pragmatic reason for drawing the line there, because there are many other large refiners in the United States that fall below that line, is that that is the line that had already been drawn by something called the refinery audit review program—it was called the RARP program—in the Federal Energy Administration in the past.

The significance of that is that teams of two or more auditors had already been permanently located at the refiner record sites of those companies. Therefore, we had a threshold accomplishment, an onboard presence at those refinery centers to build on, whereas at the others there was no comparable permanent presence and no resulting effort already underway in that category.

The 35 largest companies are, as Mr. Bardin said, well known.

OTHER PRIORITIES OF THE OFFICE OF SPECIAL COUNSEL

The second order of priority assignments I have been given, in addition to completing intensified audits of the largest 15, is a mix of the following: First, to bring up to current posture those same 15, because the first priority, which I've already summarized, goes only to what we call the base period, that is, 1973 through 1976. That's the large part of the crunch, the catchup effort which was unfinished in the FEA days; and on which I've been instructed to concentrate resources and complete.

So the second priority is to bring those largest 15 up to date as soon as possible, and to close the books on the embargo period in 1976.

A compatible priority within the ERA, based on our best judgments as to optimizing our resources, is to complete the base period, that is, the 1973–76 period, intensified audit of the balance of the companies, subtracting the 15 largest from the 35 largest companies, which are the total target universe in my office. I apologize if that's somewhat confusing, but that's the way the targeting itself breaks down.

Mr. Bardin, I think, stated that you might be interested in a very short summary of the initial phase. Even before my office had been activated in December, steps had been taken leading to the experimental intensification of the investigation of the two largest refin-

ers, Texaco and Exxon. I am pleased to tell you that approximately two out of the three of the largest components into which we break down the oil industry for those two largest companies of the largest 15 have already been essentially completed. We have published enforcement actions identifying alleged overcharges, price violations with respect to Exxon of well over $400 million in the areas of natural gas liquids and crude oil production; as to Texaco, one large aggregated notice of violation totaling $380 million in crude production actions.

I think it's reasonable to assume we'll act in the other areas in the very near future as well.

One important thing that we're trying to put in place in our startup phase is a much more efficient use of legal manpower. You'll recall the Sporkin task force, on which I had the pleasure of serving last summer, identified the relatively ineffective use of legal support manpower in the historic audit phase of our predecessor agency.

We made an intensive effort here to integrate legal and audit resources from the beginning of the audit effort, rather than on a review basis at the end. We have found some efficiencies in this. It's hard to quantify, but we think it's played a large part in the ability we have had so far to identify slightly more than $1 billion in price violations.

IDENTIFICATION OF OVERCHARGES

Senator HATFIELD. Considering the period of time involved with these so-called overcharges or violations, how do you identify those who were actually harmed by such overcharges?

Mr. BLOOM. This raises a related question of remedial orders. We have not yet reached the point of final remedial orders in some cases. That's not to say we haven't given careful thought to some of the problems, because we're in the startup phase of enforcement actions.

First we have to complete the audits, identify the issues, draft the notice of probable violation, then proposed remedial orders, then remedial orders. But the problem is a very interesting and difficult one. In some cases, it may be relatively easy. If I may give you a very simple illustration involving a large reseller and a major refiner in my area of jurisdiction, the States of Washingtom and Oregon in the Pacific Northwest, a consent order was agreed upon and announced at the end of last week in which Texaco, one of our original intensified targets, agreed to repay an admitted overcharge which our auditors identified some time ago of about $3.4 million. In that case it was relatively simple. I'm picking one on the easy end of the spectrum right now for illustrative purposes. It happens to be a major reseller in this case, Gull Oil, the largest unbranded jobber for Texaco in the States of Oregon and Washington.

It was determined that the best way to handle that was on a consensual basis; in terms of remedy, it was to have $1.9 million paid straight to the direct victim, Gull, the unbranded jobber, and $1.4 million paid, over a period of, I think, 12 equal installments, by Texaco to a long list of identified former customers of Gull.

You may ask why former customers and not present. Because our regulations and this order contain language requiring, through complicated regulatory means, Gull to pass through the benefits of this repayment to its present customers. That doesn't benefit the former customers. So we identified them, and they ranged from amounts as low as $900 to amounts as large as $80,000 or $90,000 each, adding up to five pages attached to the order of identified victims of overcharges. That's a relatively easy one.

On the other side of the spectrum, Senator, it is very foreseeable that in some crude oil and refinery pricing violations, when we come to remedies, it may be so difficult to reconstruct in any equitable way a compensation to the marketplace because of very numerous categories of injured parties which simply cannot be reconstructed, our working hypothesis in that area is that the most appropriate remedy would be to order repayment to the U.S. Treasury.

Senator HATFIELD. To the Treasury?

Mr. BLOOM. Yes, sir.

Mr. BARDIN. We've actually done that in one case, Senator Hatfield, Getty Oil, and that case is now on appeal.

Senator HATFIELD. You mentioned former customers. Conceivably, some of these cases could lead to a price rollback as it would relate to current customers.

Mr. BLOOM. Yes, sir.

STATUTE OF LIMITATIONS ON VIOLATIONS

Senator HATFIELD. Now, do you have, in any phase of this program, a statute of limitations to deal with?

Mr. BLOOM. We certainly do on the criminal side, because generally my obligation involves referring to the Justice Department appropriate cases of evidence of criminal violations. And as you know, of course, Senator, there are clearly stated statutes of limitation.

Mr. Bardin might want to amplify on this, but I know that in the ERA, the Office of Enforcement, as well as my own office are involved in some discussions with Mr. Bardin about the administrative steps that would constitute an equivalent to a civil statute of limitations by internal administrative action. I'm not sure how much Mr. Bardin wants to get into that.

Senator HATFIELD. When would the statute start running in terms of your activating these various cases within this 35?

Mr. BLOOM. Certainly I would hope—and I'm sure any such internally generated limitation will be flexible enough to allow the completion of the audits already underway, so that any items identified showing a real need for restitution, rollbacks, repayments, that proceed out of those audits, would be——

Senator HATFIELD. You're not running against that now, nor are you at the time when you activate the case, but rather when you begin to require refunds. Is that the point where you feel the statute of limitations will start running?

Mr. BLOOM. On the civil side?

Senator HATFIELD. I'm on the criminal side.

Mr. BLOOM. On the criminal side I think it's a fairly strict court-made law on how to time the running. We have not yet encountered that. We are proceeding on the criminal side of our investigations whenever something suggests possible willful violations. We, of course, are prioritizing those to allow for the possibility of criminal statutes of limitation.

Senator HATFIELD. I'm not sure I understood correctly when the criminal statute of limations would begin.

Mr. BLOOM. We would take the most conservative view of it, of course, Senator; and the most conservative view of it would be the beginning of the implementation of the overcharge decision. A date could be argued more generously, if we get such an interpretation, from the actual impact on the victims.

But I think in matters such at this, a court could read such statutes against the Government—it would be wise for us to take the most conservative view of the situation.

Senator HATFIELD. When you identify the 34 companies, that's the date that you think the statute of limitations will begin running?

Mr. BLOOM. No, sir.

Mr. BARDIN. Senator, my understanding is that the criminal statute of limitations, which is a 5-year statute, will be timed from the offense.

Senator HATFIELD. From the offense.

Mr. BARDIN. It could be argued that the offense is at the time when the overcharges take place. On the other hand, these offenses are typically continuing ones.

Now, the potential for a strict interpretation of the statute is of some concern to us, because here we are, sitting almost 5 years after the embargo right now. So the instructions that I've given the Special Counsel, Mr. Bloom, and the Assistant Administrator for Enforcement, Mr. Herzog, who's responsible for the other cases, are to give priority in processing to those cases which appear to involve willful violations. We must do this in order that we may get them analyzed and if there really is evidence of willful violations, get them to the Department of Justice and the U.S. attorney as quickly as possible, within even the strictest reading of the statute of limitations, and they are doing that.

In the case of the civil question, there is no civil statute of limitations. We are developing a series of administrative policies which will put some reasonable restraints on how far back we reach. My present plan on handling that is to distinguish between the smallest companies—of which the smallest, of course, are the retailers, 180,000 retail stations in this country—the medium-sized companies and the largest companies.

OFFICE OF SPECIAL COUNSEL MANDATE

I think perhaps I just ought to amplify one point that Mr. Bloom touched on. It is worth keeping in mind that his mandate is to get these cases to the point where we have identified an apparent overcharge, and to do that very quickly.

In the case of Exxon, it is striking that when they set out to do the intensified audit program—actually even before the Special

Counsel's Office was activated and thereafter—they went to a two—shift system, something that Government regulators haven't done in oil price regulation before. They have two different 8-hour shifts working through there at—what?

Mr. BLOOM. A rate of almost 70 people.

Mr. BARDIN. Seventy people in order to get in there, get the facts, and then get out with them.

Now, that is the process that he is engaged in, and that we will be moving through in these 2 years. As these cases develop, there will be additional work which begins now but may continue beyond the 2 years in the legal framework. There are provisions for administrative appeals, in some cases, within the Department, including an appeal to the Federal Energy Regulatory Commission. There is, in every case, the right of the oil company to have a court review the matter judicially.

Of course, if it's criminal, the U.S. attorney has to bring the action in a court. So, the potential for litigation can continue beyond the 2-year period.

Senator HATFIELD. Thank you.

Now—excuse me.

STARTUP PHASE OF THE OFFICE OF SPECIAL COUNSEL

Mr. BLOOM. If I may amplify just a little on Mr. Bardin's last point—I apologize for taking your time, but I think it is important—one of the really forceful lessons we've learned from the startup phase, the first 6 months of my operations, is that, if anything, we approached this conservatively and pessimistically about manpower needs. We have learned to our surprise that, if anything, we may have underestimated the followup phase, that is, the manpower-related impact of bringing enforcement actions. We've become the victim of our own success to the extent that we identified and brought $1 billion in enforcement action. Some of those are very large and very complex matters, and they, of course, stimulate very resourceful, imaginative, well-financed legal attacks by the target companies on our program of enforcement.

For instance, with the recent action involving the Hawkins Field in Exxon, I don't want to talk about the merits because it's pending, but Exxon, in addition to filing a copious response which we're now having to review, has also brought an independent legal challenge in a Federal court in Texas without waiting for the exhaustion of administrative actions in the agency, attacking our 1975 ruling under which we had proceeded.

All of this multiplies the manpower, both on the legal side and the audit support side. The one great variable we cannot quantify because we don't have enough experience is the obviously very considerable legal, audit, and computer support for enforcement.

So, it would be a mistake to underestimate, or to think that the matter is relatively simple in terms of identifying these charges and putting them forward. There will be a continuing heavy manpower obligation in the Department of Energy to staff those things up, or it will make the whole progrm useless.

It would be pointless to identify billions of dollars in overcharges and then shortchange the audit and legal support of those things

and lose. We're taking on some of the most resourceful and able antagonist in the American business community. They have every right to resist these things; they are doing so resourcefully and ably; and we have to expect to bear the responsibility of defending those enforcement actions where we've taken them and pressing them, hopefully, to success.

Senator HATFIELD. Now that we have Mr. Coleman, we'll have someone who knows the inside of this.

Let's turn to the private grievances and redress for a moment.

Mr. Bardin, you've been a very patient witness, I want to tell you, and I'm grateful. I'm sorry that this gets so long.

Mr. BARDIN. I very much appreciate the opportunity to discuss these matters with you, Senator Hatfield. It's a personal privilege and pleasure, as well as an institutional responsibility.

PRIVATE GRIEVANCES AND REDRESS

Senator HATFIELD. Perhaps that's my feeling as well, so that's why I've been so long today.

Mr. Bardin, the $3.1 million fiscal 1979 budget for private grievances and redress represents about a 30-percent increase over the previous year. You project that you will receive as many requests in fiscal 1979 as in fiscal 1978. This seems to be in apparent contradiction to earlier promises to streamline, simplify, and reduce the regulatory burden.

Now, shouldn't these efforts really lead to fewer grievances? If so, when will we see the reflection of that decrease in the budget?

Mr. BARDIN. Let me give you a partial answer, Senator, then ask Mr. Melvin Goldstein, the Director of the Office of Hearings and Appeals, to join us, so that he can supplement it.

Since the budget was developed, I want to note that the Office of Hearings and Appeals has been moved out of the ERA, and now reports directly to the Secretary and Deputy Secretary, because it reviews appeals to decisions of the ERA. The decision was made to make sure that in appearance, as well as in fact, we furnished to the private parties an appropriate detachment in the appeal process.

I think there are several answers, from my perspective, to that question. Before I ask Mr. Goldstein to address them, I'd like to just pick up on the last point that Paul Bloom mentioned.

In the enforcement work, it's strictly catchup on past history, where even decontrol may have taken place, so that we have far less in the way of future regulatory responsibility. When a remedial order, a proposed remedial order is issued against a company, they have the right to challenge that on appeal to the Office of Hearings and Appeals. This is private redress for the citizen, for the corporation, subject to our regulations.

We are stepping up the enforcement effort by Mr. Bloom and Mr. Herzog on all of the history of potential civil overcharges in the oil pricing situation. That's going, inevitably, to generate a set of appeals to the Office of Hearings and Appeals.

In addition, there will be appeal or exception applications by people who want to be treated differently. They feel that the particular facts of their case are different from that which we had in

mind in adopting the regulations. No matter how simple the regulations and no matter how easy it is to understand or how light it is burdened, the fellow who feels his case is an exception doesn't want to live with a simple regulation, he wants somebody to look at the actual facts of his case.

So what we have, under Mr. Goldstein, is roughly analogous, say, to the Small Claims Court of the Department, except some of those claims are very large claims, indeed, that involve hundreds of millions of dollars. He is going to have that burden.

Mel, do you want to supplement that?

Mr. GOLDSTEIN. Certainly.

Thank you, Mr. Chairman.

The assumption which you have made was the very assumption that we ourselves used in compiling the 1978 fiscal year budget. We assumed that, as the regulatory effort was directed toward simplification, there would be fewer petitions for exception from the regulations presented to us. That has, in fact, been contrary to our actual experience during the course of 1978.

What we find instead is that, as any change in regulations occurs in this environment, there are a number of instances in which firms are affected in an adverse manner to an extent that we could not anticipate in terms of the general change in regulation.

So, we are finding and have found an increased number of exception applications resulting solely from the simplification process. This does not mean, of course, that the simplification process is failing, because what the simplification process is aimed at is the resolution through general rulemaking of the great majority of situations which may be encountered.

The couterpart of that, though, is the necessity for dealing on an individual case basis with those particular situtations in which firms are adversely affected by the general regulatory program.

For example, we find that as of April 1, 1978, we have an inventory of over 1,000 cases. We never anticipated that level of caseload when we put together the 1978 budget.

Senator HATFIELD. Phew. [Laughter.]

It boggles my mind.

PROCESSING OF PETITIONS

You alluded to a time limit for processing these petitions. What is the time limit that you feel is reasonable?

Mr. GOLDSTEIN. Well, during periods in 1977, we were averaging, I think, about 65 days to resolve petitions. Now, that's an average, and that included the most difficult as well as the easiest cases. It's my judgment that that is a reasonable time frame—65 days from the date on which all the data has been submitted to us.

Senator HATFIELD. You're projecting that for 1979, are you, as well?

Mr. GOLDSTEIN. We are hoping to achieve that, but I'm not certain that we will be able to, on the basis of the current funding of staff levels.

Senator HATFIELD. It could be longer?

Mr. GOLDSTEIN. It could well be longer. It has been longer during recent months, because of the unanticipated increase in caseloads.

Our cases, for example, have more than doubled on an intake basis in 1978, as opposed to 1977. That was as I said, never anticipated.

Mr. BARDIN. The basic justification for the increase proposed for fiscal 1979 is the sense that we have slipped currently, and that if we're going to get back to the rate of output that Mr. Goldstein is targeting for himself, we will have to add these positions to that effort.

Mr. GOLDSTEIN. Let me say, Mr. Chairman, in all frankness, that this current budget was put together before we had the most recent data that has come in in terms of the increase in our caseload. This reflects the situation which existed some time in the past, because of the nature of the budget cycle.

We will certainly make the very best effort we can with this manpower, but I think that both the Congress and the people affected by the regulations are entitled to expeditious treatment when they are presenting a claim of serious hardship or gross inequity to us.

It may well be that we'll have to look at this again and come back and discuss the situtation with you.

Senator HATFIELD. You're laying the foundation for a supplemental right now. [Laughter.]

Mr. GOLDSTEIN. I'm laying the foundation, I hope, for an opportunity to discuss with you the problems that we might encounter in providing the kind of treatment which I think the affected industry and the people involved deserve.

Mr. BARDIN. Mr. Goldstein is a brlliant lawyer and a very able administrator. We certainly—the Department of Energy—hope and trust that he is going to perform miracles and you will give him the tools with which to do that.

SUBMITTED QUESTIONS

Senator HATFIELD. Mr. Bardin and members of your staff, I reluctantly tear myself away from this wonderful session. You've been a very good tutor this morning and I've learned a great deal from your testimony.

You've been very helpful. But I must recess this hearing and submit to you the remaining questions for the record.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

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SUBMITTED QUESTIONS

COAL UTILIZATION

Question. For your coal utilization program you are proposing a $1.8 million program increase to be offset by savings from NEP start-up costs. The increase is based on 130 projected appeals for FY 1979. How did you arrive at that estimate, and how certain are you of the accuracy?

Answer. The $1.8 million increase for the coal utilization program was requested to enable the coal utilization program to evaluate and process petitions for exemptions from the provisions of the NEA. This will include engineering, financial and environmental evaluations to determine the practicability and feasibility for conversion from gas or oil to coal. Following evaluation, petitions will be granted or denied. Of course, administrative and judicial appeals will follow some petition denials.

Petitions

It is estimated that 390 petitions will be filed in FY 1979. The estimate was developed as follows:

o Industry. Based on a projection of new facilities to be constructed, the number of existing units subject to the program, the nature of the appropriate exemptions and experience in the ESECA program, it was estimated that 250 industrial petitions for exemptions from prohibitions from burning oil and gas would be received. An estimated 0.2 manyears is required for each petition processed.

o Utility. Exemption requests or permits to burn oil in the utility area are expected to be fewer than for industrial facilities. Based on the above factors, it was estimated that 140 exemption petitions would be submitted in FY 1979. It is believed that a high proportion of exemption petitions could result in the requirement for an Environmental Impact Statement. Without the environmental analysis it is estimated that it would cost approximately $15,000 to process each petition.

Appeals

Based on the fact that a new program is being created, our experience with the present ESECA program and the nature of the statutory exemptions it is estimated that approximately 30 percent of the industrial and utility petitions will be denied, resulting in approximately 130 appeals.

Since the estimate was made at an early point in the legislative development of the NEA, it cannot be stated to have a high degree of accuracy, as many changes have occurred in the legislative process. Better estimates cannot be made until the final form of the legislation is known. At that point the requirements of the Act can be correlated with new and replacement combustor data. It is believed that the 390 petitions estimate could be substantially refined at such time as all the facts are known.

UTILITIES

Question. You are seeking $625,000 to begin a district heating program. You mention in the justification that this is not a new technology. It it is already proven, why is Federal involvement necessary to encourage acceptance?

Answer. Although the energy saving potential of district heating has been shown to be significant, as has its technical feasibility, Federal involvement is necessary to demonstrate cost effectiveness and regulatory practicality. The budget request will be used to assist State or local regulatory agencies in developing detailed, site-specific implementation plans for two kinds of plants: new plants not yet constructed and existing plants suitable for retrofitting.

Question. Your request for consumer offices remains static at $1.9 million. What has been your experience to date with this program? Has this program had any effect on rate decisions? (Consumer offices represent consumer interests at public utility commission hearings.)

Answer. The Department of Energy (DOE) has been pleased with its experiences to date with its Utility Consumer Office Grant Program.

The 12 existing grants were awarded in September 1977, and most of the activity during these first few months of operation has been directed toward organizing, recruiting personnel and notifying consumers about the role and function of these offices. The offices have also spent considerable time developing and publishing procedures on how they will operate and represent the interests of consumers in electric utility proceedings. This developmental phase of operation is now about over in many of the programs and the offices are beginning to take an active role in regulatory proceedings.

Although the State offices have now begun to participate in some 25 proceedings, because of the length of the hearing process we will not be able to assess the ultimate effectiveness of this program for several months.

INSULATION SERVICES

Question. Your insulation services activity has efforts indentical to those under rate reform--financial assistance, technical assistance, and hearing intervention. Why can't you combine these activities? Wouldn't that save money?

Answer. These activities have, in fact, already been combined, resulting in better overall management and more efficient utilization of resources.

In the area of financial assistance, for example, a total of 10 Pilot Implementation Projects are currently being funded. In all 10 cases, rate reform programs are included and in 9 of the projects, some form of insulation service program is included as well.

The technical assistance contract with the National Regulatory Research Institute provides for on-site visits, information transfer, and regional symposia; all of these cover both rate reform and insulation services.

Finally, DOE intervention in State hearings has advocated some form of utility conservation services in 6 of the 25 intervention efforts to date.

Question. Although you propose a half million dollar reduction for insulation services, you are asking for seven new positions. Why is a 50 percent personnel increase required when the program level is being reduced?

Answer. This shift in the mix of resource requirements is a function of the maturation of the program. During Fiscal Year 1978, substantial contract support is needed because of the inherent start-up costs. For example, the development of rules requires extensive, short-term, technical analysis, but is not a continuing effort over the life of the program.

In Fiscal Year 1979, on the other hand, the ongoing program will require monitoring, enforcement, and fine-tuning. This effort will require a less technical and longer term commitment more suitable for permanent staffing.

PETROLEUM - CRUDE OIL ALLOCATION

Question. The entitlements program - designed to equalize crude oil prices to various segments of the refining industry - has been a continuing problem. For example, you have proposed another adjustment to the entitlements for California "heavy" crude oil. What assurance can we have that this program will no longer have negative effects like the closing in of California production?

Answer. The crude oil entitlements program is only one of several factors which have contributed to the closing of some California production, estimated as of May 15, 1978, to comprise about 30,000 barrels per day. The entitlements program has contributed to the problem since it has failed to fully equalize the cost of California heavy crude production. Restrictions on the export of residual fuel oil and California's stringent air quality requirements are important factors which have reduced demand for heavy sour crudes. However, the administration is committed to preventing shut-ins of domestic crude oil production.

This is one of the reasons why the administration has proposed eliminating entitlements through the crude oil equalization tax program. However, while we are not committed to the maintenance of the entitlements program, we are committed to preventing domestic production from bring shut in. For this reason, we believe temporary amendments to the entitlements program which address this problem are warranted.

Question. On the other hand, Secretary Schlesinger has proposed imposing a $5 a barrel import duty on crude oil if the equalization tax is not passed. Won't this further complicate the entitlements program? How would such an import duty affect your staffing and budget needs? When will a decision be forthcoming on this import duty?

Answer. Although a large import fee on crude oil would significantly increase the amount of money being transferred through the entitlements program and would require some modifications to the program rules and administration, the imposition of such a fee would not significantly complicate the basic entitlements program. There would be a small impact on the entitlements operational and regulatory budget and staff, but a significant impact in the compliance effort to audit and enforce fee payments as significantly larger dollar volumes would be involved and increased audit activity at a large number of firms required. Approximately 80 manyears of additional effort might be required under the ERA Compliance Budget Activity. The administration still supports the Crude Equalization Tax. Any decision regarding the implementation of an alternative to the tax is premature.

Question. You say that after implementation of the crude oil equalization tax, say in 1981, there will be a significant reduction in effort here. How much of a reduction can we look forward to: 10 percent, 25 percent, 50 percent?

Answer. During the phase-in of the crude oil equalization tax, entitlements program operational activity would continue at its present level. While the dollar amounts transferred in the program would be diminished, the number of personnel required to operate the program would not change. In addition, there would be a small increase in rulemaking activity because of the need to adapt the program to the phase-in of COET. There would be a reduction of about 50 percent in operations and regulation development resources devoted to the entitlements program. Some resources may have to be involved in program wrap-up, including a general report on the development and effect of the program, and on enforcement activity support, and some will be shifted to provide DOE input into the operation of COET.

Question. Specifically, what activities will be reduced? For example, the national energy plan suggested that the equalization tax would eliminate the entitlements program. But if the world price of oil goes up faster than domestic inflation, won't some form of entitlements be needed?

Answer. The activities that will be reduced are those that are now devoted to receipt, analysis and validation of refiners' reports; compilation, calculation and issuance of the monthly entitlement list; assistance to reporting companies; associated rulemaking activity; support of the exceptions process; and support of interpretations and rulings.

Under COET, once it is fully implemented, the amount of the tax is equal to the differences between the controlled domestic price and the world price. Therefore, in most instances the COET will equalize price among refiners and no entitlements program would be required. However, the President would have authority to hold down the COET in instances where the world price of oil has significantly increased and such increase would likely have a significant adverse impact on the economy. In such a case, if the difference between the acquisition costs of domestic and foreign oil became substantial, some form of cost equalization might be needed.

Question. You mention reviewing and inspecting 50 to 60 oil refineries and petrochemical plants to certify their operating capacity. Why are you inspecting only 50 to 60 - to develop industry averages or information specific to these facilities? How will you select these facilities? What is their distribution by size, by ownership, by geography?

Answer. All new, expanded and reactivated oil refineries and petrochemical plants are inspected to qualify for participation in the Entitlements and Oil Import Programs. We schedule the inspection of 50 to 60 facilities per year in response to requests from industry. The total number of refineries in the U.S. is 294 (May 1978). We do not select facilities for inspection; we simply inspect the facilities of all applicants. The size of refineries varies but 80 percent of the plants certified have a capacity below 30,000 barrels per day. These facilities are owned mainly by small refiners and are primarily located in the Texas/Louisiana area and secondarily in the Southern California area.

Inspections During 1977

48-hour Test Runs for the Entitlements Program	20
Oil Import Inspections (Section 213.29)	23
Petrochemical Plants (Section 213.30)	15
Total	58

CRUDE OIL PRICING

Question. Your crude oil pricing effort would increase by 70 percent. The additional $1 million would, according to the justification, provide better analysis of proposed regulatory actions and simplify regulations. Please explain how you will provide better analysis of regulatory actions. What will you do that you haven't been doing in the past?

Answer. Price control regulations for petroleum were devised in an emergency environment in 1973-74, and were not designed with the intention of an indefinite existence.

Extension of effective crude oil price controls for several more years, which the President has proposed, will demand a high level of sophistication in regulation development if we are to simultaneously accomplish the several objectives of proper control, maintenance of production incentives and administrative simplicity. Forthcoming national energy goals will place greater emphasis on resource development initiatives. Legislation resulting from such initiatives will create new and increased demands on regulatory development resources. Finally, adoption of a Crude Oil Equalization Tax would create a new task for DOE--that of advising the Department of the Treasury on the appropriate mechanism for determining the applicable taxes on crude oil production.

These tasks will require a modest increase in a relatively small task. The savings in regulatory simplification is not in the regulation development area, since it often takes more resources to make a regulation simple and understandable than it does to make it complex and confusing. Rather, the savings will be in the resources required to operate and enforce the regulatory program. The savings in this area will more than offset any increase in regulation development effort in future years.

Question. How will you simplify regulations? Do you have a long-term goal in this area? How does the FY 1979 program relate to that goal?

Answer. One part of our effort will be directed toward eliminating those regulations that we no longer consider necessary. For example, we have proposed and may soon submit to the Congress for review energy actions to decontrol motor gasoline, aviation gasoline and kerosene-based jet fuel. We will also be analyzing whether we can make the necessary findings to lift controls on butane and natural gasoline. This will leave only propane subject to controls, and in late FY 1979 we will consider the advisability of decontrolling this product as well.

A second part of the effort will be directed toward simplifying the regulations that will remain in place. Recently we significantly clarified and improved the price rules applicable to resellers of crude oil. We are also revising and simplifying the price and allocation rules applicable to natural gas liquids. Our major effort in this area will be to consider the use of the entitlements program to control wellhead crude oil prices, thus eliminating the need for ceiling price controls on producers and resellers and perhaps the need for crude oil allocation controls.

A third part of the effort will be to reduce the compliance burden on the regulated industry, particularly the smaller members of the industry. We have just announced a compliance policy to the effect that we will close out as yet unproductive audits of small resellers and retailers. We are considering and will likely adopt certain administrative limitations on how far back audits may reach as well as recordkeeping rules that will relieve many of the unnecessary burdens on small businesses.

Question. You mentioned that in 1978 you are going to provide incentives for high risk/high cost production and for tertiary production. Please explain how you determined what incentives are "adequate" in these cases.

Answer. The adequacy of incentives for tertiary crude oil will be determined on a case-by-case basis as the result of data provided by the producer, including cost of production, risk of technique, front end money required and pay-back period. High risk/high cost production will be defined generically consistent with the President's national energy plan.

Question. To what extent did your analyses rely on information submitted by the industry, for what kinds of information? To what extent did you verify such information?

Answer. Our regulations are based on Congressional mandates, consideration of administration policy, information provided at our public hearings where industry, consumers and others receive a chance to comment, other information including Federal and State data and our own analysis of economic impacts. We attempt to verify any industry information used in decisionmaking, relying on our data reporting systems and field audit teams for verification. Unverified industry data is never the sole basis for decisionmaking.

Question. The national energy plan, a year ago in April 1977, recommended greater incentives for high risk/high cost production and for tertiary production. When can we expect them? How long will it take before you propose these regulations, hold hearings, and finalize the regulations? Will development of these new regulations conflict with the goal of simplifying regulations?

Answer. We anticipate taking these actions in the context of enactment of the National Energy Act, including the Crude Oil Equalization Tax. A notice of decision on the tertiary recovery rulemaking outlining the steps DOE will take to approve qualified tertiary projects, was issued in August 1977. A final rule implementing this decision is being prepared.

As to the other items, notices of proposed regulations, hearings and final regulations would have to be scheduled, processes we would expect to complete in FY 1979.

These regulations will provide further adjustments to the crude oil pricing regulations and in that sense could be viewed as adding to their complexity. However, these programs are being designed to make application and review expeditious and to minimize the burden on the industry. At the same time, we are working on an entitlements-based price control system that would not conflict with these measures or with the crude oil equalization tax when enacted, and would simplify the existing crude oil pricing system.

Question. Do you envision reliance on State regulatory commissions to certify certain types of high risk/high cost production? If so, what assurance do you have of their capabilities to perform this task adequately?

Answer. State regulatory bodies will be asked to review the technical portions of tertiary recovery applications. We have contacted via letter and telephone 32 States producing crude oil, including all the large producing states. Regulatory bodies with expertise to assist in producer certification are willing to cooperate in an advisory capacity. In those States with minimum expertise, we will perform the technical review function. In any event, the State role will be advisory. We will retain final responsibility in all cases.

Question. A year ago the national energy plan proposed that oil discovered in or after April 1977 would qualify - by 1980 - for the 1977 world price plus inflation. When are you going to formally propose this price? What has taken so long? Doesn't your delay continue our dependence on foreign oil?

Answer. Special price treatment for newly discovered oil will be implemented when Congress completes action on the National Energy Act, including the crude oil equalization tax. Newly discovered oil incentives are expected to encourage additional domestic production; thus a failure to adopt this incentive could in the future result in increased imports compared to what might have been required. However, since newly discovered oil now receives the upper tier price, and since the industry is aware of the administration's future intentions with regard to the pricing of newly discovered oil, we do not believe that failure to adopt the rule at this time is having a significant adverse effect on incentives for new exploration and development.

MULTI-RESOURCE - PETROLEUM PRODUCTS AND NGL'S

Question. The first objective of this budget area is equitable distribution of petroleum products and NGL's among different geographic areas and types of users. What criteria do you have to determine whether distribution is "equitable"?

Answer. When supply is equal to demand in all regions and areas of the country, distribution can in most instances be considered equitable. When regional or spot shortages occur we take actions which prorate supply across demand equitably by calculating an "allocation fraction" for various regions and areas. Equitable distri-

bution to various types of users is achieved through the application of various allocation levels to various types of users following the priorities set out in the Emergency Petroleum Allocation Act.

Question. Another major objective is monitoring decontrolled products. How do you do this? What procedures do you have and what data do you use?

Answer. Monitoring takes different forms for different products. Home heating oil, for example, is monitored through a comprehensive data analyses activity involving periodic meetings with advisory committees and hearings. In this case, it is a formal, published system.

For residual fuel oil, other middle distillates and several controlled products ERA staff prepares a weekly report on production, stocks, imports and demand, and these trends are carefully watched to anticipate potential problems. Prices, as reported monthly in DOE summaries of refiner and marketer reports, are examined to identify any adverse trends and the Administrator is alerted if these occur. We also review supply, demand and price trends with advisory committees and review trade publications carefully for any signs of adverse circumstances.

Question. What specific parameters do you have to judge whether price controls on a specific product should be reimposed? Are these parameters made known to the public? If not, why not?

Answer. When middle distillates were decontrolled, ERA adopted a monitoring system to estimate what prices would have been, had they remained under controls. We determined that in the first full year following decontrol, prices did not exceed what they would have been. The middle distillate monitoring formula "trigger" was published in the Federal Register and public input was provided. Also public hearings were held at the end of the first full heating season regarding the effects of decontrol on prices to the public.

Considerable criticisms have been levelled against this monitoring program. The DOE oversight committees in both houses have approved amendments to the DOE authorization bills that would prohibit the expenditure of funds for such a monitoring system. Consequently, if and when motor gasoline is decontrolled, DOE will only survey and analyze price data. We will not promulgate margins monitoring,or "trigger" formulae to guide the industry or the public. If the analysis indicates that significant price increases have occurred that do not appear to be cost justified, DOE will hold public hearings to determine whether remedial action, including, if necessary, the reimposition of controls, should be taken.

Question. With respect to the energy watch established during the 1976-77 winter to monitor fuel supplies, how effective was this system? What weaknesses were noted and what are you doing to improve your capabilities in this area?

Answer. The energy watch established during the winter of 1976-77 was used to monitor, on a daily basis, the propane, distillate, and residual fuel supply and distribution situation in critical states. Contact was maintained daily by the FEA National and Regional Offices with State Energy Offices, prime suppliers, transmission companies, jobber organizations, and all related federal agencies to expedite the delivery of fuel to the critical areas.

The system was effective to the extent that it identified suppliers of products and areas of shortage, but the major problem during the winter of 1976-77 was a disruption of the distribution system due to pipeline capacity and frozen rivers.

The primary weakness of the system was that it was developed and implemented on an emergency basis without the benefit of a previously developed contingency plan and data base to use in assessing supply potential problems.

Prior to the winter of 1977-78, a number of steps were taken to improve our capability. We developed a historical product usage by state and by supplier for use in comparing anticipated deliveries each month. We refined the question format and forms to be used for weekly telephone surveys.

We further refined our data system for assessing by state, the effect of projected curtailments upon the demand of alternate fuels. This data was then compared to historical product availability of alternate fuels by state as well as to an estimated supply to determine if alternate fuel requirements would be met by projected supply availability.

Question. To what extent was current information provided to state and local officials last winter? Is there room for improvement here? What steps are you taking?

Answer. Various DOE units participated in a coordinated effort to provide state and local officials with accurate, timely information throughout the winter.

ERA established the Energy Emergency Center as a point of contact for state and local governments for dissemination of information and assistance on energy related activities and problems. The Center maintained daily contact with state energy offices of the impacted states, and in areas where there were severe emergency situations, more frequent communications between the Federal, State and local governments were required.

ERA's Utility Systems Office, which monitored the electricity situation and transfers in the impacted areas, maintained daily contact with state public utility commissions to exchange information, and ERA's Fuels Regulation Office provided daily information on movement of coal.

In addition, a weekly Winter Data Bulletin was published by the Energy Information Administration which had wide dissemination to states and local governments. The Bulletin provided them with facts on coal stocks and consumption, natural gas, refined products, demand watch and weather. All of these actions attempted to provide current data on a real-time basis.

DOE has initiated a program to develop an Emergency Management Information System which will provide information to states at the level of detail necessary for their management of an energy emergency.

DOE has already formed a Task Force to develop the program plan for this system, comprised of various organizational units which would be involved in energy emergency situations. The purpose of the Task Force is to define state and federal requirements for this system and to formulate a plan for development of the system. An important factor in this developmental phase is consultation with states. Task Force members have already begun these consultations with on-site visits to three states and more are planned for the near future.

Question. Of the cases under review by the Office of Special Counsel, have you referred any to the Department of Justice for prosecution? Would you expect to in fiscal 1979?

Answer. A significant number of cases under review by the Office of Special Counsel (OSC) have been referred to the Department of Justice (DOJ) for civil prosecution. Three such actions have already been brought in the U.S. District Court: Two counterclaims filed against Getty Oil ($33 million), and an intervention in a class-action brought by retail gasoline dealers against Union Oil.

A case involving a major refiner was also referred for possible criminal prosecution to the U.S. Department of Justice by the Federal Energy Administration; the OSC inherited responsibility for this case. Additional major refiner cases may be referred to the Department of Justice in FY 1979.

Question. How has the Special Counsel staff revised your audit programs to cover areas not previously covered and improve the likelihood of disclosing potential problems?

Answer. The Office of Special Counsel (OSC) has established a field organization that segregates two specific program areas, the crude production and natural gas liquid areas of the major integrated refiners' operation. The remaining refinery pricing areas are subject to the supervision of three geographical offices in the Northeast (Philadelphia, Pennsylvania), Southwest (Dallas, Texas), and Pacific (San Francisco, California) areas of the United States. Further, the OSC has delegated responsibility for audit and enforcement of Department of Energy regulations involving the major refiners to these field elements. Attorneys dedicated to the mission of the OSC by the Office of General Counsel have been integrated into the audit efforts of each team assigned to a major refinery investigation. This decentralization of authority, establishment of subject matter related offices in particularly difficult areas, and integration of attorneys into the audit team efforts permit issue resolution and initiation of enforcement actions in a more expeditious and effective manner than was possible in the pre-Department of Energy enforcement program.

Question. What success have you had with the cost/benefit approach recommended by the Sporkin Task Force? Please provide for the record an explanation of how costs and benefits are estimated in this context.

Answer. The analysis of audit program results from a cost/benefit viewpoint revealed that too much audit time had historically been invested in programs with low "pay-offs", such as the reseller-other program. As a result of this analysis, a significant redistribution of regional audit resources from low to high payoff programs has been ordered and is reflected in the FY 1979 budget.

In addition, a small-case policy has been developed that will minimize the amount of audit time to be expended on small firms and thus allow for the more efficient utilization of manpower for large-firm audits.

"Benefits" are measured by the total dollar amount of settlements achieved in each enforcement program over a specified time period. "Costs" are measured by the corresponding number of direct audit hours expended in the program. Programs are rated on the basis of the benefits to cost ratio.

Question. In January you lost a U.S. District Court case in Cleveland involving, according to press reports, up to $1.3 billion in alleged overcharges. How does this ruling affect your work?

-- Have you decided to appeal the decision?
-- In light of the judge's unflattering characterization of your regulations, what are chances on appeal?
-- How long would it take to get an appeal court decision?
-- Does the $1.3 billion in alleged overcharges at issue in this case represent a bulk of the $1.5 billion cited in your justification?
-- How much of the Special Counsel's staff is involved in the case? Does the adverse ruling imply that these staff members would not longer be needed?

Answer. DOE filed a timely appeal of the decision with the Temporary Emergency Court of Appeals and briefs have been submitted by both parities. We do not believe that the judge's characterization of the regulations affects the probability of success either way. We anticipate under the present briefing schedule that a decision might be forthcoming from the Temporary Emergency Court of Appeals by late fall. Since 1973, FEA/DOE has been party to 41 regulatory appeal decisions in the TECA; 36 of these have resulted in judgments in favor of the agency.

There was no "$1.3 billion in alleged overcharges" in the U.S. District Court case in Cleveland. FEA never brought enforcement action against the companies in that case. The ruling of the U.S. District Court in Cleveland, Ohio, involved the sequence of recovery of nonproduct costs.

The $1.3 billion in alleged overcharges was suggested by the amount of nonproduct costs thought to be identified by the major refiners for the period involved. Since the issue before the appellate court involves only the sequence of recovery, it is not clear that the appellate court's upholding of the District Court's decision would, in fact, result in the entire $1.3 billion alleged as an overcharge being unrecoverable by the Department. Still at issue is the validity of the costs themselves, i.e. whether the costs included as nonproduct costs were appropriately characterized as such, and further, whether other regulatory constraints on the use of nonproduct costs might proscribe their being passed through, regardless of the sequence of recovery.

Since this decision is presently on appeal and the sequence of recovery of nonproduct costs has been an area of the major refiner audits that has been suspended pending a resolution of this issue, the ruling has had little effect on the day-to-day activities of the Office of Special Counsel. Presently the only members of the Special Counsel staff involved in this matter are attorneys assigned to the Office of the Solicitor to the Special Counsel for Compliance. These lawyers are participating in the preparation of papers to be filed before the appellate court. An adverse ruling by the appellate court would have no impact on these lawyers since their involvement is a function of the matter being in litigation and not the particular subject matter involved. No auditors are presently specifically committed to the audit of the major refiners on sequence of recovery. In light of the still unanswered questions regarding nonproduct costs other than those associated with sequence of recovery, an adverse ruling will not imply that there are members of the Special Counsel staff that would be no longer required to support the mission of the office.

EMERGENCY PREPAREDNESS

Question. The request for emergency preparedness proposes an an increase of nearly $5 million over the current level as well as a program shift. You are reducing the base by $5 million on the assumption that the gasoline and diesel fuel rationing plan will be completed in FY 1978 and submitted to Congress. Where do you stand on that effort?

Answer. We intend to publish the proposed Standby Gasoline Rationing Plan in the Federal Register in the near future. Following publication, there will be a three month public comment period during which public hearings will be held at a number of sites throughout the country. Based on the current schedule, the proposed rationing plan, revised to take public comments into account, will be forwarded to Congress for consideration in early 1979.

Question. FY 1979 program changes include $1.3 million for assistance to states to ensure their contingency plans are compatible with Federal measures. Why is this necessary? Can't the states assume this responsibility on their own?

Answer. Some states have assumed this responsibility already by developing some type of contingency plan but the depth and scope of these plans are widely divergent.

States without specific legislative authorities find themselves without monetary and manpower resources to undertake such a project.

States with legislative authorities often find themselves unable to stretch their appropriated monies to meet the diverse mandated programs, and federally funded energy programs place an additional burden on their capacity to undertake additional projects. Therefore, in-depth contingency planning often is redelegated to low priority status.

In summary, it is not necessarily a lack of interest or unwillingness on the part of a state to assume this responsibility, it is more likely to be a decision based on limited economic resources.

Federal funding for contingency planning would promote consistency and compatability between state and Federal plans thereby enabling all units of government to coordinate and cope with short-term energy emergencies more effectively.

Question. The largest program change is $7.3 million for full state utilization of the Emergency Management Information System (EMIS). Tell us more about what is involved here. Isn't there some comparable plan currently in effect?

Answer. There is no comparable program currently in effect. What DOE has in existence are several emergency related data collection systems, such as the Natural Gas Monitoring System, Refined Products Monitoring System, the Coal Situation Monitoring System and the Summer Motor Gasoline Monitoring System, without the timeliness or level of detail, (i.e., county or SMSA) needed.

The response capability of these existing systems are not sufficiently prompt to satisfy state requirements under emergency conditions. They do, however, provide the groundwork for development of a system which will give state and local governments consistent, credible information with updated frequency that can be measured in hours or days rather than weeks or months.

In addition to having such "real-time" data, state and local governments need valid consistent data at the level of detail necessary for their decision-making purposes during energy emergencies. Current systems aggregate data only at the national level.

Only eleven states have legislatively mandated authority to collect data. The remaining states are hard pressed to find funds to develop their own data collection capability in the absence of enabling legislation to do so. Therefore, their data collection activity is generally minimal or non-existent, causing them to rely heavily on the Federal government for much needed information which is not available to them at the state level.

In order for full state utilization of EMIS, it is necessary for the Federal government to develop and implement a plan which will be truly helpful and responsive to their needs in times of emergencies. Implicit in the plan is strong state involvement in the planning stages.

PROGRAM ADMINISTRATION

Question. You have $10.1 million budgeted for program administration which is only slightly more than the FY 1978 amount. What about positions? Can you give us the total number of positions funded for ERA in FY 1978 and proposed for FY 1979.

Answer. In FY 1978, under the program administration part of the budget which is a line item under the Policy and Management mission there are 288 positions for $9.1 million dollars. In FY 1979 325 positions are proposed for $10.1 million dollars for ERA.

Question. The justification indicates that some of the positions for ERA a budgeted and justified under the Policy and Management activity. What about the others - how many are funded directly through this account?

Answer. There are a total of 1,999 positions requested and funded in ERA's FY 1979 budget request. Of this amount 1,574 are included under the Regulation mission. The balance of 325 are funded under the program direction activity under the Policy & Management mission. There are no other positions for ERA included in the budget request

Question. Some of the position increases are significant. For example, the increase for coal utilization is 101 positions, or a 151 percent increase in one year. Why is an increase of this size necessary? (Would go from 66 positions to 167 positions.)

Answer. The increase in the number of positions in the coal utilization program from 66 to 167 is based on the projected workload and program in the proposed National Energy Act. The 101 increase in positions will be used in the following manner:

° Processing petitions - It is estimated that 92 positions will be needed to evaluate and process the 390 petitions that are expected to be received in FY 1979. The number of positions is based on personnel on board at the end of the fiscal year. Through the year, as the program picks up steam, and a greater number of exemption petitions are submitted, the number of personnel dealing with the workload will increase.

° Processing appeals from petitions denied - It is estimated that 9 positions will be needed for this effort. This is a relatively light staff effort because much of the investigative and foundation work will have been accomplished at the time of the petition evaluation.

In addition to NEA activities, the program will be involved in a substantial ESECA follow-up effort. Approximately 60 issued orders will be pursued through the Notice of Effectiveness stage. Issued and effective orders must also be monitored to assure compliance. Through the year the ESECA effort will decrease while the NEA workload will continually increase. Resources will thus be shifted.

Question. Give us the details on personnel for the record. Provide a listing of personnel by activity and give a detailed justification for any increases, including workload factors.

Answer. A table follows which constructs the various ERA activities and the planned utilization of positions included under Policy and Management as well as a break out of those positions directly funded under the Regulation mission which supported the FY 1979 submission as approved by the OMB. It is important to note that the manpower allocation shown for FY 1979 may change as a result of the final version of the NEA as it relates to the Coal Utilization program, the Utility Conservation program, and the needs of other programs and functions transferred to ERA under the DOE reorganization.

Justifications and workload factors have been provided above for major increases shown on the following table in response to other questions of the Committee. However, for the Emergency Preparedness increase, the primary justification for the 34 additional positions is to develop, manage and operate the Emergency Management Information System (EMIS). Generally, the positions are required for EMIS development work including requirements analysis, systems analysis (including design of survey forms, data reduction procedures, and computer programs) and operation of some of the EMIS modules. Specific manyears and functions follow:

Emergency Preparedness Functions	Increase in FY 1979 Staffyears
Requirements analysis Coordinate with DOE components such as FERC, ERA EIA and other participating government agencies to develop emergency information needs.....5	5
Managerial support Program direction and management.....1 Division level managers.....2 Secretarial support.....2	5
State liaison personnel Coordinates and includes state participation in the requirements analysis and development of EMIS. These positions will also provide technical support to the States.	3
Module project managers Embargo.....2 Gas rationing.....2 Brownouts.....1 Transportation.....1 Weather indicators.....2 Coal.....1 Summer motor gasoline supply monitoring.....1	10
Weather data base coordinator	1
Emergency planning and analysis Emergency data requirements.....3 Civil preparedness activities.....2 Emergency information analysis.....3 Impact assessment.....2	10
Total.....	34

FY 1978 & FY 1979 ERA POSITIONS

Mission/Activity	FY 1978	FY 1979	Change
Regulation:			
Crude Oil Allocation	46	51	+ 5
Crude Oil Pricing	45	50	+ 5
Petroleum Production & Natural Gas Liquids	145	91	- 54
* Compliance	1,362	1,353	- 9
* Executive Direction & Administration	35	34	- 1
Private Grievances & Redress	78	95	+ 17
Total Positions funded under Regulation.	1,711	1,674	- 37
The following mission/activities are funded under Policy & Management:			
Energy Supply - Production, Demonstration & Dist:			
Coal Utilization, Industrial	36	105	+ 69
Coal Utilization, Utilities	30	62	+ 32
Total Positions funded under Coal	66	167	+ 101
Conservation:			
Utility Demonstrations	5	3	- 2
District Heating	-	-	-
Consumer Offices	2	2	-
Rate Reform	16	25	+ 9
Insulation Services	8	15	+ 7
Total Positions funded Conservation	31	45	+ 14

FY 1978 & FY 1979 ERA POSITIONS

Mission/Activity	FY 1978	FY 1979	Change
Emergency Preparedness:			
Total positions funded under Emerg. Prep.	28	62	+ 34
* Positions to augment Regulation activities and to support new DOE programs, i.e. responsibilities from former FPC for power supply and reliability export/import of natural gas liquids and DOE intervention before FERC	163	51	- 112
GRAND TOTAL ERA	1,999	1,999	0

* Following is a list of the components for the total Compliance positions reflected in the table preceding the additional justification material provided to the Committee

	FY 1978	FY 1979
Direct positions (Regulation)	1,362	1,353
Direct positions (Policy & Management)	37	46
Subtotal direct compliance positions	1,399	1,399
Executive Direction & Administration (Regulation)	35	34
Total Compliance	1,434	1,433

SUBCOMMITTEE RECESS

Senator HATFIELD. I want to compliment you highly on your forthright, direct, well thought-out statement, and also for your responses to the questions, and I'm most impressed by the quality of your program, the way you're handling it with your very able staff.

I just want to make that part of the record this morning, and say that I had high expectations of you and you've gone beyond them.

The hearing will recess until 1 p.m.

[Whereupon, at 11:45 a.m., the subcommittee was recessed, to reconvene at 1 p.m., the same day.]

(AFTERNOON SESSION, 1:05 P.M., WEDNESDAY, MAY 17, 1978)

DEPARTMENT OF ENERGY

ENERGY CONSERVATION PROGRAM

STATEMENT OF DONALD J. BEATTIE, ACTING ASSISTANT SECRETARY, CONSERVATION AND SOLAR APPLICATIONS

ACCOMPANIED BY:

MAXINE SAVITZ, DIRECTOR, DIVISION OF BUILDINGS AND COMMUNITY SYSTEMS

FRANK STEWART, DIRECTOR, STATE AND LOCAL PROGRAMS

VINCENT ESPOSITO, DIRECTOR, TRANSPORTATION ENERGY SYSTEMS

DOUGLAS HARVEY, DIRECTOR, INDUSTRY CONSERVATION

RONALD SCOTT, DIRECTOR, SOLAR APPLICATIONS PROGRAMS

SAMUEL HUGHES, ASSISTANT SECRETARY FOR INSTITUTIONAL RELATIONS

RICHARD PASTORE, DIRECTOR, DIVISION OF BUSINESS PROGRAMS

OPENING STATEMENT

Senator BELLMON. The subcommittee will come to order.

This morning, we heard the budget estimates of the Energy Regulatory Administration. It's our intent this afternoon to proceed with the budget request for the conservation programs. If time permits we will also hear the Energy Information Administration estimates.

Our first witness is Mr. Beattie, the Acting Assistant Secretary for Conservation and Solar Applications.

BIOGRAPHY AND PREPARED STATEMENT

We welcome you, Mr. Beattie. Since this is your first appearance, we'd like to ask you to insert a biographical sketch, along with your full prepared statement for the record at this point.

Also, we'd like you to introduce you associates at the witness table, and then, if there's no objection, we'd like you to insert your opening statement in full in the record; and we'll go immediately into the questions.

[The statements follow:]

BIOGRAPHICAL SKETCH

DONALD A. BEATTIE

Mr. Beattie was appointed the Acting Assistant Secretary for Conservation and Solar Applications on October 1, 1977, and is presently responsible for these programs within the Department of Energy. From March 5, 1977, he was the Acting Assistant Administrator for Solar, Geothermal and Advanced Energy Systems of the Energy Research and Development Administration. He had served as the Deputy Assistant Administrator for Solar, Geothermal and Advanced Energy Systems since April 8, 1975. Mr. Beattie joined ERDA on January 19, 1975, at which time he served as Task Force Coordinator for the Solar and Geothermal Task Force, assisting the Assistant Administrator for Solar, Geothermal and Advanced Energy Systems in the integration of AEC and NSF solar and geothermal programs.

Before transfer to ERDA, Mr. Beattie was Director, Division of Advanced Energy Research and Technology, National Science Foundation and was responsible for coordination of all Federal programs in solar and geothermal energy research and development. As Division Director he was also responsible for R&D programs for many additional technologies including projects in coal conversion, tertiary oil recovery, topping cycles and advanced storage batteries. While at NSF he chaired the Solar Energy Task Force for Project Independence which resulted in forwarding to the Congress the first comprehensive solar energy R&D program.

Prior to joining NSF in January 1973, Mr. Beattie was Program Manager for the Lunar Surface Experiments in the Apollo Lunar Exploration Office at the National Aeronautics and Space Administration (NASA). Previously, he was program manager for scientific flight programs and long-range planning as Chief of the Advanced Manned Lunar Exploration Objectives and Requirements Office and as Senior Systems Engineer for Advanced Flight Payload Concepts. For his efforts in the Apollo Program, he was awarded the NASA Exceptional Service Award in 1971.

In addition to his Federal service, he was employed for six years as a geologist in Colombia, South America.

Mr. Beattie served in the U.S. Navy from 1951-1956 as a Naval aviator which included several deployments with the U.S. 6th Fleet.

Mr. Beattie is a Fellow of the American Association for the Advancement of Science, a member of the Geological Society of America, and a member of the American Astronautical Society.

Mr. Beattie received his bachelor of science degree from Columbia University in 1951 and his master of science degree from the Colorado School of Mines in 1958.

PREPARED STATEMENT OF DONALD A. BEATTIE

Acting Assistant Secretary for Conservation and Solar Applications
FY 1979 Appropriations Hearings

Mr. Chairman and Members of the Committee:

It is my pleasure to be here today to discuss the President's budget request for Doe's Conservation and Solar Applications program for FY 1979.

For FY 1979, the President is requesting $821.2 million for the Conservation programs under this Subcommittee that are the responsibility of the Assistant Secretary for Conservation and Solar Applications. This amount includes the majority of the funds in our mission-oriented budget designated for conservation. However, these activities represent only part of the Administration's overall conservation and solar energy programs. The total direct expenditures for the conservation area, as proposed, are slightly more than $1.0 billion. For the programs I will discuss today, this represents an increase of about $280.6 million over FY 1978. This growth is consistent with the high priority the Administration has given to conservation programs.

I recognize the critical need for energy conservation and am personally dedicated to implementing a vigorous program throughout the Nation. There is no single solution to our National energy problems. However, the most immediate payoffs in our efforts to meet our energy needs without undue dependence on foreign sources, and without producing severe economic dislocations, will come through conservation. The moderation of demand for all energy sources, but especially scarce oil and gas, is the goal of our program. The budget we are requesting for FY 1979 will move us toward this goal.

Programs

We have undertaken a coordinated, multifaceted program to conserve energy that is organized along major end-use areas.

In Transportation, the main thrust is to work with industry to bring into the marketplace fuel-efficient heat engines and electric vehicles as soon as practicable.

In the Residential and Commercial Buildings area, our approach is to develop and demonstrate new energy-saving methods and technologies for the large stock of existing buildings and those yet to be built, and to weatherize the homes of low income persons. In the Industrial Conservation area our approach is to complement industry interest in improved efficiency by supporting high-payoff processes and demonstrations. Our State and Local Grant programs will encourage states to reduce projected energy consumption by developing and implementing energy conservation plans. Finally, we are providing assistance to individuals and small businesses in undertaking a National program for the demonstration of small-scale appropriate technologies, and by providing invention development assistance.

Accomplishments

I believe the Conservation and Solar Applications program has made and will be making notable progress in Fiscal Year 1978. To illustrate just a few examples:

o By the end of FY 1978 a program will be underway to weatherize

approximately 390,000 homes under the Weatherization Assistance Program.

- o By the end of FY 1978, about $75.0 million will have been awarded to the States for implementation of approved conservation programs under the State Energy Conservation Program.
- o In the Industrial area, techniques such as the use of fumes as fuel in curing paint on coil coating lines has been demonstrated. (For the demonstration unit alone, enough natural gas is being saved to heat 8,000 average-size homes.)
- o Initial requirements of P.L. 94-413, including special studies, R&D, and the planning of demonstration for electric and hybrid vehicles have been completed.

Program Summary

Next, I would like to summarize briefly each major activity proposed for FY 1979.

Residential and Commercial Buildings

The request for Residential and Commercial Buildings program totals $262.7 million. Of this amount $63.8 million is directed toward finding ways to increase the efficiency of energy used in the Nation's existing buildings and new buildings. The program is also responsible for developing methods and processes in community design and energy systems to further help reduce energy demand. The objective is to satisfy human needs and to beneficially utilize both solid and liquid waste generated within the building environment as alternative fuel sources. Community systems activities under this program offer promise for recapturing and beneficially using normally wasted heat energy by providing utility service to buildings.

Another important element in this area is the mandatory appliance efficiency program. This program is responsible for developing test procedures, minimum targets and consumer education for major home appliances such as furnaces, central and room air conditioners, water heaters, ranges and refrigerators.

The FY 1979 request also includes $199 million for the Weatherization Assistance Program which provides funds to States for weatherizing the homes of low income individuals. We are estimating that FY 1979 funding will permit the weatherization of approximately 850,000 homes resulting in an energy savings of about 2.3 million barrels of oil annually.

Also the Federal Energy Management Program is being pursued as part of the Residential and Commercial Buildings program. We are developing guidelines that will result in 10-year plans by all agencies for energy conservation in Federal buildings. The goal is to have the plans implemented this year and reports made by agencies annually on progress achieved.

Industrial

An increase of $20 million is provided for conservation activities in the industrial sector, bringing the FY 1979 request to $49 million. Activities in this sector are directed toward cost-shared research, development, and demonstration to improve the efficiency of energy intensive processes, monitoring of progress in the industrial/business sector, and implementation of new and existing energy technologies in the private sector. The anticipated energy savings that can be achieved from this sector is estimated at 3.2 quads annually by 1985.

The principal objective of the Industrial Conservation program is to increase energy utilization efficiency and to

substitute more abundant fuels for oil and natural gas. Projects funded under this program focus on industrial energy technologies with very large conservation potential that are not being pursued actively by industry alone. RD&D targets are characterized by high potential energy savings; have an estimated return on investment that would attract broad scale implementation; and are environmentally acceptable and operationally safe.

Transportation

In the transportation sector funding in FY 1979 totals $107 million, a $42 million increase compared to FY 1978. This sector is responsible for development of transportation technologies, operational strategies, and institutional concepts which, if implemented by industry, consumers, businesses and public officials, will significantly reduce the consumption of energy used by the transportation sector.

Transportation is the largest petroleum consuming sector in the United States. It accounts for one-fourth of our National energy use and consumes more than half the petroleum used. Thus, the immediate objective of the program is to conserve energy through improved efficiency. The ultimate goal of the program is to eliminate transportation's almost complete dependence on petroleum. The two primary thrusts of the Transportation program are electric and hybrid vehicles and the gas turbine and Stirling heat engine program.

State/Local

Within the $368 million requested for State and Local programs in FY 1979, the majority of funds are to implement state energy conservation plans, and for cost-sharing energy conservation programs for schools, hospitals, and local government buildings. Under these programs, grants will be provided to States and tribal organizations. The objective of the EPCA/ECPA programs is to encourage States to develop and implement conservation plans that will reduce projected energy consumption in each participating State by 5 percent or more from the total consumption projected for 1980. The Schools and Hospitals program is designed to enable States to conduct preliminary energy audits of schools and hospitals, and to provide financial assistance to States, for capital improvement projects that will conserve energy in these types of buildings. The program for local government buildings will provide funds to States and units of local government to undertake preliminary energy audits and carry out detailed engineering studies.

The FY 1979 request of $28.4 million, an increase of $7.0 million over FY 1978, supports the solar commercialization program and the solar in Federal buildings program.

Multi Sector

In our Multi Sector programs in FY 1979, the budget request of $5.4 million will provide for conservation programs to support the Inventions program and the development of small-scale energy technologies across the country. This activity also provides for outreach opportunities and market research assistance for energy conservation programs.

Conclusion

In closing, I believe that the programs and funding proposed with this budget will start us on the road toward reducing the growth of energy consumption to the 2 percent goal the President has set. The programs will allow us to buy time, to reduce our appetite for more energy, and to adjust to today's energy reality, a world of increasingly expensive fuels.

Members of my staff are with me today and we will be glad to answer any questions you may have.

INTRODUCTION OF WITNESSES

Mr. BEATTIE. I'd be happy to do that, Mr. Chairman. Let me introduce to you the people who are with me at the table.

On my far left, to your right, is Mr. Ronald Scott, in charge of our solar application programs; to his right is Mr. Vincent Esposito, Director of the Division of Transportation Energy Conservation; next is Maxine Savitz, Director, Division of Buildings and Community Systems; on my left is Mr. Douglas Harvey, Director of the Division of Industrial Energy Conservation; and on my right, Mr. Frank Stewart, who directs our State and local government programs; on the far right is Mr. Mayhew, representing the Controller's office.

ASSISTANT SECRETARY FOR CONSERVATION

Senator BELLMON. Mr. Secretary, as has been noted, there's a sizable—in fact 52 percent—increase in the conservation funding, which appears to reinforce the importance assigned to this program by the President and the national energy plan.

However, we're concerned that more than 6 months after the creation of the Department of Energy, there is still no Assistant Secretary for Conservation.

Can you tell us why this important position has not yet been filled?

Mr. BEATTIE. As I'm sure you're aware, Mr. Chairman, a nominee has been sent to the Senate for this position. It's my understanding that there are some questions that are being answered in regard to her nomination at this time.

Senator BELLMON. So the Administration has done its part and it's now up to the Congress. Is that what you're saying?

Mr. BEATTIE. I believe that there are questions that were returned by the committee to the administration that are in the process of being answered now by the administration.

Senator BELLMON. Has the absence of an Assistant Secretary for Conservation inhibited the development of a sound conservation budget program?

Mr. BEATTIE. Obviously, Mr. Chairman, it's very important to get the Assistant Secretary onboard just as quickly as we can to give the leadership that she will give.

I think, though, in the interim, since the fiscal 1979 budget does represent a melding together of programs that came into the Department from the former agencies, the 1979 budget we're defending is not materially affected.

LEGALITY OF TEMPORARY APPOINTMENT

Senator BELLMON. Are you aware, Mr. Beattie, that the Comptroller General ruled yesterday that your appointment as Acting Assistant Secretary is not legal?

Mr. BEATTIE. I just learned that as I came to the chamber Mr. Chairman.

Senator BELLMON. So that the record will be complete, we will at this point include in the record a copy of the Comptroller General's decision, dated May 16, 1978.

[The information follows:]

DECISION ON TEMPORARY APPOINTMENT

FROM

COMPTROLLER GENERAL OF THE UNITED STATES

B-150136

May 16, 1978

The Honorable Warren G. Magnuson
Chairman, Committee on Appropriations
United States Senate

Dear Mr. Chairman:

Enclosed is a copy of our decision concerning the Department of Energy, B-150136, of today, in which we recommend to the Secretary of Energy that certain corrective action be taken with respect to four officials serving in acting capacities in positions that require Senate confirmation. We have found no basis in law to support the appointment of these officials to serve in their acting capacities.

This matter is brought to your attention pursuant to section 236 of the Legislative Reorganization Act of 1970, 31 U.S.C. § 1176 (1970).

Sincerely yours,

Acting Comptroller General
of the United States

Enclosure

DECISION

THE COMPTROLLER GENERAL
OF THE UNITED STATES
WASHINGTON, D.C. 20548

FILE: B-150136 DATE: May 16, 1978

MATTER OF: Department of Energy--Acting Officials' Status and Authority

DIGEST: 1. The positions of General Counsel, Inspector General, and Assistant Secretaries, established by the Department of Energy Organization Act, Pub. L. No. 95-91, require Presidential nomination and Senate confirmation. Section 902 of the Act authorizes the President to make interim appointments of officers previously confirmed by the Senate. Four of the five interim appointees serving in such positions had not been previously confirmed by the Senate. Hence, they were improperly appointed.

2. Although Vacancies Act, 5 U.S.C. §§ 3345-49, which was intended to preclude extended filling of office subject to Senate confirmation without submission of nomination to Senate, applies to "executive departments" which includes Department of Energy, Act does not apply to the named positions because these positions have never been filled and therefore have not been vacated as contemplated by the Act.

3. Validity of decisions made by four acting officials of the Department of Energy during period they were not authorized to hold positions could be challenged. Secretary is advised to consider ratifying those decisions.

By congressional request, the General Accounting Office has been asked for a legal opinion as to the eligibility of the following persons to continue to serve in an acting capacity at the Department of Energy, in positions that require confirmation by the Senate:

Eric J. Fygi	Acting General Counsel
Joseph Seltzer	Acting Inspector General
Donald A. Beattie	Acting Assistant Secretary for Conservation and Solar Applications
Donald M. Kerr	Acting Assistant Secretary for Defense Programs
James L. Liverman	Acting Assistant Secretary for Environment

The following information has been provided our Office by the Department of Energy concerning the officers presently serving in acting capacities. Mr. Fygi was appointed Acting General Counsel by the Secretary on September 28, 1977, effective October 1, 1977. On September 30, 1977, Mr. Fygi was serving as the Deputy General Counsel, a position not requiring Senate confirmation. Mr. Fygi has never been confirmed by the Senate to serve in any capacity. On September 23, 1977, Mr. Lynn R. Coleman was nominated by the President to serve as General Counsel. The nomination of Mr. Coleman was returned when the Senate adjourned and resubmitted to the Senate on January 26, 1978. Mr. Coleman was confirmed by the Senate on May 9, 1978.

Mr. Joseph Seltzer was appointed Acting Inspector General effective October 15, 1977, by William S. Heffelfinger, Director of Administration, acting on behalf of the Secretary. Mr. Seltzer has never been confirmed by the Senate to serve in any capacity. On April 19, 1978, Mr. J. Kenneth Mansfield was nominated by the President to serve as Inspector General, and was confirmed by the Senate on May 3, 1978.

On September 28, 1977, the Secretary appointed Mr. Donald A. Beattie to serve as Acting Assistant Secretary for Conservation and Solar Applications, effective October 1, 1977. At the time of his appointment, Mr. Beattie was serving both as Deputy Assistant Administrator and Acting Assistant Administrator for Solar, Geothermal, and Advanced Energy Systems, Energy Research and Development Administration. Mr. Beattie has never been confirmed by the Senate to serve in any capacity. On January 25, 1978, the President nominated Ms. Omi Walden to serve as the Assistant Secretary for Conservation and Solar Applications.

On December 29, 1977, Mr. Heffelfinger, acting on behalf of the Secretary, appointed Mr. Donald M. Kerr to serve as Acting Assistant Secretary for Defense Programs, effective January 1, 1978. At the time of his appointment Mr. Kerr was serving as Deputy Assistant Secretary for Research, Defense Programs, and continues to concurrently serve in that position. Mr. Kerr has never been confirmed by the Senate to serve in any capacity. No nomination has been submitted for this position.

Mr. James L. Liverman was appointed by the President on September 30, 1977, to serve as Acting Assistant Secretary for the Environment, effective October 1, 1977. On September 30, 1977, Mr. Liverman was serving as the Assistant Administrator for Environment and Safety, Energy Research and Development Administration (ERDA), a position for which Mr. Liverman received Senate confirmation. No nomination has been submitted for this position.

The position of General Counsel was established by section 202(b) of the Department of Energy Organization Act of 1977, approved August 4, 1977, Pub. L. No. 95-91, 91 Stat. 565, 569 (42 U.S.C. § 7132(b)). This section provides:

> "(b) There shall be in the Department * * * a General Counsel, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall perform such functions and duties as the Secretary shall prescribe. * * *

> [T]he General Counsel shall be compensated at the rate provided for level IV of the Executive Schedule under section 5315 of Title 5."

The position of Inspector General was established by section 208(a)(1) of the Act, 42 U.S.C. § 7138(a)(1), as follows:

> "(a)(1) There shall be within the Department an Office of Inspector General to be headed by an Inspector General, who shall be appointed by the President, by and with the advice and consent of the Senate, solely on the basis of integrity and demonstrated ability and without regard to political affiliation. The Inspector General shall report to, and be under the general supervision of, the Secretary or, to the extent such authority is delegated, the Deputy Secretary, but shall not be under the control of, or subject to supervision by, any other officer of the Department."

Under section 203(a) of the Act, 42 U.S.C. § 7133(a), Congress provided for eight Assistant Secretaries as follows:

> "(a) There shall be in the Department eight Assistant Secretaries, each of whom shall be appointed by the President, by and with the advice and consent of the Senate; who shall be compensated at the rate provided for at level IV of the Executive Schedule under section 5315 of Title 5; and who shall perform, in accordance with applicable law, such of the functions transferred or delegated to, or vested in, the Secretary as he shall prescribe in accordance with the provisions of this chapter. * * *"

Congress made special provision for interim appointments to be made when officers required by the Act to be appointed and confirmed by the Senate had not, on the effective date of the Act, completed the nomination and confirmation process. The requirements for the designation of interim appointments are established by section 902 of the Act, 42 U.S.C. § 7342, as follows:

> "In the event that one or more officers required by this chapter to be appointed by and with the advice and consent of the Senate shall not have entered upon office on the effective date of this chapter, the President may designate any officer, whose appointment was required to be made, by and with the advice and consent of the Senate, and who was such an officer immediately prior to the effective date of the chapter, to act in such office until the office is filled as provided in this chapter. While so acting such persons shall receive compensation at the rates provided by this chapter for the respective offices in which they act."

First, it can be seen by the clear terms of the above-quoted sections of the Act that all five officers under consideration here are required to be appointed by the President by and with the advice and consent of the Senate. Further, the record indicates

that none of the five officers have been so nominated and confirmed. Therefore, the provisions for interim appointments found in section 902 of the Act, set forth above, which provides for designating officers to serve until nomination and confirmation has taken place, are for consideration. That section authorizes the President to make an interim appointment of any officer of the Government who, immediately prior to the effective date of the Act (October 1, 1977), was serving with Senate confirmation.

Consequently, in the absence of appointments made by the President in compliance with the various appointment provisions enumerated above or by use of the interim appointments provisions discussed above, only the Secretary himself, in whom, by statute, all of the agencies' functions are vested until delegated, may perform the duties of the interloping officers. Sections 201, 203(a); 42 U.S.C. §§ 7131, 7133(a).

The record indicates that Mr. Liverman was appointed by the President to serve as Acting Assistant Secretary and at the time of his appointment was serving as an Assistant Administrator, ERDA, with Senate confirmation. Therefore, in view of the provisions of section 902 of the Act, in our opinion there is no legal objection to any service by Mr. Liverman as Acting Assistant Secretary. However, none of the other four officers under review have been appointed in accordance with the requirements referred to in section 902 for interim appointments. We, therefore, conclude that Messrs. Fygi, Seltzer, Beattie, and Kerr, have not been legally appointed. Thus, there has been no legal authority for any of them to perform the duties of the respective offices.

Since there is no legal authority for Messrs. Fygi, Seltzer, Beattie, and Kerr to occupy the positions of Acting General Counsel, Acting Inspector General, and Acting Assistant Secretaries, respectively, in the absence of compliance with section 902 of the Act, the validity of their actions in their acting capacities could be challenged. Therefore, we recommend that the Secretary give consideration to ratifying such actions. See 56 Comp. Gen. 761 (1977).

We have also been requested to discuss the applicability of 5 U.S.C. § 3348 to the subject temporary appointments at the Department of Energy. Sections 3345, 3346, and 3347 of title 5, United States Code, provide methods for the temporary filling of vacancies created by the death, resignation, sickness or absence of the head of an executive or military department, or the head of a bureau thereof whose appointment is not vested in the head of the department. Section 3349 of title 5 makes the methods described in the preceding sections the sole means for filling the vacancies described therein, except in the case of a vacancy occurring during a recess of the Senate. Section 3348 of title 5, United States Code, imposes a 30-day limit on temporary appointments under sections 3345, 3346, and 3347 for positions which are subject to Presidential appointment and Senate confirmation.

All of the cited sections are derived from the Act of July 23, 1868, ch. 227, 15 Stat. 168, hereinafter referred to as the Vacancies Act. The legislative history of the Act makes it clear that the provisions now codified as sections 3345 through 3349 of

title 5 were intended to preclude unreasonable delays in submitting nominations for offices in executive departments subject to Senate confirmation. See, e.g., 39 Congressional Globe 1163, 1164 (February 14, 1868). The executive departments have been defined to include the Department of Energy. 5 U.S.C. § 101 (1977). The Vacancies Act, by its terms, clearly contemplates the vacating of an office by the person occupying the position as a condition precedent for the application of its provisions. Since none of the five offices discussed above were previously occupied, it would appear that the Vacancies Act would have no application.

We believe that the Congress, in providing for interim appointments, may have been motivated by a recognition that no provision of law would otherwise allow for anyone to occupy the positions in question without the advice and consent of the Senate. The interim appointments provision is similar to the Vacancies Act in that it allows the President to appoint any officer of an executive department serving with Senate confirmation to serve as an officer of the Department of Energy in a position requiring Senate confirmation. One significant distinction between the Vacancies Act and the interim appointments provision is the absence of any time limit on the service of an interim appointee under section 902, whereas an officer directed by the President under the Vacancies Act to perform the duties of a vacant office would be limited to 30 days.

Since our decision contains a recommendation for corrective action, we have furnished a copy to the congressional committees referenced in section 236 of the Legislative Reorganization Act of 1970, 31 U.S.C. § 1176 (1970), which requires the submission of written statements by the agency to the Committees on Government Operations, Governmental Affairs, and Appropriations concerning the action taken with respect to our recommendation.

R.F. Keller

Acting Comptroller General
of the United States

CONSIDERATION OF RECOMMENDATIONS

Senator BELLMON. The Comptroller General recommended that since your appointment and the appointment of several other acting Department of Energy officials are not yet legal, your actions could be challenged. Therefore, the Secretary should consider ratifying such actions.

Has any consideration been given to this recommendation?

Mr. BEATTIE. Since the recommendation has just come forward, Mr. Chairman, I am not aware that any actions have been taken today. But I'm sure that the Secretary will proceed as required by those directions.

Senator BELLMON. He'll see that some decision is made on this matter?

Mr. BEATTIE. Yes, sir.

ACCOMPLISHMENTS OF CONSERVATION PROGRAMS

Senator BELLMON. We're concerned in this committee—I speak for myself more than anyone else—that Congress provides a large budget for the Department of Energy. We have now a critical problem in the country insofar as our energy supply is concerned, and yet, we aren't able so far to identify too many tangible results for the investment we have made in the Department of Energy.

So I'd like to inquire a little bit about the accomplishments that you know about which have been made by the investment we've made in conservation of energy. It's grown from practically nothing to $1 billion a year over the last 5 years. It's a program we're looking to for the quickest results in reducing energy demand.

Can you give us the major accomplishments of the conservation programs in terms of barrels of oil, kilowatts of electricity, or other forms of energy that we're saving?

Mr. BEATTIE. We have not yet translated the projects underway, Mr. Chairman, to those types of numbers. However, we have some estimates of the savings that will be accomplished by the programs underway.

As an example, in the weatherization program, which is a growing program for which we have requested about $200 million in fiscal 1979, we foresee that that program will save several million barrels of oil annually when we have the homes weatherized that those funds will provide for.

Many of the programs, as you've noted, are just now coming to some sort of fruition, so the savings are things that will happen from now and into the future, rather than things that I think we can point to that we've already done, although in some cases there are savings of that measure.

I have included as an example in my testimony a project in the industrial conservation area, a coil coating plant, where we are using the fumes that are driven off during the paint-drying process to repower the overall process. That one plant alone, as a result of the project that we have underway, is saving gas that will be equivalent to heating about 8,000 homes.

So there are a number of projects of this sort that we could point to. We'd be pleased to give you a more complete listing than we have in my testimony for the record.

Senator BELLMON. Well, have you established a baseline against which you can measure future conservation accomplishments?

Mr. BEATTIE. Many of the programs have baselines already mandated by law. As an example, the EPCA/ECPA funding that we have requires that we assist the States to save energy on the order of 5 percent based on where they would have been in 1980.

The Federal energy management program, which is part of the NEA, was also contained in the Executive Order 12003—and lists a baseline that all the Federal establishments must measure against for the years ahead in terms of savings.

The appliance program has target numbers which are mandated by the Congress which indicate the percentage of savings that we are hoping to achieve against a baseline.

The industry reporting program, which comes under this office, has a similar mandated baseline that we are measuring against,

and we're in the process of forwarding to the Congress our first annual report on the progress that industry is making.

So that each of the areas have baselines of one sort or another, some mandated by law and some that we are putting into effect ourselves.

Senator BELLMON. One of the concerns that we have here in Congress is that the problem is identified, a plan of action is developed, an agency is created, millions appropriated to accomplish a task, and 20 years later, perhaps the task has long since been achieved and the agency's still in place and every year we're appropriating money to do something that has long since been done.

Do you have any target date for when the energy conservation task will be fully met so we can let the Sun go down on your work?

Mr. BEATTIE. I foresee energy conservation as a continuing need for the Nation, Mr. Chairman. There are some mandated targets, as you are aware, for 1985. As an example, in the National Energy Act.

But many of the programs that we are getting underway will not see their full results until after 1985. And so, many of the projections that we can make for the programs that we have underway show impacts of a major nature in 1990 and the post-1990 period.

Those are very, very major impacts that the Nation can benefit from it if we put our conservation programs into action.

TARGET DATE FOR CONSERVATION WORK

Senator BELLMON. Can't you give us some reasonable date when you feel that most of the energy conservation work will have been accomplished? How long is it going to take to get people to realize they should insulate their homes and get factories to stop wasting energy?

Mr. BEATTIE. As I've indicated, Mr. Chairman, there are different targets for different sectors. As an example, in the building sector, 1985 is a major date whereby we hope to have the vast majority of buildings well insulated. But in industrial processes, as an example, some will take much longer for industry to accomplish because it involves bringing into being technologies which are not on the shelf now. We have to finish the research, development, and demonstration of some of these technologies. Then they have to be implemented by industry, in some cases, requiring rather large expenditures of capital.

So I don't believe that there is a single date that I can point to. There are those mandates that we have or expect to have in the NEA which are major ones in the buildings area and we expect to be able to accomplish those by 1985.

The other energy sectors will take much longer. The actions that we have underway, as an example, in transportation energy, are much longer term. We have the mandates of mileage performance by 1985 and we hope that we will be able to meet those mandates.

But the incorporation of new technologies, the work that we're doing on heat engines, improved engines, turbine engines, Stirling engines, and things of that sort, where we perceive the possibility of a 30-percent savings in gasoline consumption, those savings prob-

ably can't be accomplished until the late 1980's or 1990's because they just will not be implemented until that time.

Each of our programs, however, in our original budget submission does indicate dates when we think major accomplishments will take place.

SPECIFIC CONSERVATION GOALS

Senator BELLMON. On page 2 of your statement, you note your accomplishments, which seem to be primarily an accounting of the amount of money you've spent in the program as you've gone on.

But could you give your accomplishments in terms of actual energy savings that are going to result from these actions you've taken?

What we're really after here, I think, is to see if we're getting some return on investment that we're making in hese appropriations.

Mr. BEATTIE. Yes, sir, those mentioned in my testimony are just a very few examples of the accomplishments that have taken place and that we expect will take place in fiscal year 1978. But we'd be happy to give you a more comprehensive list, Mr. Chairman.

Senator BELLMON. Make it in terms of quads or barrels saved.

Mr. BEATTIE. Yes, sir. We'd be pleased to do that.

[The information follows:]

EXAMPLES OF CONSERVATION AND SOLAR APPLICATIONS PROGRAM ACHIEVEMENTS IN TERMS OF ENERGY SAVINGS

A prime example of a cost-effective conservation and solar applications project is the demonstration of the solvent fume recycle concept to the process of paint curing for coated sheet metal. This adaptation of the so-called coil coating process was undertaken by our Division of Industrial Energy Conservation. For a total installation modification cost of $952,200 ($415,900 of this was furnished by DOE) 596,800,000 standard cubic feet of natural gas are saved annually. At the current interstate wellhead price for natural gas of $1.49 per thousand standard cubic feet, this amounts to $889,232 in annual fuel cost savings for just this one production facility. This means that the system, even at today's low gas prices, pays for itself after only slightly more than one year of operation and has a direct benefit/cost ratio of 0.93 in the first year. It is important to realize also that this ratio does not even include the benefits due to the reduction in air pollution which results when the fumes are recycled and incinerated rather than being vented to the atmosphere as was being done previously.

Other CS industrial projects which have proven to be similarly cost effective include the boiler fuel-air ratio control system and industrial waste heat recuperators. Still other examples of cost-effective projects can be cited from the CS Buildings and Community Systems Conservation program. BCS is developing numerous products to assist residential and commercial consumers to cut energy costs. Among these are projects to develop an efficient screw-in fluorescent light bulb, infrared mirror window coverings to retain building space heat, an advanced gas furnace, energy from solid wastes and techniques for improving the efficiency of older urban dwellings.

MOST EFFECTIVE CONSERVATION ACTIVITY

Senator BELLMON. What conservation activity do you expect to be most effective in the area of energy savings in the immediate as well as in the long term?

Mr. BEATTIE. I think the area that we'll see the more immediate impact is in the buildings area, and I think that that will come about for a number of reasons. First of all, there will be the aspects of the National Energy Act which will make it very attractive to home owners and building owners to improve the efficiency of their buildings.

The buildings area, I'm sure you know, accounts for about a quarter of our energy use at this time, and a large percentage of that use could be saved.

The more exciting area to me, I think, is the transportation area because that is a key energy user in that it uses a large portion of our petroleum and that, of course, is an area of great concern, the reduction of our oil usage.

I think that the programs that we have in electric and hybrid vehicles, the programs that we have in improving the efficiency of heat engines, will lead to rather significant savings in the transportation area by about 1990 and after. We'll really see the effects at that time.

The other big area, of course, is the industrial area, and here, again, with the many programs we have underway in cogeneration, waste heat recovery, process improvement, and many other activities, provide a great opportunity to make major savings in the industrial and business sectors.

ENERGY COST VERSUS CONSERVATION

Senator BELLMON. Based on the work you've done so far or the observations that you've made, can you identify the relationship between cost of energy and conservation activities?

Mr. BEATTIE. For almost all our activities, there is a possibility of showing the cost-benefit of moving to conservation and, as you mentioned in your opening statements, conservation is the one area where we can make an immediate impact.

One of the reasons we're going to make an immediate impact in conservation is that we can show the cost effectiveness of the actions we are proposing.

Let me ask Mr. Harvey, in the industrial area, to give you some details of some of the cost effective activities he has underway and the way we're looking at such things as return on investment for some of the activities.

Mr. HARVEY. Senator Bellmon, the industry area offers, as Mr. Beattie pointed out, some very important opportunities for conservation. Let me just tick off a few of the programs we already have in demonstration that have very high potential.

We have a program that measures the air-fuel ratio very accurately for individual burners in multiburner boilers. These are large industrial boilers. We have this system in operation. It's been in operation since last September. It is saving about 2 percent of the fuel that's required for the boiler. Now that doesn't sound like very much.

On the other hand, when you think of the number of steam-rising facilities in the United States which amount to on the order of 13 quads, 13 quadrillion Btu's, 2 percent of that number is indeed a large number.

The total potential that we see for that particular project is about one-half a quad savings in 1985, and that will reach almost full marke potential, full market penetration. By the year 2000, it would reach 6.2 quads.

Senator BELLMON. Before you go on, can you translate quads into barrels of oil?

Mr. HARVEY. Divide it by 2 to obtain a million barrels per day equivalent. So half a quad is 260,000 barrels a day equivalent.

Senator BELLMON. A quad is a million barrels per day?

Mr. BEATTIE. Approximately one-half million a day.

Mr. HARVEY. Half a million barrels a day, approximately.

To give you an idea, a quad is a freight train 2,500 miles long filled with coal. That's how much energy——

Senator BELLMON. A ton of coal is about 6 barrels of oil, as I remember, on the average.

Mr. HARVEY. I think so. You're catching me on a few of these conversion factors. I'm certain that I can find that out for you.

In the coil coating system Mr. Beattie mentioned, we have now got five of those systems installed, as opposed to the first one. We're saving the equivalent of, let's see, about 40,000 homes' worth of natural gas.

So far, that system is saving 1.5 trillion Btu's. In barrels-a-day equivalent, that's 75,000 barrels a day equivalent on just those five systems.

We have a recuperator, this is a ceramic heat exchanger of a totally new type, that is now installed in a steel reheat furnace. It's just gone under test, so we don't fully know its actual performance as yet, except we do know that it's operating at greater than 70 percent efficiency, which was our goal.

For recuperators in general, we project a savings of about 250,000 barrels a day equivalent by 1985. Now that's applied to all of the direct heating processes to which they could be applied.

That includes steel reheat furnaces, aluminum remelt furnaces, glass kilns, and so on. So there's a very large marketplace for these high temperature ceramic recuperators.

COST EFFECTIVENESS

We have gone through every one of our projects and looked at the cost effectiveness of that project, not only to the Government, but to the industry that would be utilizing that process.

For the industry, we feel that in order for it to penetrate the marketplace quickly, it must have an internal rate of return of better than 15 percent after taxes. That means that it will get into the marketplace.

Many of these are high-risk programs and I'd like to point out at the outset not all of them will work, because when there's a high risk of success, there's also a high probability of a failure.

So we're funding those things that industry normally would not fund by themselves.

You asked about the cost effectiveness as far as the energy saved in terms of the cost of energy. We figure that on an average of all of our projects—we have over 100 of them—the cost of the energy of those projects ranged between $1.50 and $2 per million Btu's. The cost of, for example, steam raising today with residual oil is about $2.50 per million Btu's.

So these are cost effective technologies that we're developing, and they will penetrate the marketplace, and they are far less expensive than developing new supply technologies.

Senator BELLMON. The point I was trying to get at was some of these conservation activities would have been undertaken by industry, in any event, and the higher the cost of energy, probably the more conservation activities industry would undertake. Isn't this true?

Mr. BEATTIE. Yes, I think that is very true, Mr. Chairman. I think that the role that we see for the DOE is a varied one, depending upon the technology. In some cases, we're doing research. In some cases, we're doing product development. In some cases, we're doing demonstrations. In some cases, we're trying to address the questions of barriers and incentives which have nothing to do directly with the technology, but with the way the industry structures itself, the way it interacts with other entities, such as utilities.

So depending on the technology, depending on the problem, we're doing different things in attempting to bring these technologies or these applications in earlier than they normally would.

CRUDE OIL EQUALIZATION TAX AND CONSERVATION

Senator BELLMON. President Carter has proposed what's called a crude oil equalization tax which would probably increase the costs of petroleum products by about 7 or so cents a gallon.

Have you computed what effect the enactment of the crude oil tax might have on conservation?

Mr. BEATTIE. I can't speak in any detail of the effect a crude oil equalization tax will have on the programs, other than as the prices go up, many of the things that we are doing will become more and more attractive.

One of the immediate effects of raising the price of gasoline will be to make the alternatives, synthetic fuels, alcohols, and things of this sort, much more attractive and able to penetrate almost immediately.

So even a few cents change of that sort will have some rather major effects, I believe, on the perceptions of industry and of the consumer on how they will spend their money on energy.

DUPLICATION OF CONSERVATION MEASURES

Senator BELLMON. Are you careful to avoid duplicating research activities or other conservation measures that private industry is willing to do on its own with its own resources?

Mr. BEATTIE. We attempt to be very careful in this regard Mr. Chairman. We do a number of things in order to avoid duplication. First of all, we continually hold workshops in all of our technology areas where we bring industry people in to understand what it is that we're doing and have them critique our programs.

As an example, in our solar program, where we're developing a marketing plan for solar cooling, we have taken that plan and distributed it to industry, asking them to comment on the way we plan to proceed in commercializing solar cooling.

We do this in many of our programs, bring industry in, let them see what we're planning to do, and comment on where we're going.

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Most of our program managers are very knowledgeable in their individual program areas. They travel extensively, meet with the business community, and keep track of what's going on.

Obviously, we cannot be 100 percent sure that there aren't things going on in business that we aren't duplicating. But I believe, in most cases, if you would talk to industry, you would find that we are indeed complementing the activities that they have underway.

BUDGET AMENDMENT INCREASES

Senator BELLMON. The budget amendment that's being readied for Congress proposes an additional $5 million for appropriate technology grants, together with another $5 million to start a new program called dispersed energy systems demonstration.

Can you tell us why these particular programs were selected for the short-term energy supply initiatives? What kind of energy savings will these programs produce between now and, say, 1985?

Mr. BEATTIE. The appropriate technology program, Mr. Chairman, is presently being funded at about $3 million, and we have just completed our initial pilot project in region 9, which includes California, Nevada, and some of the western States.

We were surprised and, indeed, very encouraged, with the way that pilot went. We had no real foreknowledge of what the response would be, but we received about 1,100 proposals as a result of our solicitation; good ideas in the appropriate technology area.

A large percentage of these were rated as good proposals. Finally, when we completed peer review, we funded over 100 proposals of all kinds, which ranged from developing training and education programs through such things as a small waterwheel for a remote valley in Hawaii.

So the program has a lot of interest and there is a real opportunity to tap the ingenuity of the American people to address the problem of energy usage.

Our plan was to systematically expand the program across the country and bring the other regions in to the program.

We felt that on the basis of the very good response of the first pilot, that we would be able to move the program more rapidly than we originally intended and to go nationwide in fiscal 1979.

The total savings that we could project from this program will be difficult to estimate, I think, until we understand how those first projects, or even how the initial projects we are funding result in good energy programs around the country.

I think that for the amount of funding that's involved, the payback will be high, not only in terms of energy savings, but in terms of energy awareness around the country.

We won't be able to give you an idea, I don't think, for another year or so as to what the real potential is in savings in terms of Btu's or quads.

But I think that from all the indications that we have, there is a great enthusiasm around the country for this program, and I expect that this $5 million that we are requesting in addition to the $3 million in the President's original budget request will be well spent.

The second program, dispersed technologies, will complement a program that we already have underway in the buildings and community systems program, and I'd like to ask Dr. Savitz to talk about that for a moment.

Dr. SAVITZ. The dispersed technologies program is to allow communities to look at various systems of integrated energy uses and to make use of waste heat so that they can have a central system to provide heating. At the same time, they can provide electricity, possibly generating the electricity from urban waste.

Combining multiple functions of energy use into small central systems, 20 megawatts or less, is the type of system we are pursuing. It might supply an apartment complex, a university campus, or a redeveloped area of several million square feet of mixed commercial and residential space.

This builds on some work already going on in the community systems area where we've had very good interaction between community local power systems and the building developers themselves.

We try to tie in energy generation and urban waste together to see how we can supply local needs, determine what's the best system to fulfill the need, and get the utility and the community working together.

Senator BELLMON. Do you have any estimate of the kind of energy savings these programs may produce between now and 1985?

Mr. BEATTIE. As I mentioned, I think it would be difficult right now to give you that kind of an estimate. I think if you ask us that question in another year, we'd be in a much better position to do that, Mr. Chairman.

Senator BELLMON. Is the $8 million that's being requested for appropriate technology enough to meet the demand for this type of technical assistance?

Mr. BEATTIE. I would say that for fiscal year 1979, that will allow us to do programs at least as large as we did in region 9 through most of the country. Until we get a little better feel for what the response will be, I would think that $8 million is sufficient and will allow us to get many hundreds of projects underway in fiscal 1979.

SOLAR FUNDING

Senator BELLMON. The pending fiscal year 1979 budget amendment called for a redirection of $100 million to solar and solar-related programs. If this additional solar funding is provided, would it significantly reduce our annual foreign oil imports in the immediate future, say by 1983, 1984, or 1985?

Mr. BEATTIE. Of course, it's always difficult to make a big impact on our energy system in a very short period ot time because it's so large. But the activities that are included in that $100 million for such things as passive solar energy, for training installers of solar equipment, to accelerate the photovoltaic program, low-head hydro and wind programs, all of these, Mr. Chairman, have tremendous potential to provide savings in the years ahead.

I would hesitate to say that you'll see big savings by 1983. I think that you'll see significant savings by 1985 and by 1990, I would say

that if those programs reach the potential that we believe they have, there will be significant market entry of a number of solar technologies leading to major impacts by the year 2000.

Senator BELLMON. It's been suggested that we might expect a reduction of around 4.4 million barrels by 1984 or 1985. Is this figure one that you have set?

Mr. BEATTIE. That would be about 9 quads in the total conservation area.

Senator BELLMON. It's a $100 million add-on. It's only 4.4 million barrels.

Mr. BEATTIE. 4.4 million barrels total per year.

Senator BELLMON. That's the way I understand it.

Mr. BEATTIE. I would think that's an achievable goal, yes, sir.

Senator BELLMON. Could I ask you to provide for the record your best estimate of savings in barrel-of-oil equivalent for the years beginning with, say, 1980 through 1985?

Mr. BEATTIE. Yes, sir.

Senator BELLMON. To be associated with this additional money.

[The information follows:]

ENERGY SAVINGS ESTIMATES FOR CONSERVATION AND SOLAR APPLICATIONS PROGRAMS INCLUDED IN THE FISCAL YEAR 1979 AMENDMENT

The energy impacts of the programs in Passive Solar, Solar Training, Dispersed Technology Demonstrations, and Appropriate Technology cannot be assessed easily. Each of these programs is designed to remove barriers to the implementation of new technologies or to explore and test new potential technologies.

Passive solar.—The program is designed to improve the state of passive solar technology as well as to demonstrate its potential. Its impact is the degree to which improved methods of passive solar are developed and adopted in new homes. It is estimated that 2,000 homes will be impacted in 1979 and up to 25,000 additional homes will be impacted by 1985 due to the initiative. This would result in energy savings of about 50 barrels per day oil equivalent in 1979 growing to about 500 or 600 barrels per day by 1985.

Solar training.—Lack of well trained solar installation and maintenance personnel has been identified as a major barrier that is inhibiting and will continue to inhibit the growth of the solar industry. Although several different scenarios exist regarding the impact of solar applications through 1985, this initiative is a necessary element in successfully achieving any projected target energy savings.

Appropriate technology.—Due to the nature of the program, energy impacts are highly uncertain. Many of the projects will fail while a number may prove highly successful in providing new decentralized sources of energy. Impacts are dependent on the degree of acceptance of the successful projects in the marketplace. A very crude estimate of the impacts, assuming the program is continued over a few years, is that 1,000 barrels per day oil equivalent will be saved by 1980 and up to 25,000 barrels per day by 1985.

Dispersed technology demonstrations.—This initiative complements the appropriate technology initiative in that it helps to speed the acceptance of the newly developed ideas and technologies. Its energy impacts are included under the estimate for the appropriate technology program although an additional 10,000 to 15,000 barrels per day oil equivalent might be saved through technologies not included under the appropriate technology program.

Senator BELLMON. The problem is that we need to know whether we're getting anything back for the funds we've provided. There's such an enormous political sex appeal to solar energy, particularly, that someone in authority needs to tell us whether all this money is really going to get any results in the short term.

Mr. BEATTIE. We'd be pleased to provide that for the record, Mr. Chairman.

DISPERSED SYSTEMS DEMONSTRATION PROGRAM

Senator BELLMON. I take it that the dispersed systems demonstration program will concentrate mainly on solar and other renewable sources of energy.

Could you give us some examples of the type of demonstrations that are contemplated in this program? You mentioned the waterwheel out in Hawaii.

Mr. BEATTIE. That was a project that's coming in under the appropriate technology program. The dispersed systems are ones that Dr. Savitz was discussing, and perhaps Maxine——

Senator BELLMON. Burning of municipal waste.

Dr. SAVITZ. Municipal waste can be used as an energy source in many ways such as direct mass burning of the waste with recovery of heat as steam or hot water. This heat can be used to power a turbine which in turn generates electricity. Another method is through pyrolysis whereby the waste is reduced to a fuel form such as a low Btu gas which can then be combusted for power or heat generation. Gaseous fuels can also be generated through the use of biological processes such as anerobic digestion, wherein the waste is acted upon by organisms in the absence of air to produce methane.

Senator BELLMON. Aren't some of those covered with other appropriations?

Dr. SAVITZ. Some of those are already covered in the buildings program. This is to accelerate the smaller systems and really try to integrate the urban waste, and other renewable resources such as solar systems to be used in small communities, putting out 10 to 20 megawatts of power and less, very small systems.

We might use it for the Indian nations, as one group would be a group of people.

Senator BELLMON. How large a city or how many homes would 20 megawatts supply?

Dr. SAVITZ. Twenty megawatts will provide enough power for about 6,000 apartment units.

Senator BELLMON. So maybe up to a city of 2,000 people.

Dr. SAVITZ. Yes.

Senator BELLMON. Probably less.

What connection, if any, does the Department of Energy program have with the CSA program? Is there any duplication?

Mr. BEATTIE. The one program that we have, Mr. Chairman, that is complementary to the CSA program is our weatherization program. For the first 2 years of the program both the CSA, and formerly FEA now DOE, jointly funded weatherization programs with slightly different ground rules as to how the funding was utilized.

The proposal for fiscal 1979—yes, sir, did you have a question?

APPROPRIATE TECHNOLOGY PROGRAM

Senator BELLMON. I was going to say we were talking about the appropriate technology program as it relates to this.

Mr. BEATTIE. I'm sorry. I misunderstood, Mr. Chairman. Yes.

The National Center for Appropriate Technology is funded by CSA and in our pilot project that we have run, and what we would

propose to do as we go nationwide, is to continue to use the National Center for Appropriate Technology to assist us in managing the program.

They have worked with us in developing the program, in the reviews that we've made of the proposals and we would propose to continue to use them in that manner in the future.

Senator BELLMON. So there will not be any duplication?

Mr. BEATTIE. No, sir, there will not.

INVENTORS PROGRAM

Senator BELLMON. You also have a related program calling for $2 million to support inventors. Can you tell us how this program will operate and will it tie into the appropriate technology and disbursed demonstration programs?

Mr. BEATTIE. At this time, Mr. Chairman, I'll ask Mr. Pastore to come forward. Mr. Hughes, excuse me, Sam Hughes, the Assistant Secretary.

Mr. HUGHES. I'll talk briefly about it and Mr. Pastore could then talk about it, if you wish some more information.

The inventors program, designed to utilize the talents and imagination of small inventors who would otherwise have difficulty getting our attention or the attention of businesses, functions through a screening mechanism at the National Bureau of Standards.

There has been a rather high volume of submissions to the Bureau, in the range of 7,000 or 8,000, as I recall.

Mr. PASTORE. Over 8,000 now.

Mr. HUGHES. 8,000 now—of which a relatively small number, I think a total of 62, have been selected as potentially useful in our business.

We are working with the processing of those and have made awards of around 25 percent of them, or a third at this point, as I recall. Others are still in the works. There is a process for working with the inventor, and with the aid of commercialization consultants, to try and establish the kind of arrangements that would enable the particular invention to be placed in the market.

Mr. BEATTIE. Mr. Chairman, you asked the question of whether or not there's a possibility for duplication. In the pilot program that we have underway now in appropriate technology, one of the pieces of information that we require from someone submitting a proposal under the appropriate technology program is whether or not they have also submitted their invention under the inventions program. This way we try to avoid duplication between the inventors program and the appropriate technology program.

AID TO INVENTORS

Senator BELLMON. Well, let me ask two further questions. First of all, have any significant energy conservation savings resulted from new inventions. Second, how much help do you give a new inventor? Do you help him or her get their idea put into use by those who might benefit from it?

Just what do you do?

Mr. HUGHES. Let me take the second question first.

Generally, we have provided a combination of money and technical assistance to enable the inventor to get his invention thoroughly developed technically, and then through a combination of further technical assistance and money, to get it commercialized.

The average grant has run at around $50,000 to $60,000 per invention, and the results in a number of areas have been very interesting and promising.

Perhaps we could provide you with some material for the record, if you like, or Mr. Pastore could describe one or two of the more promising, if you wish.

Senator BELLMON. All right. Mr. Pastore?

Mr. PASTORE. My name is Richard Pastore. I'm Director of the Division of Business Programs, and the energy-related invention programs is under my control.

Of the inventions that have been recommended to us by the National Bureau of Standards, in 1962, as of the end of April of last year, they've actually given funding awards to 17 of those inventions. We have 10 more in the procurement process. There have been three that were withdrawn or rejected by the program itself.

Senator BELLMON. What was the average size of the award?

Mr. PASTORE. In the past, Mr. Bellmon, they have been running, as Mr. Hughes has said, $50,000 to $70,000. I can't give you the exact average. Our planning figure at the present time for future awards is $55,000. We have actually awarded a little over $1 million on all of those that have been awarded to date and have, in the process of procurement now, a little better than half a million dollars on the 10 outstanding, as I say, averaging around $55,000.

Only two of the inventors have completed the work that we funded them for. Both of them were relatively sophisticated technologies which were very early on in the research development process. One of them is not coming to fruition because it turned out that the process that the inventor was working on is not possible to build from an engineering standpoint.

The research people are aware of this. The work that the inventor did was good work and it brought to light a deficiency in engineering development, which must be overcome in time. But we could spend an awful lot of money on it.

Consequently, there is no further money going directly to the inventor in that particular case.

The second invention that was funded and has been completed by the developer used a process of osmosis to increase or build a head of water. That work was completed. The report has been rendered to the Department and is under consideration by the Department for further work in that particular area.

Again, it is a relatively new approach to energy supply technology and will probably require considerably more research and development work.

Another invention we expect to have completed within the next month or so was an award that was given to Dr. G. R. Fitterer. It involved the use of a new alloy for controlling the oxygen content of sheet steels.

We gave Dr. Fitterer an award of slightly less than $100,000 to test his process in some actual steel plants, and if we are to believe

his estimates of the market that he may be able to penetrate on it, there is a possibility that he would save an annual amount of energy equivalent to the output of two nuclear powerplants, if it were applied in all of the processes that he believes he can get it into.

That becomes a marketing question. That's the type of potential that some of these have. Others are more mundane types of inventions which apply to automobiles and households, which don't have quite as significant a splash if they are successful.

PATENT RIGHTS

Senator BELLMON. If an inventor comes to you with an idea and you provide him a $50,000 grant, who owns the patents that result?

Mr. PASTORE. It has been the policy of the Department to consider waiving patent rights to these inventions and allowing the inventor to maintain the patent rights under these grant arrangements that we've been going in with. However, each case is looked at individually at the present time, to determine whether or not the commitment of the Government is significant enough to warrant the Government's attempting to maintain some patent rights on the invention. Basically, we look to the inventor to maintain patent rights.

Senator BELLMON. Well, if the invention is successfully patented and produced and marketed, does the Government recover any of this front-end money?

Mr. PASTORE. Not at present, Senator Bellmon.

Senator BELLMON. Would there be objection to such an arrangement?

Mr. PASTORE. Do you mean by the inventor, sir?

Senator BELLMON. I mean, you're the administrator of the program. Can you get the inventor to sign an agreement that if his product becomes a financial success, that he'll pay back the $50,000?

Mr. PASTORE. I believe that such an arrangement could be worked out. However, the premise that we're operating on at the present time, is that if any of these inventions do come to fruition, they will be judged on the priority of whether or not the general public will benefit from the commercial application of the inventor's concept. We think that the Government's money is recovered in the benefit to the general public.

Senator BELLMON. I would think an inventor who achieves an economic success with his idea with the help of the Government might be grateful enough to want to, to be willing to pay us back.

Mr. PASTORE. I would be willing to believe that myself, Mr Bellmon. In fact, the British have such an arrangement in a corporate-type program of this type.

Senator BELLMON. I believe that's all I have. Thank you very much on that point.

ENERGY SAVINGS FROM GRANT PROGRAMS

Back, Mr. Beattie, to another line of questioning. By far the bulk of the requested increases for fiscal year 1979 involve grant programs. Increases for weatherization and State conservation grants

exceed $250 million. Do you have any reasonably firm estimates on the energy savings these large program increases will achieve?

Mr. BEATTIE. Yes; Mr. Chairman, we do have some estimates. I mentioned one earlier in terms of the savings we anticipate from the weatherization program when we get all of those buildings weatherized. Let me ask Mr Stewart to give you some details on that.

Mr. STEWART. Thank you.

The expected accomplishment for the fiscal year 1978 effort that we presently have underway is estimated at about 400,000 homes to be weatherized. These are low-income homes. Through the fiscal year 1979 budget, we expect an additional 850,000 homes to be weatherized. This, we expect, will produce a savings of about 3.5 million barrels of oil.

These figures in terms of numbers of homes, as compared with the amount of oil savings, and in some respects compared with, say, industry, are not that impressive. But when one looks at the fact that we have fairly small dwellings, by and large, and when we look at the impact that energy costs have had on the incomes of those who don't have very flexible incomes, the savings is significant both in human terms as well as in energy conservation terms.

Senator BELLMON. The 3.5 million barrels, that's an annual saving?

Mr. STEWART. Yes, sir.

Senator BELLMON. 850,000 homes. That's about 10 barrels—let's see, about 4 barrels per home per year.

Mr. STEWART. In terms of the total number of homes or in terms of——

Senator BELLMON. You said 400,000, and gave us a figure of 850,000 for fiscal year 1979. Are the savings accumulated over both years?

Mr. STEWART. No, sir; it's just associated with 1 year.

Senator BELLMON. That's for 1 year?

Are you at the present time able to get the insulation materials that are needed?

Mr. STEWART. At present we are, sir.

Senator BELLMON. Have we gone so fast that we've run up the price of these materials?

Mr. STEWART. Our efforts are just getting underway in many respects. The weatherization program that the Department of Energy is managing put out its first full set of awards as of December of last year. So essentially, we're in the first 5 months of operation, and that, by and large, has been during the heavy winter season. So we haven't been able to do as much in terms of actual weatherization of homes as we expected to do through the close of the year.

At this point, we have not had any report of a shortage of insulation, particularly cellulose, which we use primarily. At this point, although we're keeping track of that, we have not experienced any problem in terms of supply.

Mr. BEATTIE. Let me just add, Mr. Chairman, we estimate about 8 to 9 million homes have been reinsulated or insulated over the last couple of years. So that the total impact that this program has is on the order of about 10 percent of the insulation materials, not

counting the new buildings that are going up at about 2 million a year. So the overall effect of this program is relatively small.

We have noted increases in prices in insulation around the country, but based on our contacts with the insulation industry, we expect that to be relatively short term. Within the next year, capacity within the insulation industry will be able to meet the projected demand.

Senator BELLMON. How do you select homeowners who qualify for assistance under the weatherization grant program?

Mr. STEWART. The legislation specifies eligibility requirements. The recipients have to be at or below the poverty level, first of all. We give priority to the homes of the elderly and the homes of the handicapped.

Senator BELLMON. And the poverty level now is about $6,000?

Mr. STEWART. Depending upon the size of the family. I think it's $6,000 for a family of four.

COST OF WEATHERIZATION FOR HOMES

Senator BELLMON. What does it cost to weatherize an average home?

Mr. STEWART. We expect that, in terms of our program, our present regulations, an expenditure of about $210 to $250 per home will be required. This is essentially for materials, which our program is directed toward.

Senator BELLMON. Who pays the labor costs?

Mr. STEWART. The labor is supplied by the Department of Labor's Comprehensive Employment and Training Act employees, so that the labor is no charge, essentially, to us.

Senator BELLMON. I wonder what the average labor cost is for a home. Do you have a figure?

Mr. STEWART. It's difficult to estimate in this situation, but our best estimate is that if you add in the cost of labor it's about double. So about $400 or $450, would be the cost.

Senator BELLMON. And from this we get a saving—I'm not sure my calculations are right—but somewhere around 4 or 5 barrels of oil per year per home?

Mr. STEWART. Five barrels.

Senator BELLMON. 3.5 million barrels of oil for 850,000 homes. [Pause.]

Senator BELLMON. Our calculations are, using the world market price of oil, that this program, not counting the CETA costs, is worth about $56 million a year to the homeowners. Have you calculated the benefit-cost ratio?

Mr. STEWART. I'm sorry, sir?

Senator BELLMON. I say, according to our calculations, if you're saving 3.5 million barrels of oil per year and using the world market price of oil of $16 a barrel, that figures out to be $56 million on an investment of $250 million plus whatever the CETA costs are.

Mr. BEATTIE. I should point out, Mr. Chairman, that that's annual savings, and you would expect those homes to be operational for 10 or 20 years or more. So you must multiply your $56 million times the lifetime of the home.

Mr. STEWART. Essentially, we're talking about a 3-year payback.

Mr. BEATTIE. We're talking about a payback in just a few years, unless the price goes up, in which case it'll be paid back even sooner.

Senator BELLMON. But if you count the CETA costs, which would be roughly the same as yours, it makes the cost of the program $500 million. So it's about a 10-percent payback.

Mr. BEATTIE. It would be a payback of about 6 years, I believe, if you run out the calculations.

Senator BELLMON. Could you run out your best calculations and include the CETA costs? I'd like to know if the program is cost effective.

Mr. BEATTIE. Yes, sir, we will.

[The information follows:]

CALCULATIONS AND CETA COSTS

1. Calculate cost of CETA/DOE investment versus energy savings to prove out the cost effectiveness of the weatherization programs.

The cost-effectiveness of the Department of Energy's Weatherization Assistance Program is determined by comparing the costs to the benefits of the program. The benefits are primarily energy savings and lower utility bills for program recipients.

Energy savings are determined by multiplying the number of homes to be weatherized times the average savings of 15 million Btu's per home per annum. The 15 million Btu's annual savings per home, or 14 percent per home was derived from a study done by the Oak Ridge National Laboratory.

The fiscal year 1979 request of $80 million under ECPA will lead to the weatherization of 343,000 dwelling units and an annual savings of 900,000 barrels of oil. The NEA proposes to increase the fiscal year 1979 funding authorization from $80 million to $200 million, thereby allowing for the weatherization of 514,000 additional dwelling units, with resultant annual energy savings of 1,400,000 barrels of oil, projected over a period of 10–20 years depending on the useful life of the dwelling and weatherization materials.

To evaluate the validity of our current estimates for energy savings the Department will gather actual data on energy consumption (before and after weatherization) on a house-by-house basis through two demonstration projects.

The program costs are primarily the federal funds distributed. The simple payback on the investment of DOE funds is approximately 3.68 years when energy savings are valued at $5 per million Btu's. ($5 per million Btu is the estimated replacement cost of oil—approximately $28 per barrel.) The labor component is roughly half the total Federal outlay for the program. Inclusion of labor costs will increase the payback period of 6.76 years.

The benefit to individuals of having their heating and cooling bills reduced (about $75 per annum) was not included in this analysis.

ENERGY EXTENSION SERVICE

Senator BELLMON. Your're requesting $25 million for the Energy Extension Service, to make that program nationwide. I have two questions: First of all, why do we need an Energy Extension Service when we already have an Agricultural Extension Service in place; and why couldn't you go ahead and train those people to do the energy work? Second, why do you also budget $10 million for the supplemental State energy conservation grants, which generally serve the same purposes?

Mr. HUGHES. I can comment, Mr. Chairman, on the Energy Extension Service. That program is patterned after, but of course is not identical to, the Agricultural Cooperative Extension Service which you've mentioned. The Energy Extension Service is in a pilot state. There are programs operating in 10 States on a test basis. In, I believe, seven of those——

Senator BELLMON. Your proposal is to make them nationwide

Mr. HUGHES. Yes, sir, that's correct, if the test works out, and it appears to be going well.

In 7 of the 10 pilot States, the facilities of the Agricultural Extension Service are being utilized to deliver the program in the areas where it's appropriate. the Cooperative Extension Service of Agriculture is primarily a rural area and suburbs program. It doesn't function in the urban areas where the Energy Extension Service must, in substantial part, function if it is to be effective.

But in those areas where it is possible, 7 of the 10 States are utilizing the Cooperative Extension Service as a vehicle. In general, the Extension Service program's objectives are the same as the Cooperative Extension Service, except the focus is on energy problems and their solution, rather than agricultural problems and their solution.

The States have adopted a variety of approaches to the use of an extension service under the pilot provisions. The statute which set up the Energy Extension Service, establishes an evaluative mechanism and provides for that before proceeding further. We do intend to carry through the evaluation and attempt to persuade the States to use the most effective devices that the pilot has demonstrated as the program expands.

We also have sought matching funds as a part of the efforts to go nationwide with the program.

ECPA FUNDING

Mr. BEATTIE. Let me address the second part of your question if I can, Mr. Bellmon, on the ECPA funding for which we have requested $10 million. The ECPA funding does include a provision to provide assistance to the States in energy awareness and energy information, which is, as you correctly point out, a function of the Energy Extension Service.

In addition, there are other activities that take place under ECPA, which include financial and technical assistance to the States in carrying out their energy conservation plans, as well as helping them develop energy audits of various activities around the States. Those activities, of course, are not included in the Energy Extension Service.

A further point, of course, is that it will be some time into fiscal 1979 before the Energy Extension Service is in fact nationwide. So we will use some of the $10 million to ensure that the energy awareness programs are continued in the States until the Energy Extension Service is in place. Also, you will note that, because of, in part, the fact that the Energy Extension is coming along in fiscal 1979, the request for fiscal 1979 has been reduced significantly from the fiscal 1978 budget.

ENERGY EXTENSION SERVICE

Senator BELLMON. Again, I'm troubled by the fact that we've put in place a program for a specific purpose. I'm curious to know if we'll ever know when this job is completed.

Mr. BEATTIE. The Energy Extension Service?

Senator BELLMON. Yes.

Mr. HUGHES. Mr. Chairman, our hypothesis, at least at this point, is that there is an apparent and desperate need for better communication, better public understanding of the energy problems and their potential solution. It seems to us that for an extended period at least, a device like the extension service, which deals face to face with individual homeowners and individual small businesses in their respective communities, is an extremely important one for handling this sort of communication.

We see it as a useful device. The utility is demonstrated, to some extent, at least, by the Agricultural Extension Service. We see it as a useful device for carrying on energy education, both about the nature of the problem and about various techniques that we've been discussing for the solution of the problem.

Senator BELLMON. So you see this, then, as a permanent fixture?

Mr. HUGHES. Well, permanent is a long time, Mr. Chairman. I certainly see it as a useful tool for public involvement and public education for several years in the future.

Senator BELLMON. What ultimate size will the appropriation need to be to do the job that you see?

Mr. HUGHES. That's a difficult question to answer. The $25 million does contemplate a national program on a matching basis. It would seem to me that the foreseeable future would not contemplate heavy expansion beyond that, but it's uncertain. It depends somewhat on the effectiveness of the program, how the pilot test works out, the number of people we try and reach, and so on.

But I don't see a program like the Department of Agriculture's program, for example.

Senator BELLMON. You mentioned the matching basis. What is the normal matching basis?

Mr. HUGHES. That is 50–50.

Senator BELLMON. 50–50 with the States?

Mr. HUGHES. Yes.

Senator BELLMON. And are the States accepting funds?

Mr. HUGHES. I guess it's fair to say, Mr. Chairman, the States are never enthusiastic about matching. It seems to us that if we provide transition opportunities and give them adequate notice, they should be willing, in this sort of program, to match it. It is, after all, a highly decentralized program, designed by individual States to meet their respective needs. And it seems appropriate, to us in those circumstances, that there be matching.

Senator BELLMON. Has any State opted out once the program was started?

Mr. HUGHES. The 10 States which are the pilot States have been going about their pilot programs enthusiastically, and we have been reasonably well satisfied with the progress thus far.

LOCAL GOVERNMENT BUILDINGS PROGRAM

Senator BELLMON. All right, sir. Thank you.

Secretary Schlesinger wrote to the committee recently and recommended that funding be increased for conservation in local government buildings. He suggested $32.5 million, instead of the $10 million in your budget. Is that recommendation being followed up with a requested budget amendment?

Mr. BEATTIE. Mr. Chairman, I believe that it is. Let me ask Mr. Mayhew to confirm that.

Mr. MAYHEW. Yes.

Mr. BEATTIE. The answer is: Yes, it is, sir.

Senator BELLMON. I wonder when we will receive the amendments.

Mr. MAYHEW. It should be coming up shortly, Mr. Bellmon. I believe we have yet to transmit it officially to OMB, but it should be transmitted to the Congress soon.

Senator BELLMON. Why are you recommending higher funding for the local government buildings program? Just how significant are the estimated conservation benefits that this program will accomplish?

Mr. BEATTIE. The number that we're recommending, Mr. Chairman, is the number that was authorized originally by the Congress, the $32 million.

The program originally came forward from the administration with a smaller number, because, in part, of our lack of knowledge of the number of buildings that would come under this program. It was very difficult, at that point, beginning the program, to understand what the commitments would be in terms of the number of buildings and the amount of work that would have to be done. So, for that reason, the original request was below the suggested authorization.

At this point in time, as we've examined the program, we have come to the conclusion that there is, indeed, a very large population of buildings out there, a very great desire on the part of the States and local units of government to work in this area, and we feel that the benefits of attempting to increase the energy efficiency of these many, many thousands of buildings at all levels is worth the funds that are being requested.

CONSOLIDATION OF WEATHERIZATION PROGRAM

Senator BELLMON. The weatherization program has been handled in the past by both the Federal Energy Administration and by the Community Services Administration, and the 1979 budget would consolidate all of this program in the Department of Energy. Why was this consolidation recommended, and again, what are the benefits likely to be?

Mr. BEATTIE. I started to answer this question inadvertently, in response to one of your previous questions, Mr. Chairman. The program is recommended by the administration to be consolidated at this time under the Department of Energy. Previously, of course, there was not a Department of Energy when the program was initiated, and it would now seem very appropriate to us that the Department take complete charge of the program.

There is also a desire, I believe, by the CSA to move out of this program and work in other areas and leave the overall management to the Department of Energy.

The program, as we have mentioned, has a very large potential. We would like to see the program consolidated in order to insure a uniform method of approaching the program. As you're probably aware, the CSA program and the Department's program are oper-

ating under slightly different regulations, and those will be consolidated when the NEA comes into existence. But we have a large field structure that can help us support this program, so we feel that we can do a very good job.

Senator BELLMON. It may be an inappropriate question, but this would seem to me, as sort of an unsophisticated outside observer, to be a program that might better be handled by HUD. Am I mistaken in that?

Mr. BEATTIE. Well, certainly HUD has entree to the same community that we're working with and works with that community in other ways. However, it is the Department's charter to work in the energy areas, and it seems to us very appropriate that we do that.

Senator BELLMON. So, you work with them closely?

Mr. BEATTIE. Yes, sir, we do.

Senator BELLMON. Sometimes, when you get two cooks in the kitchen, the outcome is not too good. Is there a need here to designate a lead agency, or are you the lead agency?

Mr. BEATTIE. We are certainly the lead agency for the weatherization program. We have a close working relationship with HUD. We have a memorandum of understanding between the two agencies, and we work very closely with those parts of HUD that have similar types of programs.

Senator BELLMON. But you feel there's a role for both agencies in this program?

Mr. BEATTIE. Yes, sir, HUD is not directly weatherizing homes, such as we are, but HUD has other complementary programs.

MEMORANDUM OF UNDERSTANDING

Senator BELLMON. Could you furnish us a copy of the memorandum of understanding for our records?

Mr. BEATTIE. Yes, sir, we will.

Senator BELLMON. Very good.

[The information follows:]

MEMORANDUM OF UNDERSTANDING

FROM

Department of Labor
Federal Energy Administration
Community Services Administration

This Memorandum of Understanding describes a joint Energy Conservation and Public Service Employment effort to be initiated by the Department of Labor (DOL), the Federal Energy Administration (FEA), and the Community Services Administration (CSA).

FEA has established a weatherization program to assist in achieving a healthful dwelling environment and maximum practicable energy conservation in the dwellings of low-income persons, particularly elderly and handicapped low-income persons, in order both to aid those persons least able to afford higher energy costs and to conserve needed energy. In accordance with Part A, 42 U.S.C. 6861-6870, of Title IV of the Energy Conservation and Production Act (ECPA), Pub. L. 94-385, 90 Stat. 1125 et seq., FEA has promulgated regulations as of June 1, 1977, for a voluntary grant program. FEA will make grants to States and other eligible participants to be used for the purchase of weatherization materials, including insulations, and limited administrative costs. Grant funds will not be used to employ labor other than supervisory personnel.

Since 1974, under the provisions of Section 222(a)(12) of the Economic Opportunity Act of 1964, as amended, CSA has conducted a nationwide Emergency Energy Conservation Program whose major purposes are to conserve energy and lessen the impact of the high cost of energy on low-income individuals and families, including the near poor and the elderly. Most important among the activities supported by this program has been weatherization of dwellings of the poor and near poor. CSA in 1976 published its Instruction 6143-1a containing the regulations governing the conduct of the Emergency Energy Conservation Program. Of the grant funds which support weatherization, ninety percent must be expended for the purchase and delivery of materials. No labor costs other than coordination and supervision are normally paid with CSA funds. Grants are made both to States and to local community action agencies.

DOL will encourage its prime sponsors to use their funds for labor costs associated with weatherization projects in accordance with the Comprehensive Employment and Training Act (CETA) of 1973, as amended, 29 U.S.C. 801. Joint efforts at the local level have already been successful in linking CSA and CETA resources. The extant CSA weatherization program includes more than 900 local projects operated by community action and other community-based organizations. One of the principal objectives of this agreement is to establish that kind of interagency cooperation at the national level which will encourage and facilitate present and expanded efforts to link the resources of the signatory agencies at the local level.

Appropriate staff from the three signatory agencies will be assigned to implement the provisions of this agreement and will:

1. Develop information and systems for DOL to provide guidance to recipients of CETA funds to facilitate their ability to furnish labor for weatherization projects.

2. Develop a system for the periodic review and assessment of project efforts to determine the effectiveness of those project efforts.

3. Implement a system of information exchange to heighten the awareness of the signatory agencies of innovative and effective project weatherization techniques in use throughout the country.

In sum, cooperation between the signatory agencies will encourage a better exchange of program information, the implementation of joint activity in research, demonstration and evaluation efforts as well as coordination of planning and funding strategies pertinent to FEA and CSA weatherization programs and related employment and training programs. This joint effort will provide outstanding public services in the area of energy conservation while also providing skills training and meaningful work for the Nation's unemployed workers.

Ray Marshall — JUL 25 1977

Ray Marshall
Secretary
Department of Labor — Date

8-12-77

John F. O'Leary
Administrator
Federal Energy Administration — Date

8/8/77

Graciela (Grace) Olivarez
Director
Community Services Administration — Date

Senator BELLMON. The DOE plan is to have the States instead of the Federal Government administer weatherization grants. I'm curious to know why. Is there some indication that the States can do a better job? Or what's the rationale?

Mr. BEATTIE. The States would be the initial party to whom the funds would be allocated. But as the CSA program and as our present program are being administered, those funds then work down to the local level, to the Community Action agencies and other entities. Perhaps Mr. Stewart could add to that.

Mr. STEWART. Sir, I think that's a very significant question that you raised. I think it speaks to our understanding of how the program can best be managed. One of the alternatives in terms of managing the program is to have one central office in Washington that makes awards to local units for implementation. At this point, we have something over 1,000 local organizations that are actually doing the weatherization of homes.

It seems to us that for a single office here in Washington to adequately manage, administer, and provide assistance to over 1,000 individual organizations is more of a job than any agency I know of in this town can handle.

Our approach is to work through the States and the organization designated by the Governor, which would have principal responsibility for providing technical assistance, oversight, and guidance, for each of the organizations that are weatherizing within the State, so that they can more directly interface with those local units. They can be more available to them, and there would not be the inordinate paperwork burden of having them file all their reports from Washington and Washington trying to foresee all that's going on out there.

We feel that that would be a very difficult system to manage. We feel that, by working through the States, we have better coordination within the States, better service to the local units, and better control of the entire program.

Senator BELLMON. As a former Governor, I philosophically agree with you. But in our State at the moment there's a major scandal breaking about CETA programs, the Comprehensive Employment Training Act. A story has been brought out that relatives of State legislators are on this program at very high salaries—campaign workers, apparently, are on it.

What kind of oversight will you be able to give the States if they undertake to administer these weatherization grants? Do you have funds enough to watch and be sure that we don't allow another series of scandals to break out in this area?

Mr. BEATTIE. At this time, Mr. Chairman, not a large percentage of the funds would be available to do reviews of the program. However, we are starting to carry out audits that do that. We are starting spot checks around the country. We are using our Inspector General's Office at the Department to do this sort of thing.

What we would anticipate is that we would work with the States themselves to set up a monitoring and auditing program, that we would use our field organizations, our regional offices, to help the States set up such a program.

Senator BELLMON. But aren't you concerned that having a State watch itself is like having the fox watch the chicken coop, a little bit?

Mr. BEATTIE. Certainly, there is that potential, I'm sure, Mr. Chairman. But what we are planning to do is to provide a comprehensive set of instructions to the States on how they must report, the kinds of information we need to get back from them so that we can, in fact, carry out spot checks ourselves.

We would also have the potential of getting other assistance in the program to carry out some of these monitoring functions.

Frank?

Mr. STEWART. Mr. Chairman, the way we envision this program operating is not so much the States watching themselves, but for the States to keep track of assistance and monitor the local units implementing the program. We would undertake the responsibility of keeping track of the State as a grantee.

Senator BELLMON. These are Federal dollars. The States tend to be very lax or generous, or perhaps disinterested, in overseeing the use of those Federal dollars, particularly if it costs the States a sizable amount of money to administer the program.

WEATHERIZATION OVERSIGHT

How large a program is this? How many dollars do you intend to invest in this way?

Mr. STEWART. We expect our budget for 1979 to be about $198 million.

Senator BELLMON. $198 million. What would you consider to be a reasonable sum to be used for oversight if you kept the full responsibility for oversight?

Mr. STEWART. We're working on a plan in that respect, Senator. One of our concerns that would have an enormous impact upon the cost of it is the projected level of penetration needed to assure a solid and well-run program. We are looking at those issues at this point.

Mr. BEATTIE. As Mr. Stewart indicates, Mr. Chairman, we are looking specifically at the problem that you're talking about. I can't say that it isn't something that concerns us, because with that large amount of dollars out there, there is always a chance for misadministration. We're not prepared today to tell you what we think the total program should be in terms of monitoring. But it is receiving our attention. We have had a number of people looking into this over the last couple of months, and we are starting to come forward now with recommendations to our management as to how we think we should continue to monitor these programs.

There's no question in my mind that monitoring must take place. I think there's always a question of how one does the monitoring and the total effort involved in the monitoring. There are some things that you can do relatively easily, as I mentioned earlier, such as calling for standardized ways of reporting the program, carrying out spot checks, things of this sort that don't require a large expenditure of effort, but which insure that those receiving the money recognize that they will be held responsible for the funds that are being expended; and that they might turn around

tomorrow and find somebody there checking on what they did during the past year.

Senator BELLMON. If a State is found to be guilty of maladministration or substandard administration, what penalties are there?

Mr. STEWART. What we attempt to do is to not so much lay blame the first time, but rather we attempt to make a correction to be sure that it doesn't happen again. If it turns out that there was malice and wrongful intent, we will terminate the grant.

Senator BELLMON. That's all, though. Whatever has been stolen in the past is forgiven and forgotten?

Mr. STEWART. That would be an effort the Justice Department would have to undertake, sir, as to whether it would be prosecuted.

Senator BELLMON. What are the penalties which the Justice Department might apply?

Mr. STEWART. I don't know.

Mr. BEATTIE. I don't think we could address that. We can certainly investigate that for you, Mr. Chairman.

The other thing that I should mention is that we do have a pilot program in Indiana at this point in time, which is, in a detailed way, attempting to look very closely at how a State uses the funds, and the problems that they've been running into. We hope to learn quite a bit from that pilot program.

Finally, the last thing I should mention is that this program has only been underway for a few months. The funds are only now beginning to work. So I don't think there is a great problem, at this point in time, of feeling or believing that the funds are being misused. We obviously want to get on top of this right away. I'm sure that the States understand their responsibilities and that we do have a way of monitoring the funds that are out there.

Senator BELLMON. Let me ask you, Mr. Beattie, to do this. I'm not satisfied that having a State monitor the local people, who are going to get pretty uptight if they're criticized by the State, is going to work. Can you give us your very best estimate of the amount of monitoring funds you would like to see made a part of this appropriation?

We'll be marking the bill up somewhere around the 10th of June. So this will give you 3 weeks or so to get into this.

And also, the same information to monitor the grants to hospitals and other local buildings.

Mr. BEATTIE. Yes, sir.

Senator BELLMON. I'm frankly very concerned that all this money flows out with the very best of intentions, but I'm not sure that those on the receiving end are quite as dedicated in accomplishing the objectives as you may be, or as the Congress wishes them to be.

So rather than see the program come up later for a great deal of criticism, I'd like to see us run a tight ship now and try to see that this money is used for conservation purposes.

Mr. BEATTIE. We couldn't agree with you more, Mr. Chairman. We'd be pleased to provide that for the record or as a separate report to you.

Senator BELLMON. And within the time frame, so we can consider your recommendations when we mark up the bill.

[STAFF NOTE.—The information is furnished at the conclusion of questions on State grants.]

Senator BELLMON. Perhaps you can, as a part of this work, also devise some way of measuring the actual energy savings that result from this investment.

Mr. BEATTIE. Yes, sir. We will be pleased to add that to the report.

Senator BELLMON. And the cost of whatever program you think would work.

FOCUS OF WEATHERIZATION PROGRAM

Since the inception of the weatherization program there has been a continuing battle between the Community Services Administration and the energy agencies over which should administer this program. Those who support the CSA position think the Department of Energy program is too restrictive and doesn't allow enough funding for such costs as supervision, tools, and transportation of materials.

Is this really a problem?

Mr. BEATTIE. As I mentioned earlier, Mr. Chairman, there is a difference in the regulations that the CSA operates under and the regulations under which the Department operates. Those, of course, are regulations that have been called out by the Congress.

However, we will have a more liberal set of regulations for our program, which will essentially make it the same as those regulations that the CSA is operating under at the present time. Our program will be broadened to allow us to provide more support.

ALLOCATION OF GRANTS

Senator BELLMON. Under what formula are the grants allocated to the States, and how does this distribution differ from the CSA-administered program?

Mr. BEATTIE. The formulas are calculated by the program, and I don't know whether we have the specific formula with us. However, Mr. Stewart can talk about that.

Senator BELLMON. All right.

Mr. STEWART. Our formula in terms of the weatherization program takes into consideration, one, the population of low income within that jurisdiction; and, two, the heating and cooling degree days, as well as concern for the cost of installation. We factor in the number of people that would potentially be served, as well as the degree of heating or cooling that area of the country would need.

So each State, once we have an overall budget level for the year, can determine just how much would be their piece of the action.

The Community Services Administration, as I understand it, makes their grants on a proposal-by-proposal basis. I may be incorrect in this respect, but my understanding is that they receive a proposal from a local unit and evaluate that, and then make the award to that particular proposal.

Senator BELLMON. Now, as I understand it, your regulations require that 90 percent of the funding be used for materials.

Mr. STEWART. Yes, sir, that's correct.

Senator BELLMON. I understand your objective, and I appreciate your desire to keep the administrative costs down. But there are some unusual circumstances that may need to be taken into account.

For instance, let's look at Alaska. In fiscal year 1978, the allocation was $319,000, as I understand it; 10 percent would be $31,800 for administration. Well, Alaska, as you know, is a sparsely settled State with enormous geography. It would cost about half that much just to hold a statewide policy advisory meeting, which you know the regulations mandate.

Also, there's a problem with the 15-percent expenditures for transportation of materials, tools, equipment, and the work crews to the storage sites. The estimate is that the transportation costs in Alaska might run as high as 50 percent.

How do you deal with these exceptional circumstances?

Mr. BEATTIE. For Alaska we did, in fact, make an exception, Mr. Chairman.

Do you have detail on that?

Mr. STEWART. We don't have the exact details on it. What we were able to do is increase the amount of money available for transportation in Alaska.

The reason why we were so restrictive with out present regulations was to insure that there was no significant duplication between what the Community Services administration was doing with their program and what we were doing with our program. What we had to do essentially was limit our resources for materials and supplies, so we wouldn't wind up giving twice the administrative resources to do essentially a simple program.

We have, since then, spent a great deal of time talking with the State economic opportunity officers, and we are in the process now of redrafting our regulations. They have reviewed that and they have agreed with our redraft. We expect that under the redraft many of the problems that have been identified over the last several months will be taken care of.

Senator BELLMON. CSA has a special formula for dealing with the Alaskan situation. Have you examined the way the CSA program works?

Mr. STEWART. I'm sorry, I'll have to undertake that, sir.

Senator BELLMON. It might be worth your while to look into that. Apparently it's equitable and is able to take into account their special problems.

I might say that the weatherization program that CSA administers was designed to benefit low-income people, and did much to lessen the impact of high energy costs on the poor. The CSA eligibility requirements covered 125 percent of poverty level. Your program only goes up to 100 percent. So you might deal with that, also.

Mr. BEATTIE. That is being addressed, sir, under the NEA and our level will be raised to the same level.

Senator BELLMON. Very good.

STATE CONSERVATION GRANTS

On State conservation grants, the figure here is $47.8 million, which is about flat with last year. When you take inflation into account, it's a reduction. How much has been accomplished to date under this program?

Tell us how the money is being spent; and when do you expect to achieve the projected 5 percent savings in energy use?

Mr. STEWART. I think a great deal has been accomplished under the EPCA program in the last year or so. At this point, we have established within 55 jurisdictions a State energy office, so there is a central contact point, a central focus for energy concerns in each State.

Those officers are working with local units of government, working with other components of the State structures, in terms of their energy conservation programs.

We have anticipated and project that the savings to be accomplished, will be accomplished in light of the anticipated consumption for 1980, so that by the close of 1979 or early 1980 we'll be able to ascertain just how well we've achieved that. Our projects are that we will exceed that 5 percent nationally. We're looking toward a 6–6½ percent savings by 1980.

Senator BELLMON. By 1980?

Mr. STEWART. Yes, sir.

Senator BELLMON. That would seem to be a worthwhile objective if you can reach it.

According to the budget history tables, the Department of Energy originally recommended $40 million for the supplemental grant program and $425,000 for the regular conservation grants. The budget request approved by OMB in effect reversed this proposal. So let me ask you two questions:

Why did DOE recommend funding the supplemental grant program so heavily? And second, why did OMB turn it around?

STATE GRANT FUNDING

Mr. BEATTIE. I'm not sure I can recapture all the history on this, Mr. Chairman. The ECPA piece was turned around for some of the reasons that we mentioned earlier, in particular, the expansion of the energy extension service. We recommended to the OMB, that the ECPA funds presently in the budget are more widereaching funds and would benefit the program more broadly than the ECPA funds at this point in time.

So, we were in concurrence that the ECPA should be expanded at this point in time to include the many activities that take place at a State level under those funds.

The ECPA, as you know, unless the Congress extends it, will be running out in the near future, and the other activities that are taking place in the schools and hospitals programs, the energy audits that will be taking place, with the local government buildings programs will augment the programs started by the ECPA funds. So, for that reason, the ECPA funding was reduced.

Senator BELLMON. Why should there be any funding at all for the supplementary grants? Why not shift that funding to the energy extension service, which is doing about the same thing?

Mr. BEATTIE. As I mentioned earlier, there are things that are being done under ECPA that are not part of the charter of the energy extension service, in particular, the financial and technical assistance to develop State energy plans and the energy audits. Those are presently not part of the Energy Extension Service.

Senator BELLMON. All right, sir.

SCHOOLS AND HOSPITALS GRANT PROGRAM

On local buildings, you have $300,500,000 budgeted for matching grants to schools and hospitals for energy conservation measures. This is a sharp increase, $100 million, I believe, for that program. Can you tell us specifically what's being accomplished with the initial fiscal year 1978 funding?

Mr. BEATTIE. The fiscal year 1978 funding for this program, Mr. Chairman, is part of the supplemental funding that we just received, and we have not sent any of that money out to the States, because the program is dependent upon passage of the NEA.

So, depending upon how soon the NEA is passed, we will get part of those funds out in fiscal 1978, probably only that part which will allow us to do the initial energy audits. The funds, we would hope, could be carried over into fiscal 1979 when we finally get into the technical assistance area with the States, and allow us to start improving the energy efficiency of specific buildings.

So, the program has not yet begun. We have been working to prepare the regulations which will provide for the manner in which those funds will be spent. But until passage of the NEA, we cannot move with those funds.

Senator BELLMON. Well, now, if you haven't started and we're now roughly halfway through fiscal year 1978, it would seem to me expecting to jump immediately to a $300 million program might be a little optimistic. Do you feel this level of funding is excessive, that $300 million?

Mr. BEATTIE. There's a big job to be done out there, Mr. Chairman, and I think that it's possible to move that money to the States in fiscal 1979. It's a little difficult at this point in time, I think, to completely answer your question.

Obviously, we made up that budget last summer, when we anticipated early passage of the NEA, and we have only reexamined the issue in terms of what we will be able to spend this year of the $200 million that's presently in the supplemental.

I would think that if we get the regulations out in the next couple of months, there's a good chance that we can spend all the funds and spend it well. Many of the States are anticipating this program and are working to get ready for the funds.

Senator BELLMON. Let's assume the passage of NEA, say, by July 1. How quickly would the regulations then be ready for dissemination?

Mr. BEATTIE. We would be ready to put the rulemaking in the Federal Register probably within 30 days or so.

Senator BELLMON. That makes this August 1.

Mr. BEATTIE. Yes, sir. Then, there's a comment period.

Senator BELLMON. How long is the comment period?

Mr. BEATTIE. Normally about 30 days.

Senator BELLMON. That's September 1, and the fiscal year is October 1.

Mr. BEATTIE. The fiscal year is October 1.

Senator BELLMON. And you've got $200 million on hand.

Mr. BEATTIE. Right. We would not be able to put out, as I mentioned earlier, the majority of the funds, except for the energy audits. We would start to get the funds out to the States, so they could begin the energy audits and that's the first step in the program.

Senator BELLMON. How much do you anticipate using for that purpose?

Mr. BEATTIE. That's about $25-30 million of the $200 million. So, there would be a carryover. At this point in time, I think I can say that there would be a carryover of about $170 million into fiscal 1979 of the $200 million.

Senator BELLMON. Would we do violence to the program if we reduced the $300 million by that amount?

Mr. BEATTIE. Violence, certainly not, Mr. Chairman. I think that we would accommodate to whatever number the Congress——

ADMINISTRATION OF GRANTS TO SCHOOLS AND HOSPITALS

Senator BELLMON. We want to give you the funds you can realistically use, but I see no reason to put money there that can't be handled properly.

Do these grants go directly to schools and hospitals, or are they State-administered?

Mr. BEATTIE. It can be both, Mr. Chairman. Let me ask Mr. Stewart to elaborate on that.

Mr. STEWART. One of the problems, sir, of course, is that we still don't have the exact language of the legislation. All the work we've done has been done on the basis of both the Senate-passed version and the House-passed version prior to conference. So, we are working a little bit in the dark in terms of developing our regulations and knowing exactly how the law is going to ask us to operate the program.

Part of the reason why you see a 200-300 split in the budget is that the Senate-passed version authorized $200 million the first year, $300 million the second year, and $400 million the third year, for the total of $900 million in the 3-year period. So, we're trying to reflect that to some degree in terms of our budget preparation.

Senator BELLMON. It wouldn't be any great departure from custom if we didn't appropriate all that's authorized.

Mr. STEWART. I understand, sir.

Senator BELLMON. Again, back to my previous topic, what about oversight on these funds? Do you have any idea what provisions you can make to be sure that this money is spent where it's intended?

Mr. STEWART. Sir, we'd like to provide that, along with the information on oversight, and supply them in the authorization context.

Senator BELLMON. Make it tough.

Mr. STEWART. Yes, sir.

[The information follows:]

FUNDING OVERSIGHT

We have some very strong ideas on this question. One part of the work underway is drafting regulations to implement the schools, hospitals, local government and public care buildings grants program. In these regulations, we are including constraints and requirements for assurances of flowing both the language of the law and our perception of what the program requires. For example, in the draft preliminary energy audit regulation, we require 75 percent of the amount alloted to a State on a formula grant basis be passed through and spent on audits in buildings owned by eligible institutions. The remaining 25 percent may be used at the State level, but, with the exception of a 5 percent allowance for administrative costs, the funds must be used in training, providing technical materials, conducting sample audits, monitoring and evaluation. Given there are 50 different States, each with its own capabilities, institutions, and on-going related efforts, we are stating our requirements in general terms. In their plans and applications, the States will have to show the specific mechanisms and procedures they will be using to meet these requirements. To take another example from the draft preliminary energy audit regulation, States are required to perform sample audits with the institution's personnel as a check on program effectiveness.

We do not yet have effectiveness sanctions other than cutting off funds in instances where irregularities or violations occur. To ensure this grant money is spent effectively, then, DOE will have to have personnel who can help States get their act together, and once the implementation is underway, stay on top of the situation so that little problems are corrected before they turn into big ones. We are currently defining this staff requirement.

Morever, we anticipate that between $200 million and $500 million in schools and hospitals grant funds and $25 million to $60 million in local government and public care buildings grant funds will have been distributed by the end of fiscal year 1979. Each institution participating in these programs will require monitoring, as well as the state and local governments also involved. While we are still developing regulations which will address the question of sanctions against those governments or institutions found lacking in performance, the number of grantees (or subgrantees) will be extremely large, requiring substantial increases in the DOE support and monitoring resources. To assure some measure of control over these governments and institutions, we contemplate at least four visits to each State to review the programs and activities in the our eligible categories of buildings; schools, hospitals, local government buildings, and public care institutions. Obviously, the maximum feasible control would be required in those instances where problems are discovered; monitoring should also include reviews of administrative procedures forms preparation, and conformance to performance standards contained in our regulations. Our estimated minimum staffing requirements is 56: 41 for program management in the 10 regional offices plus 15 man-years for headquarters coordination, planning, and support. These estimates would hold for each year of the programs and should be contemplated by travel staffs. Monitoring activities would require 10 to 25 additional man-years in the regional offices.

SAVINGS FROM SCHOOLS AND HOSPITALS PROGRAM

Senator BELLMON. Do you estimate savings of about 43 million barrels of oil a year under the schools and hospitals grants program? How cost-effective do you anticipate this will be, and when will the size of investments in school and hospital conservation be repaid in terms of fuel savings? Could you give us that?

Mr. STEWART. That's a very complicated question.

Senator BELLMON. If you maybe want to think about it or work on it, give it to us for the record.

Mr. STEWART. Fine.

[The information follows:]

OIL SAVINGS

Yes, we do estimate potential savings of about 43 million barrels of oil equivalent per year at the end of the 3-year programs. This estimate was based on the amounts authorized, estimates of the potential coverage of each phase of the program, and judgments based on experience as to the probable energy savings from each phase.

Some aspects of the cost/benefit question are out of control. Preliminary energy audits and technical assistance in particular result in recommendations; unless those recommendations are acted on, no benefit will result. We are trying to build into the program some incentives. For example, to qualify for technical assistance, an institution must show adoption of operating and maintenance changes recommended by the preliminary energy audit. On the other hand, when it comes to the energy conservation projects—and this is more than three-fourths of the total authorized—we can impose direct control. Our current thinking is to exclude from consideration any project which does not pay back in ten years or less. Further, we expect payback to be the first selection criteria. In all probability, for the program as a whole, we will obtain about a five-year payback. In sum, for the amount of Federal money involved, the energy conservation potential of this program is significant.

Senator BELLMON. But I do think we need to keep in mind that we look at this as an investment. Unless we get some reasonable return and an attractive benefit/cost ratio, we ought not to get into this sort of activity.

Mr. BEATTIE. Yes, sir. Let me, if I may, correct something. It was just pointed out to me, Mr. Chairman, that the supplemental funds cannot be carried over into fiscal 1979. They are 1-year funds, it's our understanding. So, the only part that could be utilized would be that which would go out under the regulations.

Senator BELLMON. There seems to be a difference of opinion, so we'll look at that.

Mr. BEATTIE. OK.

FISCAL YEAR 1978 OBLIGATIONS

Senator BELLMON. The fiscal 1978 appropriations for both the schools and hospitals and local government buildings programs did not get enacted until last March, and even then, the funding is contingent upon passage of suitable authorization. The authorization is still stalled here in Congress.

If authorization is enacted fairly soon, will you have trouble effectively obligating the fiscal year 1978 funding in the time remaining?

Mr. BEATTIE. We discussed that point just a minute ago, Mr. Chairman.

Senator BELLMON. All right.

Mr. BEATTIE. But just let me add one thing. Our analysis indicates that if the NEA can be passed by June, we do have an opportunity to obligate the energy audit part of the funds, which, as I mentioned, was about $25–30 million.

Senator BELLMON. You think $25 million or $30 million is about it? Do you feel like the local governments are geared up to handle this kind of funding in a relatively short period of time?

Mr. BEATTIE. There's not a uniform answer to that Mr. Bellmon. There are some States that are gearing up and will be able to do it. As you know, this does require matching funds, and some States probably will not be able to comply with that. But there are, we feel, a sufficient number of States that will be able to do it, that we will be able to get most of the audit funds out.

Senator BELLMON. I'm all in favor of your helping, but I think we need to be a little cautious that we don't jump so fast that the money is wasted.

ELECTRIC AND HYBRID VEHICLES

I might take just a minute to go into some questions about electric/hybrid vehicles. You have a request for $37.5 million for these types of vehicles. That involves about $15 million for the purchase of 600 additional demonstration vehicles.

What will these additional purchases demonstrate that's not already been demonstrated by the 200 vehicles you have?

Mr. BEATTIE. First of all, Mr. Chairman, this is a program that we contemplate carrying out over a number of years. At the present time, the state of the art is rather rudimentary in electric vehicles, and the program is designed to improve the capability of industry to turn out new and good products.

So, with each successive buy, we foresee being able to get an improved vehicle into the program that we can test and evaluate, and at the same time, encourage industry to broaden their horizons and work very diligently in what we think is a very important program.

Let me ask Mr. Esposito, who's in charge of that program, to amplify that.

Mr. ESPOSITO. Yes, sir.

The initial vehicles are most likely to be commercial vehicles, because that's the most likely place where they'll succeed. To really save energy in the long run with electric vehicles, you need to penetrate the automobile market, which is much more difficult.

So, by the time we get to the 600-vehicle purchase, we should begin to see some better small passenger cars. And as Mr. Beattie pointed out, as we go to the larger numbers of vehicles, we'll get more and more aggressive in terms of making them compete with the internal combustion engine cars.

Senator BELLMON. But you know, the thing that troubles me is that when fossil fuel is converted to electricity, you lose roughly two-thirds of the Btu's. How do you anticipate an energy saving from an electric vehicle?

Mr. ESPOSITO. We view the electric vehicle, first of all, as a petroleum-saver, Mr. Bellmon. We feel that it would just about justify itself as a petroleum-saver alone, because you can generate your electricity in many other ways. It is true that if you start with oil to generate electricity and then use the electricity in a car, it's not an effective way to use energy. With other sources of electricity, however, such as nuclear and coal, the electric vehicle can be energy competitive, depending upon the price of electricity. Converting coal to liquid fuels to burn in automobiles is still an infant technology, and it's very uncertain as to its potential.

We look to it as a petroleum-saver, first, but we think in the long run it could also be an energy-saver when you compare it to artificially produced petroleum.

Senator BELLMON. So, the primary reason you need the other 600 vehicles is because you think the industry may be able to build a better mousetrap, I guess you could say.

Mr. ESPOSITO. The industry is progressing rapidly and aggressively to develop a market. Also, we have performance standards that we publish each year, that can be upgraded as time goes on to further push the technology ahead.

Senator BELLMON. Mr. Beattie, perhaps to settle the question of whether these funds are available, in Public Law 95-240, passed March 7, 1978, there's this language: "Appropriations remain available for obligation until September 30, 1979." So, that gives you, apparently, the flexibility to use those funds in the next fiscal year.

Mr. BEATTIE. Thank you, Mr. Chairman.

SUBMITTED QUESTIONS

Senator BELLMON. I have no further questions at this time. But there are some additional matters that we'd like to submit for your written response for the record.

Mr. BEATTIE. We'd be pleased to do that, Mr. Chairman.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

ADDITIONAL SUBCOMMITTEE QUESTIONS

ENERGY CONSERVATION

QUESTION: How are weatherization grants allocated to Indian tribes? Are they within the respective State allotments?

ANSWER:

DOE may grant funds to a tribal organization if it determines that the low-income tribal members are not receiving equivalent assistance through the State and would be better served by a direct grant. In addition, a State may elect to have DOE directly serve the Indian tribes within that State. To date half a dozen States have recommended that their resident Indian tribal organizations apply directly to DOE for funding. In these cases an equivalent portion of the State allocation is held aside and reallocated to the tribal organizations.

QUESTION: What has been achieved to date under the supplemental grant program? Can you give us any specific examples?

ANSWER:

All 55 States participating in the Base (EPCA) State Energy Conservation Program have also applied for and been awarded grants under the supplemental ECPA) Program, totalling $12 million in FY 1977. DOE has received an appropriation of $23.5 million for FY 1978 supplemental grants to States. All State applications for these funds, due March 31, 1978, have been received. As of May 1, 23 supplemental grants, totalling $9,060,100, had been awarded.

States are using their supplemental grant funds to develop the three program measures required by ECPA (energy audits, public awareness and information, and intergovernmental coordination), to supplement some of their existing base plan program measures, and also to fund some entirely new measures. A list of the specific program measures funded by each State with its supplemental grant money is attached:

STATE ENERGY CONSERVATION PROGRAM

Supplemental Plans

(May 24, 1978)

STATE	MEASURE NAME
ALABAMA	PUBLIC EDUCATION
ALABAMA	INTERGOVERNMENTAL COORDINATION
ALABAMA	ENERGY AUDITS
ALASKA	PUBLIC EDUCATION
ALASKA	INTERGOVERNMENTAL COORDINATION
ALASKA	ENERGY AUDITS
ARIZONA	PUBLIC EDUCATION
ARIZONA	INTERGOVERNMENTAL COORDINATION
ARIZONA	ENERGY AUDIT PROGRAM
ARKANSAS	PUBLIC EDUCATION
ARKANSAS	INTERGOVERNMENTAL COORDINATION
ARKANSAS	ENERGY AUDITS
CALIFORNIA	GRANT MANAGEMENT
CALIFORNIA	INTERGOVERNMENTAL COORDINATION
CALIFORNIA	LOCAL GOVERNMENT ENERGY MANAGEMENT ASSISTANCE
CALIFORNIA	LOCAL GOVERNMENTAL PLANNING ASSISTANCE CONTRACTS
CALIFORNIA	CITIZEN GROUP CONTRACTS
CALIFORNIA	INSULATION TESTING AND CERTIFICATION
CALIFORNIA	DATA ON PASSIVE SOLAR BUILDING STANDARDS
CALIFORNIA	PARAMETRIC STUDIES FOR PERFORMANCE STANDARDS
CALIFORNIA	TRAINING CAL/ERDA COMPUTER PROGRAM USERS
CALIFORNIA	COMMERCIAL APPLIANCE EFFICIENCY
CALIFORNIA	ENERGY MANAGEMENT SYSTEM SEMINARS
CALIFORNIA	PROCUREMENT SPECIFICATIONS FOR SOLAR EQUIPMENT
CALIFORNIA	EDUCATION CURRICULUM DEVELOPMENT
CALIFORNIA	ENERGY AUDIT ADVERTISING
CALIFORNIA	COMMERCIAL/INDUSTRIAL AUDITS (SUPP)
CALIFORNIA	REMOVING CO-GENERATION BARRIERS

STATE	MEASURE NAME
COLORADO	ENERGY AUDITS
COLORADO	INTERGOVERNMENTAL COORDINATION
COLORADO	PUBLIC EDUCATION
CONNECTICUT	PUBLIC EDUCATION
CONNECTICUT	INTERGOVERNMENTAL COORDINATION
CONNECTICUT	ENERGY AUDITS
CONNECTICUT	ENERGY EXTENSION SERVICE
DELAWARE	ENERGY AUDITS
DELAWARE	PUBLIC EDUCATION
DELAWARE	INTERGOVERNMENTAL COORDINATION
DISTRICT OF COLUMBIA	ENERGY AUDITS
DISTRICT OF COLUMBIA	PUBLIC EDUCATION
DISTRICT OF COLUMBIA	INTERGOVERNMENTAL COORDINATION
FLORIDA	PUBLIC INFORMATION AND EDUCATION
FLORIDA	INTERGOVERNMENTAL COORDINATION
FLORIDA	ENERGY AUDITS
GEORGIA	STATE FACILITIES ENERGY MANAGEMENT PROGRAM
GEORGIA	LOCAL GOVERNMENT ENERGY MANAGEMENT PROGRAM
GEORGIA	HOMEOWNERS & BUILDERS ENERGY CONSERVATION SERVIC
GEORGIA	SOLAR TECHNOLOGY COMMERCIALIZATION STUDY
GEORGIA	FUELS MANAGEMENT AND SUBSTITUTION STUDY
GEORGIA	TELEPHONE ADVISORY SERVICE
HAWAII	PUBLIC EDUCATION
HAWAII	INTERGOVERNMENTAL COORDINATION
HAWAII	ENERGY AUDITS
IDAHO	PUBLIC EDUCATION
IDAHO	INTERGOVERNMENTAL COORDINATION
IDAHO	ENERGY AUDITS
ILLINOIS	COMMERCIAL BUILDING PROGRAM

STATE	MEASURE NAME
ILLINOIS	INTERGOVERNMENTAL COORDINATION
ILLINOIS	HOMEOWNERS EXTENSION SUPP
ILLINOIS	CORN DRYING SUPP
ILLINOIS	FARM PROGRAM SUPP
ILLINOIS	THERMAL AND LIGHTING STANDARDS PROGRAM SUPP
ILLINOIS	CONSERVATION INVESTMENTS SUPP
ILLINOIS	PUBLIC UTILITIES PROGRAM SUPP
ILLINOIS	INDUSTRIAL SURVEYS SUPP
ILLINOIS	LOCAL GOVERNMENT PROGRAM SUPP
ILLINOIS	STATE BUILDINGS PROGRAM SUPP
ILLINOIS	SOLAR PROGRAM SUPP
ILLINOIS	WASTE-TO-ENERGY PROGRAM SUPP
INDIANA	RESIDENTIAL AUDIT AND RETROFIT
INDIANA	PRIDE/COMMUNITY ACTION
INDIANA	INTERGOVERNMENTAL COORDINATION
IOWA	PUBLIC EDUCATION
IOWA	INTERGOVERNMENTAL COORDINATION
IOWA	ENERGY AUDITS
IOWA	CONSUMER PROTECTION PLAN
IOWA	ENERGY EFFICIENCY HOME AWARDS
IOWA	THERMOGRAPHY
IOWA	AUDIT BEFORE MORTGAGE
IOWA	TRAINING OF BUILDING OFFICIALS
IOWA	IOWA ENERGY EXTENSION SERVICE
KANSAS	PUBLIC EDUCATION
KANSAS	INTERGOVERNMENTAL COORDINATION
KANSAS	ENERGY AUDITS
KENTUCKY	LIGHTING EFFICIENCY SUPPLEMENT
KENTUCKY	THERMAL STANDARDS SUPPLEMENT
KENTUCKY	PROCUREMENT PRACTICES SUPP

STATE	MEASURE NAME
KENTUCKY	AGRICULTURAL PRODUCTION SUPPLEMENT
KENTUCKY	PUBLIC EDUCATION CURRICULUM SUPPLEMENT
KENTUCKY	PUBLIC EDUCATIONAL FACILITIES SUPPLEMENT
KENTUCKY	LOCAL GOVERNMENT FACILITIES & SERVICES SUPPL
KENTUCKY	RESIDENTIAL SUPPLEMENT
KENTUCKY	PUBLIC EDUCATION AND AWARENESS
KENTUCKY	INTERGOVERNMENTAL COORDINATION
KENTUCKY	ENERGY AUDITS
LOUISIANA	BUILDING ENERGY AUDITS
LOUISIANA	EDUCATION AND PUBLIC AWARENESS
LOUISIANA	INTERGOVERNMENTAL COORDINATION
MAINE	ENERGY AUDITS
MAINE	BUSINESS/INDUSTRY PROGRAM
MAINE	EDUCATION PROGRAMS
MARYLAND	ENERGY AUDITS
MARYLAND	PUBLIC EDUCATION
MARYLAND	INTERGOVERNMENTAL COORDINATION
MASSACHUSETTS	ENERGY AUDITS
MASSACHUSETTS	PUBLIC EDUCATION
MASSACHUSETTS	PUBLIC EDUCATION
MASSACHUSETTS	ENERGY AUDITS
MASSACHUSETTS	CONSUMER PROTECTION PROGRAM
MASSACHUSETTS	INTERGOVERNMENTAL COORDINATION
MICHIGAN	PUBLIC AWARENESS
MICHIGAN	INTERGOVERNMENTAL COORDINATION
MICHIGAN	ENERGY AUDITS
MINNESOTA	PUBLIC EDUCATION
MINNESOTA	INTERGOVERNMENTAL COORDINATION
MINNESOTA	ENERGY AUDITS

STATE	MEASURE NAME
MISSISSIPPI	INTERGOVERNMENTAL COORDINATION
MISSISSIPPI	ENERGY AUDITS
MISSOURI	PUBLIC EDUCATION
MISSOURI	INTERGOVERNMENTAL COORDINATION
MISSOURI	ENERGY AUDITS
MONTANA	PUBLIC EDUCATION
MONTANA	ENERGY AUDITS
MONTANA	PROGRAM ADMINISTRATION - COORDINATION
NEBRASKA	INTERGOVERNMENTAL COORDINATION
NEBRASKA	ENERGY AUDITS.
NEBRASKA	PUBLIC EDUCATION
NEVADA	PUBLIC AWARENESS
NEVADA	INTERGOVERNMENTAL COORDINATION
NEVADA	ENERGY AUDITS
NEVADA	SSECP SUPPLEMENTAL PLAN ADMINISTRATION
NEW HAMPSHIRE	RETRO-TECH OUTREACH SUPPLEMENT (EDUCATION)
NEW HAMPSHIRE	INSTITUTIONAL PROGRAM SUPPLEMENT (EDUCATION)
NEW HAMPSHIRE	HOME ENERGY LOAN PROGRAM SUPPLEMENT (EDUCATIO
NEW HAMPSHIRE	PUBLIC EDUCATION
NEW HAMPSHIRE	INTERGOVERNMENTAL COORDINATION
NEW HAMPSHIRE	SCHOOL AUDIT SUPPLEMENT
NEW HAMPSHIRE	INSTITUTIONAL AUDIT SUPPLEMENT
NEW HAMPSHIRE	INSTITUTIONAL AUDIT SUPPLEMENT
NEW HAMPSHIRE	LIGHTING EFFICIENCY AUDITS
NEW HAMPSHIRE	STATE BUILDING AUDITS
NEW HAMPSHIRE	RETRO-TECH SUPPLEMENT
NEW JERSEY	PUBLIC AWARENESS
NEW JERSEY	PROFESSIONAL TRAINING
NEW JERSEY	CONSUMER PROTECTION
NEW JERSEY	ENERGY AUDITS

STATE	MEASURE NAME
NEW JERSEY	INTERGOVERNMENTAL COORDINATION
NEW JERSEY	RECYCLING
NEW YORK	PUBLIC EDUCATION
NEW YORK	INTERGOVERNMENTAL COORDINATION
NEW YORK	ENERGY AUDITS
NORTH CAROLINA	ENERGY AWARENESS/REFERRAL SERVICE
NORTH CAROLINA	INTERGOVERNMENTAL COORDINATION
NORTH CAROLINA	ENERGY AUDITS
NORTH CAROLINA	INDUSTRY/COMMERCIAL EDUCATION PROGRAM
NORTH CAROLINA	SOLAR VOCATIONAL EDUCATION PROGRAM
NORTH CAROLINA	ADMINISTRATION
NORTH DAKOTA	ENERGY AUDITS
NORTH DAKOTA	INTERGOVERNMENTAL COORDINATION
NORTH DAKOTA	PUBLIC AWARENESS
NORTH DAKOTA	AGRICULTURAL ENERGY AUDITS
NORTH DAKOTA	LOCAL GOVERNMENT ASSISTANCE
NORTH DAKOTA	PUBLIC SCHOOL CURRICULUM
NORTH DAKOTA	PUBLIC SCHOOL ENERGY CONSERVATION SERVICE
NORTH DAKOTA	CONTINGENCY PLANNING
OHIO	INTERGOVERNMENTAL COORDINATION
OHIO	ENERGY AUDITS
OHIO	PUBLIC EDUCATION
OKLAHOMA	PUBLIC EDUCATION
OKLAHOMA	INTERGOVERNMENTAL COORDINATION
OKLAHOMA	PUBLIC EDUCATION AND AWARENESS
OKLAHOMA	ENERGY AUDITS FOR COMMERCIAL BUILDINGS
OKLAHOMA	ENERGY AUDITS OF RESIDENTIAL BUILDINGS
OKLAHOMA	ENERGY AUDITS FOR HOTELS/MOTELS/RESTAURANTS
OKLAHOMA	INDUSTRIAL AUDITS

STATE	MEASURE NAME
OKLAHOMA	MONITORING AND EVALUATION OF RESULTS
OKLAHOMA	PROGRAM ADMINISTRATION (SUPPLEMENT)
OKLAHOMA	INTERGOVERNMENTAL COORDINATION
OREGON	ENERGY AUDITS
OREGON	ENERGY CONSERVATION BOARD
OREGON	SOLAR DATA COLLECTION
PENNSYLVANIA	PUBLIC AWARENESS
PENNSYLVANIA	INTERGOVERNMENTAL COORDINATION
PENNSYLVANIA	ENERGY AUDITS
PENNSYLVANIA	VANPOOLS FOR COMMONWEALTH EMPLOYEES
PENNSYLVANIA	CONSUMER PROTECTION IN ENERGY CONSERVATION
RHODE ISLAND	PUBLIC AWARENESS
RHODE ISLAND	INTERGOVERNMENTAL/PRIVATE SECTOR COORDINATION
RHODE ISLAND	ENERGY AUDITS
SOUTH CAROLINA	PUBLIC EDUCATION
SOUTH CAROLINA	INTERGOVERNMENTAL COORDINATION
SOUTH CAROLINA	ENERGY AUDITS
SOUTH DAKOTA	PUBLIC EDUCATION
SOUTH DAKOTA	INTERGOVERNMENTAL COORDINATION
SOUTH DAKOTA	ENERGY AUDITS (SUPP)
TENNESSEE	PUBLIC EDUCATION
TENNESSEE	INTERGOVERNMENTAL COORDINATION
TENNESSEE	ENERGY AUDITS
TENNESSEE	OPTIONAL TRANSPORTATION PROGRAM (SUPP)
TEXAS	PUBLIC SCHOOLS
TEXAS	PUBLIC EDUCATION
TEXAS	INDUSTRIAL PROCESSES (SUPP)
TEXAS	NEW COMMERCIAL (SUPP)
TEXAS	EXISTING COMMERCIAL

STATE	MEASURE NAME
TEXAS	INTERGOVERNMENTAL COORDINATION (SUPP)
UTAH	ENERGY AUDITS
UTAH	PUBLIC EDUCATION
UTAH	INTERGOVERNMENTAL COORDINATION
VERMONT	PUBLIC EDUCATION
VERMONT	INTERGOVERNMENTAL COORDINATION
VERMONT	ENERGY AUDITS
VERMONT	CONSUMER PROTECTION ENERGY EDUCATION
VIRGINIA	PUBLIC AWARENESS
VIRGINIA	ENERGY AUDITS
VIRGINIA	INTERGOVERNMENTAL COORDINATION
VIRGINIA	PUBLIC PROTECTION
WASHINGTON	STATE-OWNED HEATING PLANT CONVERSION PROGRAM
WASHINGTON	ENERGY AWARENESS
WASHINGTON	RESIDENTIAL ENERGY AUDIT PROGRAM (SUPP)
WASHINGTON	CONSUMER PROTECTION PROGRAM
WASHINGTON	COMMERCIAL BUILDING AUDITS
WASHINGTON	LOCAL GOVERNMENT ENERGY MANAGEMENT (SUPP)
WASHINGTON	INTERGOVERNMENTAL COORDINATION
WEST VIRGINIA	COMMERCIAL/INDUSTRIAL AUDIT PROGRAM
WEST VIRGINIA	ENERGY MANAGEMENT IN PUBLIC SCHOOLS
WEST VIRGINIA	ENERGY EDUCATION PROGRAM
WEST VIRGINIA	EVALUATION, COORDINATION AND DATA DEVELOPMENT
WISCONSIN	UTILITY ENERGY AUDIT PROGRAMS
WISCONSIN	BANK HOME WEATHERIZATION PROJECT
WISCONSIN	AUDITOR AND INSTALLER TRAINING
WISCONSIN	SCHOOL ENERGY CONSERVATION (PSECS)
WISCONSIN	TECHNICAL ASSISTANCE TO LOCAL GOVERNMENTS SUPP
WISCONSIN	ENERGY AUDIT FOR THE HOSPITALITY INDUSTRY

STATE	MEASURE NAME
WISCONSIN	BANK HOME WEATHERIZATION PROJECT
WISCONSIN	ENERGY BIBLIOGRAPHY PROJECT
WISCONSIN	ENERGY EDUCATION FOR LOW-INCOME PERSONS
WISCONSIN	ENERGY EDUCATION TASK FORCE
WISCONSIN	PROGRAM ADVISORY COMMITTEES
WISCONSIN	SECP INTERGOVERNMENTAL COORDINATION
WISCONSIN	SOLAR AND ALTERNATE ENERGY SOURCES PROGRAM
WYOMING	PUBLIC EDUCATION
WYOMING	INTERGOVERNMENTAL COORDINATION
WYOMING	ENERGY AUDITS
WYOMING	ENERGY CONSERVATION ADVISORY COMMITTEE
AMERICAN SAMOA	PUBLIC AWARENESS AND EDUCATION
AMERICAN SAMOA	INTRA-GOVERNMENTAL COORDINATION
AMERICAN SAMOA	ENERGY AUDITS
GUAM	PUBLIC EDUCATION
GUAM	INTERGOVERNMENTAL COORDINATION
GUAM	ENERGY AUDITS
PUERTO RICO	ENERGY AUDITS
PUERTO RICO	PUBLIC EDUCATION
PUERTO RICO	INTERGOVERNMENTAL COORDINATION
PUERTO RICO	INDUSTRIAL PROGRAM
VIRGIN ISLANDS	PUBLIC EDUCATION
VIRGIN ISLANDS	INTERGOVERNMENTAL COORDINATION
VIRGIN ISLANDS	ENERGY AUDITS
TOTAL SAVINGS	

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ENERGY AUDITS

QUESTION: How much of the supplemental grant funding in fiscal 1978 went to energy audits? How much to other conservation activities? What was the total spent for technical assistance?

ANSWER:

About 39 percent, or $9.1 million, of FY 1978 supplemental grant monies are slated for expenditure on energy audits, with the balance, or $14.4 million, going for other conservation activities.

The total spent for technical assistance to States in FY 1978 will be approximately $200,000. This total represents only the total appropriated for the supplemental program.

QUESTION: Why is it neither of the conservation grant programs require matching funds? Shouldn't the States be expected to put up at least part of the cost of these conservation programs?

ANSWER:

When developing the State Energy Conservation Program it was recognized that most States did not have the immediate resources to undertake the level of effort required by EPCA; even with partial Federal funding. Therefore, the requirement for matching funds was not included as part of the legislation.

Most States, at this point in the development of energy conservation programs, do contribute considerably to the program costs. In some instances State appropriated funds greatly exceed those received from the Federal government. This, however, is not the case in all States. Several continue to face difficulties in raising internal State funds for these programs and require the full Federal funding to continue implementation of their programs.

QUESTION: How much of the first year funding is expected to go to technical assistance and how much to actual energy conservation projects?

Give us your goals for fiscal 1979. How much of the total grant funding do you anticipate will be spent on actual energy conservation projects, and how will that break down between operating improvements and construction?

What level of funding do you project for fiscal 1980 under the three year program for schools and hospitals?

ANSWER: As you know, there are significant differences between the Senate and House versions of the NEA concerning authorization levels. Our best information at this time is that $900 million will be authorized over three fiscal years for schools and hospitals, and $65 million over two years for local governments and public care institutions. The breakdown for preliminary energy audits, (PEA), technical assistance (TA), and energy conservation projects (ECP), at these authorization levels would be:

	PEA	TA	ECP
	(in millions of dollars)		
Schools and Hospitals			
FY 78 or first year	20	56	224
FY 79 or second year	5	44	251
FY 80 or third year	None	21	279
Local Government and Public Care			
FY 78 or first year	7.5	25	N/A
FY 79 or second year	7.5	25	N/A

Before I attempt to deal with the questions concerning the breakout between technical assistance and energy conservation projects, let me first deal with our program goals. One fundamental fact, recognized by the legislation, is that no one has a good data base on what's out there (especially when it comes to local government's and public care institution's buildings).

Therefore, one of the primary objectives of the preliminary energy audit is to get information which will provide a solid base for subsequent technical assistance work. Also, our experience indicates that operating and maintenance changes can generally save 10% to 15%, and often more, of the energy used in a building. So that aspect of the preliminary energy audit is also critical. Finally, the law requires some assessment of the need for retrofit in the building as part of the preliminary energy audit. The degree of need will be an important factor in choosing which buildings receive technical assistance. Technical assistance grants will provide for detailed engineering analyses of buildings. We intend to require both operating and maintenance procedures and potential retrofit actions to be covered. However, as we understand the law, none of the energy conservation project money could be made available to fund operating improvements. The building owner would have to pay the costs, if any, associated with such improvements. It is imperative that these be considered, though, because the economics of a retrofit can change radically after operating improvements are made.

With this background, we can state our goals:

(1) Provide preliminary energy audit coverage to as many buildings owned by eligible institutions as possible.

(2) Require that the scope of technical assistance work include operations and maintenance, and that the results of such work provide basic cost/benefit data for choosing the best energy conservation projects.

The distribution of funds relates to these goals. Since preliminary energy audits will form the basis for deciding where to spend technical assistance money, we hope to use the total authorized, if possible. Similarly, because technical assistance work provides the basis for judging the merit of energy conservation projects, we should use the amounts authorized for this activity also. In other words, if the appropriation is in fact less than the authorization, we would allocate funds across the three phases with an eye to securing the best possible data and information base through preliminary energy audits so that decisions regarding technical assistance and projects will benefit.

Beyond the necessity for hard information for decision-making, there is another reason for this opinion. Funding will simply not allow technical assistance in all of the buildings which receive a preliminary energy audit, but we expect the results of the preliminary energy audit will induce management action to save energy even without the follow-on technical assistance work. Likewise, the detailed engineering analysis resulting from the technical assistance work will uncover far more energy conservation projects than we will be able to fund. Our hope is that in many cases, the institution will implement some of these with their own resources simply because it makes economic sense to do so.

QUESTION: Do you have any idea at this time how the grant funding will be allocated between schools and medical facilities? How does the allocation relate to potential energy savings?

ANSWER: As required by the legislation, neither schools nor hospitals will be allocated less than 30% of the monies. States will determine the funding allocation and application ranking procedures in accordance with DOE regulations. Our regulations currently state that the funding will be allocated between schools and hospitals in each State on the basis of the ratio of the square feet of each of these building types to the combined square feet of schools and hospitals within the State.

In determining these allocations the States will also take into account such factors as energy consumption and cost patterns and potential energy savings. DOE's intent is to lead to the establishment of policies and procedures in each State that will make funding available where the energy and cost savings potential are greatest, while distributing the monies equitably between schools and hospitals facilities.

QUESTION: The grant program for local government buildings, when implemented, provides half the cost of energy audits and technical assistance. Is it assumed that the local governments will follow up with suitable energy conservation improvements?

ANSWER: We believe that when local government officials, as a result of the technical assistance projects, realize the energy saving potential of their buildings they will be convinced that the investment required for follow-up projects would be worthwhile from a cost control and energy management point of view. We anticipate that the work undertaken at the technical assistance phase will persuade some local government officials that significant benefits will accrue from the commitment of funds to energy conservation projects, with or without Federal assistance.

If it turns out that local governments -- or public care institutions, for that matter -- cannot fund energy conservation projects because of their financial straits, the Department of Energy and Congress may want to consider extending financial support to these governments and institutions to provide some assistance in installing energy conservation projects.

QUESTION: How did you arrive at your estimate of one cent per square foot for audits and 10 cents per square foot for technical assistance in the local government buildings grant program?

ANSWER: These estimates result from our experience with regard to similar Federal programs in the past and consultation with professional engineers and others who have performed the activities. Basic costs of preliminary energy audits seem to fall in a range of 1/2¢ to 1-1/2¢, depending on the condition of the building and the commitment of management to energy conservation. Likewise, activities similar to those defined as "technical assistance" programs can vary in cost, from a minimum of about 5¢ a square foot to over 20¢ a square foot. In this instance, these costs are dependent on the preliminary work done to identify and implement operations/maintenance changes, and scope of work undertaken by the architect or engineer. Our estimates are based on this information, which seems to be the best indication of costs likely to be confronted by the States, local governments, and institutions participating in the programs.

QUESTION: Under the budget amendment that is being sent to Congress shortly you are proposing to utilize the $8 million originally budgeted for federal vanpooling for other programs. This leaves only the $700,000 to administer the program. Under the circumstances, what kind of a vanpooling program do you plan to conduct?

ANSWER: The program conducted would promote ridesharing by Federal employees in vanpooling arrangements where the vans are owned, not by the Federal Government, but by individual employees or by other parties, such as leasing companies or transit authorities. Three types of vanpool ownership arrangements are now common in the private sector: the original form in which the vans are owned by the employer, those where vans are owned by individual employees (owner/operators), and those where vans are owned by third parties. The program we propose would rely exclusively on the latter two types of ownership arrangements.

The vanpool program would include: the development of an implementation plan, employee education, the institution of implementation procedures, the dissemination of information to Federal offices, the removal of institutional and regulatory barriers (such as classification for lower insurance rates, regulatory policies at the State and Federal levels, and unclear Federal labor and income tax regulations), and technical assistance for owner/operators.

QUESTION: Since it is apparent that funds to purchase vans are not going to be authorized or appropriated in the foreseeable future, how effective do you feel the federal vanpool program will be?

ANSWER:

There is evidence that a program of vanpool promotion which relies on employee owned and third-party owned vans can be effective in developing the Federal vanpopl program. The recent growth in vanpooling in the private sector has shown that vanpools owned and operated by individual drivers can expand to serve a large market. For instance, at one site where DOE provided technical assistance, in only seven months owner/operator vanpooling expanded to 24 vans, serving 16 percent of the total labor force. In addition, third party owned vanpools have shown promise. Many organizations are currently operating to provide vans directly to Federal

employee operators, with no financial involvement from employers. We believe that a program of promoting employee owned and third-party vans among Federal employees can lead to the achievement of the NEP goal of 6,000 Federal vanpools, in spite of the fact that the vans will not be purchased by the Federal Government.

QUESTION: Please submit for the record a justification of the revised vanpool program under the remaining $700,000 request. Tell us why we should not also delete the $700,000 request.

JUSTIFICATION FOR THE FEDERAL EMPLOYEE VANPOOLING PROGRAM

ANSWER: The DOE program to promote vanpooling by Federal employees will rely exclusively on vans owned by individual employee operators and by nonfederal third parties. Vanpools owned and operated by individual drivers have proven that they can expand to serve a large market. For instance, at one site where DOE provided technical assistance, owner-operator vanpooling expanded in only 7 months to 24 vans, serving 16 percent of the employees. In addition, third-party owned vanpools have shown promise. Organizations are now operating to provide vans directly to operators with no financial involvement from employers. Thus, the recent experience in vanpooling has shown that the Federal Government need not own or lease vans for vanpooling. The following work program is designed to aid and expand owner/operator vanpooling, and, to a lesser extent, to establish pilot programs involving third-party organizations, such as leasing companies, who would make vans directly available to Federal employees. The work will involve both planning and implementation at 15 to 20 Federal employment sites in the first year and at other Federal employment sites in following years:

I. Development of an Implementation Plan: $150,000

- Management planning: $50,000

  Assess the overall decisions about the thrust of the effort to expand owner/operator and third-party vanpooling for Federal employees, including the marketing and educational strategy, priorities for employment sites, the nature of management assistance provided, and the policies with respect to institutional barriers.

- Select sites: $50,000

  Rank Federal employment sites for their potential for vanpooling, taking into consideration such factors as the number of employees, the proportion of long distance commuters, the characteristics of the employees, and the availability of transit service for long distance commuters.

- Develop employee matching tools and other standard implementation measures: $50,000.

II. Employee Education: $125,000

- Design and implement the marketing and educational campaign: $125,000

  Include information for Federal employees about the advantages of vanpooling and the benefits of being the owner/operators of commuter vans. The campaign will be designed to reach Federal employees at high priority sites.

III. Implementation Procedures: $200,000

- Develop organizational and administrative procedures: $75,000

  Establish the means to organize the campaign at each work site, including gaining the assistance of agency management, dealing with regulatory requirements and identifying appropriate site coordinators.

  Model administrative procedures for owner/operators.

- Train site coordinators: $50,000

  Provide necessary information on the steps in setting up and administering a vanpool program and the tools to sell the concept.

- Provide technical assistance: $75,000

  Supply person-to-person technical assistance to coordinators to aid them in the problems they may encounter in establishing a vanpool program.

IV. Removal of Institutional Barriers: $100,000

Assist site management in identifying and overcoming institutional problems such as regulatory constraints and difficulties in securing reasonably priced insurance.

V. Technical Assistance for Owner/Operators: $125,000

- Produce an owner/operator manual: $50,000

  Develop a step-by-step description of what an individual needs to do to purchase his own van, to recruit riders, and to manage his vanpool.

- Cooperate with financial institutions: $25,000

  Achieve arrangements with individual credit unions and other institutions to secure attractive financing for vanpools.

- Assist management at selected sites in working with third-party vanpool organizations: $50,000

  Establish guidelines for agreements between agency management and third-party organizations regarding respective responsibilities for establishing a successful vanpool program. Assist management of pilot sites in coordinating with such organizations.

If the request is deleted, vanpooling among Federal employees will not expand rapidly, and will not approach the level stated by the President in the NEP. Successful vanpool programs at major employment sites in the public sector have been accomplished only through well coordinated promotional and implementation plans. The rapid and orderly growth of Federal employee vanpooling to a level meeting the NEP goal of 6,000 vans will occur only if funding is provided for the DOE program which is outlined above.

QUESTION: While we are on federal programs, tell us what you have accomplished to date under the Federal Energy Management Program. What is the total energy savings to date, and how did you measure that savings? What is the total estimated cost of the full 10-year program for Federal Energy Management?

ANSWER: The Federal Government has saved significant amounts of energy resulting in considerable cost avoidance. The following list of accomplishments is illustrative of the actions and activities undertaken to improve the energy efficiency of the Federal Government.

-- Developed with GSA, through an interagency task force, a Multi-Year Action Plan consisting of a series of initiatives to increase energy efficiency in the Federal Government. The Plan was accepted by the Energy Resources Council in September 1975.

-- Visited 287 Federal installations across the Nation to confirm implementation of energy conservation programs, identify barriers to conservation and to identify energy saving techniques that could be shared in the Federal community. This program was conducted with GSA and the Federal Executive Boards.

-- Promulgated in conjunction with GSA, Federal Property Management Regulations detailing guidelines for energy reduction in buildings, vehicles/transportation and carpooling.

-- Promulgated regulations requiring agencies to appoint energy conservation coordinators to be responsible for implementing agency energy reduction programs and to maintain liaison with DOE (FEA).

-- Developed life cycle costing methodology for use by agencies in developing and implementing 10-year buildings plan.

-- Developed, tested and distributed a manual enabling people with little technical background to identify retrofit projects in existing buildings.

-- Developed a process standard methodology for design of cost-effective, energy-efficient new Federal buildings; currently validating its effectiveness.

-- Funded architectural and engineering surveys to determine energy savings potential in variety of buildings, i.e., school, Public Health service facility, postal facility.

-- Funded implementation of energy management systems (EMS) in selected Federal facilities to determine saving potential of these systems.

-- Evaluated potential of new and existing lighting technologies to be used in revising Federal lighting standards.

-- Assisted the National Park Service in developing comprehensive energy plan.

-- Developed and distributed to Federal agencies "Practical Materials for Teaching Energy Management" - an Energy Resource Manual for use in developing agency education and training programs.

-- Developed architectural and engineering manuals for use in identifying and implementing energy conservation projects in existing buildings.

-- Developed and distributed over 500,000 posters and bumper stickers to increase energy conservation awareness among Federal employees.

-- Collect and monitor (since 1974) quarterly data on energy conservation activities accounting for 99 percent of Government vehicles, 99 percent of Government space and covering 98 percent of the Federal personne

-- Participates in and provides DOE guidance in deliberations of the regional Interagency Motor Equipment Advisory Committees and the national Interagency Motor Equipment Management Committee.

-- Currently developing guidelines to implement 10-year plan for energy conservation in buildings under control of Federal Government.

-- Working with Federal agencies to assist them in preparing their overall plan for energy reduction plan for all other aspects of their operations.

-- Developing manual and worksheets for agencies in implementing life cycle costing methodology.

The cumulative energy savings through FY 1977, measured from an estimated FY 1973 base, have been approximately 440 MBOE or a reduction of 29 percent in energy used. Since the beginning of FY 1975, Federal agencies have collected and reported to the Federal Energy Management Program actual energy use data, which forms the established baseline from whicl all energy reductions are currently measured. FY 1975 is also the baseline year established in both Executive Order 12003 and the sections of the proposed National Energy Act covering the Federal Government. Actual savings through FY 1977 against the FY 1975 baseline have been 28 MBOE or a reduction of 4 percent; 6 MBOE in buildings and 22 MBOE in transportation and equipment.

The potential cost for a full 10-year program for Federal Energy Management, which would include use of solar, geothermal, fuel conversion, alternative forms of transportation and other actions has not been reliably estimated. However, the portion explicitly dealing with Federal buildings, specifically reductions of 20 percent in existing and 45 percent in new buildings by 1985 over 1975 levels has been estimated at $2.67 billion. This investment is calculated to provide a discounted payback in less than 6 years.

Question: How realistic are the FEMP conservation goals? Do you really think you can accomplish reductions of 20 to 40 percent in energy usage by 1985?

Answer: Executive Order 12003 requires all executive agencies to develop plans for energy reduction in all of their operations and for those that own or maintain buildings to develop, in addition, specific buildings conservation plans. It is only in the buildings portion of the agency plans that quantitative reduction goals have been established; 20 percent in existing and 45 percent in new buildings in 1985 over 1975 levels of consumption. The goals for nonbuilding or operations energy use will be established by each agency as part of their overall plan and reported to DOE. It is anticipated that the largest savings, collectively for the Federal Government,

will be in the operations usage. Since 1973, the savings in this area have been 3-4 times as great as those achieved in buildings and facilities. We believe, however, that the 20 percent and 45 percent reduction goals for existing and new buildings are achievable, but with some difficulty.

Question: If federal buildings in Washington, D. C., are any example, there is still a considerable amount of wasteful energy practices. Doors are propped open in the winter because of overheating, garage doorways are left open around the clock with large amounts of heated air escaping. What are you doing to stop these kinds of practices?

Answer: The President has indicated his concern with our national energy situation. The Federal Government has had an energy management program in effect since 1973, and rules and regulations have been codified. It is the responsibility of each agency head, as cited in 41 CFR 101-20.116, and line officials to ensure the recognition of our continuing national problem, to adhere to existing rules and regulations and to eliminate wasteful practices through commitment and actions. Your observation is correct; garage doors are often left open and other wasteful energy practices are to be found in Federal buildings and in all other Federal operations. However, neither the Federal Energy Management Program nor any other entity within the Federal Government has any central enforcement or sanction authority to eliminate such practices. This lack of central enforcement or sanction authority has been recognized since the inception of the program; however, those authorities that do exist have been vested solely with each agency head.

Question: Your request for electric and hybrid vehicles involves reductions in research and development and in studies and program support. Why is this? Isn't there still a lot of important research work to do on electric and hybrid vehicles?

Answer: The reduction of funding for research and development occurs primarily in a decision to stretch out the hybrid program in our analysis of program priorities and allocation of funding. This stretchout is programmatically possible due to the Phase I contractual effort which is currently in progress to have multiple contracts to determine the optimal hybrid concepts to be developed. Near-term battery funding will be reduced slightly due to the selection of the most promising battery technology among parallel developments. The initial supporting studies effort can be reduced due to the smaller effort required for the continuing effort for these studies.

There is still a lot of important research and development work to do for electric and hybrid vehicles to improve the technology so that the vehicles can become commercially viable. The allocation of the funding request for research and development for vehicle systems and technology development and energy storage is over $20 million. Important research and development in near-term electric vehicles will be carried out with the goal of improved performance in later demonstrations.

Question: Please detail how you would implement the proposed $1.9 million loan guarantee and incentives program for electric vehicles. How much is for guarantees and how much for planning grants?

Answer: On Friday, May 12, 1978, the final loan guaranty regulations for the electric and hybrid vehicle program were published in the Federal Register. However, the Department of the Interior and Related Agencies Appropriation Act for fiscal year 1978 P.L. 94-74), requires that prior to implementation of the loan guaranty program, a specific provision permitting such implementation be provided. DOE is planning on implementation of the loan guaranty program when given authority by the Congress in the FY 1979 Appropriation Act. The incentive program was initiated with the publication and distribution of the Program Announcement on the EHV Small Business Planning Grants on May 8, 1978. The closing date for the first series of grants is June 26, 1978.

The increase for FY 1979 is $1.9 million for loan guaranties and incentives. The total request for loan guaranties and incentives in FY 1979 is $2.4 million. Of this amount, $300,000 is set aside for Planning Grants; $1.75 million for loan guaranties and $350,000 for studies and support in both areas.

Question: What interest is there now in industry for electric and hybrid vehicle development? Do you have any idea of the demand for any loan guarantees?

Answer: General Motors has indicated that they are very interested in electric and hybrid vehicles in the commercial van and passenger car market areas. GM plans to market a passenger car in the mid-80's. Fiat has publicly shown a prototype of a four-passenger car for introduction in the mid-80's. Battery producers, such as Gould, and equipment suppliers, such as GE, have expressed a corporate interest in EHV's. However, industry believes that more R&D such as the Government program and their own in-house R&D are needed before EHV's can be competitive.

The current small business firms producing electric cars are desperate for investment capital. Due to the high risk of this technology, these producers indicate that commercial banks require the backing of a Federal Loan Guaranty default fund before granting loans. DOE believes that the demand for loan guaranties will be very high after the funding for loan guaranties is provided by the Congress.

Question: In your judgment, where should federal funding be applied most effectively to stimulate electric and hybrid vehicle development? In research and development or in demonstration and incentives?

Answer: Although the prospects for eventual commercialization of electric and hybrid vehicles are very good, there are a number of barriers which must be overcome. Some of these barriers are technical in nature and require R&D to overcome them. Others can only be removed by stimulating a market for the vehicles and providing incentives to assist the private sector.

The balanced program outlined by Congress in P.L. 94-413, as amended, provides a good framework for simultaneously promoting a technology push and a market pull. The program established by DOE attempts to maintain this balance which in our judgement is vital to the success of the commercialization process.

Failure to fund research and development would result in a lack of vehicle performance that could impact consumer acceptance. The determination of the market potential is accelerated by the program funded by demonstrations and incentives. On the other hand, the development of better vehicles, though vitally important to the commercialization process, is not enough to insure success.

Question: On the basis of the funding level you are recommending, do you think the goal of coming out with a commercially viable electric or hybrid vehicle by 1985 is attainable? If so, at what total Federal investment?

Answer: Electric vehicles produced today are mainly commercial vans and small passenger cars, which are conversions of existing internal combustion vehicles. The 30-50 mile range limitation that exists for these vehicles with today's batteries means that they are best suited to missions involving fixed routes for commercial delivery and service on short-run commuter and in-town trips. It should be noted that current vehicles could satisfy the demands placed on a second car in a multi-car household on 90 percent of the driving days.

With the program currently planned by DOE in response to P.L. 94-413, as amended, we expect to stimulate the penetration of some markets prior to 1985. As advances are made in batteries and vehicle technology, EV's in the mid-80's should become capable of longer range commercial applications, suburban commuter/shopping and moderate range passenger service.

Hybrid vehicles will probably not be ready and commercially viable by that time. The total Federal investment beginning in FY 1976 and extending through FY 1984 is estimated to be $475 million. This includes support for demonstration, incentives and R&D.

Question: Your $57.8 million request for buildings and community systems is only a 5 percent increase over the current fiscal year. It involves reductions in all programs except community energy utilization. How does this square with the President's commitment to energy conservation, since buildings utilize an estimated 32 percent of total energy consumption?

Answer: The commitment to energy conservation in the buildings sector remains high within the administration; however, energy and energy conservation must be considered in the overall scheme of National priorities and funding judgments made accordingly. The small growth results primarily from a major decrease of $2,500,000 in the urban waste area. A detailed explanation of that decrease is given in response to another question. Once the urban waste decrease is taken out of the picture, the request for BCS, with the exception of the community systems activity, is a level-of-effort program. The community systems activity is growing as a result of moving from conceptual studies to demonstrations. In building systems, the converse is true; the program is moving from the phase of placing demonstrations into operation to one of evaluation of the demonstrations. It is hoped that passage of the National Energy Act can pick up some of the slack which will be caused by the level-of-effort Buildings Conservation program.

QUESTION: Please tell us about the projects to retrofit 10 elementary schools. Where does that project stand and what have you learned from it?

ANSWER: The 10 school demonstration project is a continuation of work initiated by the FEA in FY 1976 and by ERDA in FY 1977. It involves the selection of 10 elementary schools (by FEA) for retrofit, and the analysis of the retrofits through hard data gathering (by ERDA & DOE). It is intended to provide both school administrators and consulting engineers the necessary information to select and analyze the cost-benefits of various retrofit options.

Three of the ten schools (Columbus, Ohio; Lincoln, Nebraska; and Kennewick, Washington) were selected for sophisticated data gathering; the installation of approximately 50 sensors in each school provides monitoring capability of all heating, ventilating and air-conditioning systems as well as other energy consumers such as lighting. The retrofits at the Lincoln school are complete, and we should have information about their effectiveness by August. The other 9 schools are in various stages of retrofit, but all schools will be completed by the start of the next school year. Monitoring and analysis will occur over that school year, and the project will be completed by July 1979.

In regard to the learning experience from this project, the following observations are noted:

1. The financing of energy-related projects, particularly retrofit, is of great difficulty for elementary schools. In our project, we required cost-sharing by each school of at least 15% of the cost of retrofit. In nearly every case, even with the caveat of up to 85% subsidy from the Federal government, substantial delays in implementing retrofit actions occurred, primarily due to inadequate availability of discretionary budgeting.

2. We have developed a manual monitoring system for evaluating a school's energy-related operations. School personnel gather certain data (temperatures, occupany levels and activities, electric demand and consumption, etc.) to allow themselves to determine the "efficiency" of their operation. This system allowed us to save money in instrumentation (3, not 10, schools) and provided an involvement of the school personnel in the energy problem.

3. The use of computer simulation for retrofit selection is a tool being championed by the consulting industry that still requires some fine-tuning before wide spread use can be promoted. For retrofit, the input to most computer programs is fairly tedious; no generalizing assumptions can be made as in the design stage of a new building. Currently, many computer programs are too time-consuming to input. We are currently utilizing the 10 school project to validate (in part) the computer program of which we have sponsored development. The program has been written in a flexible format so that its use for retrofit analysis is expected in any major push in retrofit activity, such as the NEA would provide.

In addition to the above accomplishments, we expect to learn a great deal over the next school year in the following areas:

1. The performance of high frequency ballasts for replacement of fluorescent lighting systems -- these are experimental units being installed in the Kennewick school.

2. The performance of an innovative roof insulation system developed by Dow Chemical. Roofs are difficult to insulate due to their lack of protection from the weather on the outside, and their inaccessibility from the inside. The system we are testing is applied to the the roof and may not only allow inexpensive retrofit, but longer life, to roofs.

3. The part-load performance of major air-conditioning equipment will be known. This information, needed by designers and computer simulators, has been unavailable in the past; if any information was known, it came from manufacturers, where test methods were unknown.

In addition to these areas, other technical areas about boiler/chiller performance will be assessed.

The project to date has a Federal cost of about $900K over its two and a half year life. This has gone primarily for instrumentation, retrofit, and preliminary analysis. Next year's funding is planned at a level of 200-250K to complete the analysis and remove some of the instrumentation for use in other projects.

QUESTION: Your building systems program is apparently shifting to retrofitting projects for schools, hospitals and multi-family housing. What will this accomplish?

ANSWER: We have not deliberately shifted our energy conservation efforts to any particular type of buildings. The emphasis on ventilation and infiltration in schools and hospitals may have been misleading, but these studies will be applicable to all residential and commercial building types.

Another factor which may have not been obvious in the building systems description is the ongoing program in other commercial buildings and in single family buildings. Examples of ongoing residential programs from FY 1977 and FY 1978 which continue into FY 1979 are the Annual Cycle Energy Systems, Minimum Energy Dwelling, Twin Rivers, N.J. (Princeton) and projects in residential ventilation, mechanical systems and major retrofitting.

As mentioned in the answer to the previous question concerning the 10 school demonstration program; our involvement is a continuation of an FEA initiated program in schools. We repeat that our objective is to develope and commercialize energy efficient design, construction and operations methods, guidelines and processes for application to new and existing residential and commercial buildings. We did not intend this to apply to schools, hospitals and multi-family only.

Question: You are apparently budgeting nearly $14 million for performance standards in buildings. How is this work being coordinated with the states? What are you doing to insure that we will not have conflicting standards in a few years?

Answer: Coordination with the states is being accomplished jointly between the Department of Energy (DOE) and the Department of Housing and Urban Development (HUD) in four separate activities: (1) A detailed building code study has been completed by the National Institute of Building Sciences. This study analyses the content and status of existing energy codes in all of the fifty states. (2) A request is being sent from HUD to the Office of Management and Budget for grant funds to aid states in implementing the performance standards. Also, DOE will brief the National Conference of State Legislators on performance standards in the Fall. (3) A letter to be signed jointly by the Secretary of DOE and HUD will be sent to each state governor. This letter informs them about the standards work and requests the name of a contact in their state. (4) HUD is planning, in cooperation with DOE, a series of public meetings on the local level to assure early interaction with states in development of regulations for the performance standards.

The National Institute of Building Science has as of last week proposed a process to constantly monitor state standards and provide early identification of potential conflicts. DOE and HUD are jointly evaluating the proposal and will initiate development of an ongoing monitoring and evaluation systems.

Question: It would appear there is potential for considerable overlap in many of your buildings and communities programs. What are you doing to coordinate your work with that of solar, electric, fuel cells, and other advancing technology.

Answer: The effort in the Department of Energy is divided along the lines of technology development and commercialization. For those technologies applicable to the buildings sector, the Division of Buildings and Community Systems has the responsibility to bring to the market place technologies to reduce the demand for scarce resources regardless of which organizational element develops the technology. In order to fulfill our responsibility, and avoid duplication, we have developed a series of internal agreements between our Division and those organizational elements responsible for technology development in order to insure a viable cooperative effort without duplication. For example, in the area of encouraging the use of district heating through retrofit of existing powerplants, both the Division of Buildings and Community Systems and the Energy Regulatory Administration have direct interest. An agreement for a joint effort has been executed, and the ERA participation has been sought and received when we initiated our procurement for district heating demonstrations. The 40 Kwe fuel cell is another example of cooperation. The development of that device has been the responsibility of the Office of Energy Technology. We are working jointly with that Office to transition the program for field test and commercialization. This transition includes joint funding and management of the marketing and commercialization investigations. These types of joint relationships are characteristic of the overall Buildings and Community Systems effort. In addition, we are always concerned about possible wasteful duplication of other Federal efforts and, to minimize such potential, instituted a number of years ago a monthly interagency meeting concerned with energy conservation R&D in buildings in order to have a free exchange of information on a timely and routine basis and thus be able to take advantage of other Federal efforts, rather than knowingly or unknowingly initiating duplicative efforts.

Question: Under community energy utilization, you are budgeting a sizeable $4.5 million increase for integrated systems. Tell us why you need that additional funding and what you will accomplish with it.

Answer: The work in this subarea is designed to accelerate the improvement in the efficiency of energy supply, conservation and delivery at the community scale. The FY '78 budget provided for continuation of one demonstration activity (Grid-connected ICES) and initiation of three other activities through competitive solicitation. The FY '79 increase will allow for the continuation of these three activities, and add one additional. This funding will allow for detailed analysis and initiation of preliminary design for retrofitting existing electric power plants to cogeneration (heat/power) plants and substitute district heating and cooling for gas and oil in space conditioning. Projections show that over 1 quad of scarce fuels may be saved annually by the year 2000 if this activity is successful. Another activity expanded in FY '79 is the utilization of coal as the primary fuel in community energy systems. This work follows the national objectives of substituting coal for gas and oil in major fuel burning installations. The third area that increases is the utilization of central heat pumps. These activities are designed to prove the application of central vs. individual heat pumps and are expected to raise the fuel effectiveness ratio to greater than one. That is to say that supplementing the fuel input by the natural energy in air and water or waste streams will allow more useful energy output than fuel input. All of these activities will use existing technologies and are expected to be in operation in the early 1980's.

Question: You appear to be giving major emphasis to the development of an integrated community energy system (ICES). How do you propose to deal with utility pricing and regulatory problems that might arise?

Answer: It is essential that the Integrated Community Energy System (ICES) be mutually compatible with utility pricing practices and utility regulation. Because of this, major efforts have been and/or taken to not only consider utility practices, but to involve utilities, utility regulatory bodies and other public agencies and bodies in the development and application of ICES. Studies are now in process that identify utility regulation that impact ICES. An MOU has been signed between the Division of the Office of Utility Systems, Economic Regulatory Administration. All of our demonstration/application activities required utilities to be active participants. In addition, we have a special effort to explore what is required to facilitate utility adoption of ICES as a part of their everyday operations. ICES and utilities should be natural partners since both are concerned with providing the community with reliable energy services at the least cost in the most energy efficient manner.

Question: Please supply for the record a detailed justification of the $6.6 million increase requested for community energy utilization. Also explain how you arrived at the total estimate of $19 million for this program?

Answer: The activities in Community Energy Utilization are divided into three subareas or thrusts. The first of these areas, Integrated Systems, constitutes a proposed 4.5 million increase. The utilization of these funds were described above. The second thrust area is Planning Design and Management. This activity is designed to develop and test concepts, tools and methodologies that identify and define roles that community forms and functions play in determination of energy demands and in implementation of conservation options and strategies. The requested increase for this area is 1.6 million dollars and will support increased local community involvement in energy planning. Two activities account for this increase. One is the Comprehensive Community Energy Management Program. This effort will allow for 10-15 local communities to test by application a methodology that will lead to an implementation plan for energy conservation and management. The second activity that is an increase from FY'78, is provision for technical assistance to communities. This is a new start in FY'79. The remaining .5 million increase is in the third thrust area, Implementation Mechanisms. The proposed increase is required to continue the work from FY'78. There are no new starts in this area. The 79 continuation will provide for the definition of the market potential of Integrated Community Energy Systems, assist in providing for means of financing these systems and assist in neutralization of institutional and regulatory barriers. The total estimate from this program (19.4 million) was determined by a series of actions starting at the Program Manager level and continuation through the Branch and Division level. Each Program Manager defined minimum current and enhanced funding for every activity that he/she had programmatic responsibility. Estimates were provided of the potential savings from these activities and the impact of the federal funding as appropriate. Branch and Division management reviewed the program requests and made allocations to each activity based on the expected benefits and the availability of funds as determined by the next higher level of authorization.

Question: Your $8.5 million request for the urban waste program involves a reduction of nearly $3 million. Why are you cutting back on this program which by your own estimates, has a high potential for energy conservation in the near-term?

Answer: The Urban Waste program was initiated by ERDA in FY 1975 and received its first appropriation in 1976. The RD&D program has expanded gradually, with increases annually. The President's

FY 79 budget request reflects this stepwise approach to increasing RD&D efforts in recovery of energy from wastes.

Preparation of the FY 79 budget request was done in advance of final approval of the FY 78 DOE Authorization which established new Sections 19 and 20 in the Federal Nonnuclear Energy Research and Development Act of 1974. The FY 78 authorization PL 95-238, was signed by President Carter on February 25, 1978.

The new Sections 19 and 20 reflect a desire by the Congress to encourage recovery of energy from urban wastes through financial support for demonstrations of new technologies. However, since these authorities did not exist at the time of the President's budget submission, no budget request was included to implement these authorities.

Title IV of the DOE Authorization Act of 1978--Civilian Application, PL 95-238, amends the Federal Nonnuclear Energy Research and Development Act of 1974 by adding a new Section 20 to assure adequate federal support through grants, contracts, cooperative agreements and price supports, to foster a program to demonstrate municipal waste reprocessing for the production of fuel and energy intensive products and to gather information about the energy related technological, economic, and institutional benefits, and impacts of such demonstration facilities. Similarly, Title II adds Section 19y which authorizes assistance for recovery of energy from municipal and industrial wastes through loan guarantees. These innovative financing means provide an excellent opportunity to encourage recovery of energy from presently discarded waste materials. Regulations and guidelines for this assistance are being prepared and a competitive program announcement will allow immediate supoort of feasibility analyses of 4-6 promising projects with FY 78 funds.

Considerable opportunity exists throughout the nation to accelerate the conversion of an estimated 200 million tons per year (by 1985) of municipal waste into useful forms of energy. Several technologies in various states of development could be used to reprocess municipal waste-to-energy. However, institutional barriers and technical and economic risks prevent or inhibit development of technologies and construciton of first-of-a-kind demonstration facilities which can cost as much as $50 - $100 million. The potential for urban waste conversion to energy is very impressive. If 55% of the estimated 200 million tons were processed for energy recovery (a reasonable goal considering waste generation and collection logistics), the Nation would save more than 0.5 million barrels of oil equivalent per day. Commensurate with the energy production of these facilities would be a stabilization of solid waste disposal costs (and possible reduction of sludge disposal costs) to municipalities and amelioration of the environmental impacts of open dumps and landfills.

A comprehensive program utilizing grants and contracts to support feasibility analyses, cooperative agreements for technical feasibility confirmation and/or site preparation and construction, through price support agreements for the products of waste-to-energy systems is the strongest possible accelerator of recovery of energy from wastes and conservation of fossil fuels on a National level.

Dozens of cities throughout the Nation have developed extensive background information for systems which could provide alternate energy sources as well as alleviate critical waste disposal problems. But without DOE assistance, many of these plans will be aborted because of the lack of funds presently available to local facilities; several municipalities are ready to proceed with financing these systems, moving energy recovery from wastes to first priority consideration for local funding support.

Question: Please tell us what you have accomplished to date under the urban waste program, particularly in the area of demonstrations.

Answer:

- Joint plan for resource recovery RD&D is being completed with EPA.
- RefCOM anaerobic digestion facility was completed. The test program has been initiated.
- Case study of Ames, Iowa, resource recovery demonstration plant is being developed.
- A series of workshops were held to broaden understanding of resource recovery and DOE programs and collect information.
- ANFLOW operated at 4,000 gpd.
- RD&D priorities and needs study was updated.
- Initiated development of fluid bed combustor unit operating on urban waste and producing steam.
- Competition for demonstration program to provide initial support for up to 10 projects.
- Competition for combined liquid/solid waste-to-energy program initiated.
- Successful use of activated carbon for enhanced anaerobic digestion.
- Competition to utilize methane recovered from landfills has been initiated in cooperation with private parties and local governments.
- Feasibility study of integrating digestor gas into existing total energy plant initiated.
- Small scale systems are being analyzed for process development and new concepts are being studied.

Question: What technology appears to be most promising in the area of urban waste utilization.

Answer: There are three broad technology areas involved in the recovery of energy and energy intensive materials from urban wastes. These are mechanical, thermal and biochemical. Mechanical technologies separate the waste in fuels (generally the light organic fraction) and materials, iron, steel, aluminum, glass, paper etc. Thermal technologies include combustion or incineration with waste heat recovery producing steam and pyrolysis techniques which produce combustible oils, gases, solids and/or chemical feedstocks. Biochemical techniques are very varied. One of the more promising produces methane although others can produce glucose, soil conditioners, low grade fertilizers, etc.

Of the above technologies, the combustion and mechanical techniques are near term, pyrolysis techniques can be available in the mid term and biochemical techniques are long term. As in all urban waste areas exceptions to each statement above can be found. For example, composting or aerobic digestion is reasonably well developed

and could be implemented now. However, there are major market constraints to composting and most plants to date have failed. This latter statement leads to the last way to classify waste to energy technologies, namely by market applications. Mechanical processing systems produce a fuel plus materials. The target market for the fuel has been large utilities to date. There are severe institutional and potential technological constraints in this market. Another market would be industrial boilers and the techniques to supply fuel to these are under development. The combustion techniques produce steam or hot water. Again the markets are limited. The pyrolysis techniques produce optimal fuels that is fuels that produce easily controlled environmental impacts or displace expensive chemical feedstocks. The promising biochemical process produces methane which can be widely marketed as synthetic natural gas. Unfortunately it is difficult to store until periods of greatest need or highest value.

Question: The budget request for solar applications to Federal buildings is $25.7 million, an increase of $5.7 million over appropriations to date.

The justification says that the 28.5 percent increase is for expansion and acceleration of the program. How did you arrive at the 28.5 percent level? Why not 10 percent or 50 percent? What goals were involved in determining this increase?

Answer: Within this 3-year $100 million program, DOE is proposing a phased approach where significant but manageable amount will be expended in increasing amounts. It is believed that this gradual approach will allow the solar energy industry to meet its increasing demands in an orderly manner thus avoiding too rapid expansion.

The $5.7 million was judged a reasonable increase over the first year funding. A 10 percent increase was deemed to small an increase and a 50 percent could result in too great a demand being placed on the fledging solar industry. The $5.7 million increase will result in approximately half the authorized funding committed by the end of two years.

Question - The justification also notes that this program is contingent upon enactment of the National Energy Act. With more than half of FY 1978 already gone, and your current funding is still not available, how can you justify an expanded 1979 program level? Why shouldn't we reduce the 1979 funding to account for the 1978 program delay?

Answer - Given the late date, expenditure of all FY 1978 funds will not be possible. However, in light of its two year limitation and the numerous projects anticipated, it is believed that all FY 78 and much of FY 79 funds can be obligated by the end of the 1979 fiscal year. DOE has been working with the agencies and departments encouraging them to develop or expand their solar energy programs. The majority of agencies and departments have responded very enthusiastically and DOE believes that there will be enough designed projects or relatively simple projects to get the program under way rapidly.

A reduction in the FY 1979 funding could result in a loss of impetus on the part of the participating agencies and departments as well as adversely affect the solar energy industry which is following the progress of this program closely and in some instances making marketing projections based on the program's funding.

It is anticipated that some of the more complex and advanced systems will be funded during the latter part of FY 79. These projects will be correspondingly higher in cost. A reduction in FY 79 funding could result in delays or elimination of these projects.

Question - Have any solar units been installed to date in Federal buildings? When can we expect to see a working system in the Washington area?

Answer - At the present time there are approximately 40 solar installations distributed around the country in ten Federal agencies. By the end of 1978, the Bolling Air Force Base Commissary solar installation should be completed. Two Federal residential installations at Fort Myer and the U.S. Naval Academy also will soon be completed. All of these were funded by the Solar Demonstration Program. Under that program, a number of solar demonstration systems have been installed on non-federal buildings in the Washington area. The water heating system on Hogate's Restaurant in southeast Washington would be an example. Under the proposed Federal Buildings Program, the first Washington area Federal building solar installation is expected to be completed within one to two years.

Question - You are projecting 50-100 projects in Federal buildings in FY 1978 and an additional 75-125 in FY 1979. Are those goals realistic?

Answer - Passage of the proposed NEA and expenditure of the maximum authorization of $100 million would result in a total of 200 to 500 solar building projects. In light of the late date, expenditure of FY 78 funds will not be fully realized until some time in FY 79. Further delays in the passage of NEA will result in fewer projects actually implemented in FY 78. The actual number of projects accomplished will depend upon (1) the relative mix of funds committed among solar hot water heating, space heating, and space cooling applicators; (2) the percentage contribution of heating or cooling load provided by solar; (3) the available sunlight intensity available at each building site during the heating and/or cooling period; and (4) the overall building heating and/or cooling system demands.

Question - The solar commercialization program would nearly double in your budget request, from $1.4 million to $2.7 million. First, provide a full breakdown of the categories under solar commercialization with FY 1978 and proposed FY 1979 funding.

Answer - The growth from FY 78 to FY 79 is substantial in terms of incremental percentages, but represents minimal funding for a broad category of commercialization planning and implementation activities. A specific two year breakdown is shown below, where Commercialization Planning covers a range of planning and analysis activities necessary to complement those currently carried under the Technology Support and Utilization element of Energy Technology. Commercialization planning as shown below includes the comprehensive examination of solar technologies across the spectrum of potential national or regional markets, and possible federally sponsored initiatives. A substantial portion of the request for this category is necessary to support implementation of the tax credit provisions of

the proposed NEA, and to support the implementation of the NEA schools and hospitals initiative.

	FY 78	FY 79	Increment
Commercialization planning	700K	700	0
Utility Service Program	300	613	+313
DOE/States Consumer Education Program	245	645	+400
DOE/DOL Training Program	155	755	+600
	1,400	2,713	+1,313

Question: What are the accomplishments to date under this program?

Answer: This program is a continuation of the solar commercialization work initiated under the Federal Energy Administration. The results of planning and analysis in the past include provisions in the National Energy Plan for tax credits for business and residents; use of solar heating and cooling in Federal buildings; and financial assistance to states for use of solar equipment in hospitals, schools, and buildings owned by local government; and use of photovoltaics on Federal facilities. These provisions are intended to stimulate the solar market and industry for selected technologies and are based on study efforts which assessed various alternative incentives and levels. Work has proceeded on the preparation of draft proposed rules for implementation of the demonstration of solar heating and cooling of Federal buildings as presently planned. The draft proposed rules have been circulated to and coordinated with the Federal agencies to facilitate early implementation and to incorporate their comments.

QUESTION: You have six hundred thousand dollars earmarked for a joint program with the Labor Department to train solar equipment installers. Is this a new effort in FY 79?

ANSWER: This program was initiated in FY 78 with the signing of a Memo of Understanding in May 78 between the Department of Energy, Department of Labor, and the Community Services Administration. The six hundred thousand earmarked for this effort in FY 79 will be to purchase equipment and materials to train several hundred workers and to install this equipment in approximately 1000 low-income homes in a dozen communities across the nation. Currently, a joint planning effort is underway and approximately 50K will be expended in FY 78 for this effort by DOE.

QUESTION: Who will be doing the training - DOE or the Labor Department?

ANSWER: The responsibility for training will be jointly shared by both the Department of Energy and the Department of Labor. The Community Services Administration will also participate in the training program.

QUESTION: What is the total funding for this program? How much does the Labor Department provide?

ANSWER: The total funding for this program will be approximately $3M. The U. S. Department of Labor will provide approximately $2M of the total amount.

Question - The justification under solar commercialization also mentions guidelines and regulations for tax credits and public utility service. Exactly what are you doing in these areas, and how much of the program budget is devoted to this work in 1978 and 1979?

Answer - The solar commercialization office has formed a task force to develop the Federal regulations and accompanying guidelines required by the NEA. This task force will also carry out technical review of the tax credit program and will prepare technical input to the IRS rulemaking process. In FY 78, $330,000 is identified for these efforts. The FY 79 budget contains $613,000 for the continuation of this effort.

QUESTION:

WHAT IS THE JUSTIFICATION FOR THE MAJOR INCREASES IN CONSERVATION ACTIVITIES?

The following justifications support the major increases in the Conservation and Solar Applications program under the jurisdiction of the Senate Interior Subcommittee.

ANSWER:

Residential and Commercial - The FY 1979 request for $263,200,000 in budget authority is an increase of $137,752,000 from FY 1978. Some of this increase occurs in the community energy utilization program where projects are moving from the feasibility and initial design stages to demonstration. Most of the increase occurs in the weatherization program ($134,784,000) to provide for weatherization of 857,000 homes.

The program is balanced between efforts which start to accumulate savings in the near term (architectural and engineering systems, consumer products, weatherization, and utility retrofit programs) and mid term (community systems, urban waste and technology development). The program will move from feasibility studies to technology development and, where appropriate, demonstrations to develop the energy data that is needed to overcome the institutional impediments to energy conservation efforts.

Industrial Energy Conservation - The FY 1979 request for $49,100,000 budget authority is an increase of $19,550,000 over the FY 1978 level and the increases are directed primarily towards selected demonstration initiatives that build upon prior study and efforts. The major activities increased include industrial cogeneration (demonstrations for simultaneous generation of electricity and thermal energy in industrial applications of glass, paper, chemicals, cement, and textiles) targeted at an estimated savings of 1.9 quads annually by the year 2000. Fifty-seven percent of the increase will be directed to this activity which is closely coordinated with related efforts of the Power Systems Division of DOE.

Twenty-three percent of the increase over the FY 1978 level is planned for the Industrial Process Efficiency Activity which is estimated to save 2.39 quads annually by the year 2000. Notable hardware demonstration activities beginning in FY 1979 are: Designing plan for energy-integrated industrial park (plants grouped together and linked so as to alternately utilize the waste energy); the design of a demonstration facility for the refining of wastelube oil; the hardware design and fabrication of the ultra high temperature heats pump.

Transportation Energy Conservation - The FY 1979 request of $97,500,000 in budget authority represents an increase of $32,517,000 over the FY 1978 level. This increase is primarily related to the heat engine highway systems activities and the electric and hybrid vehicle program.

For example, in the Heat Engine Highway Systems program, hardware development will begin on a gas turbine engine capable of achieving a 30 percent improvement in fuel economy over comparable existing internal combustion engines. Under the Electric and Hybrid Vehicle program, additional demonstration sites and vehicles will be acquired as mandated by P.L. 93-413 and also a financial incentives program including loan guaranties and planning grants.

State/ Local - Of the FY 1979 request of $368,300,000 for State and Local Programs, the $300,500,000 request for the Schools and Hospitals program will support the forthcoming National Energy Act which calls for a cost-shared grant program to implement energy conserving operating and capital modifications in schools and health care facilities.

Solar - In the Federal Buildings Solar program, the $5.7 million increase in the FY 1979 request funds the second year of the program and will provide an additional 75 to 125 projects across the Federal government.

In the Solar Commercialization program, the FY 1979 request is for further studies and selected commercialization experiments to identify specific economic, institutional and legal barriers to solar energy commercialization; for formulation and cost/benefit analysis of market incentives and strategies to overcome those barriers; and for impact evaluation of Federal/State market demonstration incentive programs.

Question: In your budget justification under community systems "selective energy conservation options" will be initiated in FY '79. What are these and how much will they cost? What do you mean in the same statement by "energy conservation planning tools?"

Answer: The "selective energy conservation options" discussed in the budget refer to those opportunities that exist in the urban environment, e.g., large existing multifamily residential developments, to substitute waste energy, waste products and renewable resources for liquid and gaseous fuels. Examples of such technologies include conversion of existing central heating and cooling plants to combined power and heat plants which take advantage of the availability of energy at temperature levels greater than needed for heating and cooling and produce electricity as a byproduct; utilization of waste generated within the complex of buildings as an energy storage and energy source to satisfy peak thermal demands; utilization of central station powerplant rejected heat as a source for a heat-pump-centered systems utilization of retrofit control systems to control energy and power demands of buildings, etc. Specific items have not yet been specified; hence, it is not possible at this point in time to specify costs. In general, however, we tend only to fund the front end design and evaluation expenditures sufficient to allow the funds for construction to be obtained through normal private-sector channels. This front-end work is the lower cost, but higher risk role that private developers, units of local government, etc., are not willing, or cannot, assume.

"Energy conservation planning tools" include both methodologies and analytical devices (both manual and computer based) which can provide for rapid, low-cost assessments of where and how energy is consumed in a community and what economic and energy benefits can be obtained by changes both in technology and the way of doing business. These tools have been available for some time for individual building analysis but have not been forthcoming from the private sector for community analysis.

Question:

Why is the DOE assisting in the development of the gas-fired heat pump? What are the potential energy savings?

Answer:

Gas-fired heat pumps are an unproven technology. This technology contains some unproven economic and technical aspects. DOE's involvement, which is complementing that of the private sector, will accelerate the introduction of the technology in the marketplace. The projects are all cost shared with industry. The gas heating market consists of small companies with small resources and not much R&D capacity. The larger companies tend to make both gas and electric heating equipment. Installed gas furnaces generally operate at seasonal efficiencies of 40-60%. The gas heat pump will at least double this efficiency. If used for heating only, the heat pump would conserve about half the gas presently used, whereas the addition of their use for cooling would, on the average, reduce the overall consumption of natural gas by about one third wherever they are installed. Unlike electrical heat pumps, gas heat pumps will maintain their efficiencies in cold climates. About 55 percent of the homes-40 million dwelling units-are currently heated with gas and will continue to be so for at least the next 20 years. At least 1.5 million gas furnaces need to be replaced every year, and there is a large potential retrofit market in addition to new construction. For specific energy savings, G.E. estimates energy savings of 40,000 BPD in 1990; about 10 percent penetration.

UESTION:

How do present estimates of gas heat pump cost, when in commercialization, compare to that of electric heating and cooling systems? What are initial costs and overall life cost projections? What product efficiencies are to be gained?

NSWER:

Initial cost of the residential gas heat pump is anticipated to be $4,000 (1977 dollars), installed. Within 2 years after gas heat pump introduction, this cost is expected to drop to about $2,500. The installed cost of a gas furnace is about $1,000-1,500; for a gas furnace with electric air-conditioning, $2,500-3,000; for an electric heat pump, $2,600-3,400. Total annual operating costs (energy costs) for the gas heat pump are about $110-330 (the average cost being about $200); for the electric heat pump about $80-825 (average cost being about $550); for the gas furance with electric air conditioning, about $200-450 (average cost being about $325). The payback time for the incremental higher initial costs associated with a gas heat pump versus the gas furnace with electric air conditioning is 8 years; for the electric heat pump, 1.7 years (best case) to 7 years (worse case). Overall average life costs for various systems on an annual basis are: gas heat pump $900; electric furnace and air conditioner, $1,300; gas furnace and central air conditioner, $900; and electric heat pump, $1,100. Gas furnaces generally run at a seasonal efficiency of 40-60 percent; electric heat pumps, 60 percent. Early indications from our development programs indicate that the gas heat pump should run at seaonsal efficiencies two to two and a half that of today's gas furnace.

QUESTION:

Is a change in the home space conditioning structure necessary for installation of the gas heat pump? Can the gas heat pump be used for cooling as well? What is the market potential for the gas heat pump, both domestically and internationally?

ANSWER:

There is no need to change home space conditioning structure for a gas heat pump. It would be installed in similar way as electric air-conditioners and electric heat pumps are. It can be used for cooling as well as heating if equipped with reversing valve.

A realistic potential market for residential gas heat pumps domestically is 1,000,000 units in 1980; 1,500,000 in 1985; and 2,000,000 in 1990. Estimates for international market are about 500,000 units in 1990. The potential for the commercial market is about 1,000,000 tons of equipment.

QUESTION:

At what date is the business go, no-go decision expected for commercialization of the gas heat pump under the current DOE program? Could additional funds be prudently used to accelerate the program for an earlier industry decision? How would $5 million additional affect the program schedule?

ANSWER:

In 1979, in the current program, General Electric will make a pre-commercialization decision--produce 50 to 100 units for field testing (Stirling-Rankine Heat Pump); in 1983 a decision will be made regarding relatively large capital investment to produce 5,000 units per year. Additional funds would allow for earlier industrial decision. Acceleration of the program would allow for completion of field tests in 1981 instead of 1982; completion of pre-commercialization prototype in 1982 instead of 1983 and pilot sales in 1983 instead of 1985.

With the commercial unit, Consolidated Natural Gas/MTI (Rankine-Rankine Heat Pump) will make a decision in 1985 regarding pre-commercialization prototype. With additional funds, field testing could be complete in 1982 instead of 1984; pre-commercialization prototype would be completed at the end of 1982 instead of 1985 and pilot sales would occur in 1983 instead of 1988.

An additional $5 million would cause the above accelerations. There are several components for each gas heat pump. At present these subsystems are being developed one at a time, sequentially. By increasing the level of support to these projects, subsystems could be developed in parallel using a system approach. Some of the specific components to be developed on an accelerated basis are: Stirling-Rankine Heat Pump: compressor, Stirling engine, heat exchanger, innovative magnetic coupling device between the engine and compressor; Rankine-Rankine Heat Pump: steam generator, turbine expander, controls, interface between building distribution and heat pump.

An additional commercial size heat pump system (Brayton-Rankine Heat Pump) would be pursued.

QUESTION:

You have budgeted support for training of installers of conservation technologies. How much is this and will it continue past FY 1979? Have you any commitment by organized labor to continue this training? How is this project coordinated with the weatherization program?

ANSWER:

In FY 1978 we are funding the National Association of Home Insulation Contractors and the Alliance to Save Energy to develop and disseminate a guide for insulation contractors on the safety aspects of installing insulation ($5,000). BCS has not budgeted for the training of installers of conservation technologies for FY 1979. The weatherization program presently has a provision that states they can use up to 10% of their funds for training or technical assistance. This effort, however, will be at the discretion of the states.

Question: Mandatory Appliances

Title III of the EPCA mandates development of voluntary energy efficiency improvement targets for 13 products. The NEP requires a major redirection of the Appliance Program by replacing voluntary targets with mandatory minimum efficiency standards for 7 of the 13 products, and allowing the Secretary descretion to set standards for 6 additional products. Does the Secretary anticipate setting standards for any of the 6 additional products?

Answer: The House version (H. R. 8444) of the President's National Energy Plan (NEP) called for minimum standards to be developed for 13 categories of appliances. However, the Senate version (H. R. 2057) mandated minimum standards for only nine product categories leaving standards setting for the remaining categories to the discretion of the Secretary.

As a result of conference committee efforts to resolve discrepancies between the two measures, the National Energy Act (NEA) currently pending before Congress requires minimum standards to be developed for all 13 product categories leaving only standards for category 14 products at the Secretary's discretion.

* * * * *

Question: This program also depends on authorization by passage of the National Energy Act. You also asked for $2.3 million in the September 1978 supplemental request. Does this FY 1979 request assume your ability to spend the supplemental in the time remaining?

Answer: The '79 budget request is predicated on the fact that all FY '78 Supplemental funds will be dedicated and/or expended during the remainder of FY '78. The first FY '78 Supplemental request constitutes, in its entirety, an essential element in program planning efforts to meet mandated timeframes for minimum standards implementation as proposed by the President in the National Energy Plan. Associated tasks supported by this enhanced funding authorization and which must be addressed during the remainder of FY '78 include the following: (1) identification of product classes; (2) modifications to test procedures to more accurately develop and assess standards; (3) development of a certification/enforcement procedure; and (4) establishment of a date system with which to collect and assimilate technical and economic data submitted by manufacturers.

UESTION:

What is the relationship between the urban waste program and the biomass program.

NSWER:

In DOE, the urban waste program is organized under the Assistant Secretary for Conservation and Solar Applications, while the Fuels from Biomass is organized under the Assistant Secretary for Energy Technology. Many of the developing techniques in Biomass are nearing the stage of the moving from the pilot/proof of concept stage (responsibility of energy technology) to the demonstration/commercialization stage. Current thinking is that the latter functions might be carried out in Conservation and Solar Applications where the two programs may be closely coordinated. Meanwhile both the urban waste and biomass programs are carrying out research in their respective fields that are of mutal interest. To take advantage of and cross fertilize developments and ideas, the branches frequently coordinate and exchange information internally in day to day activities. The first jointly funded project between the two branches, is an R&D effort on pyrolysis of mixed agricultural and urban wastes, which is nearing fruitition. Contract award is expected by the end of this fiscal year.

QUESTION:

What has been the success of waste-to-energy projects so far and how are you planning to enhance this?

ANSWER:

Waste-to-energy plants are complex and highly site specific with respect to economical operation. The few plants that have operated to date have suffered normal problems of working out design difficulties and getting through shakedown to achieve efficient operation. The technical problems which exist in systems can be corrected, as more experience is gained, through RD&D programs to optimize specific unit processes. To illustrate the types of problems that exist the following brief descriptions of operating plants are offered:

SAUGUS, MASSACHUSETTS: This project was constructed by Wheelabrator-Frye, Inc., and is a large (1200 ton per day) waterwall incinerator of European design. The plant is located in an area where waste disposal costs are high ($15-20/ton). The product of the system is steam which is sold to a nearby General Electric manufacturing facility. This project has two important strong points - high normal waste disposal costs which can be applied to provide revenue to the system, and a good, nearby market for the steam product. The estimated cost of that facility was less than $40 million - $30 million was provided by revenue bonds, $10 million provided by Wheelabrator-Frye. Since operation began in 1975, Wheelabrator-Frye has increased its financial contribution by almost $15 million to solve technical operating problems. The main point to be considered is that even though the technology used has been applied previously in over 100 facilities around the world substantial technical improvements were required to successfully transfer this technology for U.S. application and reliable operation to meet contractual commitments to provide the steam product.

AMES, IOWA: This project uses prepared refuse (refuse derived fuel-RDF) as supplemental fuel to coal-fired boilers in a municipally owned electric utility. This technology was first utilized in a pilot plant in 1972 in St. Louis. This project is supported by general obligation bonds of the City of Ames. The problems in this case are both technical and institutional. The project design was based on little operating experience in the larger suspension fired boilers of St. Louis. The smaller Ames boilers have required substantial technical modification to burn this material; grates must be added to the suspension fired unit so that the material can be combusted. This technical modification may be as much as an additional 20% of total project cost. Another problem in Ames relates to availability of waste material and corresponding equipment design and sizing. The design was based on a planned 400 tons per day of waste from Ames and the surrounding communities. This level of waste could have provided income to the plant through sale of recovered materials and RDF, resulting in a net processing cost of $5/ton. However, less than 200 tons/day has been available to the facility and the processing cost, which in Ames is collected in local taxes, has been twice the estimate. Further, until the cost is reduced, there is little likelihood of getting local jurisdictions to dispose of their waste at the Ames facility.

These two very simplified examples illustrate the types of problems which exist in waste-to-energy plants. The systems must operate in the local arena-site specific circumstances must be recognized.

DOE's RD&D programs are aimed at providing options to planners so that the available waste stream can be matched in quality and quantity to the local energy market. DOE shares in applied research projects with the private developers to accept portions of the risk of research efforts. The DOE program covers all aspects of energy recovery, including mechanical, thermal and biological recovery

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technologies. Much of our effort is concentrated on the biological systems which are in general less developed than the others. Our RD&D programs are also aimed at developing economic small scale recovery systems. Most of the operating plants are in the 1000TPD range. To achieve the total potential of waste-to-energy processes the smaller systems must be available to small communities and local industries.

DOE also recognizes the institutional constraints which must be overcome to accelerate use of these processes. In most areas, waste is viewed as a disposal problem rather than a potential energy source. Waste-to-energy systems can be competitive with available waste management alternatives, particularly in life cycle costs and therefore might be financed by various means based on project revenue. To acquire such means, each project must be lead through a discrete series of interrelated steps to develop the project to the point where the necessary capital can be raised. The necessary steps include identification, study and solution of the institutional problems to amass and control the waste stream, to obtain a site, make political arrangements, conduct environmental studies and selection of an optimum option and conceptual design to confirm and develop that option to the point that bonds can be issued and sold. The local government itself generally does not have the operating funds available from its limited budget to risk this study. Recognizing that each community's needs and circumstances are unique, DOE's program supports the necessary feasibility and design studies which lead to effective systems. These studies will generally be supported with direct funds although cooperative agreements will be initiated in some instances to allow recoupment of funds for large design efforts. DOE authorities for loan guaranties, price supports and cooperative agreements will be used to support construction, shakedown and operation of facilities. These innovative financing mechanisms minimize Federal outlays while providing means to accept the technological risks of demonstrations of new technologies.

In summary, the DOE program is aimed at covering all aspects of RD&D leading to acceleration of energy recovery from wastes. DOE recognizes the strong interaction of technical and institutional concerns in effective systems and has targeted efforts to maximize conservation of energy while minimizing Federal outlays.

QUESTION:

To what extent is technology for the conversion of municipal waste ready for commercial demonstration? If Federal loan guaranties were available, would there be any active interest in the private sector?

ANSWER:

Energy may be recovered from urban wastes or other wastes by three basic technologies: mechanical, thermochemical and biochemical. In many systems, these technologies are interrelated so that all might be utilized. As an example, a plant might use mechanical means to separate the organics and inorganics of a solid waste stream, biologically convert the organics to methane and combust the waste from that process to provide plant power. There are a number of specific techniques within any of the technologies that are in varying states of development.

The mechanical technologies generally precede or postcede either of the other technologies. The basic functions are receiving and storage, homogenization and separation. Receiving refuse and refuse storage techniques are commercial. Homogenization and separation subsystems exist in a limited number of instances. One is operating, four are in shakedown and two other plants are in construction. Each has its own subset of problems to be corrected. These problems are both technical and institutional.

The thermal technology has two major divisions. One division is combustion. The refractory and waterwall incinerators mass burning as received wastes with heat recovery have been highly developed in Europe. A limited number (8 plants) have been constructed in the United States. This technique is implementable although some research needs remain. The majority of these will be solved by the proponents. A second version of these plants mechanically produces RDF and then combusts it in a waterwall boiler, dedicated spreader stoker. Two systems are under construction in the United States. The third combustion technique uses RDF as a substitute for coal in existing boilers. Work is underway to develop fluid-bed combustors. The second and lesser developed thermal process is gasification and pyrolysis at various conditions. The products are low to medium heat value gas, organic combustible liquids and char. The optimum product depends upon the specific process. None of these are operating at commercial scale in the United States, although several are ready to be demonstrated. Development work is necessary particularly for true pyrolysis units and samll scale systems.

Although not solely confined to thermal processes, small scale (25 to 100 TPD) systems remain to be developed and optimized. The small starved air modular incinerator with waste heat recovery is near commercialization. Other systems are at various stages and require further development and demonstration.

There are three principal biological techniques at varying stages of development. Compost plants converting sewage sludge and/or solid waste to soil conditioners are commercially available. This technique suffers from exceptional market constraints. The technique of enzymatic (or acid) conversion of cellulose to glucose for fermentation to fuels and chemicals is in development, but is a few years from commercial availability. The anaerobic digestion of the organic fraction of urban solid waste to produce methane is being piloted by DOE and will be available for demonstration in the early 1980's.

The principal actors in demonstrating these systems are the specific developers and suppliers themselves and the local governments who are users of the systems. Dozens of cities throughout the Nation have developed extensive background information for systems which could utilize wastes to provide alternate energy sources. In most urban settings, to utilize 1000 tons per day of solid waste for energy recovery can mean a capital expenditure of $50 million or more to construct the system. The following comments relate directly to the use of loan/bond guarantees to support waste-to-energy systems:

- Loan/bond guarantees are considered most useful in earlier stages of RD&D, especially for demonstrations of innovative or risky technologies.

- Loan/bond guarantees can accelerate implementation of projects by providing easier access to necessary capital.

- Loan/bond guarantees will be particularly helpful in establishing projects because they can be applied such that they are in effect through the first three years of operation of a facility. This shakedown phase is where most operating problems are identified and solved and where immediate availability of capital is critical.

- Loan/bond guarantees are considered helpful in projects involving combustion of refuse derived fuels in utility boilers. Utilities should more readily agree to long-term commitments in projects if guarantees are present.

- Loan/bond guarantees minimize the drain on the Federal Treasury.

DOE has been contacted by over 40 cities and/or system suppliers who are interested in guaranteed loans for construction of facilities. The regulations are now being prepared and DOE will be ready to utilize this financing mechanism in FY 1979.

Question: You are requesting $49.1 million for industrial conservation, an increase of $19.5 million. First, what are some specific energy conservation achievements to date under this program?

Answer: Since the initiation of the program in FY 1976 the activity has developed into sharply focused thrusts selectively directed at the spectrum of industry and agriculture. Project selection techniques are in operation to assure that activities are of highest cost-effectiveness, are not redundant to efforts of industry alone, have an appropriate Federal role, and would be implemented by the private sector once developed.

Several of the cost-shared developments initiated early in the program are coming to fruition at this time. The more notable of these are:

- A successful demonstration is near completion of fumes-as-fuel in paint curing/coil coatings. The demonstration unit is saving 80 percent of the natural gas previously used and, to date, six additional systems are in operation. This one-year old program --which cost the Government $412,000 total -- has already saved 1.5 trillion Btu's of natural gas (which @$1.75 per million Btu represents a savings to date of $2.6 million).

- A successful demonstration will be completed in FY 1978 for a boiler air/fuel ratio control system which, for the demo alone, is saving 75 billion Btu's annually.

- As a result of a DOE/EPA/TVA project, the development of a pipe-cross reactor utilizing the wasted chemical heat of reaction in fertilizer production has been successfully demonstrated and is being rapidly implemented by industry. There are currently sixteen units in operation saving an estimated total of 520 billion Btu's annually in natural gas.

Several additional technologies have progressed into early demonstration or analytical phases including:

- Eight contracts are in demonstration hardware phases for waste heat recovery. Five are directed at high temperature recuperators which are more efficient and cost-effective than conventional units. Three contracts are for industrial heat pumps which operate at higher thermal levels than existing equipment.

- A new crude distillation process has been conceptually developed through computer analysis and is expected to save 46 percent of the energy consumed in conventional distillation.

- Three activities directed at advanced aluminum processes are in hardware phases: pilot-scale tests are being conducted for substitution of coal for

natural gas in aluminum remelt operations and an electrolytic aluminum smelter has been tested with an inert cathode.

- Contractor effort is being initiated for retrofitting obsolete blast furnaces to produce a medium Btu gas.

- Techniques and instrumentation have been developed for auditing energy consumption in a commercial refinery.

- A variety of activities are in progress for increased efficiency in textile processes (foam dyeing, dyestuff filtration, and waste heat utilization) and in paper making (high density headbox and improved black liquor processes).

- An industrial cogeneration program is being initiated pursuant to demonstration of topping cycles in industrial environments. Designs are complete and fabrication has been initiated for application of a bottoming cycle system in glass processes.

- Industrial Energy Conservation targets have been established for the ten most energy-intensive industries and an Annual Report was completed for the Congress and the President.

- Design of a vertical shaft heat exchanger (for preheating glass pellets prior to glass melting) has been completed.

- A parametric study was completed for energy-integrated industrial parks and a PON will be initiated in FY 1979.

The results to date, although significant in terms of actual energy conserved, represent only a beginning and will substantially increase as the numerous activities now in progress come on line.

Question: How realistic are the industry conservation goals of conserving 3.2 and 8.6 quads by 1985 and 2000? What is the total estimated Federal investment to reach those goals?

Answer: The goals of Industrial Energy Conservation as established by considerable analysis are considered challenging but achievable through a highly focused and aggressive program directed at the highest potential targets. The savings of 3.2 quads annually by 1985 is obviously the more difficult due to the small amount of time remaining to penetrate the market with the selected technologies including waste heat recovery, improved combustion efficiency, and cogeneration. The goal for the year 2000 is viewed as readily achievable with a concerted program.

The goals are predicated on a continued, reasonably funded program of diverse activities not only including currently identified projects but also including additional efforts in subsequent years supportive of the goals and building upon the results of the initial work.

The Federal investment to achieve these goals is estimated as $75 to $150 million annually considering significant cost sharing by industry and a high degree of uncertainty as to specific project details in the future years. To conserve 3.2 quads annually by 1985 (which at $3.00 per 10^6 Btu's represents $10 billion per year savings) for this magnitude of Federal cost seems very cost effective especially when compared to the cost of developing new supply options.

Question: For fiscal 1979, 57 percent of the budgeted increases are for projects that will save 1.9 quads annually by 2000, 23 percent for projects saving 2.3 quads, and 19 percent for projects saving 4.1 quads. Why are the biggest increases budgeted for the programs with the smallest energy saving potential?

Answer: Although the focus of Industrial Energy Conservation is directed to the projects of highest energy savings potential, the energy savings-per-Federal dollar vary considerably from project to project even when comparing total project costs. On an annual basis the combinations of differing project phases further complicates comparisons. The percentage increase in any given year for any given project cannot be related to its total energy savings. The percentage increase of a modest but worthwhile program in its early years will be large (even infinity) while the percentage increase of a mature project with large energy savings potential may be very small (or even negative).

The 57 percent ($11,000,000) of the increase over FY 1978 is for a series of industrial cogeneration demonstrations and largely represents equipment and installations at industrial sites. The increase of 23 percent ($4,523,000) is largely for process changes in energy-intensive industries (large furnaces, etc.) and the 19 percent increase ($3,723,000) is primarily for retrofit technologies which tend to be somewhat less costly per energy impact than the other categories.

Even though the energy saving potentials and costs vary somewhat within the total program, all of the efforts are considered significant targets and cost-effective. Projects are selected on the basis of cost, risk, and energy saving potential.

Question: What is the approximate breakdown of effort aimed at energy conservation in large industries compared to small business and industry? Assume the latter to be those that have no or very little R&D capability.

Answer: The Industrial Energy Conservation program is directed at the highest potential targets for energy savings across the wide spectrum of industry and agriculture. Prime considerations in project selection include the degree to which a given industry is pursuing conservation on its own, availability of capital, other competition for private sector capital, and energy saving benefits that will accrue to small industries without R&D capability from the technology development even if a large industry is funded for the development. The program focuses on the energy loss points, develops and demonstrates technologies for improved efficiency, and disseminates the results to all of industry. Therefore, Federal involvement

with large industries facilitates development of advanced technology which benefits the smaller concerns as well. Furthermore, most of the industrial energy is consumed (and wasted) by large industries and it is logical to focus a major effort there.

Approximately 20 percent of the FY 1979 effort will be conducted by small industrial concerns and universities with the majority of these concerns having R&D capability since development of new technology is the prime objective.

Question: Can you justify such a large percentage increase in cogeneration (over 300 percent) when a detailed assessment of the impacts of cogeneration on utilities, industry and the total energy system has not yet been completed? How do you know you will be putting this money into the most promising areas?

Answer: A detailed assessment of the potential impact of cogeneration on industry has been completed. Results are published in two reports by Resource Planning Associates. They are "The Potential for Cogeneration Development in Six Major Industries by 1985," and "A Technical Overview of Cogeneration -- the Hardware, the Industries, the Potential Development." The areas of opportunity for cogeneration are well known. The majority of the funds are programmed for system demonstration activities which are calculated to generate industry interest and to remove the perception of risk associated with application of modern technologies in today's plants. These funds will be heavily leveraged with private funds.

Question: Since there are cogeneration activities ongoing in many industries, shouldn't you be concentrating on ways to spur innovation rather than demonstrate existing or nearly commercial technologies?

Answer: Our program concentrates entirely on innovative systems. Money will be spent on the demonstration of conversion system technologies which have not yet been applied to industrial cogeneration and are therefore not yet generally acceptable.

Question: Apparently 15.3 million of your 1979 request for cogeneration is to take five demonstrations projects into the hardware design, fabrication, and demonstration phase. How much has been invested to date for these demonstrations?

Answer: Approximately 2.5 million of the 1978 budget is devoted to the initiation of these demonstration projects.

Question: What do you expect to gain from demonstrating existing technology?

Answer: Those are existing technologies only to the extent that the prime mover components (gas turbines, diesels, etc.) are available as commercial items. The applications which are envisioned for demonstration will apply these technologies in an innovative way. The impact of the expected penetration of these innovative systems will double the energy savings associated with cogeneration.

Question: Wouldn't it be more effective to promote the use of existing technology and, when it becomes available, the use of advanced cogeneration technology being pursued under the improved conversion efficiency program?

Answer: This is precisely what we are doing. The primary objective of our program is to achieve acceptance of existing technology. Our long range plans call for applications activities to help introduce advanced technologies when they become available.

Question: Realistically, how can DOE claim that appropriation of $300,000 will "ensure an adequate flow of new and existing technology and procedural information to the industrial sector and to promote accelerated implementation of such technologies...?"

Answer: There is an additional $1,700,000 which is included in the waste energy reduction, industrial process efficiency, and industrial cogeneration activities. This amount covers the commercialization and technology transfer related activities for each technology development through the completion of demonstrations and the identification and analysis of existing but underutilized technologies. These related activities include market surveys, exhibits, planning, process-specific seminars, and analyses during the project RD&D phase. The $300,000 is in addition and covers commercialization and technology transfer external to the RD&D effort and after the completion of the demonstration phase. Therefore, there is a total of $2,000,000 of FY 1979 budget authority covering the commercialization and technology transfer activities.

Question: What internal proposals have been made to increase the request for commercialization and technology transfer? What happened to those proposals and why?

Answer: No internal proposals have been made to increase the request for commercialization and technology transfer for Industrial Energy Conservation projects in view of the answer to question number 104. Considering the project phases planned during FY 1979, the total request for technology transfer appears adequate.

QUESTION: The program that dominates Transportation Energy Conservation the Heat Engine Highway Systems sub-program, has placed its major development emphasis on the gas turbine engine and the Stirling engine. (1) What are the goals of the Heat Engine Highway System sub-program in 1985? (2) How do these goals compare with the already mandated 27.5 mpg new automobile fleet average for 1985?

ANSWER: (1) The recently passed Automotive Propulsion Research and Development Act of 1978 (Title III, P.L. 95-238) defines the general goal of the program, i.e., by 1983 to demonstrate significant improvements in fuel economy and emissions in automotive propulsion systems. Specifically, the systems to be demonstrated are expected to achieve a 30-percent improvement in fuel economy compared to the conventional spark ignition engine and the new systems will meet the most stringent exhaust emissions considered by Congress for future years. In addition, the new systems will have the capability to use virtually any liquid fuel available.

(2) The 27.5 mpg standard refers to a fleet average of sales by each manufacturer with the fleets consisting of a wide range of vehicle sizes. The new propulsion systems could be used for vehicles which would normally achieve the 27.5 mpg average (with a conventional engine) and, by replacement with the new system would achieve 35.2 mpg. The new propulsion system could also be used for full size family vehicle to aid U.S. industry in providing to the American public a wider variety of vehicle sizes while ensuring high fuel efficiency to meet the existing standard. Thus, the new, energy efficient engines could permit either higher fuel economy standards (and more energy saving) or provide the public with efficient transportation covering a wide range of vehicle size options to satisfying better consumer needs.

QUESTION: What are the goals of the Heat Engine Highway Systems sub-program for the year 2000? How do these goals compare with the 35 mpg new auto fleet average that appears to be achievable by that date with conventional (spark ignition) engines?

The FY '79 emphasis on aerodynamic designs of rotating machinery and testing of new designs suggest that many more years will be needed to complete the gas turbine development. The Stirling engine seems even farther from commercial status? What is DOE's commercialization schedule for the gas turbine engine? For the Stirling engine? At what point does DOE anticipate that its funding will stop and commericalization be left to industry?

ANSWER: These two questions can be readily answered together.

The program is planned to bring the new propulsion system technologies to the point where they can be demonstrated by 1983. It is industry's decision to commercialize and initiate production from that point in time. Earliest limited production could start in 1987 with 500,000 units produced by 1990. Evolutionary advances in thermal efficiencies could bring the 30 percent demonstrated increase in mpg up to 50 percent during the early 1990's.

QUESTION: The justification says that a "most important" principle in DOE's planning is that the highway engine program supplements industrial R&D. (1) What is the extent of industry co-funding of the DOE work on gas turbine engines and Stirling engines?

(2) What is the extent of proprietary industry programs on such engines?

(3) To what extent is DOE duplicating work that has been done, by the auto industry?

ANSWER: (1) The gas turbine and Stirling engine programs are at different stages of procurement today. Two major multi-year contracts have been signed with Ford Motor Company and Mechanical Technology Inc. (MTI) in the Stirling engine program. In the Stirling engine program, Ford Motor Company is cost sharing 50 million dollars of the total 152 million dollar contract. The MTI contract is written requiring recoupment of 2-1/4 times total government cost if the engine is commercialized.

The gas turbine program is currently going through concept selection phase with the program definition phase being conducted by each of the big four of the U.S. auto industry. Major contracts will be written after this phase. The amount of cost-sharing has not been determined as yet for the next phase.

(2) Proprietary industry programs in this area vary mainly according to the size of the manufacturer. Chrysler and American Motors General do not have proprietary programs in gas turbine and Stirling engines. General Motors (GM) has a commercialization program established for the heavy duty gas turbine planned for large trucks and buses. The Ford Motor Company is cost-sharing the gas turbine ceramics and the Stirling engine programs with the government in order to accelerate technology development.

(3) The current DOE engine development work is being carried out by auto industry members. This relationship provides considerable information as well as insight on industry inhouse programs. To the best of our knowledge there is no duplication of effort between the industry and government programs. In the area of gas turbine and Stirling engine development the current DOE program aims at supplementing and not duplicating industry programs.

QUESTION: DOE reports a 20-25-percent improvement in transmission efficiency for a pre-production model transmission, and a $600,000 increase is requested for 1979. (1) What commercial interest has resulted from this DOE development? (2) How do you plan to encourage it's use by auto manufacturers?

ANSWER: (1 & 2) The major auto industry manufacturers have shown strong interest in the DOE transmission program. GM and Ford Motor are in the process of conducting evaluations of current hardware installed in test vehicles. The problems cited in the past are that additional development is required on the hydromechanical type of transmission in the areas of noise and production cost. Government funding in FY '79 will be used to develop new solutions to the noise problem. Production cost reductions are the role of the industry and not the DOE.

QUESTION: In view of the fact that we must eventually increasingly shift away from petroleum fuels towards synthetic fuels, does DOE think the percentage of the Transportation Energy Conservation Program budget devoted to alternate fuels utilization (5.6 percent or $5,500,000) is adequate?

ANSWER: The percentage of total budget figure is not a good measure of the importance of the Alternative Fuels Utilization Program (AFUP). Rather, it is a reasonable measure of the difficulties facing technology development and end-use of non-petroleum fuels in highway vehicles. The auto industry also is working on the end-use of non-petroleum fuels. Thus, the DOE AFUP is not operating independently but in concert with work being conducted by industry to solve the same problems.

QUESTION: The air transport industry reported recently that airlines had instituted procedures which in 1977 saved 500 million gallons of fuel, even though traffic increased by 38 million passengers. Did DOE play any part in divising these new procedures? Are you familiar with what they did?

ANSWER:

The 500 million gallon savings reported by the air industry refers to a reduction from 1973 consumption levels, not the amount of fuel actually saved in 1977. If we look at the period from 1975 to 1977, we find that the air industry has increased fuel consumption by an average of 3.7% annually, significantly greater than the conservation goals proposed by the President in the National Energy Plan.

The air industry has indeed adopted many fuel efficient operating procedures, most of them in 1974 in response to the oil embargo and the tripling in fuel prices that occurred between 1973 and 1975. However, most of the fuel reductions that did occur in 1974 were the results of restrictive FEA fuel allocation policies and supply shortages which caused the airlines to cut back on flight schedules. Air fuel allocations have since been relaxed and the airlines have restored many of the flights discontinued during the embargo fuel allocation period.

Most of the fuel efficient operating procedures referred to by the airlines were adopted in 1974 and 1975 as a result of the issuance by the Federal Aviation Administration (FAA) of a seven point fuel conservation program, a program fully supported by the FEA. DOE is currently supporting two contracts which are looking at airline operations and maintenance procedures to determine to what extent these fuel conservation procedures have been adopted by the airlines and whether there are additional opportunities in this area for more fuel savings.

QUESTION: Why does nonhighway transport receive only 1.8 percent of your budget when it accounts for something over 20 percent of total transportation energy use?

ANSWER:

The largest energy consuming nonhighway mode is aviation, accounting for about 8 percent of the total transportation energy consumption. The National Aeronautics and Space Administration has an energy conservation budget for this mode almost equal in size to the entire DOE transportation budget; any large effort in this area would likely be duplicative, therefore. The remaining modes consume together approximately an additional 13 percent, and two of those (rail and marine) have some Federal involvement in energy conservation from other Agencies (FRA and MARAD respectively).

The nonhighway modes are in an earlier stage of research - largely one of identifying opportunities of energy conservation. Future years will require larger investments to implement demonstrations of emerging technologies and operating techniques.

QUESTION:

You apparently have $220,000 for Railroad Systems and $190,000 for the Marine Program under Nonhighway Transport Systems. What do you expect to achieve in these areas with that insignificant funding level?

ANSWER:

The railroad program will support two projects -- laboratory testing of alternative fuels for locomotive diesel engines and an analytical assessment of future propulsion systems for locomotives. The alternative fuels lab tests will include runs with various off-spec diesel fuel compositions and non-diesel fuels such as alcohol, gasoline and simulated coal-derived liquids. Project expansion leading to operational demonstrations in cooperation with the rail industry is anticipated in future years. The propulsion system analysis will assess the potential for energy savings attainable through the introduction of new technology into locomotives. Both efficiency improvements and alternative fuel capabilities will be considered for advanced diesel systems and longer range propulsion alternatives such as gas turbines, Stirling engines and fuel cells.

The marine program will also support two projects -- bottoming cycle application to medium speed marine diesel engines and an assessment of coal-oil slurries as contingency fuels for marine boilers. The bottoming cycle program will seek to improve marine diesel operating efficiency on the order of 15% by recovering waste heat from the engine. The coal-oil slurry project will investigate the technical, economic and energy conservation feasibility of coal-oil emulsions for marine contingency/alternative fuel use. Both projects represent initial phases of efforts which may lead to technical and operational demonstrations in future years.

Question: Will the study to evaluate a sample of Federal agency buildings plans to validate agency proposals be done by DOE staff? If not, who will do it and how much will it cost?

Answer: This study, which is aimed at assisting DOE in updating the planning guidelines, recommending changes to the Federal 10-year Buildings Plan, and assisting agencies to meet their energy goals in the most cost-effective way will be carried out by a combination of DOE staff and contractor support. The contractor support will be carried out under the direction of DOE staff and use architects, engineers and others who are experts in the field of buildings energy conservation. The cost of contractor support for this effort is estimated at $150,000.

Question: In FY 78 budget hearing, DOE officials stated that "DOE staff would be relied upon to conduct the actual (agency) plan review and monitoring of agency progress." The FY 79 budget justification states that DOE will submit an annual report of agency progress toward energy goals based on technical review, analysis and evaluations of agency energy reports. How many staff members will be needed to accomplish these reviews and prepare an annual report? Will the staff be sufficient to "work with agencies if it appears that major program changes will be required...to achieve FY 1985 goals?" How many Federal agencies will be reporting to DOE?

Answer: We estimate that a total of 25 staff-years of support will be required to maintain an effective level of program management in the review of agency plans and reports, preparation of annual reports, undertaking annual agency energy budget reviews, providing technical assistance during preparations and possible revisions to agency plans and to provide program continuity. Of this level of support, approximately 10 staff-years are directly associated with the agency plan reviews and report preparations. During those periods of short intense activity such as energy budget reviews and plan approvals, we estimate as much as 43 people may be required. Some of these periodic activity level increases will be met by contractor support. The sufficiency of the staff size and its technical capabilities to "work with agencies" will be dependent upon the nature of any "major program changes ... required ...." If the "changes," for example, involve detailed agency budget review and analysis for OMB, it is conceivable that additional staff support would be required. All Federal executive agencies are required to report to the Secretary of Energy on progress made towards achieving agency goals. Sixty-seven executive agencies are expected to submit copies of their operations plans; of these twenty-six executive agencies with separate building authorites (including Postal Service and the Panama Canal Company) are expected to submit buildings plans for approval.

Question: DOE has not mentioned training in its FEMP budget justification. If FEMP is the overall authority for Federal energy conservation, why doesn't it provide for training of Federal personnel? In particular, there is no allowance for training relating to the technical handbooks and procedure manuals. What assurance is there that agencies will understand and use them?

Answer: Although FEMP is the authority for Federal energy conservation, it is not the authority for training. Training is the responsibility of each individual agency. However, FEMP has developed teaching manuals and other materials to assist individual agencies in training their own personnel. The materials, which include Practical Materials for Teaching Energy Management - A Resource File, Identifying Retrofit Projects for Buildings, Energy Conservation Compendium, and others, have been distributed to agencies in as large a quantity as resources allow. Most of the manuals have been circulated in draft form to agencies for review and comment. Many have been revised after receiving agency comments suggesting improvements to increase their effectiveness. In addition, several of the more technical manuals developed by DOE have been field-tested in joint effort with other agencies prior to final publication. Through these processes, it is assumed that agencies "understand" the manuals. However, DOE does not have the authority to require agencies to use these manuals.

Question: In a report dated December 22, 1977, (EMD-78-2) GAO evaluated the retrofit portion of DOE's draft "10-Year Plan For Improving The Energy Efficiency of Federal Buildings" and made several recommendations for improving the plan. These recommendations addressed areas such as using economic analyses in evaluating and selecting projects for funding, central approval and funding or projects by DOE to insure that the greatest benefits--Government-wide--are obtained, considering energy efficiency when purchasing equipment for buildings, and developing a definition for

energy conservation retrofit projects which would distinguish them for normal repair and alteration projects. What has DOE done to implement these recommendations?

Answer: The GAO report was based on a draft plan prepared at a time when DOE did not have authority to require agencies to undertake specific actions such as those identified in the December 22 GAO report. Since that time, however, Executive Order 12003 has been issued which requires, among other actions, that DOE issue planning guidelines to Federal agencies, and include a mandatory life cycle cost approach for investments in Federal buildings. Thus, most of the recommendations made by GAO on the draft plan are addressed in the DOE planning guidelines. With regard to one of the report's major recommendations, central funding, there exists no legal authority for DOE to centrally fund energy projects.

Question: Although Executive Order 12003 requires OMB to consult with DOE on agencies' energy conservation budget items, how will DOE be able to insure that the Federal Government will receive the most overall benefit in terms of energy and dollars saved from its limited investment in retrofit projects?

Answer: DOE will review, require revisions as appropriate and approve all agency 10-Year Buildings Plans for retrofitting. This will include a review of how agency retrofit projects will be identified, the life cycle cost methods used in costing them and how the projects are prioritized. The agency annual reports will also include costs, cost savings, energy savings and other benefits realized of projects undertaken. Under existing Executive Order 12003 authority, OMB is required to consult with DOE on agency budget requests and, through this mechanism, we believe DOE will have an opportunity to recommend funding for Government-wide projects. However, as DOE does not control the allocation of funds for projects, DOE will not be able to insure that the Government will receive the most energy and dollar benefits from the actual investment. This being the case, it is not intended that agencies submit to DOE detail project data and justification in advance or as part of their energy funding requests to OMB.

Question: The aim of the Federal Energy Management Program (FEMP) is to encourage conservation in the federal government. By its nature the program is more voluntary than mandatory. Should the Congress consider making the FEMP conservation program (mandatory) as outlined in a recent GAO report entitled "Improvement Needed in Department of Defense Energy Conservation Investment Program?"

Answer: The FEMP conservation program is a mandatory program through rules and regulations which have been codified in 41 CFR 101-20.116, Section 381 of the Energy Policy and Conservation Act (EPCA), Executive Orders 11912 (April 13, 1976) and 12003 (July 20, 1977) and various aspects of the proposed National Energy Act, when enacted. Executive agencies are or will be required, by the above authorities, to develop and implement energy conservation programs. However, neither FEMP nor any other entity within the Federal Government has any central enforcement or sanction authority over executive agencies. This situation has been recognized since the inception of the program; however, existing authorities to insure implementation of and adherence to rules and requirements rest solely with the head of each agency.

ENERGY INFORMATION ADMINISTRATION

Question: One of the goals of the Energy Information Administration (EIA) mentioned in your statement is reducing duplication among the various energy data programs. How is it that a consolidation of all the energy information programs results in a budget increase of 32 percent for FY 1979?

Answer: The Energy Information Administration has undertaken as one of its goals the Energy Data Systems Consolidation Project. Phase I of this project includes thirty-five or 12% of the 275 energy data systems. Phase II will include the study of additional systems identified as candidates for consolidation as well as controlling the creation of more duplicative energy data systems. While the system consolidation project will eliminate several small data systems, three large energy data gaps have been found to exist. They are FRS, OGIS and Consumption.

In addition to studying and analyzing these energy data systems for elimination, modification or consolidation, the current systems will continue until the new energy data programs have been thoroughly reviewed and tested. Where possible systems that are candidates for elimination are eliminated as soon as possible and immediate savings to respondents are realized.

The main goals of the Energy Data Systems Consolidation project is the reduction of burden on the public and reliable energy data. There is not necessarily a decrease in monies spent.

Question: How many information systems have been eliminated as a result of consolidation under EIA?

Answer: EIA has eliminated two forms and one energy data system as of May 23, 1978. An additional three forms and systems are targeted for elimination by June 30, 1978.

Question: What dollar savings can be anticipated due to scaling down or eliminating programs?

Answer: It is anticipated that as a result of the elimination, modification or consolidation of energy data programs, the dollar Phase I savings to respondents will be approximately $250,000. Likewise, savings to the Government will be approximately $500,000.

Question: Several efforts within EIA are proposed for expansion or greater emphasis. Why can't these increases be offset by savings from consolidation or elimination of other programs?

Answer: The largest increases are in Congressional mandated and/or authorized programs like the Oil and Gas Information System, Financial Reporting System and Energy Consumption Data. These programs require extensive resources to gather meaningful data. In addition, requirements for all forms of energy data are

increasing rapidly--at a much faster pace than EIA can study and analyze current systems and forms that may be consolidated or eliminated. However, EIA has implemented a consolidation program that should offset some of the costs required for increased energy data.

The following is a list of forms and systems that have been targeted for elimination, consolidation or modification in phase I of the Energy Data Systems Consolidation Project as of March 13, 1978.

Eleven forms and eight systems have been targeted for elimination. They are:

Form No.	System	Name
BOM-6-1321-M	BOM-010	Sales to Trade and Own Use of Petroleum Products - District V
BOM-6-1343-A	BOM-21	Natural Gas Processing
BOM-6-1326-A	BOM-13	Value at Wells of Crude Oil Purchased
BOM-6-1385-A	BOM-025	Pennsylvania Anthracite Production
BOM-6-1387-A		Pennsylvania Anthracite Production Contractors Report
BOM-6-1388-A		Pennsylvania Anthracite Production River Coal Report
BOM-6-1392		Distribution of Pennsylvania Anthracite
BOM-6-1370-A	BOM-024	Coke and Coal Chemical Material
BOM-6-1305-M	BOM-010	Natural Gas Liquids Processing Plants
FEA 100A	Propane/ Butane	Producers and Wholesale Purchasers Resellers
FPC Form 40		Annual Report of Proved Gas Reserves
	BOM-037	Fuel Oil Import by Sulfur Level

The following list includes four forms and two systems targeted for consolidation. They are:

Form No.	System	Name
BOM-6-1340-A BOM-6-1341-A	BOM-019	Supply and Disposition of Natural Gas
	RIS	Regulation Information System
FPC Form 64 FPC Schedule 1840		Natural Gas Operation Information File

The last group is a list of five forms and two systems targeted for modification. They are:

Form No.	System	Name
EIA-5	BOM-031	Coke and Coal-Chemical Material
BOM-6-1308-M		Tanker and Barge Shipment
BOM-6-1325-T		Crude Oil and Petroleum Pipeline Survey
BOM-6-1386-A		Pennsylvania Anthracite Mine Without Preparation Plant
P-124-M-1	RP 272	Crude Oil First Purchaser

There are some forms and systems currently being analyzed to determine if they will be eliminated, consolidated or modified. As soon as the analysis is completed, the respective forms and systems will be placed in one of the above categories. EIA also wishes to remind you that the category of those already categorized could change, depending on the outcome of detailed data and functional analysis.

Question: In marking up the FY 1979 appropriation bill, the House Subcommittee reduced EIA by $4 million. How do you feel about this reduction? (Information Analysis and ADP Services are reduced to the FY 1978 levels, and collection and dissemination is reduced by $1.6 million.)

Answer: The $4 million reduction is mainly in the area of reducing contract support levels for the above programs. This will reduce EIA's ability to utilize specialized expertise which does not exist in-house to develop specialized computer software, perform special analyses, develop new data bases, design new systems, further develop models and document current models, (as recommended by the PART team).

Question: We understand that EIA's request was originally $96.6 million. This reduced to $86.3 million by DOE and further reduced to $63.4 million by OMB. What were your plans for the original request of $96.6 million? What efforts were reduced or eliminated?

Answer: The reductions came in financial reporting; data validation; the National Energy Information System, and energy consumption. Resources requested would have been utilized in the following manner:

1. Financial Reporting System: Provide for expansion of the company sample to the largest 200 petroleum companies and provide for field audits of approximately 35 of the companies surveyed to determine validity of the data submitted.

2. Data Validation: Provide for conducting validation analyses of large energy data areas other than financial reporting and oil and gas reserves (e.g. consumption, conservation, coal, emergency management information, regulatory data).

3. National Energy Information System: Provide data on new technologies and regional energy demand data, and improve access to the NEIS data base.

4. Energy Consumption: Provides for the development and partial collection of energy consumption data for the commercial and industrial sectors through primary data collection surveys and special studies.

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Question: Taking this one step further, what were your plans under the Departmental allowance of $86.3 million?

Answer: Perhaps the clearest way of addressing these issues is simply to state those activities which we will not be able to undertake in FY 1979 as a result of OMB's cut. These are some of those activities:

Information Analysis

We would not implement the integration of the short-term Electricity Forecasting System into EMIS. We would not be able to purchase new models and would not be able to gather geographical detail at the state level for all fuels. We would not be able to more thoroughly analyze coal conversion programs and to implement end-use demand analysis in the vertical or horizontal divestiture on the industry and we would not assess the investment impacts on the nation's economy and on the industry of specific energy policies. We would not be able to analyze the effect of regulatory conservation measures and we would not be able to conduct several kinds of specialized regional analyses and socio-economic impact analyses.

Collection and Dissemination

At the President's budget level we would not be able to increase the computer efficiency of PIES. We would not be able to expand the planned number of states participating in energy information organization and exchange from 14 to 32 states. We would not complete comparative studies of major petroleum companies versus independents and of horizontally diversified companies with coal and uranium companies. We would not be able to redesign FRS forms for nonpetroleum firms.

In the area of data validation, we would not be able to review non-DOE energy data collection programs nor would we be able to conduct validation analyses of any energy data areas other than financial data and oil and gas reserve data. We would not be able to establish external checks on individual system validity, would not standardize an additional 7200 data elements and would not catalog and analyze existing systems to eliminate duplication.

In the area of industry systems and analysis we would not implement a state program for the Regulatory Information System. We would also be unable to improve the current level of access to the NEIS system.

Question: Give us the details for the record, covering both your original request and the Departmental allowance. Provide information on what you planned to achieve under each of these levels and indicate specifically what programs or efforts were reduced or eliminated.

Answer: The attached chart indicates the EIA request to the Department, the Department's request to OMB and the Presidential allowance. Also attached is information, by program, indicating what EIA will accomplish/not accomplish with the Presidential budget submission.

Energy Information Administration FY 1979 Budget Request
(Budget Authority in $ Millions by Decision Units)

	Fiscal Year 1978	EIA Requested	DOE Requested	President's Budget
Collection and Dissemination	19.6	51.7	44.7	32.6
Financial Reporting System	1.4	7.1	6.5	4.5
Data Validation	1.8	8.5	4.7	1.6
NEIS (This includes: Petroleum Demand Watch Monthly Status Report Mo. Petroleum Price Report Mo. Petroleum Stat. Report IEA Support, etc.)	5.8	8.3	7.4	5.2
Energy Consumption Survey	1.3	9.6	7.1	6.9
OGIS	4.4	12.1	12.9	8.4
Fuels Data Gathering (BOM energy data-- Coal, Natural Gas)	3.0	2.9	2.9	2.9
PIES Access	.7	1.3	1.3	1.2
NEIC	1.3	1.9	1.9	1.9
Information Analysis	17.4	27.6	24.3	18.5
Modeling and Forecasting	7.1	10.9	11.4	8.5
Impact Analysis (Economic analysis, macro, micro, international competition)	4.2	6.4	6.6	3.3
Industry Systems Analysis	6.1	10.3	6.3	6.7
RIS	(5.2)			
ADP Services to Other Functions	11.1	17.3	17.3	12.3
Conservation and Solar Application	2.5	3.0	3.0	2.0
Regulatory Activities	4.4	10.2	10.2	7.9
Miscellaneous	4.1	4.1	4.1	2.4
TOTALS	$48.1	$95.6	$86.3	$63.4

ADP support to other DOE activities represents the decision levels for programs of other DOE components

Modeling and Forecasting

Will Do

1) Provides periodic standard forecast results by fuel (short-term) and overall (long-term).

2) Forecast natural gas curtailments.

3) Provides base case scenaios for major policy initiatives.

4) Analyzes effects of taxation, price, regulatory and allocation measures on energy markets.

5) Provides aggregate levels of geographic and industry detail of energy demand.

6) Provides world energy market studies for OECD controls only.

7) Produce legally required documentation of all models.

8) Quarterly international forecasts.

9) Update and document PIES model and forecasts annually.

Will Not Do

1) Integration of the short-term Electricity Forecasting System for EMIS cannot be implemented.

2) New models cannot be purchased and implemented.

3) Geographical detail at the state level would not be available for all fuels.

4) Would not have industrial data to analyze coal conversion programs.

5) Unable to implement end-use demand analysis in the industrial sector.

6) Unable to model the effects of transportation infrastructure, cost and capacity to support reliable analysis of regional supply, siting, and environmental policy impacts on energy markets.

Impact Analysis

Will Do

1) A cursory assessment of competition in energy industries (with no assessments of the competitive impacts of energy actions and developments) would be possible.

2) Provides for six major studies of the national and industrial impacts of energy sector events.

3) Formal economic impact evaluations could be performed for regulatory changes.

4) Three of twelve high priority needs for site-specific regional impact studies could be satisfied at this level of funding.

5) This level of funding would provide analysis of direct and indirect socioeconomic impacts of changes in energy prices to a one or two year time horizon, and to broad socioeconomic groups at the state level.

Will Not Do

1) No evaluations of vertical or horizontal divestiture.

2) No improvements in current national and industrial impact methodologies would be possible.

3) No quantitative assessment investment impacts at the national or industry level of specific energy policies, actions, and developments would be feasible.

4) No resolution or examination of known inconsistencies between energy market analyses and impact analyses could be undertaken.

5) Regulatory actions relating to Conservation measures, electric utility rate restructuring, strategic petroleum reserves, coal conversion programs, appliance efficiency standards and home insulation requirements could not be analyzed.

Will Do

6) Cursory documentation of assumptions, data, models, and methodologies could be provided.

Will Not Do

6) There would be no improvement in current regional impact analyses capabilities, and known inconsistencies between energy market and regional impact analyses could be resolved.

7) This funding level would preclude several kinds of regional impact analyses, including analyses of energy supply disruptions or constraints, analysis of indirect and interregional impacts; analyses of boom town assistance options; and analysis of impacts by industry and regional.

8) Inquiries regarding regional impacts from other agencies, Congress, DOE regional offices, and state interest groups could not be answered.

9) It would provide no capability to analyze the socioeconomic impacts of energy related unemployment or household sector responses to policy that induce long-run adjustments.

10) No improvement in known deficiencies of existing socioeconomic impact models would be possible, with the result that constant demand elasticities across regions and income groups as well as questionable imputations of energy expenditures, would continue to be used.

11) No reduction in current 43 percent bias in Comprehensive Human Resources Data Systems (CHRDS) high income group consumption data would be possible.

PIES Access

Will Do

1) Provide a modeling and forecasting capability to make available the PIES capability to Federal and non-Federal users.

2) Provide manuals and information to aid non-EIA users in understanding and using PIES.

3) Make PIES scenario runs requested by Congress.

4) Maintain a production version of PIES to be used for PIES access.

5) Create PIES access billing procedure for public use of PIES on EIA computer facility.

Will Not Do

1) Will not increase computer efficiency of PIES scenario runs as all requests will not be honored. This will keep PIES costs at a higher level, which will reduce PIES usage by other Federal Agencies and the public.

NEIC

Will Do	Will Not Do
1) Provides for continued operation of central capability to manage and disseminate Energy Information Administration's data and analyses to public and private sectors and to prescribe and implement structures and systems for organizing and accessing such data and information. (This function is not otherwise provided by any other government or commercial activity.)	1) Will not expand from 14 to 32 states active participation in state programs on energy information organization and exchange.
2) Furnishes information management and user services to national clientele, including: local government agencies, business organizations, consumer groups, and the general public.	2) Will not establish first state component of National Energy Library.
3) Functions as national focal point for meeting energy information needs as resources permit, using both in-house and contractor assistance, also supports regional and state energy information programs.	

FRS

Will Do	Will Not Do
1) Provide full scope reporting for approximately 27-30 petroleum companies.	1) Would be unable to complete comparative studies such as profitability of majors versus independents or of horizontally diversified companies within coal and uranium companies.
2) Provide limited interpretation on profitability; horizontal and vertical integration; and effects of government regulations.	2) Unable to complete statistically valid assessments of upstream and downstream operation.
3) Provide limited field audit program.	3) Unable to include about 40 non-petroleum companies engaged in coal and/or nuclear activities in FRS coverage to address horizontal control issue and redesign of forms for non-petroleum firms.

DATA VALIDATION

Will Do	Will Not Do
1. Review proposed energy data systems to ensure that requirement is soundly defined and cannot be met by existing systems. Ensure that:	1. Will not expand new systems review to non-DOE elements. This is a significant gap. For example, Interior collects coal, oil, and gas resources and reserves information on Federal and Indian lands and Census provides energy consumption data via the Annual Census of Manufacturers and other Census publications.
Proposed procedures will yield data satisfactory for the intended use.	

Will Do

Proposed procedures and forms can be applied in the field in a straight forward manner with minimum effort from the respondent.
(500K)

2. Perform a data validation review of five additional Federal energy information systems. This review will focus on the methodology used in measuring and reporting data and its effect on the meaning and accuracy of the resulting statistics.
(600K)

3. Analyze examples of inconsistent data.
(250K)

4. Support standardization of definitions of 5% (1,300 to 26,000) of key energy data elements (now in Energy Data Standards). This effort is important because the lack of standard terms and definitions is the largest contributing factor to duplicative information requests, the lack of credible data, or inadequate data. Energy data elements have never been formally defined, much less standardized.
(150K)

Will Not Do

2. Will not conduct validation analyses of energy data areas other than financial data and oil and gas reserves data.

3. Start (or continue) tracking projections of energy data.

4. Systematically examine energy data to establish external checks on individual system validity, for example, possible inconsistencies. To illustrate: production at oil wells is reported as X "old" barrels per day. Receipts at refineries are reported as X-Y "old" barrels. These numbers should be equal. Why aren't they? (My office is currently investigating this specific problem and will publish a report shortly.) The whole of energy data should be treated systematically in the same manner.

5. Will not standardize an additional 7200 energy data elements.

6. Catalog and analyze existing systems to eliminate duplication or near-duplications.

Energy Consumption

Will Do

1) Residential Sector -- Actual Energy consumption data by fuel type, house structure, and income, with other important demographic, socioeconomic, energy consuming equipment, attitudinal and transportation data; energy consumption for household transportation with trip purpose and other relevant characteristics. Commerical-- Will be starting commercial feasibility study. Industrial -- will be starting the development of energy consumption survey.

Will Not Do

1) Will not have industrial and commercial energy consumption data because of the time frames.

Industry Systems Analysis (former FPC)

Will Do

1) Provides substantive information on electric and natural gas supply and consumption to DOE, in order to assure continuous reliability and adequacy of power and natural gas.

2) Maintain a centralized, up-to-date source of information.

3) Identify and analyze problems and prepare appropriate reports.

4) Collect sufficient reliable information on supply, costs, consumption patterns, problems, trends, technology, and long-range industry plans and outlook.

5) Complete a continuing series of substantive, timely reports to DOE, Congress, industry, the public, etc., and respond to inquiries.

6) The Regulatory Information System (RIS) will collect and process gas and electric information required in regulatory matters from the various respondent utilities. The system will edit and audit all incoming data, organize and structure the information in a series of large scale data bases for on-line access and concurrently produce a series of special and standard reports.

Will Not Do

1) Will not complete design development, and implementation of RIS State Program. This program prevents duplicative reporting of natural gas and power data to the State commission and the Federal Sectors. If the program were instituted the States could fully utilize RIS, its data bases, and its special standard reports.

2) Will not expand current special or standard reports or generalized retrieval programs.

3) Will not develop additional pre-stored structured queries for access to the RIS.

Fuels Data Gathering (former BOM)

Will Do

1) Information on coal, petroleum, natural gas, and other fossil fuels is collected, analyzed and disseminated.

2) The Fuels Availability System (FAS), a computerized data storage and retrieval system, is utilized to assure the prompt availability of current information on the status of fossil fuels production, consumption, imports and exports.

3) Information is disseminated through periodic reports, special publications and responses to requests for information.

Will Not Do

1) The Fuels Data Gathering activity did not request an increase in support. They received their current level.

NEIS

Will Do	Will Not Do
1) Provide for the continued publication of existing reports and limited access to existing data bases.	1) Current level of access would be limited for DOE offices.
2) Provides for overseeing all data gathering activities performed in the DOE Regions.	2) Access would have to be limited for the public except for the highest priority requests.
3) Survey on solar collectors would be continued.	3) Little margin or market shares data could be included in the gasoline monitoring system which will contain only prices.
4) Data on world supplies of oil and gas would be assembled.	4) No new data bases can be documented.
5) To maintain most current energy data bases.	5) The Regional Energy Activity and Demographic (READ) data base would be accessible to other DOE offices only through nonflexible standard format reports.
	6) It does not support anticipated weekly reporting nor the new emphasis on extensive state level participation referenced in the National Energy Plan.

ADP Services to Other DOE Functions

Will Do	Will Not Do
1) Conservation and Solar Applications--Provides data services support for the following: (a) data services support and analysis of GSA data files; (b) data collection and analysis and tracking of program effectiveness in solar commercialization; (c) reduce data from grantee quarterly reports for input into the management information system (MIS) for the purpose of tracking grantee progress and flagging compliance problems; (d) ADP support to MIS emphasizing the monitoring of buildings under retrofit; and (e) ADP support for processing energy audit forms for schools and hospitals, and operation of a grant management system.	1) Data services support to other programs is contingent on the levels approved for their decision units. Therefore, EIA can only support their approved requests and would have no need to show support for levels not approved by the President.
2) Regulatory Activities--Data services support includes: (a) ADP facility operations and management support for propane and synthetic natural gas (SNG) feedstock allocation programs, data preparation, processing and maintenance of systems to support management or propane and SNG feedstock allocation programs. Maintenance and	

Will Do

processing of data to support administration of propane and SNG feedstock allocation programs. Modification of existing forms required for propane and SNG feedstock allocations and development of new forms as required by OMB. Additional ADP facility operations and management support for monitoring of middle distillates and motor gasoline supplies; (b) improvement to expand data coverage of the price monitoring system for motor gasoline to include particular regional and local markets and improvement to computer operation on middle distillate monitoring system to include coverage of particular regional and local markets. Compile version of Compliance Manual (three additional books of 1,000 pages 2,000 copies. Maintain capability for auditing that part of major refiners' computerized accounting system dealing with regulatory matters. Modify and Add to assignment Tracking System and Personnel Locator System due to changing program and regulatory requirements. Access files maintained by Assignment Tracking, Time/Activity and Personnel Locator System for budgeting and workplan requirements. Complete FEA ID numbers to allow mergining of Compliance Case Tracking and Information System (CTIS) information and FEA reports information; (c) contingency planning (Emergency Management Information System) data support including: development of supporting computer systems and design of software packages; identification of key data elements and development of pre-implementation data package.

Support to Miscellaneous DOE Programs--Data services support includes: a) quick response data processing support or studies on electricity; (b) data support--primarily for data collection and analysis in support of reporting requirements for U.S. submissions to the International Energy Agency's Standing Group on Oil Markets and Standing Group on Emergency Questions; and on-going ADP support; (c) development of Coal Production Tracking System; (d) development of Natural GAs Curtailment System; and (e) support of Comprehensive Human Resources Development System models analyses of household sector energy impacts.

Q. Although the net change under information analysis is a reduction, you are proposing an increase of $992,000 for contracting in the modeling and forecasting area. With this proposed increase, how much in total will be earmarked for modeling and forecasting?

A. $8,532,000.

Q. How much of the total budget under modeling and forecasting is for contracting? Shouldn't more of this work be done in-house?

A. A total of $5,000,000 is allocated to contracts. These contracts are divided into four broad categories of activities: development of models and methodologies, updating of information on which EIA models are based, preparation and updating of model documentation, and computer support. The use of contractors for model development permits a variety of specialized skills to be called upon for peak development activity which could not be effectively utilized on a full-time basis. The tasks of documentation and model updating are also most effectively handled by contractors, with careful monitoring by in-house staff, since they involve a considerable amount of mechanical activity. In-house staff are responsible for producing all of EIA's forecasts and analyses, from the detailed planning stage, through model operation or other methodological computation, to writing of final reports. Contractors are used to supplement in-house staff in specialized areas or for mechanical tasks.

Q. There has been some question as to the documentation and verification of some of EIA's models. Will this proposed increase enable you to increase the validity of your models? How?

A. Yes. We would like to have at least minimal technical documentation of all of EIA models by the end of 1979, and expect to improve the usability of documentation for some of our more crucial models. During the preparation of documentation, there would also be more thorough checks and "test runs" to ensure that the models are behaving properly.

Q. In the impact analysis area, there is a reduction of $1.2 million and nine positions. The justification points out this will require individual program offices to assume greater analysis responsibility, and that you must now postpone a proposed energy related investment analysis. If the impact of the reduction is that severe, why are you proposing it?

A. In formulating its FY 1979 budget, given limited resources, the Administration judged that funding for impact analysis, although a high priority activity, had to be balanced against funding for even higher priority activities in the general area of information analysis.

Q. How much will remain in the budget for impact analysis after this proposed reduction, both in terms of dollars and positions?

A.

Salaries and expenses	$1,986,000
Contracts	1,300,000
	$3,286,000

Positions: 50

Question:
Under industry systems analysis you are proposing an increase of $198,000 and 7 positions to implement a state program to collect information on natural gas and electric supply and demand. The justification mentions that this is a cooperative program. Would you elaborate? What is the nature of this cooperative effort?

Answer:
The Respondent Information System (RIS) state program which is incorporated under the Industry Systems Analysis decision unit is not a development or implementation of a new system but rather the expansion of the existing RIS system. Much of the gas and electric data which was collected by the former FPC and the current EIA was also utilized by the various state utility commissions. They use the same forms to collect the data (i.e. the old FPC forms). Throughout the development of the RIS system, there has been a joint cooperative effort with the NARUC Subcommittee and more recently with the individual state commissions. This was accomplished to preclude undue reporting burdens on the utilities. The positions which are being requested will be the first phase of the state program. The positions will for the most part be used to modify, expand and improve the existing RIS software to accommdate the needs of the various state commissions.

Question: The request for collection and dissemination is $32.6 million, an increase of $11.8 million. One of the problems in EIA has been validation of information collected. In your statement, Dr. Moses, you mention the Office of Energy Data Validation. How much is in the budget for this office?

Answer: The Office of Data Validation's request is for $1,567,000.

Question: How does the FY 1979 level for the Office of Energy Data Validation compare with your request to the Department and to OMB? What efforts were reduced or eliminated?

Answer: The EIA Departmental request was for $8,500,000. The Departmental OMB request was for $4,700,000. As to the question on "what efforts were reduced," please refer to a previous question that covered reductions in the total EIA submission.

Question: The justification mentions that by the end of FY 1978 you plan to have validated 14 of the 250 federal energy data systems and to have standardized 5 percent of the 26,000 data terms. Where will you stand at the end of FY 1979 in these areas if the budget request is granted?

Answer: The President's FY 1979 budget would permit pilot validations of five additional data collection systems. Also, using funds included for that purpose in the FRS and OGIS lines ($3.0M and $1.38M respectively), it would permit an effort which we believe to be inadequate to the need in these two crucial areas.

In general, we find it more useful to think of areas of data collection than to merely count numbers of data systems. The funding, as proposed, would not permit any significant expansion of validation effort into new areas of data collection.

We expect that we will have standardized 10% of the 26,000 energy data terms by the end of FY 1979.

Question: What is your target date for completing the validation and standardization work?

Answer: We expect that new requirements for energy data will continue to emerge, and that requirements to validate ongoing data systems will vary among systems and, for a given system, over time. As a result, we will never reach an absolutely stable position with regard to validation and standardization.

However, as a result of the Office of Energy Information Validation reviews of proposed energy data collection systems, new systems being put into operation are better able to collect meaningful information. In time, the inventory of operational energy data collection systems will be replaced by systems which have passed the OEIV review. Because these new systems will have data quality control mechanisms built into their design, they will produce better quality data and will be less of a problem to validate.

With adequate support, we would hope to have initially validated most high priority data systems and to have achieved relative stability with regard to standardizing data terms within three to five years. The work that we are doing to complete this initial validation is not being accomplished in a manner which is treating the problem as one of a "bubble." Instead, we are attempting to establish standards for review procedures and progress to see that those reviews take place in an orderly manner, recognizing that quality in data validation is of paramount importance and must be pursued in an orderly manner. Because of the great difficulty involved in the validation of models, we are progressing more slowly in that area than in others.

Question: Do you intend to validate new systems as they are implemented? Are any new systems contemplated in your validation efforts during FY 1979?

Answer: The Office of Energy Information Validation does perform a careful independent review of every proposed new energy data collection system. This review seeks to ascertain that the requirements have been soundly defined and that the system as designed is prima facie likely to meet those requirements in a manner which minimizes the burden upon the reporting activities. One would hope to be able to do practical field validation of actual data collection system behavior within 6 to 24 months after the system has gone into effect. However, the FY 79 budget only supports a portion of the efforts required to do this, and only for two systems -- FRS and OGIS.

Question: What is the current budget for validation work, both in terms of dollars and people? What is planned for FY 1979?

Answer: The FY 1978 current budget for data validation is $1,845,000. This figure supports 23 positions. The FY 1979 request is for 38 positions and $1,567,000.

Question: You propose a $3 million increase for a Financial Reporting System to develop and implement an annual reporting program for 27 energy companies. When would this program be operational and when could we expect the first quarterly report?

Answer: Section 205 of the DOE Act of August 4, 1977, requires that EIA have a financial reporting system effective for use by mid-1979. First reports are scheduled to be available by September, 1979.

Question: The justification says very little about your proposed $5.5 million increase under energy consumption data activities. Tell us more about the residential data collection program which you plan to implement in FY 1979.

Answer: The design and pretest of a Residential Energy Consumption Survey was begun in late fiscal 1977. Methods are being developed for obtaining accurate data on household consumption of electricity, natural gas, LPG, and fuel oil, and for relating consumption to various characteristics of the household and housing unit. An energy assessment and transportation component are seen as integral parts of the design. An energy assessment would provide detailed data on the energy related characteristics of the structure and characteristics of the major energy consuming appliances within the unit. The transportation component would provide data on actual fuel consumption and miles traveled by individual vehicles. Data from the Residential Energy Consumption Survey will be available in late FY 1980.

In FY 1978, an Interim Residential Survey will be started which would provide limited baseline data on fuels consumption in housing units by type. Preliminary tabulations and analysis of this data will be available in late FY 1979.

Question: The justification also makes reference to designing commercial and industrial consumption surveys. Aren't you already getting this kind of information?

Answer: At present, the Energy Information Administration does not collect statistical data on energy consumption in the commercial and industrial sectors. Data now in use are based on estimates from secondary data sources. The most current are for 1974 for the commercial and 1975 for the industrial sector. However, the commercial sector is a virtual data gap and there is no available means of verifying the data.

Question: What would be different about these proposed new surveys?

Answer: The new commercial and industrial energy consumption surveys will collect data on the actual fuels consumed and the characteristics which influence or determine consumption patterns (such as type of structure, industrial process, major energy consuming appliances, etc.). These data are needed for monitoring, modeling, policy determination, and policy evaluation.

Question: How much of the $5.5 million increase is for the residential program, and what is already in the base?

Answer: The FY 1978 base for consumption data is $1,341,000. Of that amount, approximately $450,000 in contract funds went to the residential program. For the $5.5 million increase for FY 1979, approximately $3.5 million will be committed to the residential sector projects.

Question: How much funding will be allocated to the commercial and industrial data programs in FY 1979?

Answer: In fiscal 1979, it is expected that approximately $1.6 million will be committed to the commercial/nonresidential buildings and industrial energy consumption data programs.

Question:

For your oil and gas information system you are proposing a $4 million increase, for a FY 1979 request of $8.4 million. Why such a large increase in this area? Funding in FY 1977 was only $791,000 and now you are asking for more than $8 million. How independent and reliable will your oil and gas data be?

How did you arrive at the $4 million figure as an increase from FY 1978 to FY 1979? On what did you base the estimate?

How will this money be used? Is it mostly contracting, or for increasing your in-house capabilities?

Answer:

The $4 million increase in this area reflects the developmental nature of the program. The program presently has 16 full-time permanent employees, but the position ceiling will increase to 48 for FY 1979. This accounts for about $1.0 million of the FY 1979 increase. Contract funding will increase by about $1.3 million reflecting operations at a fuller stage of development and also the fact that the full allotment of funds for FY 1978 could not be outlayed during the fiscal year due to the late start-up of the program. Data validation, which was restricted to staff buildup and planning during FY 1978, will increase by about $1.7 million to cover actual auditing of reported data and independent reserve estimates. These increases total to $4 million over the FY 1978 funding level of $4.4 million.

The Oil and Gas Information System seeks to collect data from oil and gas well operators, those who have the most intimate knowledge of day-to-day operations. It is intended that all large and intermediate operators be canvassed thereby covering an estimated 93 percent of annual oil and gas production. A statistical sampling technique is being considered for application to small operators who account for the remaining 7 percent of annual oil and gas production.

The data collected will be subject to audit by a separate office in the EIA. This office will also audit the data collection and handling procedures of the Oil and Gas Information System, and will perform on-site audits at respondent company offices. In some of these field audits, actual reserve estimation input data will be collected with which independent government reserve estimates will be made.

Q. You are planning work in FY 1979 to make the Project Independence Evaluation System (PIES) available to the public. Exactly how do you propose to do this?

A. Although EIA does not yet have a formal procedure for providing public access to PIES (or to its other models and methodologies), we have already been responding to some requests for assistance, such as from the Texas Energy Advisory Committee. In order to develop more formal procedures, EIA has sought an evaluation of access alternatives to include a determination of their responsiveness to ECPA requirements for PIES access. Access alternatives are:

(1) Provide Descriptive Model Documentation and User's Guides;

(2) Provide Periodic Data and Model Results;

(3) Provide Custom PIES Runs Based Upon User-Specified Scenarios;

(4) Provide Terminal Access to Allow Users to Change Data and Rerun Model;

(5) Provide Capability for Users to Change Model Structure on DOE Computer; and

(6) Provide Copies of PIES in Machine-Readable Form with Documentation.

Altenatives (1), (2), and (3) appear at a minimum to be necessary to satisfy ECPA requirements. Development of any or all of alternatives (4), (5), and (6) are highly desireable in terms of providing responsive access although user involvement of the kind called for entails numerous technical and management problems. A new office, the Office of Analysis Oversight and Access (OAOA) has been established within EIA to administer our rapidly expanding program in model documentation, validation, and access. The further development of model accessibility, for PIES and other EIA analysis systems, is part of the office's programs. In addition, staff positions have been identified, against which we are recruiting, that are to enhance the PIES operating group's ability to respond to requests to utilize PIES.

In sum, we are bolstering our staff capabilities to operate PIES in response to requests and developing a program designed to facilitate direct user involvement with the system.

For FY 1979, simplification and enhanced access to specific PIES modules have been programmed in support of EIA's model validation and assessment under OAOA. The modules chosen are oil and gas supply, coal supply, and electric power generating facilities selected and dispatch. In addition OAOA is conducting a staff assessment of the staff and other resources costs of achieving "portability" for PIES among other operating systems consistent with option (6) above.

Q. Will there be a charge for access to PIES? If so, how will you compute it and what will happen to receipts from service charges?

A. There will be a charge for access to PIES (and to other EIA analytical models) for the general public. Although the final details have not yet been completely worked out, the charge would include the computer costs and personnel costs needed to fulfill a particular request. The receipts from charges for access would revert to the Treasury.

The cost of a complete PIES analysis involving DOE staff support varies greatly with the nature of the scenario involved. For a scenario which can be constructed using existing data files and model components, the cost would include approximately 30 minutes of CPU computer time (roughly $400/hour DOE rate or $1200/hour commercial rate), 3 person-hours for initial discussion and planning with the client, 3 person-hours for setting up the PIES run and mechanical checking of the results, 5 person-hours for substantive review and interpretation of results with client, and approximately 20 person-hours for complete writeup and typing of analysis documentation, including specification of assumptions and interpretations of results. The careful documentation of the entire analysis process, which may appear unnecessarily time-consuming, is essential for maintaining EIA's credibility and independence, both in appearance and in fact.

Other scenarios, which encompass energy market details which the PIES models do not currently handle, would require more staff time to develop, implement, and verify the specific mechanisms to be used in simulating the scenario. There would also be more computer time needed to run some of the independent supply and demand models of PIES, as well as more computer time needed to debug the PIES forecast itself. The development of software for more responsive user access will include a proper cost accounting for such access.

Q. The budget proposes a $470,000 increase under PIES. How will this increase be utilized - contracting, in-house, or a combination of both?

A. A combination of both:

By contract	$209,000
In-house	263,000
	$472,000

Q. Is the increase solely for making PIES accessible to the public? If not, what else is planned?

A. Yes. The funds will provide for the creation of specialized computer programs and documentation to simplify and automate the specification of scenarios and computation of service charges for using the various components of PIES. It will also provide some additional resources, both staff and computer, to handle the increased workload which is expected from public requests. Although the additional funds will be aimed specifically at making PIES accessible there is a important by productin as much as the investment in streamlining and automation will also make it easier for in-house staff to run PIES. The time freed by more automation would be used to provide more responsive and better quality forecasts and analyses.

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Question: The request for ADP support is $12.3 million. Although the increase is just over $500,000, there are several larger internal adjustments. How are you able to reduce ADP support to Conservation and Solar Applications by merely $700,000?

Answer: EIA has responsibility to provide ADP support to DOE program offices to gather energy data. Therefore, as a support function, EIA provides only the resources necessary to support the level of activity approved for the FY 1979 budget request by Conservation and Solar Applications. If their activity level increases in the area of energy data, EIA's needs will also increase.

Question: You also propose a $2 million ADP support reduction to miscellaneous DOE programs. Please tell us which programs will take the major reductions, and supply details for the record on exactly how this reduction will be allocated.

Answer: The following table indicates the programs supported; the FY 1978 resources; and the FY 1979 proposed resources:

Program	FY 1978	FY 1979
Resource Applications Coal Supply	588	414
Resource Applications Oil and Gas	1185	613
Resource Applications Electricity	425	0
International Policy	417	365
Consumer Affairs and Special Impacts	690	1000
Congressional and Public Affairs	140	0
Resource Management	259	0
Personnel Management	366	0
Administrative Management	65	0

Question: The increase which affects these reductions is for support to the regulatory programs--up $3.2 million. What is the total budgeted for ADP support to regulatory programs?

Answer: EIA has $4,419,000 budgeted in FY 1978 and $7,901,000 budgeted in FY 1979 for regulatory programs. EIA has responsibilities only for energy data gathering ADP support. The Director of Administration, DOE, has responsibility for all other ADP support within the Department. EIA has no records that would show other ADP support to regulatory activities.

Question: The justification mentions the areas which will benefit from this increase but fails to give dollar figures. Please provide this information for the record.

Answer: The following programs increase over FY 1978 to the levels indicated:

Crude Oil Pricing	$1,196,000
Petroleum Production and Natural Gas Allocation	576,000
Petroleum Production and Natural Gas Pricing	385,000
Emergency Preparedness	612,000
Compliance	2,990,000
Private Grievance	300,000
Utility Coal Utilization	285,000

QUESTION

How many computer systems are currently in operation by EIA? Are these systems leased or does DOE own the computers?

ANSWER

The Energy Information Administration manages and operates three computer systems. These systems are a leased IBM S/370-168-MP4; a leased IBM S/370-158; and a Honeywell H-200 which has both leased and Government owned components.

QUESTION

How much of the total workload is handled by EIA? Is your data service a significant portion of the total ADP budget for the Department?

ANSWER

Utilizing the information contained in the Department's FY 1980 ADP long range planning data with respect to ADP workload requirement, EIA supports 4.3% of the Department's workload in FY 1978. In FY 1979, this support will increase to 4.6%. As reflected in the Department's Schedule 43a, OMB Circular A-11, submitted in February 1978, the EIA ADP equipment budget is 5.9% of the total in FY 1978 and 5.6% in FY 1979.

Questions Submitted by Senator Bayh

QUESTION: In April 1977, the Division of Transportation Energy Conservation, Energy Research and Development Administration, issued a report entitled "An Assessment of the Technology of Rankine Engines for Automobiles." (ERDA-77-54).

The "Assessment" concluded, based on research and development work sponsored by EPA and ERDA that the Rankine Engine:

- produces extremely low exhaust emissions
- provides a quite ride
- has a multi-fuel capability and can utilize broad cut fuels
- is better suited to the use of synthetic fuels derived from coal or shale than the internal combustion engine

And while it also concluded that at the present stage of development, the Rankine Engine was not as fuel efficient as the internal combustion engine, it went on to note that "research opportunities were identified which pointed to increases in fuel economy without degraded emissions."

(1) Has the Division of Transportation Energy Conservation supported any of the "research opportunities" identified as promising in regard to increased fuel efficiency?

(2) The "Assessment" found that in reviewing the state of the art in 1977 "much progress has been made since 1970 in furthering the development of automotive Rankine Cycle

Engines." Does the Transportation Energy Conservation Section have a later progress report on the development of the Rankine Engine for automotive use?

(3) Can the Transportation Energy Conservation Section identify research and development projects currently underway that are designed to improve the fuel efficiency of the Rankine Engine?

(4) What plans does the Transportation Energy Conservation Section have to support research and development work on the Rankine Engine?

(5) How does enactment of the Automotive Transportation research and Development Act affect the TEC's planning for heat engine highway systems?

ANSWER (1) TEC has not supported any of the "research opportunities" identified as promising in ERDA-77-54 report.

(2) ERDA-77-54 reflects the last formal detailed assessment of the subject topic. The Jet Propulsion Laboratory (JPL) is assigned by the DOE to assess all alternative heat engine systems annually has not found any new data or information to change the original ERDA assessment of the Rankine system.

(3) The DOE, TEC is not aware of any programs by government or industry designed to improve the fuel economy of the Rankine engine for automobiles.

(4) TEC is not planning to support R&D on the Rankine engine.

(5) Implementation of the Act accelerates the pace of the current program by reducing the development time to demonstration from 7 to 5 years.

Alternative Fuels Utilization Program

QUESTION: The Alternative Fuels Utilization Program, within the Department's Division of Transportation Energy Conservation, is designed to resolve major outstanding problems in the use of alternative fuels, including alcohol fuels, in conventional automobiles. To date, this program has concentrated on methanol from coal -- not alcohol fuels from renewable resources. The Administration's budget request for the alternative fuels program calls for an increase of $2.9 million, bringing the program up to a level of $5.5 million. This appears to be an insignificant amount, given the fact that transportation currently consumes about 50 percent of all petroleum used in this country.

The Department's budget justification indicates the FY '79 request will be used to zero in on ways to reduce the costs of alcohol fuels; assess the effect of alcohols on distribution and refining systems; and test synthetic fuels to ascertain performance and emission characteristics.

Can you indicate for the Committee how the funds for alcohol fuels will be divided between methanol and ethanol? What specific projects will be undertaken to achieve these goals? What actual demonstrations will be done using alcohol fuels in conventional automobiles?

ANSWER: It is difficult to provide specific figures for work on ethanol and methanol, because the Alternative Fuels Utilization Program (AFUP) activity addresses alcohol fuels as a broad class. Although ethanol characteristics more closely resemble gasoline than do those of methanol, there are relatively small operational differences between ethanol and methanol. Further, if alcohols are to be extensively used, it is expected that a broad range of alcohols will be used in many combinations. To obtain basic data, gain insight into operational phenomena and simplify early and fundamental experimentation, chemically pure grades of ethanol and methanol were used. As experimentation approaches commercial quality fuels to obtain better performance, higher reliability and lower cost the combinations are becoming more complex, and anticipated commercial fuels will be specifically formulated.

Anticipating this, the AFUP projects typically address "alcohol" including both methanol and ethanol. Most data is generated on methanol because it represents a more appropriate worst case condition than does ethanol (automotive and fuel engineering address worst case situations as this as the only meaningful approach to the extremely high product reliability required in the marketplace). However, whenever researchers anticipate that significant differences may exist related to real-world fuel formulation, data are generated on both chemical and commercial grades. Also, since the possibility and actuality of ad hoc marketing of ethanol/gasoline blends has developed, considerably more ethanol data has been derived in AFUP projects.

At this time $200,000 in AFUP project work is specifically aimed at ethanol, a like amount at straight methanol, a comparable amount of ethers (separate or combined with alcohols) and the remainder is broad-based (non-distinguishable) as to application. In all cases, the program is aimed at making the best possible use of the specific types, singularly and collectively, and at achieving viable market readiness.

The next projects to be initiated are on the "Influence of Use of Alcohol Fuels in Highway Vehicles on the Commerical Distribution System" and "Impacts of Alcohol Fuels for Highway Vehicles on the Petroleum Refining Industry." With regard to vehicular demonstrations, only limited engineering test activities are planned involving a small number of automobiles.

Work will be initiated on synthetic fuels to characterize their performance and emissions, and to assess engine/fuels combinations as pre-requisites to future engine design modifications for optimizing the fuel/engine match.

QUESTION: DOE's FY '79 budget request assumes that the Department will be taking over responsibility for the weatherization program designed to assist lower income citizens conserve energy by effective weatherization of their dwellings. In the past much of the responsibility for federal weatherization programs has fallen to local community action agencies with monies administered by the Community Service Administration. There is a great deal of concern in Indiana and other states regarding the Department's plan for implementation of the weatherization program.

What are the Department's plans for the administration of the weatherization monies?

ANSWER: The DOE program's authorizing legislation (Title IV, Part A of P. L. 94-385) provides for grants to the States. The States in turn subgrant the funds to local community based organizations, usually Community Action Agencies (CAAs). CAAs are the mandated delegate local agencies in the DOE program where they are already operating a weatherization program with CSA funding. It should be noted that CAAs mobilize and deliver a variety of programs for the poor utilizing funding from a number of resources including HEW, EDA, DOL, CSA and DOE.

QUESTION: Are there any plans to have the local community action agencies continue to be the major sponsors of weatherization?

ANSWER: Yes, CAAs will continue to be the major sponsors of weatherization under the DOE program. It is a legislative mandate under current statute and the priority will continue under the NEA.

Question

A common complaint heard about DOE's research and development efforts is that they are geared toward projects favored by large corporate energy interests because of the procurement process. Typically, corporations with an eye on federal money use their extensive resources to track federal programs and write either solicited or unsolicited proposals for federal funds to advance their own interests. The process has a built in bias toward promoting technologies from which the major energy companies benefit and ignoring innovative, small scale energy projects developed by individuals or small businesses.

The Department's grant program for appropriate technology in the Division of Conservation and Solar Applications is the only place in the Department where the small businessman or individual scientist can go for federal support of technologies and processes which are energy efficient, simple to operate and maintain, environmentally sound and appropriate for local conditions. The pilot program the Department conducted in the Western region for appropriate technology in FY 1978 was flooded with applications. Yet, the Department requested no increases in this program in FY 1979.

— Can you provide for the Committee the number of applications received by this program in FY 1978?

— The number of awards made?

— The budget increase which would be necessary to extend this into a national program able to harness the inventiveness of our citizens?

Answer

The President's original budget request for FY 1979 did request $3 million for the Appropriate Technology Small Grants program. However, DOE in its recent request to re-program $100 million of the funds contained in the FY 1979 budget requested that $5 million be provided for the Appropriate Technology program. So, DOE has in fact requested additional funding for this program in FY 1979.

Only the pilot regional program in Federal Region 9 has completed a round of solicitation, evaluation and selection. In that program, approximately 1120 proposals were received and 108 proposals valued at $1.3 million were selected. Over 50% of the grants have completed negotiations and those projects are underway.

A program announcement soliciting proposals will be released in July in the Northeast and the Midwest with project selection scheduled for late calendar year 1978.

Question: It is my understanding that the current DOE regulations for weatherization provide money only for the cost of materials while CSA provides limited funds for supervision, equipment, transportation and storage to ensure that the weatherization is done properly and is financially possible for poor families. Can you provide for the record the regulations under which DOE will administer the program? Is the Department contemplating any changes in the regulations that will make the program more effectively serve poor people?

ANSWER: Current DOE weatherization regulations are more restrictive than those which govern the CSA program. DOE has monitored the first six months of program operation with close attention. Experience in the field has taught DOE that, in practice, the grantee States and the CAAs could not find sufficient external sources of funds to utilize fully the grant funds provided for purchasing materials. The National Energy Act (NEA), when enacted, will provide the flexibility needed for efficient program operation. But rather than wait for the passage of NEA, DOE has prepared proposed amendments to the current regulations which provide, within the context of current legislation, the additional flexibility sorely needed during the interim period until passage of NEA. The proposed amendments will be transmitted to the Federal Register for publication by the end of the month.

Question Submitted by Senator Leahy

QUESTION: My concern is that the Community Services Administration weatherized about a quarter of a million homes with $64 million in a time period. There's a question just how many homes DOE has weatherized so far. So if we could get a breakdown by how many actually have been weatherized and how many you anticipate weatherizing.

ANSWER: Based on information supplied to us by CSA, they have completed 225,000 homes to date (over a 4-year period) and they anticipate the completion of 400,000, with the expenditure of FY '78 funds, at a cumulative cost of approximately $213 million. As stated earlier, DOE has completed (in a 4-month period) more than 11,000 homes to date and projects a cumulative total of 393,500 (including FY '78 funds) at a cost of $92.5 million.

Questions Submitted by Senator DeConcini

QUESTION: Although many of the energy programs for low income persons funded through the Community Services Administration has been transferred to the DOE, that agency retains a $10 million budget for energy activities. Is there any overlap between the two programs?

ANSWER: To date none of CSA's energy programs for the low-income has been transferred to DOE. However, it is the intention of the Administration to house the national weatherization effort in DOE. Weatherization is the only overlapping program between DOE and CSA and it will be the only CSA program to be transferred to DOE. CSA's weatherization program is but one part of a much broader program known as Emergency Energy Conservation Services, which provides a wide variety of short-term responses to energy needs of the poor. When CSA's weatherization budget is transferred to DOE, CSA will be free to focus on its other crisis intervention programs.

QUESTION: The argument has been made to me that the energy problems of the poor are the products of poverty and that the CSA can best coordinate all low-income programs including energy programming. Would you agree?

ANSWER: The underlying rationale for the Department of Energy is that a centrally focused attack on this Nation's energy problems will prove far more effective than having fragmented energy programs scattered throughout the Federal Government. Administration of the national weatherization program by DOE is consistent with this philosophy. Administration of this program by an agency only tangentially concerned with energy is not. All other crisis intervention activities, however, will continue to be administered by CSA.

QUESTION: Does the Department see a possible cause and effect relationship between energy inefficiency and other poverty-related problems such as housing, employment, and transportation? Could you list your specific goals for energy programs directed to low income persons and groups? Are the programs to be funded in FY 79 adequate to meet those goals? What evaluation program or process is in place to evaluate those goals and activities? Does this evaluation include impact analysis? How much is budgeted for evaluation?

ANSWER: The DOE Weatherization Assistance Program is not a housing, employment or transportation program. The purpose of the DOE program is to assist in insulating the existing dwelling units of low-income persons, in order to both aid those persons least able to afford higher energy costs and to conserve energy. However, there is

certainly an employment impact associated with this program in that jobs are provided for both management staff and the public service employment workers who install the weatherization materials.

The program goals to be achieved by the end of FY 79 depend upon the level of funding authorized and appropriated and the legislative limit governing the expenditure per home. Projected program goals for FY 1979 under both current and proposed NEA legislation are shown below.

NOTE:

The $210 cost per home here covers only the materials.

Under ECPA Authorization only:

- $80 million in grants will be awarded
- 343,000 homes will be weatherized at an average cost per home of $210 (cumulative program total of 736,500 homes)
- 912,500 barrels of oil annual energy savings

Under NEA Authorization:

The $500 cost per home here covers cost of materials and includes transportation of tools & equipment, on-site supervision and furnace modification.

- $198,750 million in grants will be awarded
- 357,750 homes will be weatherized at an average cost per home of $500 (cumulative program total of 751,250)
- 1.07 million barrels of oil annual energy savings

The program is undergoing constant evaluation as DOE pursues its rigorous monitoring effort. Grantee and subgrantee offices are visited to determine whether or not program guidelines are being met, and actual site-visits are made to determine if weatherization projects are in compliance with program regulations and prescribed standards for materials and workmanship. In addition, a formal evaluation will be completed in FY 1979. Among other things, it will examine the impact of the program on the energy needs of the poverty community and the relative success in meeting program goals. The amount budgeted (FY 79) for this evaluation is $100,000.

Question Submitted by Senator Hatfield

Question: The Energy and Natural Resources Committee has agreed to an increase of $10.5 million in the authorization for a Home Heating Oil Conservation program. $6 million would be for a demonstration program on the retrofitting of existing technologies, including the flame-retention burner, smaller, less wasteful nozzles, flue dampers and other stack heat recovery devices. The retrofit demonstration program would include training for retailers and installers and monitoring of the savings for information

dissemination. $4.5 million would be added for research and development of new designs for boilers and burners, including oil heat pumps. Do you see a need for this type of additional effort in the oil heat area?

Answer: Over 14 million home heating oil installations are in use in the U.S. These account for almost 3 quads of energy yearly, or 1 out of every 6 barrels of oil we import. Seasonal furnace efficiency now averages 55%. It appears that average efficiency could be raised to about 70% with the use of retrofit fuel saving devices and methods. This seasonal efficiency could be improved to about 80% by using advanced technology oil burners, boilers and furnaces. Through the use of oil-fired heat pumps, seasonal efficiencies could more than double seasonal efficiencies of today's heating systems. Energy savings that could result from commercialization of successful research and development in these areas are enormous. If 5% savings eventually resulted due to the knowledge disseminated as a result of these demonstrations, almost half a billion dollars could be saved on our balance of payments.

At present DOE's only oil space heating activity is a small (approximately $450,000) program. An additional $250,000 is available in the existing FY 1978 budget. The oil heating industry has no space heating improvement program and has requested Government funding for a comprehensive program.

In summary, we believe that this type of additional effort in the oil heat area is needed if the U.S. intends to significantly reduce the amount of oil it consumes and imports.

Senator BELLMON. I want to congratulate you for what's being done in conservation. I've been watching the energy consumption figures, and it's pretty obvious that we're making an impact. I'm not sure whether it's being done through the legislation that's been passed, or whether it's because of higher costs of energy. And I would hope, when you come back next year, you might be able to tell us just why it is that people are becoming more energy-conservation conscious.

Mr. BEATTIE. We will make every effort to do that, Mr. Chairman.

Senator BELLMON. All right.

SUBCOMMITTEE RECESS

The subcommittee will now stand in recess until 10 a.m. tomorrow, when we will continue with further hearings on the Department of Energy budget.

[Whereupon at 2:45 p.m., Wednesday, May 17, the subcommittee was recessed to reconvene at 10 a.m., Thursday, May 18.]

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1979

THURSDAY, MAY 18, 1978

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:10 a.m., in room 1224, Everett McKinley Dirksen Office Building, Hon. Henry Bellmon, presiding.
Present: Senators Huddleston, Young and Bellmon.

DEPARTMENT OF ENERGY

RESOURCE APPLICATIONS

STATEMENTS OF:
GEORGE S. McISAAC, ASSISTANT SECRETARY FOR RESOURCE APPLICATIONS
ROBERT D. THORNE, ASSISTANT SECRETARY FOR ENERGY TECHNOLOGY
GEORGE FUMICH, JR., ACTING PROGRAM DIRECTOR FOR FOSSIL ENERGY, ENERGY TECHNOLOGY

ACCOMPANIED BY:
CARLYLE E. HYSTAD, ACTING DIRECTOR, OFFICE OF STRATEGIC PETROLEUM RESERVE
ROBERT E. NELSON, DIRECTOR, NAVAL PETROLEUM AND OIL SHALE RESERVES
DELMAR D. MAYHEW, ACTING DIRECTOR, OFFICE OF BUDGET

OPENING REMARKS

Senator BELLMON. The subcommittee will come to order.
Today we are scheduled to complete our hearings on the Department of Energy. This morning we will cover requests for the Strategic Petroleum Reserve and programs under the "Energy Production, Demonstration, and Distribution" account. This afternoon's session will center on fossil energy programs. In the case of the Energy Information Administration, we will submit additional questions to be answered for the record at the close of this hearing. Most of the EIA budget questions were inserted at the close of yesterday's hearing and appear on page 715.

OPENING STATEMENT

Mr. McIsaac, please introduce those who are with you to testify on behalf of the programs to be covered this morning. We will place your statement in the record at this point.
[The statement follows:]

PREPARED STATEMENT OF GEORGE S. MCISAAC

ASSISTANT SECRETARY
FOR RESOURCE APPLICATIONS
DEPARTMENT OF ENERGY

Mr. Chairman and members of the Committee, it is a pleasure for me to be here this morning to testify on behalf of the Department's FY 1979 Budget Request. I am accompanied by Captain Robert H. Nelson, Civil Engineer Corps, United States Navy, who is the Director of the Naval Petroleum and Oil Shale Reserves and Carlyle E. Nystad, Acting Director of the Strategic Petroleum Reserve Program. They will review their respective programs in more detail after my remarks.

As this is my first appearance before this Committee, I would like to take the opportunity to provide you with a broad overview of the missions and responsibilities for the Office of Resource Applications.

Missions and Responsibilities

The principal mission of Resource Applications is to accelerate the development of environmentally acceptable supplies of energy to provide for the Nation's energy demands. This will be accomplished by a variety of tools yet to be determined, but including: incentive programs to promote commercialization of technically proven energy sources, identification and resolution of institutional barriers to the introduction of new sources of energy supplies, and commercial demonstration.

At this time, of course, our primary responsibilities involve ongoing energy delivery operations associated with power marketing and oil production from the Naval Petroleum Reserves, plus development of an emergency energy preparedness capability in the form of the Strategic Petroleum Reserve.

I should emphasize that our role with regard to accelerating the introduction of new technologies is still evolving - as quickly as our new organization can proceed.

Now, I will briefly discuss the major program activities in Resource Applications.

Power Marketing

The five power administrations - Alaska, Bonneville, Southeastern, Southwestern, Western and Alaska - transmit and market electricity generated from facilities operated by the Army's Corps of Engineers, the Department of the Interior's Bureau of Reclamation, and the International Boundary and Water Commission. In FY 1977, the energy marketed by these administrations totalled 110 billion kilowatt hours, resulting in revenues to the Government of $667 million. Budget authority for that year was $134 million of which $27 million was for construction. For FY 1979 the budget request is $127.5 million. This does not include $48 million in planned obligations for the Bonneville Power Administration which is financed on a revolving fund basis.

Emerging Energy Sources

The major activities of the Emerging Energy Sources Office will be administration of the Geothermal Loan Guaranty Program and the development of low-head hydropower.

The Geothermal Loan Guaranty Program has received ten applications totalling $101 million. At this time we have issued guarantees on three loans totalling $14 million. Guarantees have been given to Republic Geothermal Inc., Geothermal Food Processors Inc., and CU 1 which is composed of GEOMAC Inc. and McCullough Oil. The remaining seven applications are being processed now. Based on present authorizations the Department can guarantee loans up to a total of $300 million. Therefore, about $200 million in guarantee authority remains. From previous appropriations $6.6 million in budget obligation authority remains to operate and support the program. Consequently, we are asking no additional funding in the FY 1979 Budget Request.

Low-head hydropower projects are currently administered by the Office of Energy Technology. However, during 1978 Resource Applications will take over the electric power development program for low-head hydro. Three positions and about 25 contracts for resource and environmental asessment and engineering development studies will be transferred.

Coal Utilization and Supply

The Coal Utilization and Supply Office will find new ways to use coal in environmentally acceptable and economic ways. The possibilities include coal gasification and liquefaction, fluidized bed combustion, and other technologies which will help shift our Nation's energy use from oil and gas to coal.

We are currently going through a very deliberate and thorough process of evaluating the state of these technologies, their institutional and environmental impediments, and their market potential. From this effort, we will develop commercialization programs that will most significantly increase the use of coal. Since specific programs have not yet been defined, no funds are sought in the FY 79 Budget Request.

To encourage and promote an increase in the production of coal, the FY 1979 Budget Request does include $1,565,000 to provide for assessing national mine expansion capacities, to assist in the development of coal resources on Indian lands, and to determine the impact of various parameters on coal production.

In addition, the Coal Loan Program, authorized by the Energy Policy and Conservation Act of 1976, will be administered under this function. This program, intended to increase production of low-sulfur underground coal by providing loan guarantees to small coal operators, will be ready for implementation this summer. Funding for the program in the amount of $6,915,000 will come from a FY 1978 Supplemental Budget request recently approved by Congress.

Naval Petroleum Reserves

The FY 1979 Budget Request includes $199,005,000 for continued development of the Naval Petroleum and Oil Shale Reserves. Congress authorized production of these reserves at their maximum efficient rate in 1976. Now a total of 32 exploratory

wells and 855 development wells are planned to be completed by the end of FY 1978.

Presently, Naval Petroleum Reserve No. 1 at Elk Hills is producing at a rate of about 120,000 barrels of oil per day. When the field is fully developed in 1980, the maximum efficient rate of production is anticipated to reach 260,000 barrels of oil per day. Production at this rate is mandated by the Naval Petroleum Reserves Production Act of 1976. We endorse the provisions of this Act as a means to help reduce our dependence on foreign oil. Revenues from this Reserve would reach two billion dollars through 1981.

Most of Naval Petroleum Reserve No. 2, which is next to Naval Petroleum Reserve No. 1, was leased out by the Department of Interior to private operators during the early 1920's. It has been necessary to continue producing from this Reserve in order to prevent migration of the oil to adjacent reservoirs being produced by private owners. All known productive areas of this Reserve are essentially developed and producing at the maximum efficient rate of production of approximately 8,300 barrels of oil per day at this time. The United States' royalty share of this production from the lessees is about 400 barrels of oil per day.

Naval Petroleum Reserve No. 3, which is known as Teapot Dome, near Casper, Wyoming, is currently producing about 2,700 barrels of oil per day. When this Reserve's full development is achieved at the end of calendar year 1979, it is estimated that the maximum efficient rate of production will be about 7,500 barrels of oil per day.

The FY 1979 Budget Request also includes $1,300,000 to implement a Pre-Development Program to assess the quality and quantity of the resources present in the Naval Oil Shale Reserve. The program includes environmental studies and engineering analysis necessary to ascertain the optimum procedures for developing the Naval Oil Shale Reserves.

Strategic Petroleum Reserve

The Energy Policy and Conservation Act (EPCA), signed into law on December 22, 1975, authorized the creation of a Strategic Petroleum Reserve of one billion barrels. The objective of the SPR is to diminish U.S. vulnerability to the effects of a severe petroleum supply interruption.

The plan for development of the SPR was transmitted to the Congress on February 16, 1977, and became effective on April 10, 1977.

Subsequently, to accelerate the original development schedule, Plan Amendment No. 1 was transmitted to the Congress on May 25, 1977, and became effective on June 20, 1977. That Amendment provided for storage of 500 million barrels by the end of 1980, two years earlier than proposed in the original plan.

More recently, a second Amendment was proposed to the Congress to increase the protection of the United States against energy supply shortages. The Amendment proposed expansion of the Reserve size from 500 million barrels to one billion barrels, as authorized by the Energy Policy and Conservation Act, to include storage of 20 million barrels of petroleum product for the U.S. East Coast. As you are aware, that Amendment was rejected by the Congress, but we believe without prejudice regarding the proposed expansion to one billion barrels. We have, therefore, revised and sent to

the Congress, an Amendment addressing only the size of the SPR. We are also in the process of reexamining the requirements for storage of petroleum to satisfy the special requirements of the East Coast, Hawaii, and Puerto Rico.

The FY 1979 Budget Request totals $4,244,770,000 for the continued development of the Strategic Petroleum Reserve. The bulk of the FY 1979 Budget request includes $4,129,280,000 for the purchase and transportation of the second increment of 250 million barrels of crude oil. Current plans are to purchase up to 180 million barrels in FY 1979 and the remaining 70 million barrels in FY 1980. The reasons for requesting this full amount in the FY 1979 budget are twofold. First, our experience with the initial oil purchases has shown that orders should be placed for the oil approximately six months prior to the date of delivery in order to permit orderly and efficient procurement. Funds must be available at the time orders are placed. Second, we wish to minimize any impact on the world oil market due to procurements for the reserve. This can best be accomplished by placing our orders over an extended period, thereby permitting their incorporation into oil production and marketing plans. It is very important that the Strategic Petroleum Reserve have the full funding to provide flexibility to obtain oil on the most advantageous procurement schedule during the period ahead.

In order to move ahead with an expanded reserve, we are also requesting $100 million in the FY 1979 Budget to initiate development of the third 250 million barrel increment of storage capacity.

New Liquid and Gas Energy Supplies

Our mission in this area is to develop specific program options which will have a direct and significant impact on these important supplies. In the area of liquid fuels we expect substantial payoffs can be achieved from enhanced oil recovery and the exploration and production of new reserves. We plan also to pursue promising synthetic liquid alternatives - particularly with respect to shale oil development. The FY 1979 Budget Request includes $1,000,000 for shale oil development projects and $554,000 for oil and gas development projects.

In terms of new gas development projects, we feel there are a number of potential sources which might substitute supplies for natural gas. Among these, the likeliest candidates include coal bed methane, geopressured methane, and methane from Devonian Shales, as well as from coal gasification mentioned above.

Conclusion

Mr. Chairman and members of the Committee, I hope this overview will help you to see how we fit into the Department's overall mission and structure, and how we plan to carry out our mission.

That concludes my prepared remarks. Captain Nelson and Mr. Hystad will present to you, at this time, some of the details of their respective programs.

INTRODUCTION OF ASSOCIATES

Senator BELLMON. We will ask that you provide the committee with a brief summary of your remarks. Also, we will ask for summary statements from your associates as we cover their programs.

Mr. MCISAAC. Senator, I'd be happy to introduce on my right Capt. Robert Nelson, U.S. Navy Civil Engineer Corps, who is the Director of our naval petroleum reserve program area. On my left, your right, is Mr. Carlyle Hystad, Acting Director of the strategic petroleum reserve program.

If it please the Chair, I would be happy to immediately forgo any opening remarks on my part in order to move directly to a very short summary of the two programs before us, the strategic petroleum reserve and the naval petroleum reserves, in whichever order you prefer.

Senator BELLMON. I would prefer it if you could give us a brief summary.

MISSION OF RESOURCE APPLICATION

Mr. MCISAAC. Yes, sir, I'd be happy to. I'd like to start, Senator, by describing the principal mission of the resource applications area of the Department of Energy. The mission of resource applications is to accelerate the development of environmentally acceptable supplies of energy, to meet the Nation's energy demands. We're looking at a number of ways of doing this; incentive programs to promote commercialization and identification of barriers to commercialization, and programmatic activities to overcome barriers to commercialization.

Our primary responsibility involves the ongoing energy delivery operations of the Department. Through the power marketing administrations, we distribute about 5 percent of the electrical power used in the United States. Our responsibilities also include oil production from the naval petroleum reserves—and I might add here, Senator, that the naval petroleum reserves, consist of about 5 percent of the total proven reserves in the United States; plus development of an emergency preparedness capability in the form of the strategic petroleum reserve, which we'll be talking about further.

I won't dwell on the power marketing administrations, since we've already talked to the committee about that. I will skip over discussion as well of the geothermal loan guarantee program, which is within my jurisdiction, and the efforts that we're going to be making in low-head hydroelectric power, which also falls within my jurisdiction.

I might stop for a minute and talk about the area of coal utilization and supply. We've established a Coal Utilization and Supply Office, which is intended to find new ways to use coal. The possibilities here, sir, include coal gasification and liquefaction, fluidized bed combustion, and other technologies that will help shift our Nation's energy use from oil and gas to coal.

The responsibility for commercially demonstrating the usefulness of these technologies in our economy is going to be transferred to me very shortly from the Office of Energy Technology under

Robert Thorne. I believe he's going to be testifying here this afternoon.

The appropriations request for many of these areas is still in the budgetary jurisdiction of Mr. Thorne, although, as the year wears on, I will be accepting responsibility for the execution of these programs.

To encourage and promote an increase in the production of coal, the fiscal year 1979 budget request does, however, include $1,565,000 in my jurisdiction to provide for assessing national mine expansion capacities, to assist in the development of coal resources on Indian lands, and to determine the impact of various constraints on coal production. Essentially, this is study money.

In addition, the coal loan guarantee program authorized by the Energy Policy and Conservation Act of 1976 will be administered under this function. This program, which is intended to increase the production of low-sulfur underground coal by providing loan guarantees to small coal operators, is going to be ready for implementation very shortly, certainly by this summer. Funding for the program in the amount of nearly $7 million will come from a fiscal year 1978 supplemental budget request which was recently approved by the Congress.

NAVAL PETROLEUM RESERVES

I'd like to turn now, Mr. Chairman, if I can, to the naval petroleum reserves. I'll shorten my remarks considerably. Our fiscal year 1979 budget request includes nearly $200 million, specifically $199,005,000, for continued development of the naval petroleum and oil shale reserves. In 1976 Congress, as you are aware, authorized production of these reserves at their maximum efficient rate. We now have a total of 32 exploratory wells and 856 development wells drilled or planned for completion by the end of fiscal year 1978. This program is moving along very smartly.

Our current production of Naval Petroleum Reserve No. 1, Elk Hills, is producing about 120,000 barrels of oil per day. Our target when the field is fully developed in 1980 is 260,000 barrels a day. That's the maximum efficient production rate. It's mandated by the Naval Petroleum Reserves Production Act of 1976. We endorse the provisions of this act as a means to help reduce our dependence on foreign oil. Revenues from this reserve will reach a cumulative total of about $2 billion through 1981.

Petroleum Reserve No. 2, which is next to Petroleum Reserve No. 1, is rather small. I have included a statement about that in the record.

And Petroleum Reserve No. 3, called Teapot Dome, of some historic fame, near Casper, Wyo., is currently producing about 2,700 barrels of oil per day. When this reserve's full development is achieved at the end of calendar year 1979, we estimate the maximum efficient rate of production will be about 7,500 barrels of oil per day.

Senator BELLMON. Before you go on, you don't mention Petroleum Reserve No. 4.

Mr. McIsaac. No, sir. That's under the jurisdiction of the Department of the Interior for continued exploration. That is not in our budget; it is in the Department of Interior budget request.

Captain Nelson. The Naval Petroleum Reserve Production Act of 1976 transferred that to the Department of the Interior, effective June 1, 1977.

Mr. McIsaac. The 1979 budget request also includes $1,300,000 to implement a predevelopment program to assist in assessing the quality and quantity of the resources present in the naval oil shale reserves, primarily NOSR's 1 and 3 near Rifle, Colo. This program includes environmental studies and engineering analysis necessary to ascertain procedures for developing this particular reserve.

STRATEGIC PETROLEUM RESERVE

I'd like to turn now to the strategic petroleum reserve. The Energy Policy and Conservation Act, which was signed into law on December 22, 1975, authorized the creation of a strategic petroleum reserve of up to 1 billion barrels of crude oil and products. The objective of this strategic petroleum reserve is to diminish U.S. vulnerability to the effects of a severe petroleum supply interruption.

The plan for development of the strategic petroleum reserve, SPRO, as we call it, was forwarded to Congress on February 16, 1977, and became effective April 10, 1977.

Subsequently, to accelerate the original development schedule, admendment No. 1 was transmitted to the Congress on May 25, 1977, and it became effective on June 20, 1977. That amendment, sir, provided for storage of 500 million barrels by the end of 1980, 2 years earlier than was proposed in the original plan.

More recently, we submitted a second amendment calling for expansion of the strategic petroleum reserve to 1 billion barrels, as authorized under the act, and to include storage of 20 million barrels of petroleum product on the east coast. That amendment was rejected by the Congress, but we believe without prejudice regarding the proposed expansion to 1 billion barrels.

We have just forwarded to the Congress a revision to that amendment which only deals with the aggregate size of the strategic petroleum reserve, and doesn't specify the location. We are in the process of reexamining the requirements for storage of petroleum to satisfy the special needs of the east coast, Hawaii, and Puerto Rico.

The fiscal year 1979 budget request totals $4,244,770,000 for the continued development of the strategic petroleum reserve, as approved in our plans. The bulk of the fiscal year 1979 budget request includes $4,129,280,000 for the purchase and transportation of the second increment of 250 million barrels of crude oil. That is the increment that will bring us up to an aggregate of 500 million barrels.

The reasons for requesting this amount in the fiscal 1979 budget are twofold: First, our experience with the oil purchases to date has shown that orders should be placed for oil approximately 6 months prior to the date of delivery, in order to permit orderly and

efficient procurement. Funds must be available at the time orders are placed.

Second, we wish to minimize any impact on the world oil market due to procurements for the reserve. We believe this can best be accomplished by placing our orders for an extended period of time, up to 1 year in advance; thereby permitting their incorporation in our oil production and marketing plans. It is important that the strategic petroleum reserve have full funding to provide the flexibility to obtain oil on the most advantageous procurement schedules during the period ahead. Therefore, we are requesting authorization in the fiscal 1979 budget to give us that flexibility.

I believe, sir, that that covers most of the items of major interest to you this morning. And I'd like to, if I could at this time, introduce Captain Nelson. He has a very short statement that he'd like to proceed with, approximately one page in length, with the permission of the Chair.

PREPARED STATEMENT

Senator BELLMON. Captain Nelson? If you'll summarize for us we'll print your full prepared statement in the record.

[The statement follows:]

PREPARED STATEMENT OF CAPT. ROBERT H. NELSON, CEC, U.S. NAVY,

DIRECTOR

NAVAL PETROLEUM AND OIL SHALE RESERVES

Mr. Chairman and Members of the Committee, I am Captain Robert H. Nelson, Director, Naval Petroleum and Shale Reserves, I appreciate this opportunity to appear before you to discuss our programs for Fiscal Year 1979.

Four Naval Petroleum Reserves and three Oil Shale Reserves were created by separate Executive Orders during the period 1912 to 1924. Naval Petroleum Reserve No. 4 in Alaska was transferred to the Department of the Interior on June 1, 1977, pursuant to Title I of the Production Act, previously referred to by Mr. McIsaac.

Continuation of the exploration, development, and production programs at Naval Petroleum Reserve Nos. 1 and 3 make up the major part of our 1979 budget request of $199,005,000. The budget is in five parts; $51,906,000 for operations and maintenance, $69,952,000 for development drilling, $60,876,000 for facilities, $15,141,000 for exploratory drilling, and $1,130,000 for pre-development for the Naval Oil Shale Reserves. (See the following Table.)

Fiscal Year - 1979 (In Thousands)

	NPR-1 & 2	NPR-3	NOSRs	TOTAL
Operations and Maintenance	$44,876	$ 6,860	$ 170	$51,906
Development Drilling	50,701	19,251	-0-	69,952
Facilities	60,876	-0-	-0-	60,876
Exploratory Drilling	13,141	2,000	-0-	15,141
Pre-development	-0-	-0-	1,130	1,130
Total	$169,594	$28,111	$1,300	$199,005

OPERATIONS AND MAINTENANCE

These programs will allow us to operate, maintain and produce the Petroleum Reserves at their current maximum efficient rates. Included are operation and maintenance costs for facilities, wells, gas plants, roads and buildings.

DEVELOPMENT & EXPLORATORY DRILLING

Extensive development and exploration drilling programs to further enhance the productive capabilities of Petroleum Reserve Nos. 1 and 3 will continue through Fiscal Year 1979. During Fiscal Year 1979, approximately 245 development wells are planned which will contribute directly to the planned maximum efficient rate for the Reserves. Exploratory drilling is necessary to identify, or further define, any new productive zones at the Reserves. During Fiscal Year 1979, 15 exploratory wells are planned. As a result of our exploratory program during Fiscal Year 1977, an estimated 20 million barrels of new recoverable oil were identified at the Elk Hills Reserve.

FACILITIES

At Elk Hills, additional facilities are being constructed to accommodate increased production. These include oil collection lines, storage tanks, and shipping facilities necessary to gather crude oil from the

well head and move it to processing and transportation facilities. The construction program also includes gas processing and handling systems, comprising collection lines, processing plants and compression facilities. The processing plants are utilized to extract the propane, butane, and natural gasoline from the wet gas produced in association with the crude oil. After extracting the liquid products, the residue gas is injected into the reservoir to maintain pressure in the oil producing zones. This is necessary to ensure maximum ultimate hydrocarbon recovery as provided by law. The liquid products are sold at public sale. During Fiscal Year 1979, one gas processing plant with a capacity of 100 million cubic feet per day will be completed, and construction will begin on another similar plant. Planned gas processing capability at Elk Hills, consisting of four plants, is 360 million cubic feet per day. A one-hundred million cubic feet per day plant is now in operation. Two additional plants, each with a capacity of 100 million cubic feet per day are currently under design and construction. We plan to use 60 million cubic feet per day of existing capacity at a Chevron-owned gas processing plant near Elk Hills.

At Teapot Dome, the major development work will consist of waterflood facilities.

SHALE RESERVES PRE-DEVELOPMENT PROGRAM

The Office of Naval Petroleum and Oil Shale Reserves is implementing a Pre-Development Program on the Oil Shale Reserves. The program includes environmental studies and engineering analysis necessary to ascertain the optimum procedures for developing the Naval Oil Shale Reserves, and the evaluation of the environmental impacts which would be associated with any such development. The Program will result in the formulation of a Master Development Plan which will provide a detailed description of the best method of utilizing the Naval Oil Shale Reserves. Upon completion in 1983, the Master Development Plan will be presented to the Administration and Congress for review, and any decision that may be required before implementation.

NAVAL PETROLEUM AND OIL SHALE RESERVES
BUDGET SUMMARY ($000)

Naval Petroleum Reserves in California

Operations and Maintenance	FY 78	FY 79
Operator Labor	3,484	3,837
Contractor Labor	4,400	4,840
Equipment Rent/Repair	635	693
Equipment Purchase	656	721
Technical Service	228	251
Chemicals	330	130
Fuel/Utilities	194	212
Transportation, etc.	341	376
Overhead and Operators Fee	1,703	1,873
Asphalto Costs	259	284
Well Remedials	6,347	18,817
Facilities	-0-	825
3G Plant	-0-	169
35R Plant	-0-	4,340
Cathodic Protection	-0-	366
Fresh/Waste Water System	-0-	572
Road Repair	-0-	253
Vehicle Replace and Repair	-0-	163
Building Rehabilitation	-0-	266
Engineering Studies	-0-	300
Miscellaneous Small Work	-0-	157
Dynameter Test, Production Survey	-0-	529
Electrical System	-0-	56
LTS Gas Plants	-0-	4,846
Subtotal Operations and Maintenance	18,577	44,876
Development Drilling		
Shallow Oil, Tulare and Dry Gas Zones	-0-	8,840
Stevens and Olig Zones	14,937	26,177
Injection	-0-	15,684
Subtotal Drilling	14,937	50,701
Facilities		
Gas Collection	17,908	7,234
Gas Injection	3,867	12,450
Oil Collection	57,173	14,618
Water Collection	-0-	14,995
LACT Facilities	4,102	265
Fresh Water and Fire Protection	6,649	-0-
Electrical Distribution	-0-	11,314
Subtotal Facilities	89,699	60,876
Exploratory Drilling		
Shallow Oil, Tulare and Dry Gas Zones	-0-	240
Stevens and Olig Zone	-0-	661
Carneros/Deep Test	3,127	12,240
Subtotal Exploratory Drilling	3,127	13,141
Total	126,340	169,594

NAVAL PETROLEUM RESERVES IN WYOMING
($000)

Operations and Maintenance	FY 78	FY 79
Management and Engineering Support	539	530
Field Supervision	529	365
Administration	565	530
Field Operations and Maintenance	1,298	1,100
Facilities	174	100
Equipment	80	95
Production	1,500	2,200
Operator's Fee	1,120	1,100
Water	-0-	840
Subtotal	5,805	6,860
Development		
Shannon Wells	3,500	2,934
Second Wall Creek Wells	3,910	9,742
Other Wells		
Shale	1,100	2,495
Tensleep	-0-	680
Materials	2,000	2,610
Reservoir Studies	150	125
Special Studies	-0-	125
Production Testing and Evaluation	200	340
Safety and Environmental	400	200
Waterflood Facilities	2,800	-0-
Workovers	100	-0-
Roads and Pads	356	-0-
Electrical Connections System	800	-0-
Flowline Connections System	900	-0-
Subtotal	16,216	19,251
Exploration		
Shale	650	-0-
Third Wall Creek	-0-	600
Muddy Lakota Dakota	1,200	1,000
Tensleep	640	400
Subtotal	2,490	2,000
Total	24,511	28,111

NAVAL OIL SHALE RESERVES
($000)

	FY 78	FY 79
Program Support Staff	334	400
Resource Evaluation		
Information Survey	16	10
Coreholes	802	716
Hydrology	56	59
Data Compilation	-0-	20
Subtotal	874	805
Surface Management		
Bureau of Land Management NOSR Nos. 1 and 3	60	40
Bureau of Land Management NOSR No. 2	32	55
Subtotal	92	95
Total	1,300	1,300

NPR BUDGET SUMMARY

Captain NELSON. Thank you, sir. Mr. Chairman, Senator Young, I'm pleased to be able to appear before you today.

Exploration, development, and production at Teapot Dome and Elk Hills make up the major part of our 1979 budget request of $199,005,000.

BUDGET BREAKDOWN

The budget consists of five principal parts: operations and maintenance; development drilling; new facilities; exploratory drilling; and work on a master plan for development of the naval oil shale reserves. I have supplied a complete cost breakout of those five categories in my statement, which I have submitted.

These programs will allow us to operate, maintain, and produce the naval petroleum reserves at their maximum efficient rates in carrying out the mandate of the Naval Petroleum Reserve Production Act of 1976, which is Public Law 94-258. Extensive development and exploration drilling programs will increase the productivity of petroleum reserves Nos. 1 and 3; that's Elk Hills and Teapot Dome. This year we plan 245 development wells and 15 exploratory wells at those two reserves.

Our exploratory program found recoverable oil in the amount of an estimated 20 million barrels—that's new oil—at Elk Hills this year. We also found new oil at Teapot Dome this past year, but we haven't been able to estimate the quantity of that at this time.

Senator BELLMON. How much new oil at Elk Hills?

Captain NELSON. We believe we have found 20 million barrels in new reserves at Elk Hills as of this year.

Senator BELLMON. Are these in the deeper zones?

Captain NELSON. Actually, they're an extension of the main producing zone, Stevens zone, primarily. But yes, the Carneros zone has definitely been a part of that increase, which is the deeper zone.

Senator BELLMON. How deep have you explored?

Captain NELSON. We have explored at Elk Hills below 18,000 feet, which is not quite the basement. We think the basement is approximately 20,000 feet deep, and we have not quite reached basement at this time, but we do have a deep test working now which will reach tentative basement depth.

Senator BELLMON. Do these deeper zones look promising?

Captain NELSON. They look promising. There is a sand that runs to the 16-18,000 foot level which has been productive, to the west of Elk Hills. We hope to find oil in that sand. That's what we're really after.

Senator BELLMON. But up to now, you've not?

Captain NELSON. Up to now, we've been unsuccessful.

Senator BELLMON. This 20,000 barrel figure does not include that horizon?

Captain NELSON. It does not include anything at that horizon.

Senator BELLMON. How deep down have you explored? How deep down have you found production?

Captain NELSON. To about 9,000 feet.

Senator BELLMON. And that's the Stevens zone?

Captain NELSON. No, that would be the Carneros zone. At Elk Hills, additional facilities include oil collection lines, storage tanks, shipping facilities, and gas processing and handling systems. One gas processing plant, with the capacity of 100 million cubic feet per day, will be completed, and construction is planned to begin on another similar plant this year.

At Teapot Dome, the major facility development work will consist of water flood facilities. We are implementing a predevelopment program on a naval oil shale reserve. The program includes environmental work, primarily, and engineering analysis of what's there and what we need to do to develop it. It will result in the formulation of a master development plan for the oil shale reserves for the best method of utilizing those reserves in the future.

That completes my statement.

STRATEGIC PETROLEUM RESERVE

Senator BELLMON. Thank you, Captain.

Mr. Secretary, do you have other comments?

Mr. MCISAAC. If you wish, Mr. Chairman, I could introduce Mr. Hystad, who also has a similar short statement about the strategic petroleum reserve.

Senator BELLMON. Mr. Hystad?

[The statement follows:]

Prepared Statement of Carlyle E. Hystad

ACTING DIRECTOR
STRATEGIC PETROLEUM RESERVE

Mr. Chairman and members of the committee, I am pleased to be with you today to discuss the Strategic Petroleum Reserve (SPR) program and the fiscal year 1979 budget. Before going into the specifics of the budget requirements, I would like to give you some background information on the Strategic Reserve and what this budget request is attempting to accomplish.

Establishment of an SPR of up to 1 billion barrels was authorized in the Energy Policy and Conservation Act of December, 1975. The Strategic Petroleum Reserve Plan, submitted to Congress in February 1977, provided for storage of 500 MMB by the end of 1982. Amendment Number 1 to the SPR Plan accelerated the SPR development schedule and established a target of 500 MMB in storage by the end of 1980, two years earlier than in the initial plan.

In his National Energy Plan, the President recommended expansion of the Strategic Petroleum Reserve from 500 MMB to 1 billion barrels. The 1 billion barrel Reserve is an integral part of the Nation's plan to reduce U.S. dependence on foreign petroleum supplies to meet its energy requirements.

Since the winter of 1973-74, the U.S. has become increasingly dependent on petroleum imports. Oil imports reached a high of 10 MMB per day in February of 1977. A major interruption of oil imports during a severe winter, such as we have recently experienced, could have a very substantial impact on the U.S. economy if we are not prepared with a large Reserve. It is essential that the U.S. attain the protection afforded by the SPR as quickly as is physically feasible, without creating unacceptable environmental problems, incurring extraordinary costs, or seriously disrupting the petroleum market.

We have worked to design a Reserve system with the capability of efficiently replacing lost petroleum imports, in the event of an interruption. We are locating storage sites so that Reserve oil can be distributed through the existing petroleum pipeline and transportation network, effectively replacing lost imports during an interruption.

The current fill schedule for the Strategic Petroleum Reserve is based on having 125 million barrels (MMB) of oil in underground storage by the end of 1978. The target of 250 MMB would be met in July of 1979, about six months later than we had hoped. As of May 1, we had 21 million barrels of oil in underground storage.

We have been making every effort to attain the maximum amount of oil in storage as early as possible because of the national importance of this program. We established a very ambitious target (in which we assumed the best of circumstances would prevail in developing and filling the storage facilities) to assure that no opportunities were overlooked for accelerating the rate of oil storage.

The slippage in the schedule for the first 250 MMB is not expected to impact the schedule for the second 250 MMB which is to be in storage by the end of 1980. Most of the second

250 MMB is planned to be stored during the last few months of 1979 and in 1980, as new storage caverns are developed.

The FY 1979 budget request provides funds for the purchase of 250 MMB of crude oil for the SPR, to be ordered in fiscal years 1979 and 1980. Along with funds already appropriated, the request for an additional $4.1 billion would permit purchase of a total of about 460 MMB of oil. These estimates assume enactment of the Crude Oil Equalization Tax. Without this tax, these funds would allow purchase of approximately 490 MMB.

Our experience with the initial oil purchases shows that orders for the oil should be placed about six months prior to the date of delivery. Funds are needed at the time the orders are placed. We also wish to minimize or avoid any impact on the world oil market due to procurements for the Reserve. Market impact can be minimized by placing orders for an extended period, thereby permitting planning of oil production and marketing. The funds requested in the 1979 Budget will permit us to place orders for delivery starting in April 1979 and running through the fall of 1980.

It is the President's desire to attain the target of 500 MMB of oil in storage as soon as it is physically possible to prepare and fill the storage facilities. It is desired that the program not be constrained by lack of appropriations in 1979. Because it is not possible to accurately predict now how much oil we will need to order in FY 1979, it was concluded that it would be preferable to request the full amount needed for an additional 250 MMB, to assure that the oil fill rate is not constrained by the lack of funds for oil.

This budget request also provides initial funding for storage facilities development for the third 250 MMB of the Reserve. Start-up funds are provided for site acquisition, design, purchase of long lead-time materials and equipment and preliminary site construction. This will permit work to start on expansion of the Reserve from 500 MMB to 1 billion barrels.

It is necessary to provide initial funding in FY 1979 in order to begin development of the third 250 MMB capacity. The first 250 MMB increment involves using storage capacity that already exists; most of the second and third 250 MMB increments will have to be stored in newly developed storage capacity. It takes a period of two to four years to develop new solution-mined caverns and fill them.

The requested $100 million will be used for the acquisition of land and rights-of-way, facility design, purchase of long lead-time equipment and materials, and initial construction of facilities at sites not yet selected. Candidate sites for this additional capacity are now being technically evaluated and environmentally assessed.

Partial funding in FY 1979 for these activities provides program continuity and avoids a construction hiatus; and it keeps total facilities development costs at a minimum.

I would be happy at this time to answer any questions you may have concerning the SPR program and our FY 1979 Budget request.

Thank you.

Mr. HYSTAD. Thank you, Mr. Chairman.

I just wanted to make a few comments, to give you a feel for the current status of the program and how we plan to proceed and the impact of our schedule on our requirement for funds.

We have now acquired four sites for storage of oil for the reserve. Three of these sites are located in southern Louisiana, and one in Texas. We are now storing oil in three of those sites. The oil is going into those sites at a relatively slow rate at this point, because we're using temporary pipeline systems, barges for the most part, to get that oil in. We're filling at a rate of about 125,000 to 130,000 barrels per day. We expect that rate to increase to about 850,000 to 900,000 barrels per day by the end of this year.

We now are anticipating that we will have 125 million barrels in storage by the end of this calendar year. And by July of 1979, we will have 250 million barrels of oil in storage. Now, that is about 6 months later than we had hoped to reach our 250 million barrel target. We have had slippages due to delays in construction, and we've had a few legal problems where we've been enjoined by the courts who have held us up for a few days or weeks. But things are proceeding quite well at this point, so we expect to meet the 250 million barrel target.

We will, then, proceed to fill these sites and other sites that we expect to select, to achieve 500 million barrels by the end of 1980.

Senator BELLMON. Where will you be by October 1, 1979?

Mr. HYSTAD. On October 1, 1979, we expect to have about 265 to 275 million barrels of oil in storage.

Senator BELLMON. You said you'll have 250 million by July 1.

Mr. HYSTAD. That's right. By July 1, when we reach 250, we will have filled the existing capacity of these sites that we've selected and one additional site that we expect to select in the next 2 weeks.

To get the additional storage capacity, we have to leach caverns in the salt domes. We drill wells, pump in water to dissolve the salt, and then dispose of the salt water brine. It takes quite a period of time to create a cavern of suitable size to put oil into, and so we will have a slow period of fill in mid-1979, from July through about October. Then, the fill rate will increase again through the rest of 1979 and through 1980.

Senator BELLMON. Where would you be on October 1, 1980?

Mr. HYSTAD. By October 1, 1980, we expect to have 450 million barrels of oil in storage. Then, the last 15 million barrels would go in the last quarter in calendar year 1980.

We do not expect the slippage of the schedule for the first 250 to have any significant impact upon the second 250. Most of the storage for the second 250 will be in the new caverns and at different parts of the domes and in new domes. Work is proceeding to design those facilities, and we expect to start construction this summer.

The fiscal year 1979 budget, therefore, is requesting funds to purchase the oil, to fill those sites as they're completed in 1979 and 1980.

FILL SCHEDULES

Now, the reason we're asking for the full $4.1 billion for this purpose in 1979, is to give us some flexibility in purchasing our oil to meet our schedules. Under our current situation, with the limitations in the funds for oil purchases, we have to purchase on a short-term basis or about 6 to 9 months in advance. This is not giving us any flexibility for longer term purchases, and does not let us implement any different oil procurement strategies.

We would hope that with the $4.1 billion we would be able to consider different approaches to buying the oil, hopefully to obtain better prices and to minimize any impact on the world petroleum market. We would give producers and marketers another period of time to plan for meeting our requirements.

We expect, during this period of late 1979 and 1980, to be filling at the rate of about 900,000 barrels per day, which is a fairly sizable impact on the world oil market.

We're also requesting $100 million in this budget to proceed with facilities for the second 500 million barrels. We are asking for $25 million for acquisition of sites and $75 million for the design, equipment and materials to start on facilities for the second 500 million barrels. This will let us continue right on with the construction effort. As we make the first 500 million barrels, we can go right on with our construction teams to proceed with expansion of sites and new sites to achieve our total objective of 1 billion barrels.

We have identified specific sites in the gulf coast area for that expansion. We have several candidate sites there now that we're studying to determine technical suitability and environmental suitability; and we expect to essentially complete all those studies in the next 2 months, so that by this fall we will have selected the sites we need for the expansion of the reserve for the second 500 million barrels.

That completes my statement.

COSTS OF STRATEGIC RESERVE STORAGE

Senator BELLMON. Thank you very much.

Before we leave this subject, let me ask you a couple of questions, although perhaps you have it in your total statement. I haven't had a chance to look it over.

What is going to be the cost of the oil that's going into this strategic reserve storage? We're talking about after you get it into the ground.

Mr. HYSTAD. The cost of the oil, including transportation for the first increment, has run about $12.75 per barrel. We are participating in the crude oil allocation program, that is, the entitlements program. So, we're obtaining the oil at the national average price.

Senator BELLMON. Which is?

Mr. HYSTAD. The national average price has been running for our oil about $12.20, and with the transportation added onto that, the total cost is about $12.75 for the oil delivered. This was during the first few months of the program. Now, that price changes and has escalated somewhat each month.

Senator BELLMON. When you say "national average price," that doesn't include the cost of imported crude?

Mr. HYSTAD. It includes the cost of imported crude, yes. This would be the composite of imported and domestic crude oil. And that composite, for 1977 and the first part of 1978, was running for our oil about $12.20.

Senator BELLMON. I'm surprised at that figure. Old oil is still selling about $5.25, and new oil is about $11.50.

Mr. HYSTAD. That's right.

Senator BELLMON. Stripper oil is about $15.

Mr. HYSTAD. And our imported oil is running about $14 or $15.

Senator BELLMON. And half the oil is import.

Mr. HYSTAD. That's right.

Senator BELLMON. And this all figures out to be about——

Mr. HYSTAD. Yes, by participating in entitlements, the price we are paying for the oil is about $2 less than the world market price.

COST ELEMENTS OF OIL STORAGE

Senator BELLMON. What's going to be the cost per barrel to hold this oil for a year?

Mr. HYSTAD. Maintenance cost?

Senator BELLMON. And also there's a cost for interest on the oil, and probably you're going to have some—do we have any loss at all in seepage or leakage?

Mr. HYSTAD. Let me just run through the various cost elements. We're anticipating the cost of developing the storage capacity to be about $2 a barrel. Our experience to date bears this out. We expect to come in very close to $2 per barrel for the storage facilities. This includes the creation of the caverns in the ground, the pipelines, the pumps, the necessary terminal facilities and so forth.

Senator BELLMON. Does it include the purchase of the site?

Mr. HYSTAD. Yes. This includes the acquisition of real estate. We are anticipating that the maintenance cost will be very low, in the neighborhood of 1 to 1½ cents per barrel per year.

Sir, we're talking about only 20 to 25 cents per barrel over a 15-year period for maintenance of the site, assuming we don't have an emergency in which we have to draw down.

With storage underground, there's very little maintenance involved. We do not have to move the oil. We would operate the system of pumps and pipeline periodically to assure that they're in good working order and we would have a small crew on site.

But that would be essentially the only cost for maintenance of this reserve, so it's much cheaper than using steel tanks, for example, where there are rather high maintenance costs on an annual basis.

So those are essentially the cost elements that we are considering from the budgetary point of view.

Senator BELLMON. What will be the cost to recover and transfer the oil where it's needed? You have to give a range.

COSTS OF RECOVERY

Mr. HYSTAD. The cost of recovery will vary by site. Essentially, the budgetary costs will include the cost of electricity to run the

pumps, to pump water into these caverns to force the oil out. The costs also include the pumps and the pipelines to move the oil to tanker docks or to the major crude oil pipelines that run up into the interior of the country, such as the Capline and the Texoma lines.

So we're estimating during the drawdown that the total cost of moving the oil out will be from 30 to 50 cents a barrel. The private sector would bear the cost of actually transporting it from the nearby tanker port, the terminal to the refineries.

Senator BELLMON. So it's a relatively inexpensive process once you get the oil in the ground.

Mr. HYSTAD. Yes, and about 90 percent of the total budgetary cost is for the oil and associated transportation.

SPR OBLIGATION SCHEDULE

Senator BELLMON. All right, sir. Thank you very much.

Table No. 1 shows the fiscal year 1979 President's budget request for purchases of oil, that only $2.8 billion will be obligated in fiscal year 1979. An amount of $1.2 billion will be carried over and obligated or ordered in 1980. Let's insert that in the record.

[The table follows:]

TABLE 1

EXCERPT FROM FY 1979 STRATEGIC PETROLEUM RESERVE BUDGET

...The fiscal year 1979 Strategic Petroleum Reserve budget for oil acquisition and transportation is based on the following information:

Fiscal Year	Quarter	National Average Composite Price ($/Barrel)	SPR Purchases (MMB)	Budget Authority ($ in millions)	
1979	1	$15.75	45.0	$708.75	
	2	15.85	45.0	713.25	
	3	16.21	45.0	729.45	
	4	16.31	45.0	733.95	$2,885.40
1980	1	17.53	17.5	306.77	
	2	17.53	17.5	306.77	
	3	18.01	17.5	315.17	
	4	18.01	17.5	315.17	1,243.88
			250.0		$4,129.28

SPR FUNDING NEEDS

Senator BELLMON. So the question naturally arises, if we're only going to use $2.8 billion to be obligated in 1979, why should we go ahead and appropriate the other $1.2 billion?

Mr. HYSTAD. I think the primary consideration and concern here is the flexibility provided for our oil procurements. With only $2.8 billion available, that $2.8 billion I assume you're looking at, is really an outlay number. With the number available at that level, we would have almost no flexibility in our oil procurements. We would have to essentially order oil as we need it.

We have not yet entered into any long-term procurements. The longest term procurement we've entered into would be less than 1 year. And with the full amount of $4.1 billion that's requested, we would have the capability to enter into some procurements for 2 years or longer for at least some portion of the oil.

Senator BELLMON. Well, we'll want to come back to the reserve program in a moment. But let me go on to some other matters first.

COAL LOAN GUARANTEE PROGRAM

Mr. McIsaac, let's look at the coal loan guarantee program. There is no fiscal year 1979 request for the coal loan guarantee program and progress to date seems to leave much to be desired.

Why is it taking so long to get this program going? It was authorized in December of 1975.

Mr. MCISAAC. Senator, I can't speak to why it took so long to get it going before October 1, 1977, but I know that since I was confirmed in February of this year, and particularly as a result of some of the confirmation proceedings, we've given a great deal of attention to this. The reason it has not been going to date is our need to produce what we call a generic environmental impact statement.

We've been working on the problem of getting environmental clearance, and we need an environmental impact statement to cover the granting of these loans. Rather than having to make an environmental impact statement for every loan, we're trying to anticipate all of the environmental questions that will arise, and cover them in one rather massive statement, which is nearly complete.

The draft EIS has been officially out for comment, and comments have been received. Now we're in the process of gaining final approval for our application form, and we will be sending a package including the procedure, the application forms, and the results of the impact hearings to the Congress very shortly. I think we'll be in the position of being able to accept applications for loans before the first of July.

The reason as to why it dragged on so long after the authorization, sir, I just don't feel qualified to comment upon. I know it has been a long time.

In terms of the moneys for this year, we have, as a result of the supplemental appropriation in fiscal year 1978 nearly $7 million available for issuance of loan guarantees, and I believe the reason

that no money was requested is that we have enough in the supplemental appropriation. We need to gain some experience with the implementation before we determine how much we ultimately would wish to have in that appropriation.

Mr. MAYHEW. May I add, Senator Bellmon, that supplemental appropriation only became available to us about a month ago.

Senator BELLMON. I'll have some more questions, but our distinguished Senator from North Dakota is here and he may want to ask some questions.

OIL EMBARGO SCENARIOS

Senator YOUNG. I have more questions on oil.

Senator BELLMON. Go ahead.

Senator YOUNG. If we had 1 billion barrels in reserve now, with our present consumption and production, how long could we stand an embargo?

Mr. MCISAAC. Senator Young, I'd like Mr. Hystad to answer that. We have made very thorough studies of different scenarios in this area, and he's prepared to deal with that.

Mr. HYSTAD. Senator, we worked with the National Security Council, the Department of Defense, the Department of State, and other agencies to study a number of possible interruption scenarios, trying to define how much oil we might lose under certain embargos or other physical interruptions. If we were to have an embargo similar to what we had in 1973–74, with today's import levels, 1 billion barrels would last us about 1 year. This would completely replace the oil that we lost.

Now we're looking at the possibility of having more severe eruptions than the 1973–74 embargo and some of the more severe scenarios would indicate that 1 billion barrels may last only about 6 months. We would have to consider fairly strict conservation measures to go along with the reserve to fully protect ourselves.

Senator YOUNG. From which countries are we purchasing this reserve oil?

Mr. HYSTAD. Today, the oil has come from a number of countries. We're obtaining most of the light sweet oil from the North Sea. There are about four or five countries that have the proper quality of crude oil to store in the reserve and the North Sea oil is a good light sweet oil for the reserve. Nigeria and Libya also have a proper quality of light sweet.

The heavier oil that we're storing, which comprises about two-thirds of the reserve, will come from countries such as Mexico, Venezuela, Saudi Arabia, and Iran.

Senator YOUNG. Percentagewise, which country is furnishing the biggest amount?

Mr. HYSTAD. I don't have that information with me. We have acquired quite a large amount in initial storage from Venezuela and Mexico. We can provide that for the record.

MEXICAN OIL PURCHASES

Mr. MCISAAC. My best guess—we'll provide it for the record, Senator—my best guess is up-to-date, what we've purchased already is from Mexico.

Senator YOUNG. Mexico.

[The information follows:]

STRATEGIC PETROLEUM RESERVE—ORIGIN OF OIL ORDERED TO DATE

Country of origin	Barrels ordered	Percent of total
United Kingdom	18,632,553	46.8
Iran	10,500,000	26.4
Mexico	6,334,894	15.9
Libya	3,610,000	9.1
Saudi Arabia	701,134	1.8
Total	39,778,581	100.0

Senator YOUNG. Why hasn't Saudi Arabia been involved?

Mr. HYSTAD. They have been involved. That is, the oil is involved. We do not have any direct contracts with the governments of these countries. The oil is offered by various firms that submit competitive bids, and they, in turn, obtain the oil from the producing countries. We have obtained some Saudi Arabian oil.

Senator YOUNG. Does Mexico have that amount of export oil?

Mr. HYSTAD. Apparently they do and their production has been increasing. They're interested in increasing their exports of oil, is my understanding.

Senator YOUNG. The Middle East isn't important in our oil reserves, according to your testimony.

Mr. HYSTAD. Up to this point, it has not been particularly important. But as we move to our higher fill rates this coming fall and in 1979 and beyond, we expect a much larger portion of the oil will come from the Middle East because those countries are the only ones that have enough shut-in capacity available to be able to meet these needs on a short-term basis.

So we expect a large share of the oil will come from the Middle East starting this fall.

Senator YOUNG. What country does the North Sea oil supply come from? Britain?

Mr. HYSTAD. The United Kingdom and Norway, primarily.

OIL SHALE RESERVES

Senator YOUNG. Maybe Captain Nelson can answer this one. On oil shale, where are your oil shale reserves?

Captain Nelson. Senator, the naval oil shale reserves are located in Colorado and Utah.

Senator YOUNG. What's your environmental problem in utilizing oil shale? We don't seem to be making any progress in usage of oil shale that I know of.

Captain Nelson. Relatively little progress to date in actually producing the shale oil. That's correct, sir.

The principal problem with respect to the environment in Colorado is the pristine environment of that State. We see the principal areas of concern as being, of course, air pollution, possible water pollution, underground water pollution, and socio and economic impacts on the areas which are rural in nature now, and would become other than rural if a significant development came there.

Mr. McIsaac. If I may add, Senator Young, one of the principal problem areas in the development of oil shale that we are anticipating is going to be the disposal of the mined matter that is left over after the shale is extracted. It's like popcorn: You cook the shale in order to get out the organic material, and the mineral that's left expands. It expands by about 20 percent over the original size of the material mined.

So you have a great deal of matter left over that you can't put back in the hole after you have mined it. We have to find a way of disposing of what in other mining industries is called slag. We're looking at a number of companies that have mineral rights in the area of the Piceance basin, primarily in Colorado, and looking at ways of disposing of the slag.

I would say, Senator, that the primary reason we have not taken advantage of this enormous reserve of minerals evident in Colorado, primarily in oil shale, has been that no one has considered any currently available process to be economic at today's domestic prices for crude oil.

Shale oil is just not competitive in the marketplace yet.

So, one of the problems that we're facing and trying to work through is what kinds of incentives are necessary to get the technology developed and proven. When the inevitable day arrives when this resource becomes economic in the marketplace, we will have it available to be utilized, and have all of these problems resolved, including the environmental problems.

Senator Young. When I came here 33 years ago, the two Senators from Colorado, Milliken and Johnson, were working on this oil shale problem and trying to get money for research on it. But apparently, little or no progress has been made over all these years.

Mr. McIsaac. I think, sir, there has been a great deal of progress in terms of technology. The problem is the cost of developing and building the rather massive plants that will be required to process oil shale keeps running ahead of the escalating market price of crude oil.

Those we talked to, who are knowledgeable in this field, and those who have experimented with it believe that the cost for production of oil shale in an environmentally acceptable fashion will range between $15 and $20 a barrel, including recovery of capital and a reasonable estimate of profit.

If we needed to estimate the minimum price which would bring shale oil onto the market, I would pick $18 per barrel as being the economic cost today. As I indicated, the price of foreign crude oil deliverable on the east coast of the United States is something around $15 a barrel or so, depending upon the type of oil. Oil shale still can't compete at that price.

If, as we expect, oil prices will escalate with changes in supply and demand patterns in the mid- or late eighties, this is going to become a very economic proposition. So, we feel that somehow we have got to get it up and going today, for 1985.

It is an enormous reserve. I was told the other day that we can produce at the rate of 2 million barrels per day from these reserves for something in excess of 200 years.

Senator YOUNG. It seems to me we're going to have to look to this source of supply in future years, regardless of the price.

Mr. MCISAAC. Yes, sir, I agree.

PREDEVELOPMENT PLAN

Senator YOUNG. What progress have you made in resolving environmental requirements? Have you gotten anywhere at all? How many years more will it take?

Captain Nelson. May I say, Senator, that this is the heart of this program. We call it a predevelopment plan, and the essence of it is to determine what the environmental problems might be, and how we would combat them so that we will be prepared, in a period of 3 or 4 years from now, to be able to proceed with the project if that decision is made, and be able to handle the environmental problems completely.

Mr. MCISAAC. I might add, Senator Young, that this has reference to our lands, the naval oil shale reserves, the NOSR's, as we call them. The companies that have their own lands—Union Oil Co., Occidental Oil Co., and some consortia of other oil companies—tell us that they already have solutions to the environmental problems that they can foresee, and that they have demonstrated their ability to operate in this area in the past. They are planning to make investments, they tell us, in full scale plants if given some form of appropriate incentive through entitlements and tax credits.

Senator YOUNG. I think consumers can find some consolation in the vast shale oil reserves, if we could find a means of developing them. It seems like we're going to have to have them some time.

ALASKAN NAVAL RESERVE

Captain Nelson, just one more question. You didn't mention the Alaskan naval reserve. You have reserves up there?

Captain Nelson. Yes, sir. There is a reserve in Alaska. That was Naval Petroleum Reserve No. 4. That was transferred to the Department of Interior, June 1, 1977, by the Naval Petroleum Reserve Production Act of 1976, which opened up Elk Hills and Teapot Dome.

Senator YOUNG. You no longer have jurisdiction?

Captain NELSON. We have no jurisdiction over it at this time.

Senator YOUNG. OK.

Thank you, Mr. Chairman.

PARAHOE PROJECT

Senator BELLMON. Since we're on oil shale, let's stay with it for just a minute. Have any of you gentlemen ever visited the Parahoe project out at Rifle, Colo.?

Mr. MCISAAC. Yes, sir. I think Captain Nelson has spent a great deal of time there. I had the privilege of visiting it for the first time on Easter week.

Senator BELLMON. I was a little surprised by your remarks concerning pristine environment, pollution of ground water, the problem of these shales being located in rural areas, and the disposal of the tailings. Those problems have all been dealt with at Parahoe

and dealt with successfully. They seem to present no real barriers to moving ahead.

Mr. McIsaac. Senator, Parahoe is targeted to produce a maximum of 100,000 barrels of oil over a period of some years.

Senator Bellmon. I fully understand that, but they're producing it right now and putting the tailings in one of those canyons. It will take 100,000 barrels a day, 35 years to fill up the canyon that they're working on now. So there's no problem of getting rid of the tailings. They have a problem of putting in an impervious layer first so there's no leakage into the ground water. As far as the pristine environment, the day I was there there was so much dust in the air from the wind that you couldn't have told if you were running 2 million barrels of oil shale and putting it all up in the air.

Captain Nelson. Mr. Chairman, I was thinking of the top of the plateau, not down in the area where the plant is. It is a very beautiful area.

Senator Bellmon. But you don't disturb the top of the plateau. This material is taken out through underground mining.

Captain Nelson. Yes, it's taken out through underground mining for that experimental plant, which is a 160-barrel-per-day operation. And you convert 160 barrels a day, or magnify it, to 2 million barrels a day, and you have a considerably bigger problem.

Senator Bellmon. You'd have a bigger tunnel.

Captain Nelson. You'd have an awful lot of tunnels.

Senator Bellmon. That doesn't disturb the surface.

Captain Nelson. It would depend on the nature of the activity. In most cases, we would hope you wouldn't disturb the surface. We would definitely fill up some canyons.

Senator Bellmon. To me that's an environmental plus. If you've ever chased a cow through a canyon, I can assure you it would be an improvement. [Laughter.]

Captain Nelson. I've talked to some environmentalists that have the opposite point of view.

Senator Bellmon. If we're going to let the environmentalists decide this country's energy policy, we all may as well go back to using firewood.

Captain Nelson. I realize that there has to be a conforming to both views, yes, sir.

Senator Bellmon. Which side do you tilt toward?

Captain Nelson. I tilt toward developing the oil shale.

RURAL SOCIOLOGY

Senator Bellmon. Let's keep that in mind and not sweat too much over what a few people may say.

As far as this rural area thing is concerned, if you look at rural sociology over the last 40 years, the greatest thing the rural area needs is jobs. We've been replacing hand workers in agriculture at a rapid rate. We've displaced some 40 million people out of the rural areas who now are stuck in the slums of our cities. And if we'll get hot on this business of developing our own domestic energy resources, a lot of those folks can find jobs out where they

prefer to live and perform an enormously valuable service to the whole country.

So if you're being held back by the concern that you're going to hurt Rifle, Colo., by putting a few hundred jobs in that area, then I think you're looking at the wrong side of the coin.

Captain NELSON. Mr. Chairman, I didn't mean to imply that we think it will hurt Rifle, Colo., by developing the NOSR's. I meant to imply that we will consider what the impact is.

Senator BELLMON. Consider it favorably. That's my point.

Captain NELSON. Yes, sir. I understand. I think everybody in Rifle agrees with you 100 percent.

Senator BELLMON. Then what's the problem? I don't see why we're not moving. There's no problem getting rid of the tailings. There's a place that they'll actually improve the environment. There's no problem with the ground water. They've proved you can put this stuff above an impervious layer where it doesn't leach.

Mr. MCISAAC. Our problem really is one of providing the economic incentive.

ECONOMIC INCENTIVE

Senator BELLMON. That's right, and we've got in the energy bill a $3 per barrel tax credit for all the oil produced out of shale. So that shouldn't be a problem.

Mr. MCISAAC. We've also announced an entitlements adjustment, which is about $2 a barrel. As I indicated, most of the statistics would indicate that oil shale becomes very economic at around $18 per barrel. And we'll provide incentives in the range of $6 to $8 per barrel in terms of the companies' economics. That should be sufficient to provide a great big wedge to get some demonstration plants up and going.

I might add, Senator, that the tax credit proposal is to apply only to the first 10,000 barrels of production per day, which we think is about the economic size for a demonstration unit; and it also incorporates a time limit, a sunset provision for the tax credit, on the presumption that at some point in the future, world oil prices are going to make this an attractive economic investment and not just a marginal investment.

Senator BELLMON. I'm not any more of a seer than anyone else. But I venture to say that by the time an investor—you mentioned 10,000 barrels. I'd say with a 100,000 barrel plant built and in operation, that the economics would be such that it will be very profitable. Of course, that's a decision we of Congress can't make. I'd be willing to see the Federal Government go ahead and build these plants, and hold them until some investor was willing to take them off our hands.

Have you considered that possibility?

Mr. MCISAAC. Yes, sir. The first alternative is to have the Government own, contract, and operate demonstration plants like the Parahoe plant, and the naval offshore oil reserve. The other is to provide the plants and have the private sector, hopefully, do it.

This is a difficult question. I think most of us, and I personally, favor trying to keep the Government away from having to go through the enormously drawn-out procedure of competitive pro-

curement for Government owned, contracted, or operated plants. The problems which you have in the administration of those, such as determining what is appropriate cost control, are constant. We think that if you're really out to prove the market economics of an alternate energy technology system such as shale oil, that the only way to do it is to bring yourself as close to the market environment as you possibly can; which means having all of the kinds of investment and operating decision systems, as in the major private sector channels. We can provide this economic pull through incentive mechanisms to get technologies off and running.

That is a controversial point, though, Senator, I must admit.

Senator BELLMON. Mr. Secretary, how long have you been in this town?

Mr. MCISAAC. I've been in Washington since 1965 on and off.

Senator BELLMON. Haven't you heard the same sort of statements most of the time since you've been here, that we're waiting for the private sector to find everything just right so they can go out there and start producing oil from shale? I remember hearing Dr. Hammer testify back about 1970 that he could do this for $4.50 per barrel. To date he hasn't produced enough oil from shale to service this town for 1 day. So what's the hangup? Why doesn't the Government, why doesn't your Department, get on with it? And when you've proved that it'll work, I'm sure you'll find some of these timid investors ready to come in and buy up your profitable properties.

I'd like to see in this budget some money to build at least a 10,000-barrel-a-day module on Government property to get going. I think we could shorten this process by probably 3 years if we do that.

What's the reason you're not asking for money to build a module?

DEMONSTRATION MODULES

Mr. MCISAAC. Well, Senator, the position is that we think the demonstration modules will be built by private industry with these incentives.

Senator BELLMON. How long have you been thinking that?

Mr. MCISAAC. I've been thinking that since I came in February.

Senator BELLMON. But you've been here for a long time.

Mr. MCISAAC. Yes, sir. I might add, though, that some of my experiences as a consultant to the Federal Government have indicated to me that you have to be very careful about what the Government can operate profitably and economically. One of my experiences was to organize Amtrak, and I've had a substantial amount of experience acting as a consultant to the U.S. Postal Service.

Senator BELLMON. I hope you do better now than you've done in those two. [Laughter].

Mr. MCISAAC. Those are some of the reasons for my personal view that we should rely upon the private market mechanisms.

Senator BELLMON. Now, Mr. Secretary, that's been talked about ever since I can remember. I've only been here since 1969, but I've had lists of witnesses say everything is going to come up roses in a

little while if we just wait. And we've waited and waited and waited, and it looks like we'll be waiting another 3 or 4 years and maybe longer, because the investors don't see this as a sure thing, and they're scared of the environmentalists or something. The Government doesn't necessarily have those concerns. And I know that the technology is there. It's being proved every day at Parahoe. They're ready for a 10,000-barrel-a-day module. And I haven't yet had a satisfactory answer as to why you're not asking for the money in the bill.

Mr. McIsaac. We think we can get the same job done at less cost to the Government by encouraging the market mechanisms.

Senator Bellmon. By when?

Mr. McIsaac. By 1985.

GOVERNMENT OPERATIONS

Senator Bellmon. So we get our first unit in 1985?

Mr. McIsaac. I don't think you'll get the first Parahoe unit any earlier, sir, by going the Government route. In fact, I think it'll take longer.

Senator Bellmon. To build it?

Mr. McIsaac. Yes, sir, if we go through the competitive bidding procedures and the requirements necessary for the Government to select a contractor, select a process technology, and so on. I think it would take longer than going through the private sector.

Senator Bellmon. If you could be given convincing evidence that you could get it in 3 years, would this convince you to ask for it?

Mr. McIsaac. If we could be given convincing evidence?

Senator Bellmon. Yes.

Mr. McIsaac. It would certainly be a terribly important factor, I think, but I'm not the sole decisionmaker in this process.

Senator Bellmon. This is in your department, is it not?

Mr. McIsaac. Yes, sir. I think it would be very persuasive for the Secretary of Energy.

Senator Bellmon. I would think your support would be helpful.

Mr. McIsaac. Yes, I just don't believe that we can build the Parahoe plant in 3 years at full scale. I don't believe that that can be done.

Senator Bellmon. Well, we'll find out.

Mr. McIsaac. Captain, do you have an opinion on this? You're closer to the operation than I am.

Captain Nelson. What I think you're considering is a sole source procurement, and those can be complicated. Three years would seem short to me. I would think 4 or 5 years would be a more realistic estimate.

Senator Bellmon. Four to five years to put it into production, by about 1982?

Captain Nelson. Yes, 1982.

Senator Bellmon. That's 3 years better than the Secretary's estimate.

Captain Nelson. But that requires a process of picking a contractor and then moving with that contractor.

ECONOMIC FACTORS

Senator BELLMON. I wouldn't find anything wrong with that. This is to me a kind of a desperate situation. Let me describe for you where we are.

Last year, our crude oil tab was $45 billion. Our imbalance of trade or negative balance was $27 billion. Now, 1985, things are going to get worse in place of better by 1985, you can bet on that. So, if you wait—that's 8 years from now—so, we're spending close to a half trillion dollars for imported crude oil between now and 1985, and assuming that our imbalance of trade gets no better, you're talking about an imbalance of trade of over $200 billion by then, and you're telling me that we've got to be very patient and very cautious and not do anything that may in any way be troublesome and sit still while this happens to us.

To me, I don't think our economy can stand that kind of abuse.

Mr. MCISAAC. Senator, I think we agree exactly on the ends. My view of it, at least, is that we'll get there faster with a far larger daily demonstration of production capacity, applying incentives—tax incentives and entitlements incentives—than we will if we go through a Government procedure of building and operating a plant.

I might add, Senator, that, in the process of building and operating a Government plant—and I cite again the Amtrak and Postal Service experience as being the basis for some of my views—you always have the concept of cost-plus operations, and you can put in incentive fees or award fees or fixed fees, but it's cost-plus as to whether or not this mechanism—government-owned, either contractor or Government-operated—sufficiently supplies the disciplines of cost-control, profitability, and the like, to insure that you do have an economic system, viable in the marketplace.

We think that, by providing the mechanisms of incentives, you get the best of both worlds. You get Government support, and you get the free play of private sector decisionmaking, cost-control and profitability to demonstrate, when we're finished in 1985, that this is a very valuable process. Those are the economics of it.

If we are to do it in the Government, we still have that question: "Will it work in the private sector?"

SHALE OIL PRODUCTION INCENTIVES

Senator BELLMON. Now, Parahoe is a consortium of about a dozen private oil companies, plus the Navy, plus the Department of Energy; right?

Mr. MCISAAC. Yes, sir.

Senator BELLMON. I would think they would learn a great deal by any future expansion of that activity. Is there any reason why they wouldn't?

Mr. MCISAAC. No, sir.

Senator BELLMON. Then, why wait for them to go ahead?

Mr. MCISAAC. Parahoe can go ahead under the mechanisms, as well, sir. There's nothing to prevent Parahoe from building the plant using the tax incentives in the entitlements approach. They could do that. It's one of four or five plants that could be built.

We're offering these incentives to all comers, up to a limit of 10,000 barrels a day.

Senator BELLMON. You're offering what incentives?

Mr. MCISAAC. The tax credit, if it is approved.

Senator BELLMON. But it's not approved.

Mr. MCISAAC. But if it is approved, this would be offered to everyone. Tax credits—

Senator BELLMON. I'm not knocking it. I'm all for the tax credit. I'm simply saying to you that that's a very iffy proposition at this point in time, and here's a budget that could very well perhaps take some of this $1.2 billion you're not going to spend for buying oil for the strategic reserve and make it available for starting in fiscal year 1979 toward getting an operational module that would show us whether or not oil shale really works. I'm convinced it will. But there seems to be some question about it, that a 10,000-barrel-a-day module might help to answer.

Senator YOUNG. Mr. Chairman, if you'd yield at that point. For years, in North Dakota, with our vast lignite reserves, we had felt that they could build huge mine-mouth power generating plants, burning lignite coal. Investor-owned companies thought that it wouldn't be feasible. But our co-ops, with 2 percent money, built two huge ones, and they're very successful. Now, the private power companies are also in that business.

What the chairman is saying is that if the private industry is not going to go ahead with the plant, the Government could well afford to go into it, and they could prove to private industry that it is feasible.

We had that same problem with power generation. The private power companies just wouldn't look at it.

COST ESTIMATES FOR PARAHOE

Senator BELLMON. Let me ask you, Mr. McIsaac, to give us, as quickly as you can, your breakdown of what it would cost to build a 10,000-barrel-a-day module, how much money you'd need in fiscal year 1979 and succeeding years. Have you done that?

Mr. MCISAAC. I don't have the Parahoe estimate for a 10,000-barrel-a-day module. I have been told by others who have studied the 10,000-barrel-a-day module that it's going to cost, according to current best estimates, something in the range of $100–$150 million total. I suspect that's low.

I could try to submit whatever we have available on the Parahoe for the record, but I imagine it's going to be a minimum of something on the order of $130 million, depending on where they choose to site it and the like.

Senator BELLMON. That's 10 percent of the $1.2 billion you're going to have left over from the strategic oil purchase program.

Mr. MCISAAC. Sir, on the strategic oil purchase, that is a no-year authorization. One of the issues that has come up in testimony before the Senate Energy Authorization Committee, as well as over in the House, is why are we not arranging longer-term contracts of direct government-to-government purchase for the strategic petroleum reserve.

One of the reasons is that we're limited to what we see as very short-term buying authority. We want to get some money in the strategic petroleum reserve authorization so we can purchase well in advance.

You say this money will be left over, but we can appropriate all this money by making long-term buys. Our flexibility would be severely handicapped if we were to have $1 billion that was to be taken out of this for the purchase of crude oil. If we can arrange long-term buys, Senator, we would hope to do so in a fashion that would enable us to avoid an expected rising price.

OIL SHALE IMPERATIVES

Senator BELLMON. I would think the Nation's flexibility would be greatly enhanced if we were moving toward getting 2 million barrels a day of oil from our own oil shale reserves. This business of spending money to buy oil in Saudi Arabia to put in salt domes in Louisiana is a very minor effort to help resolve our energy crisis. But bringing on 600 billion barrels of oil shale is a major long-term, almost permanent, solution to the problem.

To me, you're looking through the wrong end of the telescope. The real flexibility comes from developing our own resources, and not becoming dependent on what we're bringing in. I maintain, Mr. McIsaac, that we need the same kind of psychology working in your department that was behind the space program or the development of nuclear weapons during World War II. You have a very negative approach to this thing, and I think it's very unfortunate. It seems to me your budget is totally inadequate to the kind of energy crisis that's building up in the country.

Mr. MCISAAC. Mr. Chairman, all I can say is that I am in agreement with your objectives. I would view the means that you've suggested, the Government approach, as a fallback position that we might have to use if these incentive programs don't work. Now, we have assurances from six companies, or consortiums, including Parahoe, that they favor a tax credit approach and an entitlements approach. We have nothing on the dotted line saying they're going to move out smartly and build with that, but they indicate that would be sufficient incentive for them to construct several of these 10,000-barrel facilities.

Senator BELLMON. Have you looked over some of the testimony that Mr. Hammer gave us about 4 or 5 years ago?

Mr. MCISAAC. No, sir.

Senator BELLMON. They proposed in situ processing; very shortly we're going to be getting oil from shale by the in situ process, and all they needed was $4.50 a barrel. So far, no oil.

Frankly, I'm very impatient about these things. We've waited a long time. We know the resources are there. We know the need is there. And if the private sector wants to come along and build plants, fine. But we know what the Government could be doing if you would simply ask for the money and get on with it. And I believe you may find at least some of us are going to be trying to provide the money, in any event. I hope, if we do, you'll be willing to make good use of it.

Do we have that assurance? If we do put the money in, will you use it? Or will you ask for a rescission?

Mr. McIsaac. If I am instructed by the Secretary of Energy to use it, I can assure you that I will make very good use of it, Mr. Chairman.

Senator Bellmon. Will there be the bureaucratic footdragging that often stalls these processes?

Mr. McIsaac. No, sir we can't afford this. The reason for going the incentives route, as I've indicated, is that we think that it would work faster. But I can assure you that there will be no bureaucratic footdragging in my sphere of operation.

Senator Bellmon. But your going ahead wouldn't slow down the private sector.

Mr. McIsaac. No, sir.

Senator Bellmon. Then I don't see why we don't go.

Do you have any other questions?

Senator Young. No.

OUTLOOK FOR COAL LOAN GUARANTEE PROGRAM

Senator Bellmon. I want to get on with the coal loan program I was talking about earlier.

The justification for the coal loan guarantee program indicates that in fiscal year 1978 you will publish the final programmatic environmental impact statement and issue regulations. Can you tell us why you need an environmental impact statement for a loan program?

Mr. McIsaac. As I understand, sir, the law requires that in any decision made by the Government to grant a loan or develop a plant or do anything of this nature that is traceable to Federal action, an environmental impact statement is required. This has been tested and proven, and our general counsel has informed me on a number of occasions that anything of this nature requires an environmental impact statement.

Rather than doing this one by one as each loan is granted, we're trying to take care of it up front all at once by having a rather massive generic environmental impact statement, and it has been prepared, and commented upon.

I think that the comments of many of the respondents have been received, and we'll be closing the process here shortly and getting on with the job of issuing procedures and accepting applications for these loans.

TIMING OF LOAN GUARANTEES

Senator Bellmon. How far along are you in completing the EIS and regulations for the coal loan guarantee program?

Mr. McIsaac. A draft environmental impact statement was issued on March 21, 1978; comments were requested by May 5. The response, to date, has been very light, and it does not appear at this point that substantial revisions will be necessary. Thus, we expect to meet our projected date of July 19, 1978, for publication of the final EIS. This being so, the mandatory 30-day no action

period following publication of the final EIS will expire on August 17.

A notice of proposed rulemaking was published in the Federal Register on May 19, 1978, and a public hearing on the regulations will be held on June 21 at the Daniel Boone Hotel in Charleston, W. Va. The notice included an announcement that applications will be accepted for review and processing, with the understanding that guarantees will not be issued until the EIS process has been completed and the final regulations have been promulgated. Since it will take approximately 2 to 3 months to process an application, taking into account the need for an onsite feasibility study, environmental review, and other analyses, we should be in a position to issue guarantees as soon as the program is fully implemented in August.

Any provisional commitments to guarantee that are issued in the interim will be contingent upon ultimate compliance with the final regulations. We do not anticipate major changes to the proposed regulations, and expect to meet the projected date of July 24 for publication of the final regulations.

Senator BELLMON. We can anticipate, then, that you'll be making the first loan guarantee shortly?

Mr. MCISAAC. I hope this summer, sir. I hope that we would have a number of applications for these loans under discussion by July 1 and that we will be making decisions shortly after that.

Senator BELLMON. How long will it take to get a decision and to get the loan actually processed and completed?

Mr. MCISAAC. I'm uncertain, sir, never having processed one of these particular loans, but our best guess is 3 months.

Senator BELLMON. So, this would mean, then, that the successful applicant might expect to have some money in hand by what date?

Mr. MCISAAC. September 15 or October 1.

Senator BELLMON. Will you give the committee a report when the applications are received and when the approval is finally granted?

Mr. MCISAAC. Yes, sir.

Senator BELLMON. How much increased coal production can we expect as a result of the coal loan guarantee program?

Mr. MCISAAC. I don't have that in hand, Mr. Chairman. I would have to submit that for the record. I'm sure it's been studied, and I'm sure we have a number.

[The information follows:]

COAL LOAN GUARANTY PROGRAM

The Program as it is now constituted is expected to bring 40 million incremental tons of coal per year onto the market, by 1985. The increase would be from all sources, i.e., new mines, expansions, and reopenings of closed mines.

Senator BELLMON. Would it be significant, or are we talking about just a dribble?

Mr. MCISAAC. I think at this stage, since these are all rather small mines, and coal technology is moving in favor of massive production from very large facilities, that relative to the aggregate national target of producing over a billion tons of coal a year in the mid-1980's, this program is not going to produce a huge amount, but it will be noticeable. It will be particularly important because

it is applicable to low-sulfur coal. It would be in those areas of the country that they're accustomed to removing and using coal, the Appalachian areas.

ADEQUACY OF LOAN GUARANTEE FUNDING

Senator BELLMON. The amount available for fiscal year 1978 is $6.9 million, $6 million of which is to be held in a reserve account to protect against loan defaults. How much of the remaining $915,000 has been obligated on EIS work and development of regulations?

Mr. MCISAAC. $60,000 has been allotted for revisions to the draft EIS.

Senator BELLMON. Provide a breakdown of how the $915,000 will be spent. Include the dollar amounts allocated to EIS preparation, development of regulations, and application processing and issuance of guarantees.

Mr. MCISAAC. The breakdown of these support funds is: $60,000 for revision of EIS, $390,000 for environmental reviews, $390,000 for project feasibility studies, $50,000 for borrower/lender handbook, and $25,000 for two financial computer models.

The Financial computer models will be to evaluate technical and economic aspects of a project via quantitative analysis.

Senator BELLMON. Is the $915,000 adequate for processing applications, both in fiscal year 1978 and fiscal year 1979, on top of the EIS and regulation workload?

Mr. MCISAAC. Yes, if we do not receive over 40 to 50 applications.

NPR DRILLING PROGRAM

Senator BELLMON. To shift now to the naval petroleum reserves, the request for the naval petroleum and oil shale reserves is $199 million, which is an increase of nearly $47 million over the fiscal year 1978 appropriation.

Captain Nelson, you talked already about what you're doing out at Elk Hills. In case you are successful and hit that deep zone in the well you're drilling, will the amount of money you're asking for make it possible to go ahead drilling more deep wells? Those are going to be pretty expensive.

Captain NELSON. No, sir. The amount of money we're asking for is for a preplanned development program, right now, of the existing Stevens and Shallow zone and Carneros zone. We know of them, and we were able to plan out a drilling program that will keep 11 rigs occupied full time for this year.

Senator BELLMON. For fiscal year 1979?

Captain NELSON. Yes, sir. That's correct. And that's 11 rigs at Elk Hills alone. It's probably the busiest oil field in the United States. Any successful hit in the very deep zones, we would have to budget for in ensuing years.

Senator BELLMON. The well you're drilling is pretty far down now?

Captain NELSON. It's at 17,000 feet.

Senator BELLMON. So you're within a couple of months of knowing?

Captain NELSON. The last 3,000 feet go mighty slow. But within 6 months——

Senator BELLMON. Six months. So you probably wouldn't know what you found in time for us to put anything in this budget.

Captain NELSON. No, sir. I don't believe that we would.

NEED FOR ELK HILLS PRODUCTION

Senator BELLMON. We seem to be in a rather unusual circumstance. We're spending millions—I guess billions of dollars to buy oil and pump it into salt domes for the strategic petroleum reserve. Yet, at the same time we're pumping oil out of the ground out at Elk Hills.

Is there some reason for this policy?

Captain NELSON. Yes, sir. It has some logic behind it. The oil we're buying is coming from foreign countries. By buying that crude and putting it in the ground, we increase the ultimate energy reserves within the U.S. borders. If we were to pump the oil out of the ground, say at Elk Hills, and simply move it over and pump it into the ground in Louisiana, we would lose that amount of energy that we needed to pump it out, pump it over and then back into the ground. So that we would end up, really, with an energy deficit if we simply moved it from one hole in the ground to another.

Thus, we are increasing our energy reserves by buying foreign crude and selling our other oil here locally, and thereby, very importantly, decreasing, hopefully, the unfortunate balance in payments that we have.

Senator BELLMON. But if you simply left the oil—if you went ahead and drilled the wells at Elk Hills, got it all ready and left the oil there, that would be a very significant addition to our strategic reserves. You could go out and crank up the pumps on short notice and start bringing in whatever it is, 300,000 or 400,000 barrels a day, if you ever get that high.

Captain NELSON. We would be able to add at the maximum efficient rate 260,000 barrels a day, or if we were in a crisis, perhaps up to 400,000 barrels.

Senator BELLMON. But if you keep producing Elk Hills, then within 10, 15, or 20 years, your production will be down to a very low level and we will, in effect, not have that as a reserve any more.

Captain NELSON. Yes, sir. The belief is, however, at that point that we will have the strategic petroleum reserve which is specifically designed to handle crisis requirements and that would not be a serious problem at that point.

Mr. MCISAAC. I think, sir, there are several factors that bear on our producing at Elk Hills, even now at a rate of 120,000 barrels a day. We feel that we're displacing substantial importation of foreign crude. The crude at Elk Hills is relatively light and relatively sweet. It's used by a number of California refineries, according to various reports, at 60,000, to 70,000 barrels a day. If that crude were not available, those refineries would immediately turn to importing crude from Indonesia. So there is that factor to consider.

Right now and within the next 10 years, when we have the maximum efficient rate of production we are avoiding an even greater dependence on foreign sources of oil by producing Elk Hills. We are also contributing toward dampening our current balance-of-payments problem as well. So there are a number of issues to consider.

OIL RESERVE ALTERNATIVES

Senator BELLMON. Well, now, here we are. We're buying light, sweet crudes in the North Sea and in Nigeria, bringing them over and putting them in the ground in the salt domes in Louisiana. We're producing light, sweet crudes at Elk Hills and putting them through the refineries in California.

By buying in Nigeria or the North Sea, we're hurting our balance of payments problem. In producing oil at Elk Hills, we're helping slightly.

It seems like our policy is in total conflict.

Mr. HYSTAD. I wonder if I could comment on that.

In designing the strategic reserve, we're looking to have a drawdown capability of about 6 million barrels per day when we have the 1 billion barrel reserve.

We will have the capability to move that 6 million barrels per day to those areas of the country that are expected to be heavily dependent on imported oil during the 1980's.

That is, the interior of the country, the gulf coast area, the east coast area, and the Caribbean refineries.

The current projections are that in the 1980's, the west coast will be importing a very small amount of oil, and that particular oil will not be particularly vulnerable to interruption. They will be getting very little oil from the Middle East.

So if we were to shut in Elk Hills as part of the SPR, there would be two factors to consider: One, it would contribute very little to our total ground capability of 6 million barrels per day. That is only a 200,000 to 300,000 barrels per day. Two, it would be produced in an area where it would not be readily or easily transported to those refineries that have lost their imports during an interruption.

Now at the present time, we do not have the ability to move the Elk Hills oil to our gulf coast storage sites.

So we have considered the possibility of, rather than purchasing sweet crudes in the North Sea, purchasing the Elk Hills oil.

But right now we don't have that option. We don't have the capability to move the oil into our gulf coast sites.

DECLINING OIL SUPPLY FOR ELK HILLS

Senator BELLMON. It wouldn't seem to me to make any sense. The only thing——

Let me ask this question. What's the decline for Elk Hills?

Captain NELSON. Let's assume that the ultimate maximum efficient rate when it's fully developed is on the order of 260,000 barrels a day, which we believe it is. It would hold that quantity of production for approximately 1 year and then begin on a parabolic decline curve.

Probably after 10 years of production, you would be below 100,000 barrels a day.

Senator BELLMON. So, in effect, during that 10-year period we will have lost 160,000 barrels of our reserve production capacity. I suppose if you needed to during a period of emergency take 100,000 barrels up, a little more than that——

Captain NELSON. Yes, sir, we could.

Senator BELLMON. For how long a period?

Captain NELSON. A short period of time, because it would be a wasteful process. We would be losing our pressure in the reservoirs faster than we would like to, and it would drop off from that period.

Senator BELLMON. Back just for a moment.

Mr. Hystad, you just said that you're going to be able to produce the strategic reserve at the rate of 6 million barrels a day.

Mr. HYSTAD. That's right.

Senator BELLMON. You're going to have a billion barrels in the ground.

Mr. HYSTAD. That's right.

Senator BELLMON. That means it'll only last us 166 days.

Mr. HYSTAD. If we were to draw it down at that rate it would. We do not expect that in an interruption we would maintain a 6-million-barrel-per-day drawdown until the reserve is empty. What we have is the capability——

Senator BELLMON. Why do you need that capability? Why not a 3-million-barrel-a-day drawdown capability?

Mr. HYSTAD. Because the projections of possible interruption scenarios that we may be faced with in the 1980's indicate that we could have shortfalls in excess of 6 million barrels per day during that time frame.

Mr. MCISAAC. Senator, although I wasn't present when a lot of these analyses were being done, I believe they were heavily influenced by our experience in the oil embargo in 1973 and early 1974. That experience indicates there are periods of time that are very crucial, until you adjust your logistics systems to pick up alternative sources of supply.

You might find incredible disruption to the extent of a 6 million barrel a day short fall, but it might taper off after 3 weeks or a month as you find sources of nonembargoed oil elsewhere on the world market and so on. There is a whole host of these various schemes which have been looked at, and as a result of all that analysis, it was decided that it would be appropriate to have a capability of drawing down at the rate of 6 million barrels a day.

On the other hand, all of these various schemes indicated that you could be drawing on the reserve, not at the rate of 6 million barrels a day, but say, at the rate of 2 or 3 million barrels a day for a rather extended period of time, up to, as Mr. Hystad indicated earlier, I believe, a year.

OIL INVENTORIES

Senator BELLMON. Well, now, we know that the industry carries inventories of some 300 million barrels. Has there been any

thought given to providing some incentive to get them to go ahead and increase those stocks?

Mr. HYSTAD. Yes; we have studied that. The act that authorized the SPR also authorized industry to store up to 3 percent of their annual throughput. That is, importers and refiners would be required to do that.

That is still under consideration as a potential means of establishing the last segment of the billion barrel system.

If we were to place that requirement on industry, it could result in a storage of about 200 million barrels of crude oil product by the refiners and importers. There are some serious problems, we think, in doing that. One is the regulatory aspects and the difficulty of assuring that industry has, indeed, increased their inventories by these amounts and that you really have this increased protection. Second, the total economic costs of this may be substantially higher than storing it in centralized salt dome storage.

If the industry were to use more steel tanks or smaller storage containers, the facilities costs may run as much as $8 to $10 a barrel, as opposed to $2 a barrel.

Senator BELLMON. Industry does use some underground storage.

Mr. HYSTAD. There is a small amount of use of underground storage. Almost no use of that for crude oil, however, up to this point.

But it's possible that a consortium might form to use salt dome storage for crude oil.

Senator BELLMON. Is any effort being made that would cause this to happen?

Mr. HYSTAD. We're now considering the issue of whether or not such a requirement ought to be placed on industry.

Senator BELLMON. This probably isn't the place to get into it, but in your scenario, how much reduction in our present daily consumption of 18 million barrels a day do you anticipate in case of an interruption of supply? Would it drop down to 15?

Mr. HYSTAD. We have looked at what could reasonably be expected. Without rationing, there would be about a 10-percent reduction in consumption after about the second or third month of embargo. The first month you would get a very small reduction, the next month, a couple of percent, and by the third or fourth month, if you had a severe interruption, you may get as much as 10 percent conservation savings.

To go beyond that would probably require rationing of some sort.

RATIONING

Senator BELLMON. What reduction could you accomplish through rationing?

Mr. HYSTAD. That depends entirely on the type of system that you have and how severely you wanted to allocate the products.

We're looking, of course, at allocating gasoline, so you have a great deal of flexibility there.

Senator BELLMON. Give us a range.

Mr. HYSTAD. One could certainly get a 25-percent reduction in total demand by a rationing system, along with voluntary conservation.

Senator BELLMON. That would bring us down then to about 13½ million barrels a day.

Mr. HYSTAD. Yes.

Senator BELLMON. Of which we produce some 8 or 9 million domestically. We'd still need to import around 7 or 6 million.

Also, back to Elk Hills, there is a current oil surplus on the west coast, which is being exacerbated by the Alaska oil. Is there any thought of constraining production from Elk Hills because the oil really isn't needed now?

Captain NELSON. Mr. Chairman, there has been thought given to that. However, in reality, there are a number of reasons why the decision has been made not to shut in Elk Hills. The principal reason is that we believe that nearly barrel for barrel our production does back out foreign imports, if not on the west coast, then ultimately on the gulf coast. That's a very important consideration.

We also have a number of independent small refiners in the California area who have indicated strongly that they are dependent upon the Elk Hills crude, and that other crudes will not suffice to give them the same load in their refineries. If we were to take away our Elk Hills sweet, they would have to then rely on imported very sweet, low-sulfur Asian crude to mix with the heavier crude of California in order to properly load their refineries. Therefore, it would increase the imports in that regard.

Finally, the consideration is, that really is our best solution to the problem—we don't contribute that much to the glut. The principal contributor, of course, is North Slope crude. Our action should be to get on with the construction of a pipeline that will permit us to ship that oil off the west coast, get it East where it's needed; and we will solve any contribution that we may be making in the best way possible.

INDUSTRY PIPELINE

Senator BELLMON. But that's a subject we really shouldn't get into in this hearing. That's the industry's problem, is it not, building the pipeline?

Captain NELSON. Partly my problem, to get to the industry's pipeline, of which there are two proposed right now: One, the Sohio line, which is near getting its approvals from the State of California; and the other one an Arco pipeline that is now in existence, but will be increased in capacity.

Senator BELLMON. But there's no way we can deal with that through our appropriation?

Captain NELSON. No, sir, there is not.

ELK HILLS PRODUCTION MANDATES

Senator BELLMON. The law presently mandates maximum production from Elk Hills.

Captain NELSON. Yes, sir.

Senator BELLMON. If this requirement did not exist, would that make a change in your operation?

Captain NELSON. Well, if the law were changed mandating other than the maximum efficient rate, we would not be producing at the maximum efficient rate. However, at this particular time, I believe

the policy would be to keep the production as high as possible, to reduce the balance of payments problem.

Senator BELLMON. If the law were changed or were simply repealed and you had no mandate from the Congress, would this in your judgment improve the situation? Would you make good use of the flexibility you'd then have?

Captain NELSON. The Secretary of Energy did forward a bill some months ago, which was never, I believe, placed in the hopper. It was never introduced in the Congress. The proposal would have given the Secretary of Energy flexibility to control the production from the two reserves, Teapot Dome and Elk Hills.

I work for the Secretary of Energy and I support him, and I would follow whatever decision he made.

Senator BELLMON. As far as you know, he still supports that legislation?

Captain NELSON. Yes, sir. As far as I know, he still supports it.

Senator BELLMON. And from your firsthand experience, you feel that if such legislation were passed, that the policy of MER would not still be kept in operation?

Captain NELSON. I know this. I know that the Secretary of Energy would give a great deal of consideration to all of the factors that I've discussed.

Senator BELLMON. If we did change the law, would this have any effect on the funding level for fiscal year 1979 for Elk Hills?

Captain NELSON. No, sir, it would not. I would still feel that I had to move to—well, if you didn't want me to move toward the maximum efficient rate of production as rapidly as possible, I could support or be supportive of fewer funds, because I wouldn't need the drilling program.

Mr. MCISAAC. I would say that it's very unlikely, Mr. Chairman, that we would intend to cut back our program for developing that field and building routes of egress for the oil that we hope to produce in that field to the southern pipeline area. We would want to continue full-bore on that.

Senator BELLMON. You'd want to continue maximum efficient production?

Mr. MCISAAC. I would want to continue our development program and our exploration program. That's really what that funding level is for, and construction of a pipeline to help us move the oil down south so we can get it to the east coast.

It is also our position that we want to continue the maximum efficient rate of production, given the nature of the studies that we've made indicating the displacement of imports currently as a result of Elk Hills production.

Senator BELLMON. You have some problem at Elk Hills with water encroachment, too, in those zones?

Captain NELSON. No, sir, not significant. It can be handled.

CARRYOVER FUNDING

Senator BELLMON. When we look at the current programs for Petroleum Reserves 1 and 2, we find that you have a carryover of $188 million available from funds appropriated to the President in

fiscal year 1977. Why is there such a large carryover of these funds?

Captain NELSON. They were primarily caused by the fact that we did get heavy early funding in the funds appropriated to the President, and it simply has taken time to move forward with a proposed location for pipelines, and a proposed number of gas plants that we would need.

We know all of those now. We have them properly planned and properly located. We're prepared to obligate those funds this year, in addition to the funding that we've requested.

Senator BELLMON. The 1977 carryover plus the 1978 appropriation amounts to $314 million.

Captain NELSON. That's correct, sir. We're prepared to obligate those funds this year for the pipeline, gas plants, and other major items that have taken this long to properly design, locate, and know that we were doing it right.

Senator BELLMON. How much has been obligated to date?

Captain NELSON. I'd have to provide that for the record, sir.

Senator BELLMON. If you'll do that, we'd appreciate it.

[The information follows:]

OBLIGATION OF FUNDS

Of the $238,271,719.00 unobligated from fiscal year 1977, $234,161,534.00 has been obligated to date. Of the $126,340,000.00 appropriated for Petroleum Reserves 1 and 2 in fiscal year 1978, $75,587,942.00 has been obligated to date. It is currently anticipated that the entire $365 million will be obligated by the end of fiscal year 1978.

ELK HILLS DEVELOPMENT

Senator BELLMON. Now, so far as Elk Hills is concerned, where do you plan to be in terms of development and production by the end of fiscal year 1978?

Captain NELSON. Fiscal year 1978, we anticipate——

Senator BELLMON. And also 1979

Captain NELSON. Well, by the end of fiscal year 1978 we think we will be 50 percent through with our development of the wells, the additional wells that we plan to develop.

Just one moment.

[Pause.]

Captain NELSON. Our best estimate is two-thirds to three-quarters completed by the end of fiscal year 1979.

Mr. MCISAAC. If it pleases you, Mr. Chairman, we'll submit a more detailed answer on where we stand at this point on NPR-1 and NPR-3 for the record.

[The information follows:]

MAJOR ACTIONS COMPLETED

To date the following major actions at NPR-1 have been completed:

1. 516 development wells have been drilled.
2. Production has increased from approximately 2,500 BOPD to about 126,000 BOPD.
3. The existing 35-R gas plant has been demothballed and put into service.
4. A route for the off-Reserve pipeline which will connect with the SOHIO California-Texas line has been selected and final design is underway.

5. The tie-in to Chevron's 17-Z gas plant will be in full operation by October 1978. Limited service will begin in June.
6. Construction has begun on 100-MMCF/D gas processing plant to process produced gas. A second 100-MMCF/D plant is under final design.
7. A field wide oil and gas collection system is currently being designed.
8. The Elk Hills tank farm which will serve the off-Reserve pipeline is currently under construction, and
9. Negotiations have been initiated to acquire the necessary electrical power to service a fully developed field.

Completion of all major development work and the attaining of the peak daily production rate of 260,000 barrels is scheduled for mid-1980.

At NPR-3:

1. 220 wells have been drilled,
2. A field wide electrical distribution system has been constructed,
3. A field wide oil and gas collection and treatment system has been constructed, and
4. Production has been increased from 220 BOPD to about 2,700 BOPD.

DEVELOPMENT COMPLETION DATE

Senator BELLMON. Well, when will you finally finish the development?

Captain NELSON. 1980 would be the last year.

Senator BELLMON. 1980 will be the last year?

Captain NELSON. Yes, sir, it should be completed.

Senator BELLMON. From then on it will be strictly a maintenance and production operation?

Captain NELSON. With the exception that, as we find new oil, which we anticipate doing, we would then need some additional developmental work as we find these new reserves. That's not an unhappy circumstance, and I would presume that we will get additional funding for further development.

Senator BELLMON. If you happen to hit commercial production in the deep zones, you might be busy for some time.

Captain NELSON. Yes, sir. It would be expensive drilling, but obviously economic, or we wouldn't follow through with it.

FUNDING TEAPOT DOME AREA

Senator BELLMON. In the Teapot Dome area, you've asked for an increase of $3.6 million, which will bring the program to a level of just over $28 million?

Captain NELSON. Yes, sir.

Senator BELLMON. I believe you told us already what the current production is.

Captain NELSON. The current production is running at 2,500 barrels a day right now, sir, between 2,500 and 2,700.

Senator BELLMON. You expect to hit the 7,500?

Captain NELSON. Ultimately, 7,500, yes, sir. That would be in 1980, late 1980.

Senator BELLMON. That's a respectable sized oilfield. But is it a unit that justifies the Federal operation?

Captain NELSON. Yes, sir. It's a nice neat package. We can handle it, and it's in the black. It isn't in the black today because we have been spending money faster than we've been earning it at this point. But it will move into the black at about midpoint in the

next fiscal year, and from then on it will be a moneymaker for the Government.

Mr. McIsaac. When we use the term, Senator, "in the black," that means that we're expending every piece of money that we're putting into it, which isn't normal practice, as I'm sure you know.

Senator Bellmon. It's the way the Government operates, though, it seems.

Are there possibilities for discoveries or development of other zones than the one that you are presently producing at Teapot Dome?

Captain Nelson. Yes, sir. We've had good success. We have hit four exploratory wells in the last 3 months that have been successful. For example, the Niobrara Shale has been found productive in the southern end of that reserve. The Muddy Sandstone has been found productive. Just this past week, we hit oil in the Lakota Sandstone, which is the first time that has been a productive zone within Teapot Dome.

Senator Bellmon. Are these deeper horizons?

Captain Nelson. They're deeper than Wall Creek, the main producing horizon, yes, sir.

Senator Bellmon. Have you gone clear to the basement at Teapot Dome?

Captain Nelson. We have not gone to the basement at Teapot Dome at this time, and right now, we have no plans to do that. We do think we have gone or will go to those zones that have been found productive in that part of Wyoming. We will be sure to go that deep.

Senator Bellmon. Does your budget anticipate testing these deeper zones?

Captain Nelson. We had not planned it at this point, sir.

Senator Bellmon. Is there some reason you don't go ahead and take a look?

Captain Nelson. No, we have been totally occupied in developing that field to the greatest extent we could within the time involved. There's nothing to prevent us from taking a deeper look. We just haven't gotten to it.

TOTAL WELLS TO BE DRILLED

Senator Bellmon. Have you given us in your statement the number of wells you plan? I believe I have it here. You're going to drill 144 new wells in 1978? How many will you drill in 1979?

Captain Nelson. I would have to provide that for the record, sir. I don't have that.

[The information follows.]

Wells Planned for Fiscal Year 1978

To date, 65 of the 144 wells planned for fiscal year 1978 have been drilled and it is expected that all 144 wells will be drilled during the fiscal year. It is currently estimated that 117 development wells and five exploratory wells will be drilled at NPR-3 in fiscal year 1979. This number may vary slightly depending on the results of the fiscal year 1978 program.

SUBMITTED QUESTIONS

Senator BELLMON. We'll have some other questions on that subject to you, and we'll get your responses in writing.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

ADDITIONAL SUBCOMMITTEE QUESTIONS

NAVAL PETROLEUM AND OIL SHALE RESERVES

Question. Let's look at the current program on Reserves Nos. 1 and 2. In addition to the FY 1978 appropriation, you have a carryover of $238 million available from funds appropriated to the President in FY 1977. Why is there such a large carryover of FY 1977 funds?

Answer. The funds associated with this carryover were targeted for the design and construction of the off-Reserve pipeline and the gas processing facilities. The Government's preferred pipeline route would tie in with the SOHIO California-Texas pipeline. Because of the lengthy permitting process associated with the SOHIO pipeline, it was not feasible to begin construction of the Government pipeline and these funds could not be obligated. Funds for the gas processing facilities were held unobligated until the resolution of dispute with Chevron U.S.A. concerning the amount of gas handling facilities required. This dispute has been resolved and these funds will be obligated this year.

Question. How much of the $238 million carryover has now been obligated as of today?

Answer. As of April 30, 1978, the latest date for which reported actual accounting information is available, $234 million has been obligated.

Question. Is the total funding listed for NPR-1 available strictly for work on NPR-1? (If not, provide breakdown between NPR-1 and NPR-2.)

Answer. All of the funding except $3,000 is for NPR-1. The $3,000 is for security services at NPR-2.

Question. What about the exploratory wells at NPR-3 - how

many have been drilled to date in your FY 1978 program? (Projected 10 exploratory wells.)

Answer. Four exploratory wells have been drilled to date in FY 1978 at NPR-3. Three of these were originally scheduled under the FY 1977 drilling program. This program has resulted in the discovery of two new productive reservoirs, the Muddy and the Lakota. These reservoirs are deeper than the major producing horizons at NPR-3 and their areal extent has not yet been determined. The Muddy has been found productive in three wells in the center of the field and the Lakota has been found productive in two wells in that area. Additional drilling to the deeper horizons including the Muddy and Lakota is continuing.

Question. The largest part of the increase for FY 1979 on NPR-3 is for development. The justification projects 122 new wells. If that projection is met, how many wells will you have on NPR-3?

Answer. Our current schedule which calls for 122 wells to be drilled in FY 79 would result in a total of 621 producible wells at NPR-3 by the end of FY 79.

Question. There is no increase for your $1.3 million program for the Naval Oil Shale Reserves. How does this program tie in with your oil shale efforts under petroleum and natural gas?

Answer. The oil and gas exploration program on the NOSRs is part of the Pre-Development Program designed to assess all the resources on the NOSRs. The oil and gas exploration program as outlined in the Pre-Development Plan calls for an approximately $7.5 million effort on NOSR-1 and approximately $4.5 million program on NOSR-2. This portion of the Pre-Development Program is currently being evaluated.

Question. When do you anticipate production of oil from the Naval Oil Shale Reserves? Do you have any idea what level of production might be possible?

Answer. There is no present plan for commercial production from the Naval Oil Shale Reserves. If production from the NOSRs were mandated, the lead time, would be a minimum of five years or more before any commercial production were realized. There is currently a modicum of production from the Anvil Points Oil Shale Research Facility. This production targeted at 100,000 barrels total is supported by the Navy and DOE jointly and is being produced from the pilot retort at the rate of approximately 150 BOPD. A preliminary estimate of sustainable commercial production from NOSR-1 would be on the order of 250,000 BOPD presuming adequate water availability and adequate environmental controls. Production from NOSR-2 would be significantly less, perhaps in the range of 100,000 BOPD. No in-depth analysis of this subject has been made to date.

STRATEGIC PETROLEUM RESERVE

Senator BELLMON. I want to go on now to the strategic petroleum reserve. We've already talked about the matter of the $1.2 billion. You feel you need it in order to go ahead and, you might say, forward contract for deliveries later on?

Mr. HYSTAD. Yes, sir, that's right.

Senator BELLMON. Could you give us some projection as to how rapidly you will be able to obligate this $1.2 billion?

Mr. HYSTAD. Well, we expect that we could obligate all of that, the full $4.1 billion, in fiscal year 1979. This, in effect, would require us to place orders for delivery of about 250 million barrels of oil, and that would not be a difficult task to achieve during fiscal year 1979.

Senator BELLMON. When you make those contracts for future delivery, do you get a firm price?

Mr. HYSTAD. We get firm prices. But in most cases, we do have some provisions for adjustment of price depending on changes in the world market prices. In the procurements we've had to date, this provides for adjustment both up and down, depending on the changes in the world price. We have had some cases in the sweet crudes where we have adjusted the price downward.

Senator BELLMON. It wouldn't seem to be much of a contract if the price can be juggled either way.

Mr. HYSTAD. Well, it is in the sense that it's tied to a reference price.

Senator BELLMON. Go ahead.

Mr. HYSTAD. We know, for example, that for this particular crude, that we would pay 10 percent below the world reference price for that crude. If OPEC increases the price by 5 percent, then the contract price would also be adjusted.

Senator BELLMON. What's the advantage, then, to forward contracting? Why not wait until you're ready to ship?

Mr. HYSTAD. We would hope we would be able to enter into some longer term contracts, particularly if we could do this on a Government basis, where we would get a firm price for long term or at least we would share in the cost of price increase rather than the Government's absorbing it all.

Senator BELLMON. Have you been successful in that effort thus far?

Mr. HYSTAD. We have not even attempted such an effort because all of our procurements to date have been on a short-term basis.

Senator BELLMON. How much of the $1.2 billion or the $4.1 billion will the Defense Department be able to utilize during fiscal year 1979?

Mr. HYSTAD. We expect they'll be able to utilize it all with longer term procurements, that they would be able to purchase base orders and contracts for about 250 million barrels.

Mr. MCISAAC. Senator, if we go to government-to-government procurement, we might not utilize the Defense Department; that is being looked at now.

Senator BELLMON. What would you anticipate to be the adverse consequences, if any, if we cut the $1.2 billion, say in half?

Mr. HYSTAD. If you cut the $4.1 billion?

Senator BELLMON. If we reduce the $1.2 billion down to, say, $600 million.

Mr. HYSTAD. In other words, if the reduction were to $600 million rather than $1.2. Well, it would have some impact. We'd be able to order oil delivery through most of 1980. We would not be able to order for delivery in the last quarter of 1980. We can order through about August 1980 under those circumstances.

Senator BELLMON. Suppose the appropriation, the $1.2 billion, were deferred until fiscal year 1980. Would you still be able to meet the goal of 500 million barrels of oil in storage by December 1980?

Mr. HYSTAD. We would probably be able to meet the goal of 500 million barrels. We would not have enough flexibility in our oil procurements.

Mr. MCISAAC. I think the concerns are, first, would we meet the goal? And I would be concerned that it might slow us down some. Although I don't have an exact answer, we have examined the question of the effects upon our fill schedule.

I would also be concerned that because we would remove some possible alternatives to our procurement method as it's operated today, we might be paying a higher price than we might otherwise.

In any event, we would still have to have an appropriation at some point to keep on schedule, whether it's a supplemental or it comes in fiscal year 1980. That would unfold as we go along, I suspect.

Senator BELLMON. There's a glut of oil now in the world market and prices are softening some. I'm not sure there's any advantage to jumping in and buying the oil months in advance.

Mr. MCISAAC. Our best estimates in internal discussions within the Department have led us to take the position that the best time is now.

Senator BELLMON. But your contracts are soft as far as price is concerned?

Mr. MCISAAC. Yes, and have been. But we anticipate, Mr. Chairman, a turnaround in 6 months or so.

WELLHEAD TAX

Senator BELLMON. Table 1 shows a composite of oil prices per barrel, including a wellhead tax of $1.52 in fiscal year 1979 and $1.88 in fiscal year 1980.

Now you may know more about what's going on here than I do, but I don't see much life in the wellhead tax proposal.

Do you have a calculation as to how much your fiscal year 1979 budget could be reduced if Congress decides not to enact the wellhead tax?

Mr. HYSTAD. Table 2, which I believe you have, shows it would be $337 million. The $4.1 billion would be reduced by $337 million without the crude oil equalization tax.

Senator BELLMON. That's in fiscal year 1979. What would be the reduction in fiscal year 1980? We don't have to worry about that yet, but could you just give it?

Mr. HYSTAD. That, of course, if we had the $4.1 billion, we would be able to purchase most of the oil for delivery during fiscal year 1980.

IMPORT DUTY

Senator BELLMON. If an import duty is imposed, how would it affect the per barrel cost of oil compared to the imposition of the wellhead tax? Let's use the figure of $5 a barrel as an import duty.

Mr. HYSTAD. The real issue here is whether or not SPR would pay the import fee. I think the assumption may be that we would not pay the import fee, and therefore, would not be impacted by it.

The discussion has been that we would pay the crude oil equalization tax, so we would have our oil prices increased to, eventually, the world average price. But, we're not now paying the import fee, and presumably, we would not if it were increased.

Senator BELLMON. So if the President enacts an import duty, it would be up to him to decide whether you pay it or not. Congress doesn't need to?

Mr. HYSTAD. The President would make that decision.

Senator BELLMON. This $4 million we're talking about spending to buy oil to be stored in strategic reserves shows up as part of our deficit in the international trade accounts. If we go ahead and

appropriate this full amount and the contracts are signed now, when does this deficit show up?

Mr. HYSTAD. The deficit will show up approximately at the time the oil is delivered. If we buy the oil on a destination basis, we pay for it within about 30 days after it's delivered to the gulf coast port. If we buy it on an origin basis, we pay for it when we pick it up from the foreign source.

So the outlays would occur upon delivery and the amount of the appropriation provided would have no direct impact on the balance of payments deficit.

MINIMUM FUNDING NEEDS

Senator BELLMON. Table 2 shows the minimum and maximum obligation authority required to meet the goal of $500 million barrels of oil in storage by 1980. It would appear from this that the Department could still meet its storage goals with an appropriation down to $2 billion.

Is my interpretation correct? And if that is correct, what's the reason that you're asking for $4 billion? Why should Congress not go ahead and simply appropriate the $2 billion?

Mr. HYSTAD. The table shows that with approximately $2.2 billion, we would purchase the oil for delivery through about March 1980. That gives us a bare minimum leadtime for our oil procurements and leaves no flexibility for alternative procurement approaches. We run a risk of running out of oil for the Reserve and slowing down the filling schedule.

Now it takes a substantial amount of time in advance of delivery to go through the entire procurement cycle. We place an order with the Defense Fuel Supply Center; they have to prepare a solicitation and announce the solicitation. The firms then need time to prepare their proposals and come back to the Defense Fuel Supply Center, and those proposals are evaluated and negotiations are conducted. Then, once an award is made, it takes about 6 weeks' advance notice to get the oil delivered to our site.

So we're talking about a minimum of about 6 months' leadtime. In other words, we need the funds about 6 months in advance of the date of delivery, and that is cutting it very close, but it's within the limits of our flexibility.

So we would certainly desire to have more than that minimum amount of $2.2 billion to give us some flexibility and to be sure that we, indeed, do not slow down our fill schedule.

OIL PROCUREMENT

Senator BELLMON. Have you encountered any hangups, any delays in the oil procurement in the past?

Mr. HYSTAD. We have not had any unusual delays. We have anticipated a normal slow Federal procurement process by providing 6 months' leadtime for our purchases.

So, we would have difficulty in substantially reducing that leadtime. We have not had any serious problems of obtaining exceptional offers from the firms.

Mr. MCISAAC. Senator, the delays that I think Mr. Hystad was referring to earlier in our original schedule had nothing to do with

procurement. We have encountered an occasional delay in actually filling these caverns. A tanker doesn't show up on schedule, we have bad weather at Freeport in the Bahamas, which is the transshipment point for some of this crude, or a captain refuses to take his ship up the Mississippi because of unusual currents and wind conditions that he feels might put his ship in danger.

These things have been hurting us on the fill schedule. But at no time have we been hurt by problems up at the front end with procurement.

Senator BELLMON. I'm not sure I've come to the proper conclusion, but let me offer it and see what comments you may have.

It appears that the committee could recommend reducing funding for the strategic oil reserve by a minimum of $337 million, and perhaps up to $2 billion, without jeopardizing the 1980 date.

Mr. HYSTAD. I think it's fair to say that a reduction of $300 million or so will not jeopardize the 1980 date. A reduction of $2 billion, I feel, would run a risk of jeopardizing the 1980 date.

FILL SCHEDULE

Senator BELLMON. All right. There's a question in my mind about the fact that the table 2 shows the cost per barrel as lower than the minimum schedule. Why is that?

Mr. HYSTAD. I believe you're referring to——

Senator BELLMON. Under the slow fill schedule.

Mr. HYSTAD. I believe that's table 2. Is that the one you're referring to?

[The table follows:]

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TABLE 2

STRATEGIC PETROLEUM RESERVE
Oil Ordering Schedule and
Estimated Need for Appropriations
500 MMB Reserve
(dollars in millions)

Oil Ordering Date	Amount Ordered	Delivery Period Covered	Cost with Crude Oil Equalization Tax starting Oct. 1978		Cost Without Crude Oil Equalization Tax	
			Avg. est. Price per BBL	Funds Required	Avg. est. Price per BBL	Funds Required
With Desired Ordering Flexibility in FY 79:						
FY 1977	27 MMB	Jul 77-May 78	$12.50	$ 338	$12.50	$ 338
FY 1978	191 MMB	May 78-Jun 79	14.69	2,805	14.04	2,682
FY 1979	246 MMB	Jun 79-Oct 80	16.78	4,129	15.41	3,792
FY 1980	36 MMB	Nov 80-Dec 80	18.08	652	16.14	581
	500 MMB			$7,924		$7,393
With Minimum Advance Orders in 1979 to Assure Continued Delivery:						
FY 1977	27 MMB	Jul 77-May 78	$12.50	$ 338	$12.50	$ 338
FY 1978	191 MMB	May 78-Jun 79	14.69	2,805	14.04	2,682
FY 1979	135 MMB	Jun 79-Mar 80	16.23	2,191	14.98	2,022
FY 1980	147 MMB	Apr 80-Dec 80	17.67	2,597	15.99	2,351
	500 MMB			$7,924		$7,393

Senator BELLMON. I believe it's the one that shows the slow fill schedule, showing prices for 1979, I believe, to be $14.98, as compared to $15.41.

Mr. HYSTAD. Yes, let me explain that.

We have made estimates of oil prices by quarter for each of the quarters through 1980.

Now in the case of our desired ordering schedule, we're going to purchase 246 million barrels in fiscal year 1979. We are estimating the cost of the oil upon delivery, and this, therefore, reflects the higher costs that will be incurred in the latter part of 1980. Whereas with the slower schedule, we don't purchase any oil for delivery in the latter part of 1980. It's all delivered and paid for through the first part of 1980 at the lower prices during those quarters.

So the average price per barrel is lower simply because we don't purchase any in the latter part of 1980. But the total price we would end up paying, if you look at the bottom line, of $7,393 million, is the same on either schedule.

Senator BELLMON. I'm not sure that I understand. You're going to be paying less for the oil if you buy it.

Mr. HYSTAD. We're assuming that the amount we pay for the oil will be determined primarily on the price of the oil at the time of delivery. That is, if it's delivered in September 1980, that we will be paying more for it than for deliveries that occurred back in March 1980.

So, in our slow schedule, our prices there reflect deliveries that have occurred up through March of 1980, and our faster schedule, that is, our larger buy of 246 million barrels, we're buying for delivery through the period of October 1980, and that reflects the higher cost of delivery from March 1980 through October 1980.

Senator BELLMON. But if you take the slower schedule, you're getting 147 million barrels delivered April to December 1980 at a lower cost than you anticipate if you have the earlier delivery, as I read it.

Mr. HYSTAD. We would get that at $15.99 per barrel.

Senator BELLMON. And your fast deliveries show $16.14.

Mr. HYSTAD. But that $16.14 is only for delivery from November, 1980 through December 1980. That's for 2 months and that's the highest cost period. So the average is reduced for delivery back in April, May, June, and July.

Senator BELLMON. Well, now, if the minimum schedule results in lower prices and allow us to keep $2 billion in the Federal Treasury for an additional year, I'm at a loss to know why you had to recommend this kind of a process.

Mr. HYSTAD. I'm sorry, sir, it does not result in lower prices. The total amount we would pay would be the same.

Senator BELLMON. But we save interest on our $2 billion.

Mr. HYSTAD. No; because the money would not be paid out until delivery, in either case. The timing of our payments would be exactly the same under either of these two alternatives, and the outlays and the interests would be paid—the deficit would be exactly the same.

The only difference, really, between the two approaches is that in one case, we can only order for up to 6 months in advance; while

in the other case, we could order for 12 months in advance of the delivery date.

Senator BELLMON. And you're concerned that there might be a price increase during that 6-month period?

Mr. HYSTAD. We're concerned that with the lower amount, we really have no ability to look at alternative oil procurement options. We would really be limited to sort of a hand-to-mouth procurement approach.

PROPOSED SPR EXPANSION

Senator BELLMON. The budget request states that Amendment 2 to the strategic petroleum reserve plan will propose expansion of the reserve beyond 500 million barrels. This budget request provides $75 million startup funding for the design and construction of a 250 million barrel storage capacity that's associated with this proposed expansion.

Can you tell us what's going to be in Amendment No. 2?

Mr. HYSTAD. Yes. The revised Amendment No. 2 was submitted to the Congress Monday, I believe. It will be before the Congress for 15 days, and either House will have an opportunity to disapprove the amendment. The amendment provides for expansion of the total size of the reserve from 500 million barrels to 1 billion barrels, and it discusses our plans for implementing the third 250 million barrels. We explain that we expect to store that oil in gulf coast salt domes. We will be working on those facilities starting in fiscal year 1979, and we will have them ready to start accepting oil in calendar year 1981. We could have the additional 250 million barrels in storage by early 1983 at the latest.

ADVANTAGE OF GULF COAST STORAGE

Senator BELLMON. I assume the reason you're going to the gulf coast and to the salt domes is because that's where the pipelines are and that's where the refineries and probably where the necessary geologic formations exist.

And I haven't seen Amendment No. 2, but in those plans are you taking into account the fact that this oil may not be located close to where the demand is, in case of an embargo?

Mr. HYSTAD. We have looked at that very closely, and we think that we have, really, almost an ideal situation. I think we have, really, a stroke of good fortune that we have the geological formations of these large salt domes located at the hub of the petroleum distribution system of this country. We will be storing this oil within a few miles of the major tanker ports of the gulf coast and within a few miles of these crude oil pipelines. So, we will be able to move this oil to any port that is now receiving imported oil or any port that we expect will be receiving imported oil, through the 1980's.

So, we think we really have almost an ideal location. We have very low-cost storage facilities; they're extremely good storage sites and locations and types, from a security point of view; they're underground, a few thousand feet, which makes them very secure from both accidental and targeted accidents, all acts of sabotage.

So, we think that we have a situation here where we've got some of the best of all worlds, in terms of storage locations.

Senator BELLMON. The transfer of the oil or the product from the gulf coast to the east coast will involve tanker movements, I take it. If we were to get into a state of hostilities, those movements might be interrupted.

Mr. HYSTAD. It's a possibility that there could be some difficulty in a state of all-out war, yes. We are not really designing the reserve to be able to respond to a full-scale military confrontation where shipping might be intercepted.

Senator BELLMON. Wouldn't it be well to consider that eventuality as a part of the strategic storage program you have underway?

Mr. HYSTAD. We have considered that. We discussed this at length with the National Security Council and the Department of Defense, and the conclusion was that they felt it was not necessary from the strategic point of view to store crude oil in locations where it would not have to be moved in tankers.

Mr. MCISAAC. I am sure part of the influence here, Mr. Chairman, is that, unlike the kinds of confrontations that you and I have seen, this one might move fairly rapidly. The question of need for a strategic petroleum reserve, if, indeed, we have an all-out war of the type to which you referred, is beyond our state of comprehension.

However, we are designing it for the kind of pressures that can be brought to bear in the event of an embargo or an economic interruption. I believe that's the purpose. And in that vein, I think we have felt that it's conceivable that you can, indeed, avail yourself of tanker movement from the gulf port to the New England area in 1 or 2 weeks' time.

I might also add that we're moving very aggressively, right at the moment, to get some product storage in New England. We have been assured by the GSA of our immediate accessibility to the Melville, R.I., storage facility that was abandoned by the Navy, in which we can store 1,300,000 barrels of reserve.

We are also looking at other possibilities in that area, as well as in Hawaii and Puerto Rico. These are the vulnerable areas of the Nation in terms of not being reachable through the pipeline system. We have promised that we will go into all of these details and come up with recommendations for location of storage in Amendment No. 3 to the strategic petroleum reserve plan, which we hope to have later on this year, in October or thereabouts.

Senator BELLMON. It might be conceivable that companies would use their private facilities to increase the amount of reserves in these areas that would be vulnerable.

Mr. MCISAAC. I think interestingly—and I'm not sure of the situation today—when I assumed this office in February, I tried to get a feel for the availability of facilities, and nearly everything, that could be filled was filled at that time.

We're in a situation where, if the companies are to add any more, which they're very reluctant to do and they're drawing down their stocks now—it would mean some considerable capital investment. For example, we were looking at the alternatives of going and getting what already existed by way of facilities, and what we found there is that if we were to take over existing facilities, we

largely would be displacing what is already being stored in the private sector.

PRODUCTION VERSUS STORAGE

Senator BELLMON. I have no further questions on the reserve issue. I would like to just try to emphasize a point I've been trying to make earlier, about producing more from the oil shale.

The strategic reserve is probably a necessary part of our national energy policy, and I don't oppose it. But it seems to me the lack of emphasis on increasing our production from the oil shale or from coal deposits or from our traditional oilfields, is something that also needs to get more consideration by Congress.

For instance, there's a proposal to enact a different definition of stripper wells. At the present time, there's some indication, at least, that wells that are deep and that have a high mix of saltwater with the oil are uneconomic to produce at the $5.25 price level in a well that may not be making more than 10 barrels a day.

As a part of our strategic energy supply program, have you looked into the possibility that perhaps a more reasonable definition of stripper production might also help add to our energy supply in time of stress?

Mr. MCISAAC. Mr. Chairman, I personally have not done that, but I know that this is being looked at. In terms of my area of responsibility, which is really the supply responsibility for alternative domestic sources over the next 5 to 8 years, to get us through what we see as a crisis situation, we're going to take every opportunity to look at every single barrier to production that exists, and we're going to be examining regulations very carefully.

I might add, although he's not with me today, Mr. Dobie Langenkamp is the Deputy assistant Secretary in this area. He's had long experience in some of the problems of regulation of the oil and gas industry, particularly as it affects small producers, and it's in his area of responsibility that we'll be establishing an operation. We already have an Office of Oil and Gas there. We're going to be expanding that operation to examine every single conceivable barrier and to try to overcome it in order to enhance our domestic production of oil and gas.

Senator BELLMON. I would think, Mr. Secretary, that in your position, where you have to deal with the country's energy supply situation in time of difficulty, that your input might have tremendous impact with the Congress if you were to simply decide what actions Congress might take to help us out. I mean, to be sure we didn't run out of oil in case of another embargo.

So, let me urge you to look at as many of these possibilities as Mr. Langenkamp may come up with, as you can, and give us your ideas as to what action we could take here to help improve our domestic production.

The stripper thing is only one item, I would think, that you might have some ideas about. You might have some ideas about oil shale, for example. You don't seem to want any more money in this budget to build a module.

Mr. McIsaac. But I want tax credits and entitlement changes up to a value of $6 a barrel, and I think that will get us what we're both after.

TAX TREATMENT OF TERTIARY PRODUCTION OF OIL

Senator Bellmon. Have you also considered that perhaps some changes in tax treatment of tertiary production of oil might help?

Mr. McIsaac. Yes, sir, we're examining that right now. We have no recommendation at the present time, but I'm sure we'll be formulating one.

Senator Bellmon. Will there be an effort made to enlighten the Congress as to your findings, or are you going to be constrained by OMB or somebody like that?

Mr. McIsaac. I don't believe so.

Senator Bellmon. How soon will you have a package of suggested actions ready for the Congress?

Mr. McIsaac. We're coming at this three ways. We're coming at it through the NESS route,

Senator Bellmon. Wait a minute. NESS?

Mr. McIsaac. That is the national energy supply strategy. It's an Internal Energy Department term for the supply strategy study that's been underway for 2 or 3 months.

We are now starting a programmatic approach to this in the sense that we're constructing a team that's looking very specifically at enhanced oil recovery, primarily tertiary recovery techniques, with the idea of seeing what we can do to speed tertiary recovery and to gain more production from the fields, where tertiary recovery must be used in order to tap the remaining reserves in any significant way.

We're considering over the next 2 months, a number of alternatives. We have two phases mapped out for this study, so my guess is that by late summer, mid-August say, we will have formulated and argued through our recommendations, internal to the Department. My view is that we would be in a position to discuss some of those approaches with you around Labor Day.

Senator Bellmon. Of course, crude oil and coal and oil shale have gotten most of our attention this morning. But also, are you looking at the natural gas situation as well?

Mr. McIsaac. One of the study efforts that we have underway is to explore enhanced gas recovery techniques in Devonian shales, tight gas sands, and coal bed methane.

Bob Thorne, whom I understand you will be talking with this afternoon, the Assistant Secretary for Energy Technology, of course, has an active program underway for the geopressurized methane.

Senator Bellmon. The only comment I'd make in addition is that it seems to me that the administration's greatest failing in its energy policy is lack of emphasis on increasing domestic supply. And I would hope anything you could do, as the person in charge of our future supplies, would be to try to give us your guidance as to what we need to do to try to enhance development of our own energy resources, which are abundant. There's no lack of raw materials. The problem seems to be getting them into production.

SUBMITTED QUESTIONS

We're going to have some additional questions on the programs we've been discussing, which we'll submit to you in writing. We'd like you to respond for the record, if you would.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

ADDITIONAL SUBCOMMITTEE QUESTIONS

STRATEGIC PETROLEUM RESERVE

Petroleum Acquisition

Question. According to Secretary Schlesinger, the DOE strategic reserve program is about six months behind the President's goal of 250 million barrels in storage by the end of 1978 (only 125 to 160 million barrels are now estimated to be in storage by that time). How will this affect your FY 1979 program for oil acquisition?

Answer. The slippage in the schedule for the first 250 MMB is not expected to impact the schedule for the second 250 MMB, which is to be in storage by the end of 1980. The FY 1979 Budget is requesting $4.1 billion in budget authority for the purchase of the second 250 MMB increment of crude oil.

Question. Currently, it appears you have only obligated about half of the $2.7 billion provided for this purpose in FY 1978. What are your current obligations and outlay estimates for the balance of FY 1978?

Answer. The SPR Program expects to obligate all remaining oil funds in this fiscal year. The Defense Fuel Supply Center (DFSC) is reimbursed by DOE approximately 30 days after delivery of the oil to the U. S. Gulf Coast.

Question. According to earlier DOE estimates, 42 MMB of oil was to be purchased during FY 1977 and 208 MMB is scheduled for purchase during FY 1978. How much of the first 250 MMB has actually been purchased? How long a lead time is required between bid and delivery? Are bids out for the balance of the 250 MMB?

Answer. To date DOE has requested DFSC to purchase 115 MMB of oil, and within the month will add another 86 MMB to this requirement. The total of 201 MMB will be adequate for fill through March of 1979. The following is the procurement schedule for obtaining petroleum for the Reserve:

	Duration (Days)
DOE places oil acquisition order with DFSC; Certifies funds availability	
DFSC determines purchase strategy and prepares solicitations	15-30
DFSC advertises and accepts bids	30-45
DFSC evaluates bids	20-30
DFSC conducts negotiations with bidders	20-30
DFSC conducts final evaluation of bidders	20
Final review	20
Notification of award	7
Tanker loading and unloading, ocean transportation and transshipment of oil	60
Total time from placement of order to delivery of oil	192-242

Question. What is the current delivery schedule required to meet the 250 MMB level? When will the fill rate reach a level to support this schedule?

Answer.. The first 250 MMB of the Strategic Petroleum Reserve (SPR) will be in place in July 1979. To meet that target, oil must be delivered to SPR sites at approximately 125,000 barrels per day through June 1978. As facilities are constructed, the rate will increase to approximately 850,000 barrels per day by the end of the year. SPR delivery rates will peak in January 1979 to about 950,000 barrels per day, then taper to approximately 580,000 barrels per day in June, as sites are filled to capacity and come off line.

Current and planned fill rates, as now conceived, will permit storing 125 million barrels of oil by December 1978 and 250 million barrels by July 1979. To date, daily fill rates are within 5.2 percent of the planned rates.

Question. There have been some criticisms of the DOE procurement bidding procedures -- namely that they are extremely burdensome and that they could be streamlined. Please respond.

Answer. The Department of Energy procures most goods and services for the SPR through the formal advertising and competitive bid process. This procurement procedure is the Government's preferred method for obtaining contractor support although at times it can be a time consuming process. Internally, the Department has done everything possible to expedite the process and eliminate inefficiencies but nothing can be done to eliminate the time required for formal advertising, bid preparation, evaluation of bids, negotiations and contract award. A limited number of procurements are handled under negotiated procurement procedures which can be less lengthy. All SPR procurement actions are processed in accordance with the Federal Procurement Regulations.

Question. Briefly describe DOE's oil procurement policies for the SPR.

Answer. Oil for the SPR is procured for DOE by the Department of Defense (DOD). DOD's oil procuring activity, the Defense Fuel Supply Center (DFSC), complies with the policies and procedures of the Armed Services Procurement Regulation in contracting for SPR oil. DOE submits oil requirements to DFSC by means of an Oil Acquisition Order (OAO). The OAO is a funded document and specifies the quantity and types of crude desired, delivery terms, and special provisions (enviromental, liability, etc.) to be contained in the solicitation and resultant contract(s). According to the terms of the Interagency Agreement between DOE and DOD, DFSC is afforded six months procurement lead time to consummate a contract once an OAO has been received and accepted. DFSC utilizes Requests for Proposals to solicit offers from industry to satisfy DOE's requirements. Offers are evaluated on FOB Origin or FOB Destination basis and the overall cost to the Government, including the use of U.S. Flag or foreign flag vessels, is considered in determining the successful offerors. Contracts are awarded to the responsive and responsible firms whose offers represent the least cost to the Government, all factors considered.

Question. In responding to a question on SPR oil procurement, DeputySecretary O'Leary indicated last June that every effort would be made to "explore every possibility that offers itself for assuring the lowest possible cost for the stockpiling program." What possibilities exist for savings in the purchase of these very large quantities of crude oil?

Answer. Budget authority is required when an oil order is placed with DFSC since DOE must certify that funds are available for the requested petroleum acquisition and transportation. Without such certification, oil and transportation solicitations can only be issued subject to funds becoming available some time in the future. This type

of solicitation could reduce the number of bidders, and limits competition, as well as reducing the Government's credibility in the world petroleum market.

DOE through its agent DFSC is currently procuring oil at competitive market prices. During FY 1979, DOE expects to consider different approaches to buying oil in order to obtain better than market prices and to minimize any impact on the world petroleum market.

Reserve Size

Question. What is the Administrator's current view as to the necessity for a 1 billion barrel storage program? When will a firm decision be required in order to meet the leach and fill, construction, and petroleum acquisition requirements necessary to meet the 1985 goal?

Answer. The Secretary views expansion of the SPR to 1 billion barrels as essential in meeting the Nation's objective of reducing U.S. vulnerability to potentially damaging petroleum supply interruptions. A large Reserve, coupled with effective conservation measures to reduce demand levels during an interruption, would enable the United States to:

- Significantly reduce adverse economic, foreign policy and national security impacts from oil supply interruptions;
- Reduce the probability of an oil embargo by forcing greater revenue losses on countries imposing an effective embargo;
- Assist in protecting the overall interests of the United States and its partners under the International Energy Program agreement; and
- Ease the severe problems and impacts of a crash program to reduce energy import dependence.

Concerning the timing of the decisions necessary to meet the 1985 goal, about four months remain before budget submissions must be prepared in September 1978, for the last 250 million barrels of storage. This assumes such storage will be federally financed at least in part and allows about 3 years for fill, 3 years for development lead time and about 1 year budget cycle time.

Question. The original SPR schedule for the first 500 million barrel storage was estimated at $9.3 billion and the accelerated schedule at $8.8 billion. What is the current estimate for the accelerated schedule?

Answer. The current cost estimate for the 500 MMB Reserve is between $8.6 and $9.1 billion. This cost range reflects the uncertainties associated with enactment of the crude oil equalization tax (COET) by the Congress and the configuration of storage sites which will make the 500 MMB SPR.

Question. In June 1977, Mr. Noel, then the Director of the SPR program indicated that the SPR plans assumed an import level of 7.5 million barrels per day (MMB/D) and an estimated 45 percent loss in an embargo or other emergency situation. This would require the SPR program to provide 3.3 million barrels per day which would provide about a 5-month supply at the 500 million barrel storage level.

What is the current import level? What import level is projected for 1980 when the first 500 million barrels is scheduled for storage?

Answer. The import level during 1977 averaged 8.7 MMB/D and reached a record high of 9.93 MMB/D for the month of February 1977. Total imports for the

first quarter of 1978 averaged 8.0 MMB/D, compared to 9.3 MMB/D for the same period in 1977.

Current projections for 1980 are between approximately 9.5 and 10.5 MMB/D, depending on the success of the President's National Energy Plan. This is somewhat greater than the estimate included in the SPR Plan, since consumption is currently projected at a higher level, and consequently imports would be greater.

Question. How many barrels of oil per day would be required to be withdrawn in a 1980 emergency? How many months of supply would be available in December of 1980?

Answer. The amount of oil to be withdrawn per day is dependent upon the scenario and the response measures assumed. Under the assumption that U.S. demand in 1980 would be 21.1 MMB/D, that imports would be 10.5 MMB/D, and that the International Energy Program would be fully effective, the withdrawal rates and months of supply of the SPR at 500 MMB in December 1980 are as follows:

	25% Production Cut, 100% Embargo of U.S.	50% Production Cut, 100% Embargo of U.S.	Loss of Major Foreign Supply
Required Replacement Withdrawal, MMB/D*	2.4	3.7	5.3
Months of Supply	6.9	4.5	3.1

*Demand restraint of increasing severity assumed to supplement SPR use.

Question. How many months supply of petroleum products do the Western European nations have on hand? (Germany, France, England, etc.?) How is their oil stored?

Answer. The table below presents a comparison of stocks in terms of days of previous year's net imports, 1974-1976. Comparable data are not available on all of the countries for 1977.

Average Stocks in Days of Previous Year's Net Imports*

	1974	1975	1976
Germany	52	60	68
France	88	92	99
The Netherlands	129	138	159
Japan	52	55	61

*Source: Study of reserves by E. Krapels, to be published June 1978. Data include imported products and crude oil.

The United Kingdom is assumed to have adequate North Sea oil reserves to meet foreseeable emergency needs.

These data do not provide an accurate estimate of the emergency preparedness of major oil importing countries since the stocks shown are ambiguous sources of oil. The principal reason is that oil stocks do not exist solely to replace oil during emergencies, but in most countries these stocks are an essential component of oil industry operations. Except for some foreign government-mandated industry storage, most of the above stocks are unavailable for emergency use without corresponding shutdown of the petroleum industry.

Only Germany and the United States have some small amount of strategic oil reserves outside of the normal industry stocks. The German government holds less than 30 MMB in underground storage, and the United States has approximately the same amount. Virtually all holdings in the foregoing table are in industrial storage--steel tanks, pipelines, and the transportation system.

Facilities Construction

Question. It is apparent that the construction of the facilities at the four sites, the pipelines, and the two dock tanker terminal is critical to meeting DOE goals. Please explain what construction is needed at each of the four sites and the timetable for completion.

Answer. Construction is proceeding at four storage sites and a DOE tanker terminal. The design effort at these sites is essentially complete. Bryan Mound and West Hackberry will have permanent facilities in place by late summer or early fall 1978. Bayou Choctaw facilities will be completed later this year (November). It should be noted that these three sites are now being filled with oil through small scale Phase I type fill systems. Meeting fill targets will require completion of the larger capacity permanent facilities. The Weeks Island site will be available for fill in January 1979 and the DOE tanker terminal will commence operations in October 1978.

The following are current targets for completion of permanent facility construction work at the four SPR storage sites:

West Hackberry

- Complete Oil Pipeline	9/01/78
- Complete Site Piping to Begin Fill at Increased Rates	9/01/78
- Complete Sun Terminal Construction	8/01/78
- Begin Pipeline Fill at 175 MBD	9/01/78

Bryan Mound

- Complete First Pair of Brine Disposal Wells	7/01/78
- Increase Fill to 115 MBD	7/01/78
- Complete Two Surge Tanks and Second Pair of Brine Disposal Wells	7/15/78
- Increase Fill to 150 MBD	7/15/78
- Complete Construction of Permanent Facilities; Second Set of Tanks	9/01/78
- Increase Fill to 205 MBD	9/01/78

Bayou Choctaw

- Complete Oil Pipeline	9/15/78
- Complete Brine Disposal Well Drilling	10/01/78
- Complete Reentry Well Drilling	10/01/78
- Begin Pipeline Fill at 240 MBD	10/15/78

Weeks Island

- Start Oil Pipeline Construction	7/01/78
- Complete Oil Pipeline Construction	11/01/78
- Complete Mine Conversion	1/15/79
- Begin Pipeline Fill at 230 MBD	1/15/79

Question. Various bottlenecks such as bad weather, high water on rivers and streams, labor disputes and lack of construction materials could delay construction. For each month delay in your current schedule, what would be the estimated cost increase in crude oil purchase?

Answer. Based on current cost estimates for SPR crude oil through 1980, a delay in the planned fill schedule could be expected to increase oil costs by about $.15 per barrel for each month. The magnitude of a potential delay in terms of the number of barrels and duration will depend upon many factors, including the SPR site affected, the type of bottleneck, possible work-arounds and the planned fill schedule at the site.

Question. Who are the contractors for each of the four SPR sites?

Answer. To date, most DOE contractor effort has been centered on design of sites, pipeline and terminals. Major contractors include:

- Gulf Interstate Engineering Co. - Conceptual design
- Parsons and Gilbane - Construction Management
- Parsons Brinkerhoff/KBB - Site design (solution mined sites)
- Fenix and Sisson - Site design (conventional mined sites)
- Ford, Bacon and Davis - Major Pipelines
- Gulf Interstate Engineering Co. - Major Pipeline
- Walk Haydel - Terminal Design Co.

Contractor efforts are underway at the four selected sites. Contractors include:

Bryan Mound	-	Gregory and Cook R. B. Potashnik S & B Contractors Cactus Drilling Brown Minneapolis
West Hackberry	-	Beckman Associates Cactus Drilling Co. Wallace Drilling Co. Glazier Contruction Co. H. C. Price Construction Co. Pentzine Construction Co.
Bayou Choctaw	-	Progress Drilling Co. Welch Drilling Co. Wallace Drilling Co. Mac Drilling Co. J. P. Messina Drilling Co.
Weeks Island	-	Dravo Morton Salt Frontier Kemper

Question. The most serious bottleneck appears to be brine disposal. New storage capacity will require leaching in salt domes. What is DOE's estimate of the delay that could be caused by legal challenges from environmental groups or individuals? Have any lawsuits been filed against DOE to date? Are any expected?

Answer. DOE has determined that the environmental impacts of disposing of leached brine will be minimal and of short-term duration only. Although legal challenges from environmental groups or individuals are a possibility for any federal program, no such lawsuits have been filed to date. If such a suit were filed, the program would be delayed for the period of time necessary to resolve the issue. If it is not resolved in DOE's favor, the resultant program delay would be of indeterminate magnitude, caused by the need to completely restructure the SPR, using facilities which do not require solution mining in salt domes, such as above ground steel tanks.

Question. On page 8, of SPR Amendment No. 1, Acceleration of the Development Schedule, Energy Action No. 12; it is indicated that one of two of the original sites will be expanded to achieve the 250 MMB target. Since the current capacity at the two largest sites totals only 163 MMB, at least 87 MMB of additional capacity will be required. What are your current plans in this regard? How long would this take?

Answer. The first 250 MMB of storage will be available using four currently related DOE storage complexes and one additional site, not yet selected.

Site and capacities are as follows:

Site	Capacity (MMB)
West Hackberry	52
Bryan Mound	60
Bayou Choctaw	44
Weeks Island	75
Sulphur Mines*	24
	255

* Site not yet selected

To achieve 500 MMB in storage by the end of 1980, the Department will select and construct new storage facilities or expand facilities at existing sites. Expansions are possible at Bryan Mound, West Hackberry, Bayou Choctaw, and Weeks Island. New storage space would be created by leaching caverns from salt formations using fresh water injection techniques.

Question. Which of the 13 SPR candidate undeveloped sites are to be utilized for the 175 MMB necessary to round out the SPR to 500 MMB?

Answer. Because environmental impact statements (EIS) on the three "groups" of candidate sites for SPR expansion (Temoxa, Seaway, and Capline) are still in draft form, DOE cannot at this time say which of the 14 sites considered therein for new leaching will ultimately be selected. However, the sites tentatively proposed for selection in the DEIS's are West Hackberry Expansion in Texoma, Bryan Mound Expansion in Seaway, and Napoleonville in Capline. In addition to these primary sites, back-up sites (Chacahoula or Weeks Island Expansion in Capline, Big Hill in Texoma, and Allen in Seaway) are under consideration in the event that use of one or more of the primary sites is inadequate or undesirable. However, none of the 14 candidate sites has been excluded from consideration at this time.

Question. Is it possible to complete the four site facilities, pipelines, and tanker terminal in a shorter time than currently planned? If so, how quickly could the facilities be constructed and at what additional cost?

Answer. No. DOE is following an intensive design and construction schedule to put facilities on line in the shortest time possible. Although the target storage goals of 250 MMB by December 1978 will not be met, DOE is utilizing fast track and work around construction techniques throughout the system. It is anticipated that the 250 MMB storage level will be reached in June 1979.

Expansion of Reserve to One Billion Barrels

Question. This $75,000,000 request is strictly for site design and construction beyond the first 500 million barrels. Does this mean that DOE has all of the funds necessary for design and construction of storage sites for the first 500 million barrel reserve?

Answer. The Department is in the process of conducting a detailed cost review of the site acquisition, design, construction and operation costs associated with the first 500 million barrels of SPR storage. Preliminary estimates indicate, however, that it will cost between $1.50 and $2.00 per barrel to develop storage facilities. It appears that the $1.53 per barrel thus far appropriated may not be adequate to fully develop 500 MMB of storage capacity.

Question. Various newspaper articles have said that there is disagreement between OMB and DOE as to the future acceleration of the second 500 MMB of storage. Does DOE favor a further acceleration for the second 500 MMB from 1985 to 1984 or 1983? Even if 1985 remains the goal, shouldn't DOE be requesting funds for all of the second 500 MMB storage facilities in order to meet the more complicated task of creating additional storage capacity?

Answer. There is no dispute between DOE and OMB regarding the SPR program. DOE has not expressed a position regarding acceleration of the December 1985 goal for the second 500 MMB, since the expansion amendment itself is only a proposal to the Congress at this time. However, internal DOE analysis has been made regarding accelerated storage, and there are a number of advantages which could be realized by achieving the second 500 MMB before the end of 1985.

At this time a joint DOE/OMB study is underway, prior to submission of the FY 1980 budget request, which is examining how the last 250 MMB of storage should be achieved. Subject to the outcome of this study, DOE may propose an accelerated program to achieve 1 billion barrels in storage earlier than 1985.

Question. Please describe the procedure to be used in creating this additional storage capacity. How many separate storage areas will have to be constructed? What is the estimated time required to complete this construction?

Answer. DOE plans to leach caverns in salt to create the additional storage capacity necessary for the second 500 MMB. From two to five new sites will be developed, depending on the amount of storage that is available by use of existing caverns. Although it is impossible at this time to estimate with particularity the amount of time that will be required to complete construction at the new sites, DOE anticipates that construction will be completed during the 1983-1985 time frame.

Question. The second 500 MMB of storage capacity to meet the 1 billion barrel goal by 1985 would require leaching in salt domes. It is estimated that 500 MMB of increased storage capacity would create 4 billion barrels of brine requiring disposal in the Gulf of Mexico or by injection into deep wells. Environmental challenges can be expected to brine disposal. This appears to be the most serious potential bottleneck to the DOE schedule in meeting the 1 billion barrel goal. Please comment.

Answer. While it is true that expansion of the SPR to 500 MMB or one billion barrels is dependent upon DOE's ability to dispose of brine created by leaching of new cavern space, DOE's plans for brine disposal have incurred no legal challenges to date. If such a challenge, either in the form of a lawsuit or a request for adjudicatory hearing or other administrative or legal action were to occur, the program would suffer a "day-for-day" delay until the issue was resolved and the appropriate permit issued or court order removed. If the available methods of brine disposal are precluded entirely because of such challenges, the resultant delay cannot be estimated, because the program would be impossible to implement through the use of new solution-mined caverns.

Long-Term Storage Problems

Question. The oil in the reserve is expected to be used only during major interruptions in energy supplies. Consequently, the oil may be stored for indefinite periods of time making it

imperative that an effective operation and maintenance program be established. The budget requests about $3.3 million for standby operational storage.

Would you discuss in detail what is included in the standby operational storage programs and how it relates to assuring proper control over the stored oil?

Answer. The $3.3 million budget request for standby operational storage will be used to operate and maintain SPR storage sites in FY 1979 after they are filled. Standby operations include continuous control monitoring of stored petroleum, periodic oil quality sampling, routine operation of plant and equipment, repair or replacement of faulty property or equipment, continuous site and pipeline safety and security and contingency planning for site withdrawal. Additionally standby operational storage funds will be requested in FY 1980 and beyond as more SPR sites are filled and placed in a standby status.

Question. Very little is known about the effects of long-term storage on the quality of crude oil stored in salt caverns. Has DOE made any assessment of these effects, and if not, are there plans to make such assessments.

Answer. The Strategic Petroleum Reserve Office (SPRO) has held extensive discussions regarding long-term storage effects on the quality of crude oils stored in salt caverns with petroleum geologists, chemists, major refinery/engineers, and petroleum analytical laboratory personnel.

Further, extensive discussions have taken place between SPRO and storage operations, and management personnel from two major countries, Germany and France, employing salt caverns for crude oil storage.

Conclusions drawn from these discussions reveal that comprehensive analyses of this nature have not been conducted, because there is no real concern that the quality of the crude oil might be detrimentally affected. However, the correspondents agreed with SPRO's position that for static storage of up to 25 years, it would be prudent to undertake studies to determine the effects of long-term storage on oil quality.

Consequently, SPRO has recently completed negotiations with Kavernen Bau-und Betriebs-Gmbh (KBB) of Germany to undertake a comprehensive analysis of the effects of long-term crude storage in salt caverns on the quality of the oil. KBB has salt caverns which have had crude oil in storage for up to eight (8) years, the longest period known. This study is expected to be completed by February, 1978.

Additionally, DOE has initiated laboratory studies with its Bartlesville Energy Research Center (BERC) involving the effects of commingling of different crude types.

Question. A recent GAO report highlights certain storage risks being taken by DOE such as:

--allowing brining operations to continue after caverns were tested and certified as suitable for crude oil storage with no plans for retesting after completion of brining operations; and

--placing crude oil in cavern storage before completing analysis of tests which would have provided assurance that oil would not penetrate adjacent caverns.

At the same time, the report acknowledges the tight time constraints for completion of the reserve.

What actions is DOE taking to reduce the storage risk and uncertainties cited in the GAO report?

Are there any actions that you would do differently and perhaps more efficiently if the storage goals were relaxed somewhat?

Answer. The title and tenor of the GAO report implies that there are significant risks with oil storage in salt domes. In fact, the storage of hydrocarbons in salt domes is a proven technology and has been practiced in this country for about 20 years. In North America, over 900 solution-mined caverns, with a total capacity exceeding 300 million barrels (MMB), have been developed in salt deposits and converted for hydrocarbon storage. Additionally, both France and Germany are developing and using leached salt caverns for oil storage.

No petroleum stored as part of the SPR has ever been lost due to leaks in underground salt caverns. Caverns at three sites are currently being filled with crude oil and at no time has there been the slightest indication that these caverns were not totally suitable for storage. Additionally, DOE monitoring during oil fill operations indicates that there has been no oil loss.

The Department agrees with GAO that the SPR Program should be implemented to minimize risk. This is specifically the reason why solution-mined salt caverns are being utilized for Reserve storage. Rock salt found in salt dome formations has a combination of characteristics which makes it highly attractive for petroleum storage.

DOE's implementation of the Reserve has andwill continue to be based on proven technology and engineering. At no time will attainment of storage goals jeopardize the integrity of SPR storage sites or the petroleum stored there.

Regional Reserves

Question. The December 1976 Plan stated that regional needs could be met through a centrally located crude oil reserve and, therefore, a regional reserve was not needed. The May 1977 Plan amendment stated that a reexamination of the need for a regional reserve would be made.

What is the status of the decision on the regional reserve issue?

Answer. A reexamination of the need for a regional reserve was completed which resulted in the DOE recommendation to store 20 MMB of residual fuel oil (or an acceptable substitute) as a part of the SPR. This recommendation was submitted to the Congress as a part of Amendment No. 2 to the SPR Plan (Energy Action DOE No. 1) on March 28, 1978. It was proposed that the refined product be located in underground storage facilities, readily available to East Coast users, costing approximately the same as salt dome storage in the Gulf Coast area. Congress did not support the salt dome cost equivalency language, relative to product storage, and disapproved Amendment No. 2 to SPR Plan on April 17, 1978. The Administration is committed to providing for the regional needs of New England in case of an energy emergency.

The DOE is now exploring low-cost storage options which will ensure adequate capacity in the New England area. If only high cost options (such as new rock caverns) prove desirable, the President will review the matter before any final decision is made. In any event, however, the President is aware of the regional storage issue, and is committed to ensuring adequate energy storage security for the New England region.

Question. If a regional reserve is needed, how will it impact on your funding needs for fiscal year 1979?

Answer. Until a final system configuration for the regional reserve evolves, it is difficult to estimate budgetary impacts with any precision. Studies are now underway to develop better cost and scheduling estimates

for the various candidate storage sites being considered for the regional reserve. These improved estimates will form the basis for determination of budgetary impacts after the specific site configuration becomes firm. In any event, any funding which may be required during FY 1979 is likely to be of a planning nature (e.g. environmental assessment, preliminary technical design) and is not expected to result in an additional request for funds.

Question. How firm are DOE's plans for storing petroleum products in Eastern Canada which apparently would be used in the event of an emergency to provide protection for the New England States?

Answer. Planning for the storage of fuel oil earmarked for East Coast users is still in process. Specific sites for this storage have not been selected yet. An analysis is being initiated to address several possible decision options with respect to the location of East Coast product storage and to suggest site system configurations for these decision options. Storage in Canadian sites will be included as an alternative for a portion of the product storage for the analyses of some of the decision options. The analysis will also include consideration of candidate storage locations within the qualifying East Coast regions and the Gulf Coast. More detailed technical and environmental analyses will also be required before final site selections for East Coast product storage can be made. There are no firm plans at present for storage of either crude oil or product in Canadian sites.

Petroleum Mix

Question. In view of the program's objective of diminishing U.S. vulnerability to the effects of a severe petroleum supply interruption, why are you planning to store 65 percent sour (high sulfur) crude and 35 percent sweet (low-sulfur) crude while industry reports that present refinery capability is the opposite... 60 percent sweet and 40 percent sour?

Answer. Present refinery capabilities for handling sour crudes [1/] is not the proper perspective for considerations involving SPR crude mix. Rather, the primary concern is the proportion of sweet/sour crudes denied during a potential severe petroleum supply interruption. In a recent industry publication [2/] the crude processed in U.S. refineries as of January 1, 1978, was reported to be 54% sweet and 46% sour with foreign imports comprising 40% and 45%, respectively, of the total sweet and sour supply. To arrive at the planned crude slate for the SPR, both historic and forecast patterns of crude supplies were considered together with careful examination of all crudes of foreign origin. A spectrum of potential interruption scenarios was approved by the national security agencies and then used as a basis for determination of alternative SPR crude mix required to properly respond to each. The planned SPR mix of 67% sour and 33% sweet represents the crude proportions required to properly respond to the interruptions considered most likely, on a relative scale, and additionally provides a broad range of response capabilities for other potential interruptions.

Question. Since the industry does not expect refinery capability for crude processing to change significantly through 1985, how would the Reserve crude oil ratio now planned for storage be fully usable in the event of another embargo?

Answer. The refining industry is expected to expand its capacity (from a 1977 base of approximately 16 MMB/CD) on the order of

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1/ Equal to or greater than 0.5 wt. % sulfur.

2/ "Capability of U.S. Refineries to Process Sweet/Sour Crude Oil"; National Petroleum Refiners Association; March 15, 1978.

9% by 1980 and an additional 13% by 1985. This forecast growth in capacity, along with supporting increases to crude supplies available, formed the basis for the DOE decision regarding SPR crude oil mix. Foreign imports of high sulfur crude oil are expected to represent the marginal U.S. supply as domestic production of crude oil declines in the future. A growth in the ability of domestic refineries to process progressively higher sulfur crude slates is expected to occur simultaneously.

Question. If the use of foreign refineries is contemplated for processing part of the sour crude during an embargo, what assurances or commitments has the U.S. Government received that these refineries will refine U.S. crude when needed?

Answer. The foreign refineries most likely to receive SPR crude would be the non U.S. refineries in the Caribbean typically serving U.S. markets. To date, there have been no discussions on the part of the USG with these refiners regarding specific arrangements for their operation during an interruption. The assumption that these refineries will be available for our use is consistent with advice provided by the National Security Agencies.

Additionally, a U.S. crisis management framework will exist during an embargo to provide the mechanisms by which to swap U.S. crude directly in exchange for products from foreign refineries. An allocation program has been proposed to distribute crude supplies to product importers for use in exchange agreements with foreign refineries as needed. Under the aegis of the proposed allocation program, a product importer would apply to the U.S. Government to have its allocable crude processed by a non U.S. refinery provided product from such crude is imported into the region of critical shortage on a barrel-for-barrel basis. In turn, U.S. Government control apparatus will evaluate any adverse circumstances associated with use of these refineries during the imposition of an embargo and will act to specifically guide and oversee individual crude exchange arrangements between U.S. product importers and foreign refiners.

Questions Submitted by Senator Huddleston

COAL LOAN GUARANTEE PROGRAM

Question. Could you tell me the status of the Coal Loan Guarantee Program?

Answer. A Notice of Proposed Rulemaking was published May 19 in the Federal Register. A public hearing on the proposed regulations will be held on June 21 in Charleston, West Virginia.

As a means of accelerating the program, the Notice included an announcement that applications will be accepted for review and processing, with the understanding that guarantees will not be issued until the EIS process has been completed and the regulations have been promul-

gated (around mid-August). This estimate is based on publication of the final EIS and final regulations on July 19 and July 24, respectively, and expiration of the mandatory 30-day no action period following publication of the final EIS on August 17.

The estimated processing time per application is two to three months, taking into account the need for individual on-site feasibility studies, environmental reviews, and various other related analyses. By proceeding now with the processing stage, we should be in a position to issue guarantees when the program is fully implemented in August. Of course, any provisional commitments to guarantee that are based on the proposed regulations will be contingent upon compliance with the final regulations.

Although application forms are not available for use at this time, the Notice contains sufficient information for anyone who wishes to apply, and my staff will be available to assist prospective Borrowers with any questions they might have.

The application form was designed, pretested, and cleared through FEA last year. However, questions arose with respect to environmental review procedures, disclosure of information, and reporting requirements, which had to be resolved, and which required eventual changes to the regulations and the application form. The revised application form is presently going through the DOE clearance process, after which it will be forwarded to the Office of Management and Budget for approval and a form number. We understand that OMB takes 6 to 8 weeks to approve forms.

A draft Environmental Impact Statement was issued on March 21 for public comment. Comments were requested no later than May 5. To date, we have received only a few replies, and it does not appear at this point that substantial revisions will be required. Therefore, we expect to meet our projected date of July 19 for publication of the final EIS.

Question. When do you expect to begin accepting applications?

Answer. Immediately, based on publication of the Notice of Proposed Rulemaking in the Federal Register on May 19.

We will be processing applications and issuing provisional commitments, contingent upon publication of the final EIS and final regulations on July 19 and 24, respectively.

Question. How long after that will you be issuing guarantees?

Answer. When the regulations have been promulgated and the mandatory 30-day no action period following publication of the final EIS has expired (or by August 17).

Question. How many staff members currently are assigned to the Coal Loan Guarantee Program?

Answer. Presently, there are four full-time employees assigned to the program, and three additional staff people will be added in the near future.

Question. Clearly, that number will be insufficient when the program becomes fully operational. What do you assess the program's staffing needs will be at that time?

Answer. The staffing requirements will be contingent upon the volume of guarantee applications.

If more applications are received than is anticipated, I am prepared to ask the Controller's department for additional personnel ceiling for this program.

Question. Is there sufficient funding in this budget to cover those staffing requirements?

Answer. Yes, these funds provide for a pilot program for the initial round of loan guarantees.

Question. Also, I note that you are requesting no additional funds for the default fund.

Answer. The funding provided for FY 78 carries over into FY 79.

Question. How many guarantees do you anticipate can be made with the funding you already have?

Answer. The FY 78 budget appropriation approved $62 million in guarantee authority. We expect each guarantee to range between $2 and $7 million, providing for between 10 and 30 guarantees.

Question. That number seems very low in view of the fact that you have received over 350 inquiries, and that 20 to 25 applications are already ready to be filed. I think, too, that it is safe to assume that interest in the program will be even greater once you begin actually issuing guarantees. Don't you think that additional funding could be put to good use?

Answer. At this point, we do not know how much additional funding we need. If the program needs additional funding, we will submit a request for such funding at a later date, after we have had more program experience.

Questions Submitted By Senator Bayh

Q. Can you please inform the Committee about the status of the SPR program, what has caused program delays to date, and if the Department is still standing behind its $4.2 billion request?

A. The SPR has targeted storage of at least 125 million barrels (MMB) in underground facilities by the end of 1978. The program has experienced some delays in construction because of wet weather at construction sites and because some landowners have contested DOE's right to take property for pipelines and above ground facilities. In addition, some drilling work is behind schedule because drill rigs have encountered delays in transit from distant locations to SPR storage sites. Finally, a delay was experienced when the state of Louisiana issued a blanket objection to SPR permit applications prior to the start of construction of segments of a key oil pipeline. DOE and its contractors are applying fast tract construction techniques to overcome schedule delays wherever possible. Based on the current SPR schedule projection, the U.S. Government will have stored and under its direct control at least 125 MMB of crude oil at the end of 1978. The 250 MMB storage goal is expected to be achieved in July 1979.

The Department of Energy continues to support the $4.2 billion budget request for the SPR Program. The budget authority requested in the FY 1979 budget for petroleum acquisition and transportation is consistent with the President's wish to fully fund the 500 million barrel Reserve in fiscal year 1979.

The appropriations available in FY 1978 for oil do not permit any flexibility for long term commitments for oil delivery. In order to assure that adequate oil is available to meet the fill schedule, the funds must be used only for deliveries during 1978 and early 1979. This precludes implementation of any alternative oil procurement strategies.

If adequate funds were available, it would permit implementation of a number of possible procurement strategies, including the following:

- o Long term commitments with producers to permit increased production of specific types of crude oil, or changes in oil types used by other consumers, so that SPR is not competing with other consumers for the same supply. This capability may be particularly desirable for "sweet" crude oil in 1980 and beyond, as world demand for this high quality oil is expected to exceed available supply.

- o Long term commitments with sellers in order to obtain price discounts that may not be feasible with short term contracts.

- o Long term commitments to encourage increased production by suppliers not traditionally supplying the U.S. market, thereby reducing U.S. dependence on relatively few producers.

These alternative strategies might be implemented on a competitive basis with private firms or on a Government-to-Government basis.

The funds requested for SPR oil in the FY 1979 budget would provide some flexibility to pursue these types of alternative strategies.

Q. Why is the Department relying exclusively on foreign oil, when it has the authority to use oil from federal offshore and onshore leases--from which the government gets royalties--and oil from the Navy's Elks Hill oil reserves now being sold commercially? The GAO has indicated such purchases would save the government over $1 billion.

A. Use of royalty oil to fill the SPR is not considered desirable. Some relatively small budget savings could be realized, but the adverse impact is likely to outweigh these savings. Undersirable effects include:

- — It has a significant adverse impact financially on small refiners now relying heavily on access to royalty oil.

- — It would be necessary to terminate existing Interior Department royalty oil contracts to use this oil, with potentially serious disruption of normal oil supplies to U.S. refiners.

With respect to Elk Hills oil, there presently is no capability to move this oil from the California fields to the Gulf Coast storage sites of the SPR. When pipelines are developed to transport this oil to other markets, it is expected that the selling price will increase substantially, to be competitive with imported oil. Therefore, there is not likely to be any cost savings to the Government by using this oil for the SPR. If it becomes feasible and economically attractive to use Elk Hills oil for the SPR, we plan to do so.

Q. Has the Government considered using Alaskan Oil for the Reserve?

A. The feasibility of including Alaskan North Slope (ANS) oil in the Strategic Petroleum Reserve (SPR) has been considered since the start of the program and is under continuing review. The crude assay data currently available to the Strategic Petroleum Reserve Office (SPRO) indicate that the quality of North Slope commercial production will fall outside the desired ranges of oils that SPRO plans to store. To store North Slope crude oil in facilities now being developed may require changes to the design of some of the facilities and increase overall program costs. The key problem areas are high yields of gas oil and residual, high sulfur content of the residual, and the viscosity.

Conceptually, the SPR crude oil should be of similar quality to imports lost during an interruption. During drawdown, SPR crudes will

be mixed with domestic supplies and continuing imports. If an unusually heavy crude such as ANS were stored, larger volumes of lighter low-sulfur crudes may be needed in the SPR to ensure a total mix that is compatible with U.S. refining capability.

Additionally, the use of ANS oil to fill the SPR would be unattractive from an economic standpoint. Both ANS and imported oil are in the imported tier and thus would be treated the same with respect to the entitlements program. ANS oil and imported oil of the same quality are approximately the same price exclusive of transportation costs. Transportation costs for ANS oil to be shipped to the Gulf Coast are greater than transportation costs for other Gulf Coast imports.

Question. What progress is the Department making on its analysis of the oil needs in the Northern Tier states and the several pipeline proposals that have been suggested for transporting Alaskan oil to the Interior portions of the nation?

Answer. In May 1978, the Department of Energy (DOE) established a task force team, under the Office of the Assistant Secretary for Policy and Evaluation, to assist the Bureau of Land Management (DOI) in the preparation of an Environmental Impact Statement (EIS) on the Northern Tier Pipeline Company application to build a new 1553-mile pipeline for Port Angeles, Washington, to Clearbrook, Minnesota. The following has been accomplished and/or is planned to obtain information vital to an analysis of the proposed pipeline, and the other pipeline proposals suggested to transport Alaskan oil to the Northern Tier and Inland States:

- Public Hearings were held the week of May 15-19 in Chicago and Seattle to make public the objectives and scope of the DOE study, and to solicit comments on the proposed Northern Tier Pipeline and related port and terminal facilities. Transcripts of oral presentations made during the hearings, and written comments received subsequent to the hearings, are currently under review.

- Several meetings have been held with other federal agency representatives to familiarize them with the DOE study. Commitments have been obtained from each agency for study inputs relative to each agency's area of responsibility and expertise.

- A Northern Tier States crude oil demand analysis has been initiated to determine the needs of each state through the year 2000. Meetings are planned in late June with the respective State Energy Offices to obtain their independent supply/demand projections. The impact of the National Energy Bill passage and its effects on demand is also included in this effort.

- Conferences are being scheduled in June and July with pipeline companies which have proposed alternative pipeline routes and methods for transporting Alaskan crude.

Some of the transportation alternatives to be studied include: the Sohio (PACTEX) pipeline; the Kitimat route proposal; the Trans-Mountain pipeline reversal/looping; the Mid-Continent system expansion; and the Alaskan Highway pipeline route. Other methods of transportation to be studied include the use of unit train oil tank cars and transhipment by ocean-going ice breaking tankers via the North-west Passage.

Current schedules are to issue an interim and final report concurrently with the DOI, on the Northern Tier Pipeline EIS, with a final report to include analyses, conclusions and recommendations to the President.

Question. Several weeks ago the President suggested the Administration is again thinking of exporting Alaskan oil to Japan as a solution to the glut of oil on the West Coast. What are the Department's current thoughts on exporting Alaskan oil to Japan?

Answer. The Department's position on exports of domestically produced crude oil, including crude from Alaska has been that as a crude-deficient nation, we should seek ways to retain and fully utilize all of our available domestic crude supply. Accordingly, DOE maintains that the best answer to the West Coast surplus problem lies in developing transportation systems, in the form of west-to-east pipelines, to provide efficient access for domestic crude to domestic refineries and markets. An export program for Alaskan crude could tend to discourage construction of these necessary transportation facilities. Further, such a program could tend to discourage the investments needed to modify domestic refineries to process all of the relatively heavy Alaskan crude.

However, DOE is aware that the current West Coast crude surplus does give rise to rational arguments for an Alaskan crude export/exchange program with Japan, on the basis that it would provide an economically and logistically attractive short-term solution. In this same vein, the Department is currently readying a program to relieve the West Coast residual oil surplus by allowing temporary, controlled volume export/exchange agreements for residual oil refined in California. With this in mind, DOE will continue to analyze the various aspects of possible crude oil export programs, but will not take any action which is not in the overall national interest.

SUBCOMMITTEE RECESS

Senator BELLMON. The subcommittee will now stand in recess until 2 p.m., when we will look at our fossil energy programs. Gentlemen, thank you very much.

[Whereupon, at 12:25 p.m., the subcommittee was recessed, to reconvene at 2 p.m., the same day.]

(AFTERNOON SESSION, 12:10 P.M., THURSDAY, MAY 18, 1978)

DEPARTMENT OF ENERGY

FOSSIL ENERGY RESEARCH AND DEVELOPMENT

OPENING STATEMENTS

Senator HUDDLESTON [presiding]. The subcommittee will come to order.

This afternoon we're resuming our hearings on the Department of Energy budget estimates. Winding up our hearings, we will concentrate on the estimates for the fossil energy research and development programs, a total of $732.8 million for fiscal year 1979, an increase of $40 million over fiscal year 1978. That total includes $637.4 million in operating expenses and $95.3 million in construction.

The justification has been included in the record, along with the summary sheets that were supplied at the committee's request.

PREPARED STATEMENT

Secretary Thorne, we welcome you back before the committee. If you would be good enough to introduce your associate at the witness table, we will proceed with a brief highlight of your prepared statement. The full written statement, of course, will be included in the record, along with the prepared statement of Mr. Fumich, Program Director for Fossil Energy.

[The statements follow:]

Prepared Statement of Robert D. Thorne

ASSISTANT SECRETARY FOR ENERGY TECHNOLOGY
DEPARTMENT OF ENERGY

Mr. Chairman and Members of the Committee:

It is a pleasure to appear before you to discuss the Department of Energy's FY 1979 funding request for Fossil Energy research and development. I am accompanied by Mr. George Fumich, Program Director for Fossil Energy.

Mr. Chairman, I would like to overview the Fossil Energy budget we are presenting to you today in the context of the nearer-term energy situation confronting this Nation. There is no need to dwell extensively on the worsening magnitude of our oil import problem -- for it is something you have heard time and time again.

But let's look specifically at the problems confronting the use of our most abundant domestic energy resource -- the coal we must count on to mute the impact of the expected 1980's peak in world oil production, but a resource, nonetheless, that is by no means assured of fully acceptable commercial use.

For example:

-- Eastern coal represents over three-fourths of last year's coal production. Reserves total over 200 billion tons. Yet 90 percent of all eastern coal resources cannot meet even the existing environmental standards without adding costly and sometimes unreliable pollution control equipment.

-- Moreover, while 60 percent of the western coal does meet current standards, all of it will require 85-90 percent sulfur removal, regardless of its much lower sulfur content, under the new proposed source performance standards.

-- Uncertainty about the relative roles between the private sector and Government in developing new resources, especially with the oil shale and other synthetic fuel industries, has limited the full commercial development of our fossil reserves.

Some industries have moved ahead on their own to commercialize new technologies. As an example, I know of one small business that is now installing fluidized bed coal combustor boilers in small industrial plants. Obviously, more of this is needed and on a larger-scale, but some momentum is underway.

It's one of the jobs of Energy Technology to provide the technical and engineering confidence so that technologies can move into the U.S. economy on a secure basis in the next several years.

For example, DOE feels quite certain that direct coal combustion techniques can make a sizeable contribution by 1985 in an environmentally acceptable way. Consequently, our first priorities are shaped toward technology developments in the areas of coal preparation and fluidized bed combustion with the intent of improving the environmental aspects of coal combustion.

In recognition of the liquids problem the country will likely be facing the mid-1980's, we are striving to demonstrate the state-of-

the-art liquid fuel technologies. Converting coal into liquid and solid fuels, enhanced oil recovery and extracting oil from shale are near-term DOE goals. The new supply initiatives, which lay the framework for starting construction of one or more coal based synthetic fuel plants in FY 1980, through FY 1978 reprogramming actions, and the entitlements and financial incentives for the oil shale industry should accelerate the availability of synthetic fuels by several years.

We are emphasizing technologies that will increase supplies of gases at low, medium and high energy contents. The conversion of western coals to pipeline quality gas is an established technology, but the same cannot be said for eastern coals. A sizeable portion of our budget is directed toward resolution of the technical problems and the demonstration of processes suitable for eastern coals. The processes for converting coal to low and medium Btu gas are essentially developed and our program is mostly oriented toward the demonstration projects.

Mr. Chairman, the budget we are discussing today is designed to achieve a balance between near-term needs and long-term opportunities. In my brief remarks this morning, I have only touched on a few of the near-term aspects of the Fossil Program. Mr. Fumich, in his discussion, will also cover our longer range fossil energy programs as well.

We are acutely aware of the dynamic nature of the problem with which we are dealing. To be able to respond in an effective and timely manner to changing circumstances is one of the foremost challenges we in Energy Technology and this Committee face. I look forward to this continuing interaction.

This concludes my formal statement, Mr. Chairman. Before we go to Mr. Fumich, I would be happy to answer any questions you or Members of the Committee may have.

Thank you.

PREPARED STATEMENT OF GEORGE FUMICH, JR.

PROGRAM DIRECTOR FOR FOSSIL ENERGY
DEPARTMENT OF ENERGY

The Fossil Energy Program is responsive to the National Energy Plan goals of conserving our currently available scarce forms of energy and implementing the use of more plentiful fossil energy fuels in the near future.

The NEP enunciates a variety of incentives designed to encourage industries and utilities to minimize their use of conventional gas and oil and maximize use of coal. Major research and development efforts are required if the role of coal in supplying energy in the U. S. is to be significantly expanded. Environmental, health, and safety problems must be overcome and coal technologies must be economically attractive when compared to available alternatives. A major objective of the Fossil Energy Program is to accept these challenges and meet them in order to facilitate a smooth transition to a more coal-based national energy profile in the mid-term. Major coal research programs are directed toward increasing coal production and developing more efficient technologies for making coal more economically competitive and environmentally acceptable (in accordance with the premise that disruptions and dislocations must be minimized).

The mission of Fossil Energy is the efficient and effective management of all fossil energy research, development, and demonstration activities. The objective of these R&D activities is to make available proven technology that will, when commercialized, assure in the National interest a dependable and timely flow of energy from fossil sources. The results of this work will also be designed to deliver sufficient environmentally acceptable energy to meet National fossil energy requirements at acceptable costs for industry, defense, the public sector, and private individuals.

In the near-term, we will continue to use large quantities of oil and gas. In accordance with National objectives to reduce U. S. dependence on imports, another major goal of the Fossil Energy Program is the development of alternate domestic sources of oil and natural gas. Additionally, we will promote the development and utilization of technologies which will conserve limited fossil fuels and increase fuel flexibility.

The greatest need for research and development breakthrough is in the area of liquid fuels because domestic liquid fuel supplies are dwindling and large amounts are needed for transportation and industrial feedstocks. Alternatives to liquids in these applications are generally very expensive. The emphasis of the Fossil Energy liquids program is on increasing domestic production by recovering a higher fraction of oil from developed oil fields; developing alternative fuels by developing economically competitive shale oil extraction and coal liquefaction technologies; and increasing the efficiency and fuel flexibility of liquid fuel consuming equipment.

A balance between gas supply and demand may be obtainable without requiring extreme prices, mandated curtailments, or extraordinary technical breakthroughs. Conventional gas resources, while uncertain, will contribute significantly to U. S. gas supplies through the year 2000. In addition, there are a variety of technologies

potentially available to obtain gas from unconventional geologic formations (e.g., Devonian Shale, coal seams, tight (low permeability) sands, geopressured aquifers) and from coal. Fossil Energy gas research has focused on transforming these potential technologies into commercially viable operations.

The Government has two principal means through which it can exercise leadership in pursuit of the above.

- Establishing regulations or incentives to promote the development or implementation of technology and use (or disuse) of various forms of energy.

- Conducting or financially supporting research and development to provide new technologies capable of economically producing useful energy from hitherto unusable sources, as well as extracting more usable and environmentally acceptable energy from existing sources.

OBJECTIVES:

The Coal Resource objectives are to develop and demonstrate, in cooperation with industry, the technologies necessary to allow coal and coal-derived fuels to substitute for oil and gas in ways and at rates that are economically, environmentally, and socially acceptable.

The objective of the Petroleum Program is to increase the domestic production and resources of oil from both onshore and offshore areas and from tar sands and oil shale. The strategy is to accelerate extraction by developing and encouraging the use of advanced technologies that are economically feasible, environmentally and socially acceptable, and operationally safe. Because the effectiveness of the enhanced oil technology depends a great deal upon the characteristics of the field, the strategy includes identifying those fields that have significant production potential, developing technologies for those situations, and assisting the private sector in accelerating the use of these technologies through cost-shared contracts.

The objective of the Gas Recovery Program is to increase the production potential and develop technologies to extract this resource at acceptable costs and in environmentally and socially acceptable ways.

This strategy involves:

- Determining the characteristics and production potential of the different resources

- Developing, demonstrating and transferring effective extraction technology

The strategy includes cost sharing projects with the private sector to enhance the timely transfer and commercialization of the technology.

The Improved Conversion Efficiency Activity under the Multi-Sector Resources Program supports the development and demonstration of commercially viable advanced energy conversion technologies for application in the electric utilities, transportation, industrial, and residential/commercial sectors.

The fundamental strategy of the Fossil Energy program is to develop technologies that will permit a smooth transition to the widespread use of plentiful fossil fuels in lieu of scarcer and more expensive resources.

The strategy focuses on technologies that will:

- Involve a transition from today's system where the most plentiful fossil fuels are incompatible with end-use devices to a compatible system of resources and such devices;

- Permit us to economically tap large reservoirs of formerly inaccessible or unusable fossil fuels that are already compatible with existing end-use devices; and

- Permit the economical and environmentally acceptable use of presently accessible fossil fuel supplies which currently fail to meet environmental requirements.

While the initial responsibility for the development of a comprehensive energy technology effort rests in the Fossil Energy R&D Program, there is heavy reliance on private industry contracts. Fossil Energy accomplishes its mission primarily through the management of programs and projects contracted through industry.

In addition to these contracts, research and development activities are performed by FE Energy Research Centers (ERC's) and Mining Operations Centers (MOCS) (either inhouse or by contract), contractor-operated DOE National Laboratories (NLs), or by grants and/or contracts with private research organizations and universities.

ORGANIZATION:

The Department of Energy Organization Act of 1977, PL 95-91, has drawn into the Fossil Energy Program R&D efforts related to the greater use and efficiency of coal. These activities include the Mining RD&D Program from the Bureau of Mines, DOI, and the Improved Conversion Efficiency Programs formerly under the Assistant Administrator for Conservation in ERDA. The Fossil Energy RD&D Program has been expanded also to include certain environmental control technologies previously initiated in EPA. The inclusion of these activities in the Fossil Energy Program will allow for a more complete integration of fossil energy systems during the development effort. Activities in commercial applications have been transferred to the Assistant Secretary for Resource Applications to strengthen the commercialization efforts within the Department.

The new Fossil Energy organization, shown in Figure 1, consists of six line divisions, an Office of University Activities, five Energy Research Centers, two Mining Operations Centers, and a small senior staff. The program management concept of large-scale projects is one of matrix management and team participation for more effective and efficient operations. As now organized, five of the line divisions, Oil, Gas, Shale, and In Situ Technology, Coal Conversion,

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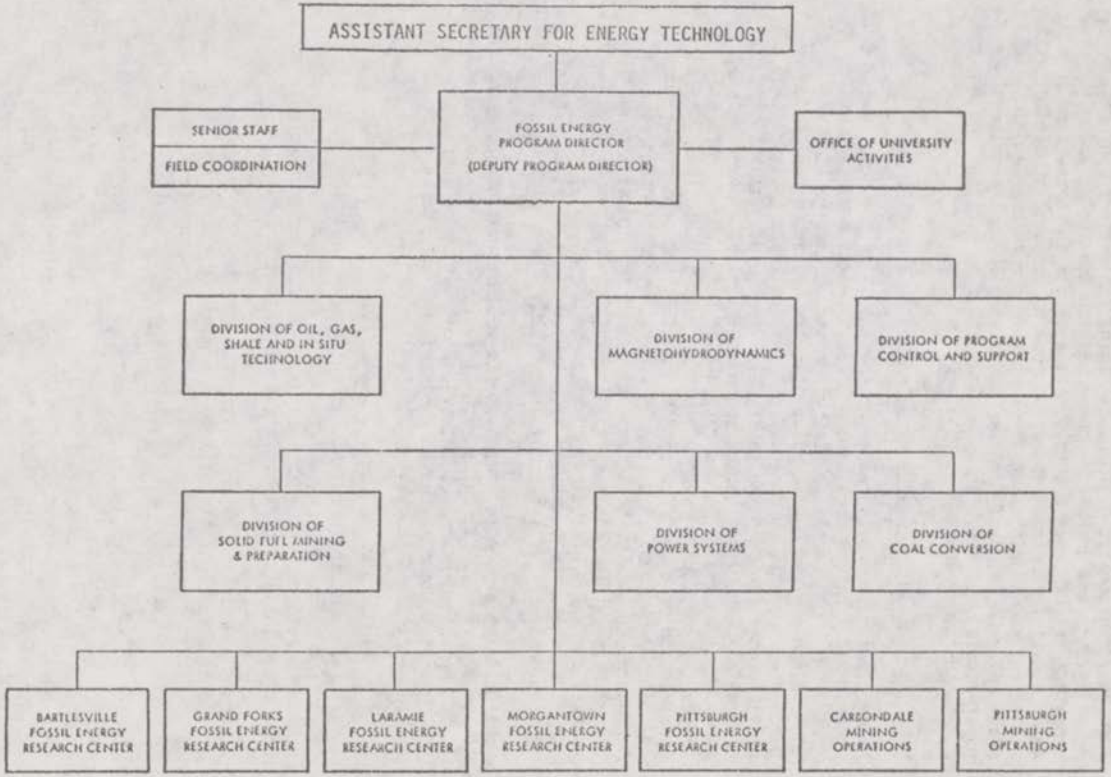
INTERIM ORGANIZATION
U.S. Department of Energy
Fossil Energy Program



Magnetohydrodynamics, Solid Fuels Mining and Preparation, and Power Systems are primarily concerned with developing and managing various process development projects for extracting and/or using energy from fossil energy sources by means of applied research, technology, and engineering development, through the demonstration phase. The Division of Program Control and Support provides environmental coordination, planning, and financial support for the Fossil Energy Program.

PROGRAM ACCOMPLISHMENTS

Major planned accomplishments during FY 1978 in the Coal Resource Program will include completion of field trials of an automated system for room and pillar mining; continued construction of the 200-600 ton per day H-Coal pilot plant at Catlettsburg, Kentucky; successful operation of the SRC pilot plant leading to scale-up to an SRC demonstration plant in FY 1979; continued evaluation of several high-Btu gasification processes, including completion of conceptual designs of demonstration plants for three different processes; continued design and procurement activities for the construction of a gasification test facility to demonstrate the use of low -Btu gasifiers for the generation of electric power; operation of low -Btu gasifiers at several industrial and institutional sites to furnish fuel gas from coal; completion of conceptual designs for a low/medium Btu fuel gas demonstration plant for industrial use; and operation of a larger scale in situ gasification test to determine well spacing and optimum operational variables.

Coal utilization accomplishments will include continued operation of the 30 megawatt AFB boiler at Rivesville, W. Va., and operation of atmospheric pressure fluidized-bed combustors at industrial and/or institutional sites in a cost-shared program to demonstrate the industrial application of this technology.

Advanced Research and Supporting Technology efforts have resulted in several promising processes which are expected to significantly improve the economics and efficiencies of coal conversion. The starter grant programs with universities will continue to generate innovative ideas in coal conversion and utilization.

In the MHD activity, major construction of the Component Development and Integration Facility will be underway and design and fabrication of the first group of components for the Component Development and Integration Facility has been initiated.

Accomplishments expected in the Petroleum Resource Program include major field tests in the Enhanced Oil Recovery Activity. Some of the field tests underway in FY 1978 can already be credited with additional oil production. In addition, high quality geological and engineering data have been generated. In the Oil Shale Activity, four different technologies for recovering oil from shale using in situ processes were underway under cost-sharing arrangements with industrial partners.

In the Gas Resource Program, major accomplishments include completion of a comprehensive strategy plan for prioritizing and planning R&D activities. Ten major cost-shared field experiments were underway to demonstrate enhanced gas recovery and a joint industry/DOE effort is underway to explore the production of gas from oil shale.

The Multi-Sector Resource Program includes the development of improved and more efficient energy conversion processes. Major

accomplishments expected in FY 1978 include development of advanced cogeneration systems and heat recovery component technology, initiation of R&D efforts on improved industrial oil and residential gas burners, and completion of fabrication of a 4.8 megawatt fuel cell power plant. This power plant will be tested beginning in FY 1978 at a host utility in New York City.

THE COAL RESOURCE PROGRAM

Coal is the Nation's most plentiful fuel resource with an estimated reserve sufficient to last several centuries. The Coal Program efforts are aimed at tapping this abundant source of energy for direct use as a fuel in an efficient and environmentally acceptable manner, or for processing into synthetic fuels needed to do many of the chores previously done by oil and natural gas. The principal objectives of the Coal Program are: to develop improved extraction technology for increasing the supply of coal at acceptable economic and social costs; to accelerate the development of environmentally acceptable technology for converting coal to liquid and gaseous fuels; to stimulate improved methods for the direct combustion of coal; to foster the rapid development of advanced power conversion systems, including magnetohydrodynamics, for generating electricity from coal; to develop technology which will minimize the environmental impacts of new and existing fossil fuel utilization systems; to validate the technical, economic, and environmental acceptability of second-generation coal processes by designing, building, and operating near-commercial scale modules; and to expand the technological base and the supply of technically trained manpower to support the evolving conversion and utilization technologies.

To achieve the goal of increased coal utilization, the Department requests $618,195,000 in FY 1979 for the Coal Resource Program, an increase of $39,115,000 over the FY 1978 appropriation. The increase includes $14,000,000 for integration of certain programs previously included in the Environmental Protection Agency's Environmental Control Technology Activity into DOE's Coal Program. I would like to describe briefly the objectives of each of the activities which make up the program, list the major ongoing projects, and describe how the requested authorization will be used.

MINING RESEARCH AND DEVELOPMENT

The primary objective of this activity is to develop and transfer to industry the technologies (both equipment and techniques) required to supply solid fuels at acceptable economic and social costs. Alternatives to surface disturbances and maximum resource recovery will be sought, while at the same time improving safety and health conditions in the application of these technologies.

The budget request for FY 1979 for Mines Research and Development is $70,766,000, an increase of $7,986,000 over the FY 1978 level. The increase will support initiation of work to implement Section 908, PL 95-87 (Surface Mining Control and Reclamation Act). Major research areas are shown in Figure 2.

Figure 2

MINES RESEARCH AND DEVELOPMENT

Research Area/Major Projects	FY 1979 Request
Underground Coal Mining	$52,860
o Mine planning and development o Development of improved mining equipment and systems o Novel mine systems for thick, multiple and steeply pitching seams	
Surface Coal Mining	12,615
o Area mining systems o Contour mining systems o Reclamation practices to minimize environmental impact	
Coal Preparation Research	5,071
o Development of technology for upgrading coal	

LIQUEFACTION

The products derived from coal liquefaction processes could compete with petroleum refined products in two distinct markets. One market uses low-ash, low-sulfur boiler fuels suitable for clean electric-power generation and industrial steam generation. The other market uses high-grade fuels such as gasoline, heating oil, and chemical feedstock. The strategy of the Liquefaction Activity is to support a number of liquefaction processes in parallel from laboratory scale, through process development units (PDU), to pilot plant stage. This approach is based on a number of considerations. The variety of coals to be processed, coupled with the requirements for a wide range of fuels, will necessitate commercialization of a number of liquefaction processes.

The final objective of this activity is to demonstrate at near-commercia scale those selected second generation synthetic fuel conversion processes that have been developed and evaluated through industry and Government research and development. This activity is the final step in the R&D process aimed at accelerating and reducing the risks of industrial process implementation. Engineering, construction and operation of demonstration plants are currently planned to be jointly funded by Government and industry to promote near-term commercialization

The budget request for FY 1979 for the Liquefaction Activity is $125,066,000, an increase of $14,466,000 over the FY 1978 level. Major projects funded under this activity are shown in Figure 3.

Figure 3

LIQUEFACTION

Research Area/Major Projects	FY 1979 Status	FY 1979 Request
H-Coal Pilot Plant Catlettsburg, Ky.	Initiate Operation	$21,000
Fixed-Bed Hydrogenation PERC, Bruceton, Pa.	Operational	4,889
SRC Pilot Plant Tacoma, Washington	Operational	13,500
Donor Solvent Pilot Plant Baytown, Texas	Design and Construction	34,600
Cresap Facility Cresap, W. Va.	Operational	13,500
SRC Demonstration Plant	Design, Planning	23,000

GASIFICATION

The overall objective of the Gasification Activity is to develop and demonstrate advanced technology needed to promote the economic manufacture of fuel gases of all grades from coal in an environmentally sound manner, both in surface processes and through in situ coal gasification technology. To accomplish this overall objective, the activity is organized into subactivities with their own targets and objectives.

The objective of the High-Btu Gasification Subactivity is the investigation and advancement of technology required for the development of improved processes for the production of high-Btu gas from coal. Processes with lower-cost potential are advanced from the laboratory and bench-scale to pilot plant investigation.

The objectives of the Low-Btu Gasification Subactivity are: to develop, in cooperation with industry, the technology needed for commercial plants to convert coal to gaseous fuels with a heating value of 100 to 500 Btu per cubic foot; to establish the required techniques for using these coal-derived gaseous fuels for chemical feedstocks, industrial fuels, and for combined cycle systems for electric power generation; and to promote production and utilization of low-Btu gas by private industry.

The In Situ Coal Gasification Subactivity has the objective of developing environmentally acceptable technology for the commercial production of fuels and energy from coal in place.

Both low-Btu gas and medium-Btu gas are potential products, and the medium-Btu gas could be upgraded to synthetic natural gas by further surface processing.

The goal of the Gasification Demonstration Subactivity is to demonstrate, on a commercial component scale, those selected second generation synthetic fuel conversion processes that have been developed and evaluated through industry and Government research and development. This subactivity is the final step in the RD&D process aimed at accelerating and reducing the risk

of industrial process implementation. Engineering, construction, and operation of demonstration plants are jointly funded by Government and industry.

The budget request for FY 1979 for the Gasification Activity is $186,646,000, a decrease of $25,354,000 from the FY 1978 level. The decrease reflects increased requirements for the development of third generation high-Btu gasification processes and the high-Btu demonstration plant, but lower requirements for ongoing low-Btu gasification projects and the low-/medium-Btu fuel gas demonstration plant. In situ gasification R&D will be conducted at about the same level as in FY 1978.
Major areas of research and/or projects are shown in Figure 4.

Figure 4 GASIFICATION

Research Area/Major Projects	FY 1979 Status	FY 1979 Request
HYGAS Pilot Plant Chicago, Illinois	Operational (as needed)	$ 0
BI-GAS Pilot Plant Homer City, Pa.	Operational	7,900
Synthane Pilot Plant Bruceton, Pa.	Operational	9,991
Hydrogasification, PDU Site undetermined	Scale-up to PDU	6,147
Catalytic Gasification Pilot Plant Site undetermined	Design and modification of existing pilot plant	7,228
Combined Cycle Test Facility (Powerton) Pekin, Illinois	Under construction	10,000
Hydrogen from Coal Facility Cedar Bayou, Texas	Design and Construction	11,610
Gasifiers in Industry Five locations Pa., Minn. (2), Ky., Tenn	Design Construction Operation	2,000
In Situ Gasification Various locations	Field Test	11,800
High-Btu Pipeline Gas demonstration plant Site undetermined	Design Procurement	42,000
Low-/medium-Btu Fuel Gas demonstration plant Site undetermined	Design start of construction	17,000
Low-Btu Fuel Gas small industrial demo plant Site undetermined	Design start of construction	10,300
Low-Btu Fuel Gas Utility demonstration plant	Conceptual Design	3,000

ADVANCED POWER SYSTEMS

The Advanced Power Systems Subprogram is aimed toward the development of advanced power conversion systems which will permit, in an environmentally acceptable manner, increased use of coal for power generation using both direct coal-fired systems and coal-derived fuel utilization systems. Increased use of coal to produce electric power can relieve dependence on oil and natural gas for that purpose, thus releasing these fuels for other uses.

The major potential economic advantages offered by advanced power systems result from the fact that high-performance combined-cycle turbine systems are expected to have lower capital cost and higher coal-to-electricity efficiencies than conventional generators. The program goal is to establish a technical base for use in developing advanced power systems.

Projects using the open-cycle gas turbine as the topping portion of combined cycles are continuing. Efforts in blade and vane cooling, ceramic component evaluation, and materials corrosion and reliability studies are underway.

Closed power systems presently do not appear as attractive as open cycle systems for baseload power, unless the reject heat is recovered and distributed for space heating needs of a community. Thus, closed power systems are being evaluated for use in district heating applications where both power and useful heat are produced (cogeneration). A complete assessment of closed cycle systems is being conducted through FY 1979 to determine whether it holds promise for utility applications and justifies further R&D support.

The budget request for FY 1979 for the Advanced Power Systems Activity is $26,900,000, an increase of $1,200,000 from the FY 1978 level. Figure 5 shows the major project in the activity.

Figure 5

ADVANCED POWER SYSTEMS

Research Area/Major Project	FY 1979 Status	FY 1979 Request
Open Cycle Gas Turbine o Phase I Systems definition o Phase II technology development o Phase III verification	Phase II in progress	$24,350

DIRECT COMBUSTION

The primary objectives of the Direct Combustion Activity are: (1) to develop fluidized-bed combustion systems capable of directly burning high-sulfur coals of all ranks and quality in an environmentally acceptable manner, (2) to develop technology to substitute coal for a substantial portion of oil in combustors capable of firing coal-oil mixtures, and (3) to improve reliability and efficiency of present boilers. To enable coal resources to be fully exploited, research efforts are being directed toward development of environmentally acceptable methods of combustion. To achieve this objective, the total effort has been integrated in terms of both broad technical approach and special technical components. Specific areas of research include fluidized-bed

combustion; combustion and heat transfer characteristics of chars, coal-oil slurries, solvent-refined coal, and coal-derived slag and ash deposits and identification, and control of toxic elements emitted during the direct combustion of coal.

The budget request for FY 1979 for this activity is $54,941,00, a decrease of $15,459,000 from the FY 1978 level. The decrease reflects lower requirements for ongoing projects, particularly the industrial applications project in which major construction will have been completed, and for planning efforts on direct combustion demonstration plants. The FY 1979 effort on demonstration plants will include the completion of conceptual designs and design modifications which may be required as a result of new environmental standards. The major research areas and/or projects in this activity are shown in Figure 6.

Figure 6

DIRECT COMBUSTION

Research Area/Major Projects	FY 1979 Status	FY 1979 Request
Fluidized-Bed Boiler, 30 MW Rivesville, W. Va.	Operational	$ 8,700
Atmospheric Fluidized-Bed Component Test & Integration Unit. MERC, Morgantown, W. Va.	Construction	11,800
Fluidized-Bed Combined Cycle Pilot Plant Wood Ridge, N. J.	Under Construction	2,500
Pressurized Fluidized-Bed Component Test & Integration Unit ANL, Argonne, Illinois	Under Construction	3,800
Industrial Applications Five locations Ill., OH., Minn., N.J., D.C.	Construction	2,000
Coal-Oil Mixtures Various locations	Modification and Retrofit underway as well as R&D	5,450

ADVANCED RESEARCH AND SUPPORTING TECHNOLOGY

This is a multi-directed activity serving as the central advanced research and program coordination activity for all Fossil Energy Programs. Activities include basic and applied research to improve existing or develop new third-generation processes for converting coal to fuel gases or liquids and chemical feedstocks; to develop improved materials and components for use in conversion and utilization processes; to improve technology for the direct utilization of coal; to provide analysis and support in the development of long term strategy and planning; to review and analyze program operations to provide assurance that key objectives are being accomplished; to provide financial planning and support; to coordinate environmental activities throughout the program; to coordinate the interface

and integration of field research; and to provide senior level project support to the Program Director. The major objectives of this activity are to:

- Explore and develop, through an initial development stage, new and advanced processes for the conversion of coal to clean synthetic fuels and chemical feedstocks.
- Advance the direct utilization of coal through applied research on coal beneficiation and feedstock control. Improve existing combustion equipment and advance novel coal-combustion practices aimed at minimizing undesirable by-products (SO_2, particulates, and NO_x).
- Provide environmental support and coordination for Fossil Energy Programs.
- Provide program analysis and integration, general management, program policy planning, and other system studies support for Fossil Energy.
- Provide an effective channel of communication between Fossil Energy and the academic community to carry out basic and applied research in support of the Department's research activities, and to help increase the availability of trained technical manpower for the Nation's future synthetic fuels industry.

The budget request for this activity in FY 1979 is $67,551,000, including $9,350,000 for general plant projects at the Energy Research Centers. The increase of $17,651,000 over the FY 1978 level will provide for an increased level of support of all of the Fossil Energy programs.

These programs in the DOE Energy Research Centers, National Laboratories and other Government agencies, private industry, and universities develop the basic and applied technology and data upon which present and future fuel conversion and utilization processes depend. The increased funding in FY 1979 will be used primarily to focus on second and third generation processes that are more efficient and less costly than processes currently being developed. Major areas of research and/or support are shown in Figure 7.

Figure 7

ADVANCED RESEARCH AND SUPPORTING TECHNOLOGY

Research Area/Major Projects	FY 1979 Request
Processes	$24,450
Direct Utilization	9,450
Materials and Components	11,090
Program Development and Coordination	12,836

MAGNETCHYDRODYNAMICS (MHD)

The major objective of the MHD Activity is to achieve successful operation by the late 1980's of a pilot scale test facility to generate electricity from coal or a coal derived fuel, using MHD generation principles. The MHD process of electrical power generation is a means of utilizing our vast coal reserves in a highly efficient and environmentally attractive manner. The MHD program is structured to accomplish the successful operation of a commercial demonstration plant incorporating the MHD process and addresses the major problems initially while comparing alternative components and designs through parallel development.

The strategy of the program is to progress through three overlapping phases, each focused on specific developmental requirements for commercial demonstration. The purpose of Phase I is to develop and integrate alternative MHD core components at a scale of approximately 50 thermal megawatts and to combine these components with other components of an MHD plant that are needed to develop engineering data and experience for pilot scale facilities. Phase II will provide engineering demonstration by system testing of selected complete test trains at approximately 250 thermal megawatts and up to 1,000 to 2,000 hours of operations. Phase III will provide the capability to demonstrate commercial feasibility at approximately 1,000 megawatts and related operating parameters.

The major focus for the first phase is the 50 thermal megawatt Component Development and Integration Facility (CDIF), for which ground was broken at Butte, Montana, on May 16, 1976. Initial generation of electric power is anticipated in FY 1980. The facility is currently over 25% complete and below estimated costs. Construction of this facility is expected to be completed in 1979. The facility will cover approximately 50 acres of a 93-acre site.

The CDIF represents the minimum size that can exhibit the critical phenomena and interactions between the various components and which can provide for subsequent scale-up to the ETF. The interrelations of these components are complex and require simultaneous development of alternative engineering approaches and their testing in a single facility. The examination of critical phenomena associated with their operations will enable a design basis to be selected for the ETF. This work is being performed in conjunction with a significant international cooperative program in MHD. In particular, major U.S.-U.S.S.R component development work is underway in already operating Soviet large scale MHD facilities. These efforts will guide component decisions for U.S. plants.

The budget request for the MHD activity in FY 1979 is $72,325,000, an increase of $825,000 over the FY 1978 level.

Major research and development areas and/or projects are shown in Figure 8.

Figure 8

MAGNETOHYDRODYNAMICS

Research Area/Major Projects	FY 1978 Status	FY 1979 Request
CDIF Project		$16,889
o CDIF Facility Butte, Montana	Construction underway	
Engineering Development (MHD) Technology	Underway	27,096
MHD Direct Coal-Fired Power Generation Test Facility Tullahoma, Tenn.	Under construction	3,950
Engineering Test Facility	Conceptual design studies to be completed FY 1978	400

ADVANCED ENVIRONMENTAL CONTROL TECHNOLOGY

This activity is directed at developing technology which will minimize the environmental impact of new and existing fossil fuel utilization systems. This effort, including projects formerly conducted by the Environmental Protection Agency (EPA), is to be integrated with the DOE's Fossil Energy program. This integration allows a complete systems approach to the fossil fuel utilization/environmental impact problem. Systems analyses will be initiated to examine the tradeoffs between precombustion clean-up, clean-up during combustion and flue gas clean-up, and the impact of these clean-up options on power generation or other utilization equipment. Integration of the EPA efforts into the ongoing Fossil Energy program will result in a single, balanced national program on coal utilization.

To achieve this overall goal several specific objectives have been established.

- Develop advanced technologies for coal clean-up prior to use.
- Develop technologies for gas clean-up during the combustion process.
- Develop environmental control technologies to clean post-combustion gases including second generation flue gas technologies.
- Determine cost versus environmental impact tradeoffs for environmental control/power systems combinations.

The budget request of $14,000,000 for FY 1979 will be used to continue those EPA programs which will accelerate the near-term acceptability of increased use of coal.

THE PETROLEUM RESOURCE PROGRAM

About one-half of the Nation's needs for petroleum currently are supplied through imports. A basic principle of the National

Energy Plan is that "the United States must reduce its vulnerability to potentially devastating supply interruptions."

The available options to lessen the dependence on imports include enhanced oil recovery from existing reservoirs and oil recovered from the Nation's vast oil shale deposits.

The principal objectives of the Petroleum resource program are to sponsor and support technologies that lead to increased domestic production and reserves of oil, including heavy oil deposits and tar sands; from both onshore and offshore areas; and to develop technology capable of recovering oil from shale which minimizes adverse environmental impacts and water requirements.

The strategy for implementing the program is to encourage and support industry efforts by:

- Determining critical technology needs.
- Identifying and prioritizing needed R&D efforts and determining the appropriate Government role.
- Establishing and implementing cost-shared development and demonstration projects.
- Maintaining an aggressive research program.
- Providing for the documentation and dissemination of data.

The FY 1979 request of $79,725,000 is an increase of $5,600,000 over the FY 1978 level. The increase provides for the continuation of four cost-shared projects to develop in situ technology aimed at utilizing each of four major geologic types of oil shale and for related ongoing research.

ENHANCED OIL RECOVERY

The objectives of the Enhanced Oil Recovery (EOR) Activity are to encourage and support industry participation in developing and demonstrating technologies to enhance the production rate and recovery of oil. Two-thirds of the oil discovered to date remains in the reservoirs and cannot be recovered economically with current practices. The potential for EOR is in the area of 60 billion barrels of normal gravity oils and 28 billion barrels of heavy oils and bitumen. This potential constitutes the goal for EOR which could extend the supply of domestically available resources by at least 10 years.

DOE has 22 cost-sharing field contracts with industry that will test the feasibility of EOR technologies in various types of domestic reservoirs. The funding for these projects is roughly 35 percent DOE and 65 percent industry. Based on the estimates of industry activity, the DOE cost-shared contracts represent about one-third of the industry EOR projects in these categories. In micellar-polymer flood tests, for example, well over half the acreage under test is in projects sponsored by DOE. Some of the field tests underway can already be credited with additional oil production, although the production response is normally delayed by approximately one year and most of the incremental production comes later in the project's lifetime. While it is too early to judge the results of the tests, all the projects have already generated high quality geological and engineering data which are valuable in designs of successful commercial projects.

The need for improved oil recovery techniques has been recognized in the recently completed in-depth strategic analysis of enhanced oil recovery. This comprehensive study contained in the "Management Plan for Enhanced Oil Recovery" brings together available information in a logical documented framework of analysis. Based on current and projected industry EOR efforts, an 800,000 barrel per day incremental production increase from EOR has been estimated by 1985. The budget request for FY 1979 of $46,700,000 is an increase of $460,000 from the FY 1978 level. This level of effort is sufficient to meet the 1985 incremental daily production goals.

The major projects included in this activity are shown in Figure 9.

Figure 9

ENHANCED OIL RECOVERY

Research Areas/Major Projects	Major Field Tests	FY 1979 Request
Micellar-Polymer Various locations	6	$ 5,860
Improved Water Flooding Various locations	5	4,690
Carbon Dioxide Flooding Various locations	5	5,220
Thermal Recovery Various locations	6	18,430

OIL SHALE

The near-term objective of this activity is to support development of a commercial shale oil industry with a daily capacity of approximately 300,000 barrels per day by 1985. This objective will be fostered by providing the technology base for commercial implementation by 1981 through development and demonstration projects in cooperation with industy. The mid-term objective is to provide the technology base to expand an oil shale industry to its full potential by maximizing resource recovery efficiency and minimizing environmental impacts and water requirements.

The major thrust of DOE's shale oil production program is the development of in situ technologies capable of utilizing each of the major geologic types of oil shales. The major types of oil shales addressed in this program include: deeply buried shales such as occur in the lower zone of the Piceance Creek Basin in Colorado; shallow beds such as in the upper zone of the Piceance Creek Basin in Utah and Colorado; variable depth thin beds as in Wyoming; and deep leached shale beds in Colorado. No one process is applicable to all of these major resource types but the vertical modified in situ process is the most technically advanced and appears closest to economic commercialization.

In-house oil shale research, performed by the Laramie Energy Research Center and by DOE's National Laboratories, is aimed at better understanding of process parameters needed to control underground oil processing. This research includes field experiments in Western oil shale, closely coordinated with laboratory research, to provide data

for larger scale projects expected to be performed by industry. Environmental issues that are unique to in situ oil shale processing are addressed as integral parts of all field work conducted either in house or by industry contractors. A small but important component of DOE's program is supporting research. This includes oil shale characterization work and shale oil refining studies. It also includes environmental monitoring of surface retorting performed by industrial lessees of the Anvil Points Facility in Colorado.

The budget request for FY 1979, $30,225,000 is an increase of $5,340,000 from the FY 1978 level. The major ongoing projects supported by this increase are shown in Figure 10.

Figure 10

OIL SHALE

Research Areas/Major Projects	Contractor	FY 1979 Status
Vertical Modified In Situ Debeque, Colorado	Occidental Oil	Phase I complete Phase II initiated
Horizontal Modified In Situ Utah	Geokinetics Shale Group	Scale up of retorts
Solution Mining Modified In Situ Colorado	Equity Oil Co.	Producing oil
True In Situ Wyoming	Talley-Frac Corp.	Complete first retort test

DRILLING, EXPLORATION, AND OFFSHORE TECHNOLOGY

The objectives of this activity are to expand and accelerate development of new domestic sources of oil and gas through cooperative programs with industry. The principal strategy for achieving this objective is (1) to bring marginal resources within the range of economic feasibility through lower costs, faster drilling, and lower risk operations and (2) to expedite production in frontier areas (deep drilling, deep offshore, and artic) through improved safety and reliability of structures and methods.

The budget request for FY 1979, $1,600,000 will permit continuation of work on improved cutters, drilling fluids and on sea floor instrumentation.

PRODUCT CHARACTERIZATION AND UTILIZATION

The objectives of this activity are: to evaluate the problems and potential of automative use of methanol fuels; to evaluate refining-process parameters as a function of coal type; to develop data on heavy petroleum fractions to aid in their processing; to identify and monitor the qualities of domestic and improved crudes; to develop advanced detection techniques for oil-spill identification; and to develop asphalt compositions which provide significantly longer road life.

The quality of the Nation's petroleum supply is declining and processors are being forced to poorer quality crudes and petroleum fractions. Characterization data on such fractions are essential for successful processing. The project on crude quality is the only one of its kind and provides a comprehensive study of crude oil quality. Sophisticated detection techniques are finding greater use in oil-spill identification. Recycling of asphalt has potential for significantly stretching this hydrocarbon resource.

Methanol is getting increased attention as an automotive fuel which can be made readily from coal. In the past year useful data have been generated on fuel efficiency and automotive emissions from methanol-fuel use in conventional spark-ignition engines. Advanced automotive engines have been tested with methanol. Unconventional carburetion systems have been evaluated to overcome fuel-air mixing problems. Methanol was evaluated in high-compression-ratio engines which can take advantage of methanol's high octane rating.

A bench-scale hydrotreating unit has been designed and installed for correlating coal composition with crude coal-liquid composition. At BERC, a novel liquid-chromatographic procedure was developed for characterizing heavy petroleum fractions. Characterization studies were completed on hydrotreated shale-oil and bitumen samples. Low-temperatures luminescence and carbon, sulfur and nitrogen isotope ratios were applied to oil identification with promising results. A comprehensive summary was published on the properties of 800 crude oils analyzed over the years at LERC. Data on detailed characterization of four crude oils were published. This included separation of residues, characterization of compound type and heteroatom composition. A unique method for screening materials to increase asphalt road life has been developed which will accelerate the selection of the best asphalt additives.

The budget request in FY 1979, $1,200,000 is a decrease of $200,000 from the FY 1978 level. These funds provide for a continuation of basic research work at DOE's Energy Research Centers.

THE GAS RESOURCES PROGRAM

Current proved natural gas reserves amount to about an eleven-year supply at the current consumption rate. These proved reserves are found in conventional reservoirs (high permeability sandstone and carbonate reservoirs) and can be easily produced and still provide a reasonable profit incentive for the gas producing companies.

Gas from unconventional geological sources could be made available to decrease the difference between supply and demand that currently exists. Four geologic sources of natural gas which are not being fully exploited are:

1. The gas-bearing shales of Eastern United States.
2. The low-permeability ("tight") sandstone gas reservoirs of the Rocky Mountain region.
3. The free methane present in coal seams.
4. The high-pressure, methane-saturated aquifers of the Gulf Coast region (geopressured aquifers).

Eastern oil shales of Devonian and Mississippian age represent another potentially large energy resource although their extent

is presently poorly defined. These formations are known to exist from New York to Alabama and Mississippi. These shales are potential major producers of synthetic gas and oil, although they are considered to be of lower grade than Western shales from an oil production standpoint. They are geologically similar to Western oil shales, and it is believed that similar technology can be used in exploiting these shales by in situ methods. Devonian shales are particularly good producers of industrial quality gas for boiler fuel or turbine operation. Economic exploitation of this resource may be feasible if technology can be developed.

A comprehensive strategy plan, which will prioritize and coordinate the planning of all DOE activities and projects in Enhanced Gas Recovery will be published in FY 1978. The basic concepts and format for this strategy document will be similar to the previously published Management Plan for Enhanced Oil Recovery.

The strategy employed in implementing the EGR activity is to develop and demonstrate in cooperation with industry the feasibility of three major stimulation technologies, advanced hydraulic fracturing, chemical explosives fracturing, and directionally drilled wells. Currently 10 major cost-shared field tests are underway. Average cost-sharing percentages in these contracts are DOE-45 percent and industry-55 percent.

The objective of the Gas from Oil Shale Activity is to develop the technology base to support initial commercialization by 1985. The mid-term objective is to expand commercial application through technologies which reduce environmental impacts.

The budget request for the Gas Resource Program is $25,875,000, a decrease of $5,107,000 from the FY 1978 level. The decrease in this resource is primarily related to deferral of work on methane from coal and geopressured aquifers. Activity in these two areas will consist of completing studies carried over from FY 1978 while maintaining close coordination with similar activities elsewhere in DOI and DOE.

Major research areas and projects in the program are shown in Figure 11.

Figure 11

GAS RESOURCE PROGRAM

Research Areas/Major Projects	Major Field Tests	FY 1979 Request
Eastern Gas Shales Various locations Oh., W.Va., Ky., Va.	6	$12,000
Western Gas Sands Various locations Utah, Co., Tex.	4	5,500
Gas from Shales Michigan	Dow Chemical In Situ	4,350

IMPROVED CONVERSION EFFICIENCY

The Improved Conversion Efficiency Activity is included in the Department's Multi-Sector Resource Program. It is aimed at managing a transition away from the consumption of limited supplies of oil and natural gas. This goal is being pursued through RD&D of technologies that will conserve energy through the more efficient use of petroleum and natural gas and through the use of alternative fuels. It will conserve limited supplies of oils and gas in the near-term (1985) and mid-term (2000) time frames so as to provide sufficient time for development and commercialization of new supply technologies.

The overall objective of this activity is to support the National goals by improving the efficiency of energy conversion processes (e.g., chemical to electrical, thermal to mechanical, chemical to thermal) and developing advanced conversion processes and systems that use fuels other than oil and natural gas. Specific objectives include the following:

- Develop technology to improve the efficiency of baseload electricity generation.
- Improve small power generator efficiency.
- Develop advanced internal combustion engines.
- Develop multifuel-capable fuel cells for electricity generation.
- Develop technologies capable of using industrial waste heat.
- Develop advanced cogeneration technology using alternate fuels.
- Develop technology in the areas of combustion, high-temperature materials, thermodynamics, heat exchangers, and lubrication that are critical to achieving national objectives.

To achieve these energy savings and efficiency improvement objectives, specific technology development efforts are under taken in three subactivities:

- Combustion Systems: to develop and demonstrate advanced technologies for increasing the efficiency and expanding the multifuel capability of combustion.
- Heat Engines and Heat Recovery: to develop and demonstrate advanced systems for energy conservation through the improvement of heat engines, the recovery and utilization of waste heat, and through cogeneration.
- Fuel Cells: to develop fuel cell technology for electric power generation and total energy systems in the near-term and to develop and demonstrate advanced, higher efficiency, economically competitive fuel cell technologies.

The FY 1979 budget request of $78,000,000 represents an increase of $19,220,000 which is necesary to continue the RD&D cycle from

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the early stages of studies, assessments, and concept feasibility to prototype hardware fabrication and testing. The primary increases in effort will be in the area of combustion (utilization of alternate fuels), heat engines (advanced cogeneration technology), heat recovery (utilization of waste heat from Federally owned facilities), and fuel cells (molten carbonate systems development).

Major research areas and/or projects are shown in Figure 12.

Figure 12

IMPROVED CONVERSION FACILITY

Research Areas/Major Projects	FY 1979 Request
Heat Engines & Heat Recovery	$29,600
o Advanced Cogeneration System o Heat Recovery Component Technology	
Combustion Systems	11,900
o Advanced Combustion Technology o Alternate Fuel Utilization	
Fuel Cells	35,500
o 4.8 MW Powerplant o Phosphoric Acid Systems o Molten Carbonate Systems o Applied Research	

ENERGY RESEARCH CENTERS AND NATIONAL LABORATORIES

The Energy Research Centers and National Laboratories play an important role in achieving the DOE goals in Fossil Energy. These facilities are staffed by highly skilled scientists, engineers, and technicians with long histories of accomplishments in the production and use of fossil fuels. They are looked to for new ideas, new data and new processes to better utilize our fossil energy resources, and project management.

INTERNATIONAL PROGRAMS

An active, cooperative International Program is underway. Technical benefits are the economics of cost sharing, more rapid achievement of technology, and the potential for funding new technology. As part of the International Energy Agency, we are supporting four Coal Technology R&D Programs: Mining Technology Clearing House Service, Coal Technology Information Service, Economic Assessment Services for Coal, and Fluidized Combustion of coal. The last project involves construction and operation of a 80 megawatt pilot unit in England, cost shared with the United Kingdom and the Federal Republic of Germany. The experimental program will have use of coals from the U.S., U.K., and F.R.G. The first three activities mentioned above involve collection, analysis, collation, and dissemination of information on research and development in all aspects of coal production and utilizaton.

In addition, we are developing detailed implementation guidelines for two new agreements with the F.R.G. signed under the IEA charter:

1) National Planning Coordination in the Field of Coal Hydrogenation Technology, and 2) Cooperation in Coal Technology - which involves our participation in German experimental coal conversion facilities, and German participation in our planned coal conversion pilot plant.

We also have a number of bilateral agreements:

Our cooperative activities in the development of MHD technologies involve testing U.S. components in Soviet facilities. Last summer, a large cryogenic magnet was constructed and shipped to the U.S.S.R. for joint testing in Soviet MHD plant. We are in the process in implementing additional bilateral agreement in MHD technology with Poland.

Bilateral agreements pertaining to coal production and utilization technologies have been concluded with Poland (coal mining, coal liquefaction), Germany (coal mining), and U.K. (coal mining and utilization). We are in the process of identifying specific joint R&D activities in that area with the Soviet Union.

Cooperative R&D activities in the exploration and production of petroleum and natural gas are being expanded. Programs in that area are being implemented jointly with the Soviet Union. In addition, we are exploring the possibility of cooperation with Canada and Venezuela in the area of heavy oil production technology.

Cooperation with less developed countries is also being investigated.

To assist this Committee in its review of the Fossil Energy Program, we have included a summary table (Figure 13) displaying, by resource and activity, the authorizations requested. We look forward to continuing our relationship with the Committee and are pleased to have this opportunity to present our program.

(Figure 13)

DEPARTMENT OF ENERGY
ENERGY TECHNOLOGY - FOSSIL ENERGY
FY 1979 BUDGET ESTIMATES
(Dollars in thousands)

SUMMARY BY ACTIVITY

Operating Expenses	FY 1978 Estimate			FY 1979 Estimate	
	B/A	Obs.	B/O	B/A & Obs.	B/O
COAL					
1. Mines Research and Development	$ 62,780	$ 71,365	$ 63,443	$ 70,546	$ 65,586
2. Liquefaction	110,200	122,519	112,952	104,866	109,926
3. Gasification	141,600	149,867	124,292	122,446	145,326
4. Advanced Power Systems	25,500	25,604	23,800	26,700	25,300
5. Direct Combustion	68,200	71,185	68,002	54,716	62,726
6. Advanced Research and Supporting Technology	40,000	40,793	42,282	57,826	50,526
7. Magnetohydrodynamics	66,800	68,731	48,482	68,825	68,325
8. Advanced Environmental Control Technology	0	0	0	14,000	7,000
Unallocated general reduction in P.L. 95-74	-23,800	-23,800	0		
Subtotal, Coal	491,280	526,264	483,253	519,925	534,715
PETROLEUM					
1. Enhanced Oil Recovery	45,940	50,109	39,940	46,000	40,800
2. Oil Shale	24,032	24,268	18,372	29,350	28,800
3. Drilling, Exploration and Offshore Technology	1,600	1,834	2,000	1,600	1,800
4. Production Characterization and Utilization	1,400	1,423	1,400	1,200	1,300
Subtotal, Petroleum	72,972	77,634	61,712	78,150	72,700
GAS					
1. Enhanced Gas Recovery	26,785	28,724	23,285	21,300	25,300
2. Gas from Oil Shale	3,850	3,884	3,010	4,350	4,300
Subtotal, Gas	30,635	32,608	26,295	25,650	29,600
Subtotal, Operating Expenses	594,887	636,506	571,260	623,725	637,015
Capital Acquisition					
Capital Equipment	5,500	5,842	3,500	4,720	4,280
Construction	83,800	154,567	34,300	95,350	71,800
Subtotal, Capital Acquisition	89,300	160,409	37,800	100,070	76,080
Subtotal, Fossil Energy 1/	684,187	796,915	609,060	723,795	713,095
Improved Conversion Efficiency					
Operating Expenses	58,280	58,545	48,000	77,000	62,500
Capital Equipment	500	600	400	1,000	500
Subtotal, Improved Conversion Efficiency	58,780	59,145	48,400	78,000	63,000
TOTAL, FOSSIL ENERGY	$742,967	$856,060	$657,460	$801,795	$776,095

1/ Total funding under the cognizance of the Subcommittee on Fossil and Nuclear Energy Research, Development and Demonstration.

STATEMENT BY MR. THORNE

Mr. THORNE. Thank you, Mr. Chairman. I have a very short prepared statement I would like to read.

It is a pleasure to appear before you to discuss the Department of Energy's fiscal year 1979 funding request for fossil energy research and development.

I am accompanied by Mr. George Fumich, Program Director for Fossil Energy.

Mr. Chairman, I would like to overview the fossil energy budget we are presenting to you today in the context of the nearer term energy situation confronting the Nation. There is no need to dwell extensively on the increasing magnitude of our oil import problem. It is something that you have heard time and time again.

Let's look specifically at the problems confronting the use of coal, our most abundant domestic energy resource. We must count on coal to mute the impact of the expected 1980s peak in world oil demand, but the resource, is by no means assured of full commercial acceptance.

For example, Eastern coal represents over three-fourths of last year's coal production. Reserves total over 200 billion tons. Yet, 90 percent of all Eastern coal resources cannot meet even the existing environmental standards without adding costly and sometimes unreliable pollution control equipment.

Moreover, while 60 percent of the Western coal does meet current standards, all of it will require 85–90 percent sulfur removal under the proposed source-performance standards, regardless of its much lower sulfur content.

Uncertainty about the relative roles of the private sector and Government in developing new resources, especially oil shale and other synthetic fuel industries, has limited the full commercial employment of our fossil reserves. Some industries have moved ahead on their own to commercialize new technologies. As an example, I know of one small business that is now installing fluidized-bed coal combustor boilers in small industrial plants. Obviously, more of this is needed and on a larger scale, but at least some momentum is underway.

It's one of the jobs of energy technology to provide the technical and engineering confidence so that technologies can move into the U.S. economy on a secure basis in the next several years.

For example, the Department feels quite certain that direct coal combustion techniques can make a sizable contribution by 1985 in an environmentally acceptable way. Consequently, our first priorities are shaped toward technology developments in the areas of coal preparation and fluidized bed combustion with the intent of improving the environmental aspects of direct coal combustion.

In recognition of the liquid fuel problem the country will likely be facing in the mid-1980's, we are striving to demonstrate the state-of-the-art liquid fuel technologies. Converting coal into liquid and solid fuels, enhanced oil recovery, and extracting oil from shale are near-term Department goals.

The new supply initiatives, which the Secretary discussed the other morning, lay the framework for starting construction of one or more coal-based synthetic fuel plants in fiscal year 1980,

through fiscal year 1978 reprograming actions. The entitlements and financial incentives for the oil shale industry should also accelerate the availability of synthetic fuels by several years.

We are emphasizing technologies that will increase supplies of gases at low-, medium-, and high-energy contents. The conversion of Western coal to pipeline-quality gas is an established technology, but the same cannot be said for Eastern coal. A sizable portion of our budget is directed toward resolution of the technical problems and the demonstration of processes suitable for Eastern coal. The second generation processes for converting coal to low and medium-Btu gas are essentially developed, and our program now is mostly oriented toward the demonstration projects.

Mr. Chairman, the budget we are discussing today is designed to achieve a balance between the near-term needs and long-term opportunities. In my brief remarks, I have only touched on a few of the near-term aspects of the fossil program. Mr. Fumich, in our further discussions, will also cover some of our longer range fossil energy programs.

Further, we are acutely aware of the dynamic nature of the problem with which we are dealing. To be able to respond in an effective and timely manner to changing circumstances is one of the foremost challenges we in energy technology and, I believe, this committee, face. I look forward to this continuing interaction.

This concludes my formal statement, Mr. Chairman. Mr. Fumich and I will be pleased to answer any questions.

Senator HUDDLESTON. Do you have a further statement, Mr. Fumich?

STATEMENT BY MR. FUMICH

Mr. FUMICH. Mr. Chairman, I have a statement I'd like to submit for the record. If you wish, I could lead into each one of my program areas with a very brief oral statement which would explain what we're doing, why we're doing it, and the magnitude of the effort.

Senator HUDDLESTON. Very good. I think that would be a good way to proceed.

MINING RESEARCH

Mr. FUMICH. I'd like to start off with our mining research program for which we're requesting a budget of $70.8 million in fiscal year 1979. I think the real justification for this particular program is the fact that for quite some time in this country, especially since about 1969, the productivity of our mines expressed in tons-per-man-day mine production has decreased. There are two or three reasons for that. One is the Coal Mine Safety Act. Another was the fact that at about that time the industry structure changed. Also I think the lifestyles of the miners changed. The continuation of the miner father/miner son combination was broken, so we had a lot of new people coming into the mines. As a result of all these factors, productivity has fallen.

For example, at that time, the productivity-per-man-day was about 15.6 tons/man shift for underground mining. Today it's right around 8.5. So, as you can see, it's almost a 50-percent reduction.

We're spending millions of dollars developing and demonstrating the technology to make liquid and gas fuels from coal; we're trying to burn coal with less pollution. With the price of coal today, I think we can get a lot of cost benefit in the mining research program. The recent coal strike will probably drive up coal prices—perhaps about $3 per ton. I think that we have to strengthen the mining research program in several areas.

I don't want to go into a lot of detail. I'm just trying to give you some of the highlights of that program. I think it's one of the more important programs that we have.

COAL PRODUCTION

Senator HUDDLESTON. With those barriers you've indicated—and there are others—is the President's plan to double production of coal still realistic?

Mr. FUMICH. Sir, the most recent estimate I received was over a billion tons. I think it is realistic. I think that these problems can be resolved. They're not going to be easy. I don't think we're going to get as much tonnage from the Western part of the country as a lot of people feel that we are. So, it behooves us to try to optimize our mining research program so that we can open new mines, increase the tons per day in the mines that we have in operation, as well as expand our Western surface mining.

Senator HUDDLESTON. Does your effort look into the transportation problems at all?

Mr. FUMICH. We haven't particularly delved into the problems of transportation away from the minesite, such as rail car availability, but that is another critical area, yes, sir.

Senator HUDDLESTON. You mentioned you saw an increase of $3 per ton. Do you have that broken down between how much of it is due to the recent contract and how much to the new surface mining law?

Mr. FUMICH. Sir, I'd like to attach a caveat to that figure. This is just an estimate I've heard bandied about. It has not been documented. I want to put that in the record only as an estimate.

This is just an average figure I have received based on the estimates of various people I've talked to in the mining industry and in some of the peripheral industries.

Senator HUDDLESTON. A $3-a-ton increase over what period of time?

Mr. FUMICH. I would say in the very near future.

Senator HUDDLESTON. All right.

COAL LIQUEFACTION PROGRAM

Mr. FUMICH. The next program area is our liquefaction program, for which we're requesting a total of $125 million. I think this program can be characterized as one of our more mature fossil energy programs.

We have advanced certain technologies which the members of this committee will remember were begun years ago. The solvent-

refined coal and some of the other projects, like H-coal, started way back in the 1960s. We have now reached a point where we can demonstrate the technology.

With respect to SRC, particularly, we're proposing a commercial module. This is not really a demonstration plant. This would be a first-of-a-kind facility. If it works, we could add on four other modules, and we'd have a commercial plant.

In Catlettsburg, Ky.—I think you're quite familiar with the H-coal pilot plant project—this is one of our better liquefaction projects. It uses a catalyst. It can use coals from all over the country. That is our demonstration plant in the classical sense. If it's successful, it will provide the data for scale up to a commercial plant.

Then, we have our donor solvent pilot plant projects. I think we have a very well-planned liquefaction program here. It cuts across a broad effort. So, in the event these projects are successful—and we're hopeful they are—they could make a broad impact on the marketplace.

Along with that, we have a test facility at Cresap, W. Va. that we think is critical. We're dealing with large plants that are going to produce thousands of barrels of liquid. We're going to have problems. We've had problems at every one of our pilot plants, and we're going to have problems in a demonstration plant. There's no getting around that. You can't work these problems out on a major level. It costs too much money. You have no flexibility.

What you need are smaller test facilities where you can test out your separation schemes, your lock hoppers, and valves, and solve whatever problems that you may encounter, such as corrosion and erosion. All these things have to be worked concurrently. So, this is what we're doing at Cresap.

We also have some third-generation processes that hopefully will be much better than what we're working on. So, we feel we've got a program that is getting near fruition, but is still looking at new frontiers for what we think are better ideas.

Senator HUDDLESTON. I will reserve my questions until you go through the entire thing.

COAL GASIFICATION

Mr. FUMICH. Gasification—you'll notice we have that broken into high Btu gasification, low Btu gasification, special projects and support, and demo facilities.

Again, we're talking about mature technology. Some of these pilot plants have been in operation for years; others have operating problems. This operation of pilot plants should always remain in the research program, particularly when you're dealing with coal on a large scale because you have high temperature, high pressure, and first-of-a-kind facilities.

This program has raised a lot of questions because it's mature. We're starting to go from one phase to another. I guess a lot of people were concerned. They think we're aborting something. This is not true. This is a program that's been going on for about 15 years, and as a result, this technology has reached a point where you fish or cut bait.

We have design studies underway on two processes which are potential candidates for demonstration. The latest report that I got on each one of these projects is that the processes look very promising. They had some problems for a while, however, both of these projects now seem on line and we should be able to make a decision on a demonstration project sometime around the first of the year.

That, again, shows you where we are. Now the demonstration plant phase will start costing a lot more money and it will look like we're putting more money into the effort.

We are going to be phasing out some of these pilot plants in the reasonable future, because most of these have been operating quite a bit of time. We have two or three that may be going another year or so, and that's it.

So, actually, we are phasing out of that particular phase of second generation technology development. But we feel that if the two demonstration projects go as scheduled, we should have information to make a decision after the first of the year.

I'm not talking now about Lurgi or the first generation technology. I'm just talking about the projects that are included in our program.

The low Btu gas program involves some industrial gasifiers, two of which, as you know, are in Kentucky. Both are on line. One of them is a $4.2 million project at Hitchins, Ky. The other one is the Pikeville, Tenn. project involving $5.8 million.

These went according to plan and I will not address them anymore.

INDUSTRIAL GASIFIERS

The others that we had are also going well, and that particular program, as you know, looks like it's been decreased. Really, that's not true. The industrial gasifiers program, was mostly funded last year so it didn't require any increase. There was a reduction in one project. That's our testing facility at Powerton. I'll be completely candid about that. We have had some problems there, some technical, some management. We're looking at that project again and reassessing it, and can give you a report on what we expect our future plans with that particular project will be.

I think that covers gasification except for the underground coal gasification work. The underground coal gasification effort is in the embryonic stage, so to speak. As you know, the Russians carried on that work for years before they dropped it. It's hard to say what the correct level of effort should be.

We don't know whether the level of effort should be, greater or smaller, because we're just getting it started.

My present feeling, is that this is a pretty realistic budget. The main project that we have to prove out is the big burn. What that means is that in an underground coal gasification project, if you have a big burn and then you have some side ones you have a real problem.

We haven't tested it out yet, and as a result, we really can't tell you what the promise of the technology is. If you look at that program, you'll notice that the lion's share of that effort is in the West, and there's a very good reason for that.

Like any beginners, we like to start on the easy problems first. In the West, the coal is more reactive. The seam is not so tight. You can get combustion much better. However, when we get back to the Eastern coals, we have the same problem with underground coal gasification as we have with Lurgi technology.

Eastern coals are a real tough nut to crack. When you heat them, they swell. They get tarry. You have that same problem underground.

As far as the Eastern part of the country, we have some lab work and other efforts underway but we're more at a beginning stage than we are in the West. That briefly is the effort we have in underground coal gasification.

UNDERGROUND COAL GASIFICATION

Senator HUDDLESTON. Is it anticipated that this underground operation will do the complete gasification underground and just tap it then much as you would natural gas?

Mr. FUMICH. Sir, it depends on what you want. In the Western sector where the population and market use patterns are different than in the East, we have underground coal gasification. It produces a gas of about 100 to maybe 300 to 400 Btus. But if you get a project that produces 100 Btu gas in the West, you're going to have to enrich it and make a medium Btu gas out of it, or a high Btu gas, which we're not really involved in yet.

On the other hand, in the Eastern part of the country, if you can get a gas that's anywhere between 100 to 500, you're in business. But like I said, we have a lot more problems in the East right now than we do in the West. We think that technology is one that we ought to move ahead.

ADVANCED POWER SYSTEMS

Advanced power systems—there we have a budget request of $26.9 million, an increase of $1.2 million.

There's a limit to coal burning efficiency right. Most utility plants can only go to about 34 percent efficiency with the conventional pulverized coal burner. If you want to get above 40 percent efficiency you're going to have to use high temperature combustion technology.

When you use a turbine, you have temperature and corrosion problems. Most of our program is involved in trying to clean up the gas and also trying to find out where the compromise is between material that works on a turbine blade and how much you have to clean up the gas.

So what you're trying to do is to improve the turbine blade materials, you're trying to use water or other types of cooling devices to protect the blades, and to clean up the gas in order to try to achieve the best technical and economic compromise.

So it's kind of a marriage between those two problem areas and that's what that program is all about.

DIRECT COMBUSTION

Next, direct combustion. For years, the utility industry has been working with conventional pulverized coal burners.

We felt that because of the size of conventional boilers and the other problems, and because of the air pollution regulations stemming from and the Clean Air Act, we could come up with a better system. In this Program we are developing fluidized-bed combustion. This concept is like blowing air upward through a bed of marbles causing them to float. This is just what the coal is like in one of these fluidized-bed combustors.

We believe that if this concept is successful, the economics of this particular process would be better than that of a conventional pulverized coal utility boiler. In other words, this would be a much better boiler. It's much smaller. It requires less capital investment in heating surfaces, the combustion process is much more concentrated within the bed. You use limestone during the combustion process, and this is one of the ways we try to meet the requirements of the Clean Air Act, because we know 90 percent of the coal east of the Mississippi is high sulfur. Worse than that, about 43 percent of this coal is 3 percent or more sulfur, and about 37 percent is between 1 and 3 percent sulfur.

So you have a lot of sulfur in Eastern coal.

We feel that this is one technology, whether you're talking about atmospheric fluidized bed or pressurized fluidized bed, that will do the job.

ATMOSPHERIC SYSTEM

Now the atmospheric system, we would consider to be first generation, or in another term, you'd say it's more near-term than pressurized fluidized bed. The pressurized fluidized bed has more promise. It'll take out more pollutants per unit of limestone and so forth. But you have higher pressures and higher temperatures, and that means you have more problems.

So this is a little further down the road. But we think both approaches are viable and should be developed, because the atmospheric and pressurized fluidized bed boilers are not only for use in the utility sector, but also the industrial market.

Senator HUDDLESTON. Let me suggest here that we proceed with questions because Secretary Thorne, I think, has a time restraint and we want to make sure we utilize him to the fullest extent we can this afternoon. [Laughter.]

Mr. THORNE. I appreciate that, Mr. Chairman.

Senator HUDDLESTON. We'll pick these other items up as we go along.

Mr. Thorne, the committee does appreciate your remarks indicating the need to move forward quickly with coal technology, with particular emphasis on the near term. That's why the committee has some difficulty in understanding the timidity of the fossil R. & D. budget proposal. The $637.4 million request involves a real increase of only about $26 million over 1978. That's less than 5 percent.

So how does this kind of a budget square with the administration's priorities for coal utilization and for emphasis on the near-term energy supply strategy?

R. & D. BUDGETING

Mr. THORNE. Mr. Chairman, you point up a very significant item in our budget, it is a quandary to us, quite frankly. The fiscal year 1979 budget was not developed by the Department. It was inherited from ERDA and as the Secretary mentioned the other day, ERDA was looking much further down the road. Their primary emphasis was on the longer range R. & D. activities.

Our quandary has been how can we, recognizing the budget constraints, try and move more of the technologies toward the near-term and begin emphasizing certain portions of the R. & D. program.

I cannot honestly tell you that this budget really does provide the proper balance and the proper emphasis between the near and the long term. I wish the R. & D. portion was somewhat larger and our longer range was somewhat shorter.

I would like to assure you we're trying to make this internal balance as best we can.

Senator HUDDLESTON. I note that liquefaction is down some $7 million. Gasification drops by about $14 million. Direct combustion, which you stressed, is reduced $7 million. Petroleum is up only slightly in the oil shale program. Enhanced gas recovery is down by $5 million.

How do you relate that kind of budgeting to the near-term energy supply strategy that we hear about?

Mr. THORNE. Mr. Chairman, I believe that the slight decrease in the budgetary emphasis on liquefaction and gasification represents, particularly in the gasification area, moving some of the technology into the commercial market.

For instance, the low- and medium-Btu technologies of conventional type we feel are ready for the marketplace. In many cases, they're starting to be used in the marketplace. Part of the program begins to become a little bit thinner.

In the liquefaction area, we still have major new thrusts particularly for the Exxon donor solvent process. This year we're putting some $30 million into that project.

In addition, we're completing the work on H-coal. As I mentioned in my introductory remarks, we are taking major steps forward in the SRC processes, through 1978 reprogramming actions.

So I think that even though the budget does not reflect perhaps the totality of the need for liquefaction and gasification in terms of the technologies that will pay off, I do think that it has that emphasis.

ENERGY SUPPLY INITIATIVES

Senator HUDDLESTON. Looking at the pending budget amendments that are supposedly to implement what the Department of Energy calls its energy supply initiatives, the amendment involves reallocating about $130 million within the fiscal 1979 budget.

We have the pamphlet entitled, "Energy Supply Initiatives" dated May 15, 1978, that has been supplied to the committee and will insert it in the record at this time.

[The information follows:]

ENERGY SUPPLY INITIATIVES

May 15, 1978

INTRODUCTION

This document presents a set of supply initiatives designed to improve the Nation's capability to commercialize new energy supply technologies. These initiatives will be funded from offsetting adjustments within the Department's budget and will build upon the National Energy Plan to ensure a balanced supply picture beyond the mid-1980's.

The National Energy Plan set forth a pricing and fiscal framework under which industry and individuals could make investment decisions aimed at substantially reducing the demand for U.S. oil imports through conservation and fuel substitution. These demand restraint initiatives, however, cannot permanently maintain imports at a satisfactorily low level. The U.S. must also begin efforts now to develop a wide range of commercially-viable new technologies which can help increase production of the Nation's abundant domestic resources in the 1980's and beyond.

Inherent in the National Energy Plan's program for reducing energy demand and imports was the need for a set of initiatives to increase domestic energy supply. To this end, a comprehensive energy supply strategy is currently under development. This study, known as the National Energy Supply Strategy (NESS), should be ready next winter. To ensure public involvement and participation in the NESS study, the Department of Energy will undertake a major outreach program to include state and local governments, the Congress, special interest groups and the public at large. The NESS will serve as the basis for the second National Energy Plan, which will be presented to Congress in early 1979.

Although there is currently a small and temporary excess of world oil productive capacity, the U.S. is still importing at great expense nearly half of its oil — far more than during the 1973-74 embargo. As world oil consumption approaches world oil production limits, it is almost certain that oil will become even more scarce and expensive during the 1980's. Despite the high likelihood of oil price increases during the 1980's, the U.S. can influence the path of these price increases through its national energy policy. The non-OPEC countries can moderate future oil price rises through an increase in the production of oil or oil substitutes, as well as through a reduction of oil consumption. Any such reduction in the demand for OPEC exports not only displaces expensive imported oil, but also increases the likelihood of relatively lower oil prices in the future. Such reductions could yield multi-billion dollar savings in foreign energy payments and thus represent a major contribution to the economic health and national security posture of the United States.

In their current state of technical advance, many new energy technologies are not economic at today's oil prices, but will become cost effective at the oil prices that are likely to accompany a worldwide limitation in crude oil production capacity. The initiatives described below will develop the capability to deploy a number of supply technologies if world oil prices rise rapidly in the future. While it is impossible to determine the exact timing and magnitude of any future oil shortage, these initiatives will serve as an insurance policy against

rapid oil price increases. Even if oil prices stay low, the investments in these measures have a relatively small cost for the critical insurance they provide.

The proposed supply initiatives fall under four categories: synthetic liquids and solids, new sources of natural gas, renewables, and the removal of institutional barriers.

For synthetic liquids and solids that can be substituted for petroleum, three initiatives are proposed:

— a tax incentive to stimulate demonstrations of domestic oil shale production;

— regulations that provide oil shale and other synthetic liquids the same entitlements treatment as imported crude oil;

— initiation of design studies leading to the construction of one or two plants for the production of synthetic fuels from coal in FY 1980.

For increased natural gas supply and more efficient distribution of supply, two initiatives are proposed:

— an accelerated technology development program to stimulate earlier and more extensive production of unconventional natural gas from geopressurized zones;

— accelerated construction of several commercial-scale, high-Btu coal gasification facilities achieved through regulatory changes and/or loan guarantees.

To accelerate commercialization of renewable technologies which can pay off in the near term, nine individual initiatives are proposed:

— increased research on photovoltaic solar energy;

— commercial scale demonstrations of wind machines;

— production of gas and liquid fuels from biomass;

— prepackaged small hydropower plants, demonstration of low-head hydro systems, and feasibility studies for hydropower at existing dams;

— grants to individuals for innovative, small technology systems;

— a dispersed energy systems demonstration program;

— design awards for passive solar heating and cooling;

— a solar training and education program;

— a requirement that Federal purchases of solar heating and cooling systems be matched by sales in the private sector.

Finally, new initiatives are needed to help overcome institutional barriers to the expansion of domestic supply. In the past, legal, institutional and regulatory barriers, as well as the problems associated with public acceptance of new technologies, have been given insufficient attention. A concerted effort is required by the Federal government,

State and local authorities, private industry and environmental and other public interest groups to define these problems and to help resolve them. This effort must be harmonized as fully as possible with the interests of local communities in public health and safety and environmental protection.

Therefore, to address institutional supply barriers, two initiatives are proposed:

— a program to provide financial assistance to States, Indian tribes and communities for mitigating the adverse social and economic impacts resulting from energy resource development;

— the establishment of a system within DOE to overcome institutional barriers and speed regulatory decisions.

The tax and budget initiatives described above are recommended for immediate adoption. Pending energy tax legislation can be amended to accommodate the tax action, and the FY 1979 Departmental budget proposal now before the Congress can be modified to accommodate the expanded technology programs. Increasing FY 1979 funds required for these initiatives would be covered by decreases in the DOE budget. The Administration has already presented its impact assistance proposal. The regulatory initiative on synthetic liquids is being promulgated in the Federal Register.

All of these supply initiatives require extensive lead times -- for both technical advances and institutional adjustments -- to develop the capability for widespread commercialization and then build the productive capacity to make a meaningful contribution to supply. These initiatives, therefore, are an important step toward meeting the energy challenges of the 1980's as well as the development of a comprehensive National Energy Supply Strategy.

SUMMARY OF SUPPLY INITIATIVES
(Dollars in Millions)

	Increases in Budget Authority
FY 1979 DOE Budget Amendment:	
o Oil shale tax credit	N/A
o Regulations to provide oil shale and other synthetic liquids entitlements treatment	N/A
o Unconventional natural gas	$ 10
o High Btu coal gas loan guarantees	20
o Photovoltaic research	30
o Wind machine demonstrations	20
o Gas and liquid fuels from biomass	10
o Low-head hydro power program	20

SUMMARY OF SUPPLY INITIATIVES
(Dollars in Millions)

	Increases in Budget Authority
FY 1979 DOE Budget Amendment:	
o Appropriate technology grants	5
o Dispersed energy systems demonstration	5
o Passive solar heating and cooling	5
o Leveraging Federal purchases of solar	N/A
o Solar training and education	5
TOTAL	$130

NOTE: In addition to the above FY 1979 increases, a FY 1978 reprogramming of $33 million for design studies of synthetic liquid and solid demonstration plants will be made available to support the synthetic liquid and solid initiative.

SUMMARY OF PROPOSED REDUCTIONS
(Dollars in Millions)

	Reductions in Budget Authority
o Light water reactor technology	$ -10
o Waste management facilities	-51
o Advanced technology and assessments projects	- 5
o National uranium resource evaluation	-10
o Vanpooling	- 9
o Clean boiler fuel demonstration (Coalcon)	-45
TOTAL	$-130

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SHALE OIL PRODUCTION

BACKGROUND: In Colorado and Utah, there are major deposits of high quality oil shale. Although "nearly ready" for many years, Western oil shale is not being produced commercially because of unfavorable economics and environmental uncertainties. Currently, the most probable range of raw shale oil production costs is from $15 to $25 per barrel depending on the technology, financing terms and environmental controls.

Shale oil capital requirements are high: approximately $1.0 to $1.25 billion for a 50 thousand barrel per day plant. Commercial production of shale oil also faces other constraints from stringent air quality requirements, water effluent limits, and limited water availability in the Colorado/Utah area. Stringent environmental controls could add substantially to the costs of production.

PROPOSAL: To accelerate shale oil development, two initiatives are proposed:

- The Administration will work with the energy conferees to modify the shale oil tax credit currently pending in the NEA tax conference. The Administration proposes to limit the credit to the first 10 thousand barrels per day of production from commercial plants placed in service by 1987. The credit will then continue throughout the life of qualifying plants or 20 years, whichever is shorter. The Administration will also discuss with the conferees a provision to phase out the credit when world oil prices exceed the cost of shale oil to U.S. refiners.

- DOE will issue regulations to provide shale oil (and other synthetic liquids) with the same entitlements treatment as imported crude oil.

DISCUSSION: Both initiatives will facilitate commercial production by placing shale oil in a competitive price range with fuel oil, particularly in mixtures with conventional residual fuel oil. Together, the limited tax credit and the new entitlements treatment will reduce the effective costs of oil-shale production by $7 to $8 per barrel for initial plant

SYNTHETIC LIQUID AND SOLID COMMERCIAL DEMONSTRATION

BACKGROUND: Domestic coal can provide a potentially large supply of the liquid and clean solid fuels which will be needed in the late 1980's and the 1990's. Synthetic liquid and solid technologies have not yet emerged on a commercial scale in the U.S. In South Africa, however, advanced versions of processes used in Germany during World War II now produce high-cost synthetic gasoline from coal.

Several new processes are under development in the U.S. for production of lower-cost synthetic fuels. The most advanced include solvent refined coal (SRC I, a solid, and SRC-II, a liquid), H-Coal and Donor Solvent.

On a commercial scale, the liquids made from these new processes would cost an estimated $20 to $35 per barrel. Since these costs clearly exceed current world oil prices, government assistance is essential to advance synthetic coal liquid and solid processes to the point of commercial readiness.

PROPOSAL: To develop the capability to produce synthetic liquids and solids from coal as rapidly as technically feasible, the following initiatives are proposed:

- o Process design studies will begin for four or five bonafide coal liquid and coal solid demonstration plants. The studies will cost approximately $6 to $8 million each, and will start in FY 1978 and conclude by mid FY 1979.

- o At this point, the SRC processes are at a more advanced stage of development than other processes currently under development in the United States. If the process studies and parallel negotiations on cost sharing are successful on the SRC processes, DOE would proceed to detailed design for two plants using the funds currently in the President's FY 1979 budget ($23 million) and in FY 1980 would move into the procurement and construction phases on one or two plants. If the above conditions are not met by either one or both of the SRC technologies, DOE would be in a position to finance one or more of the other proposals in FY 1980. This approach will assure expeditious development of synthetic coal technology within the funding levels provided in the FY 1979 budget.

DISCUSSION: These initiatives will demonstrate the economic and technical viability of producing synthetic liquids and solids from coal. If the program meets its scheduled goals, the first demonstration modules will be on line by 1983 and commercial-scale plants could be on line by 1987. The preliminary process design studies will assess whether proceeding to detailed design and construction makes technical and economic sense. The decision to proceed will await completion of the process design studies.

Electric and gas utilities are discussing the possibility of purchasing a portion of the output from the SRC I and SRC II plants during the early years of their operation.

Major benefits will accrue from demonstrations of synthetic fuels production technology. If world oil prices rise moderately to the point at which synthetic fuels are competitive, production could be initiated rapidly — many years sooner than without such a program. This would reduce oil imports through direct displacement and place a downward pressure on world oil prices by reducing the demand for OPEC exports. In addition the coal solids technology offers a promising, cost effective means for meeting environmental standards.

UNCONVENTIONAL NATURAL GAS

BACKGROUND: Natural gas from geopressurized zones has great but uncertain potential. However, it is not now produced commercially because of technical and environmental problems, unfavorable economics, and the uncertain nature of the resource base. The private sector is not expected to develop geopressurized methane resources in the near future because of these uncertainties.

PROPOSAL: The potential commercial application of geopressurized methane will be accelerated by expanding the current Federal R&D program ($10 million in FY 1979) as follows:

- o Increase the number of geopressurized wells drilled in FY 1979 by two (from two to four) to reduce the time required to complete the planned 3-year feasibility study of this resource.
- o Initiate further supporting work on the geopressurized methane resource to provide the information base for eventual commercial development.

DISCUSSION: The accelerated drilling program will demonstrate the feasibility of developing geopressurized gas resources sooner and will provide technical and economic information to aid energy planning and private development. If this initial feasibility drilling program proves successful, subsequent demonstrations would provide critical data on reservoir productivity, both rates and lifetimes, as well as information about environmental issues, including brine disposal and surface subsidence.

An expanded technology program will accelerate development of the resources and could have a large payoff for a relatively small level of Federal involvement. Even if optimistic estimates are too high, the program will provide better information concerning the resource base and production costs that is essential to energy planning.

HIGH-BTU COAL GAS

BACKGROUND: High-Btu coal gas could become an important domestic source of energy. Several commercial projects have been promoted actively, but no plants are actually being constructed. Slow progress is attributed primarily to siting delays and a lack of private financing as opposed to any specific problems with the basic technology.

A commercial-scale, high-Btu coal gas project represents a large investment ($1.6 billion for a 250 million cubic foot per day plant). If unforeseen technical or other obstacles prevent completion of a plant, the debt repayment burden could seriously erode the corporate net worth of project sponsors. In addition, rolled-in pricing is necessary to assure the marketability of the relatively high cost gas from these plants.

The capability to accelerate commercialization of high-Btu coal gas provides a hedge against scarce, expensive oil. To develop the capability well in advance of higher-priced oil, however, requires that the government modify the marketability and non-completion risks and remove some institutional barriers confronting the first commercial plants.

PROPOSAL: On a case-by-case basis, DOE will review commercial-scale high-Btu coal gas projects to determine the need for:

- o Intervention before FERC to argue for tariff protection against non-completion, or
- o Federal loan guarantees ($20 million in FY 79, total to be determined).

DOE will develop criteria and procedures for this case-by-case review; issue regulations and request simplification of existing authority to guarantee loans promptly; and develop a strategy for intervening before FERC. Such efforts would supplement a favorable FERC action on rolled-in pricing for these projects.

DISCUSSION: This initiative will ensure that risks currently associated with high Btu coal gasification are modified selectively (for several commercial-scale plants). Market risks, caused by the high cost of high-Btu gas, will be addressed by support for a favorable FERC ruling on rolled-in pricing. The risks of noncompletion will be addressed through loan guarantees or by tariffs that will insure that investors are adequately protected. For example, FERC could modify conventional tariffs to include a non-completion guarantee; alternatively it could treat, on a contingent basis, the costs of the first few plants as research and development expenditures (an extension of FPC Order No. 566). Under a selective approach, tariff modifications can be made to fit the special risks of each project and its sponsors.

In particular, case-by-case determinations shall be made whether and how the ratepayers of a particular pipeline or utility consortium should bear the cost of any project failure. In some circumstances, loan guarantees may be the most effective and equitable method of insuring against project risk. This initiative demonstrates that the Federal Government would be willing to provide that insurance when appropriate.

The cost of insuring against the risk of noncompletion is expected to be moderate. Noncompletion is highly improbable and there are likely to be assets to offset noncompletion costs. In addition, many of the potential reasons for noncompletion would probably stop the project before substantial project costs were incurred.

High-Btu coal gas can be an important cost-effective source of future supply. In the residential sector, for example, high-Btu coal gas already competes favorably with electricity. For other sectors, this initiative can insure that the U.S. will obtain the technical and institutional capability to build additional capacity rapidly. With higher oil prices, additional capacity would save the U.S. economy as much in reduced imports as it would cost in the near term to build several plants.

PHOTOVOLTAICS

BACKGROUND: Photovoltaic (solar-electric) cells convert sunlight directly into electricity. They have a wide range of potential applications, since electricity can be used to meet all types of energy demands. Moreover, photovoltaics can be used either for dispersed or central power generation. However, costs must be reduced substantially before photovoltaics are competitive for residential applications with electricity from conventional sources.

PROPOSAL: DOE will expand the current focus on flat plate silicon cell technology to include new technologies -- such as those utilizing amphorous materials, photochemical conversion and advanced concentrator concepts. This proposal will increase FY 1979 funding of the four major research competitions initiated in FY 1978, and fund unsolicited proposals in advanced concentrator performance, cost reduction concepts and electrolyte semiconductor cells. It will also increase funding of advanced thin film materials, initiate an R&D program to provide starter grants for novel high risk conversion concepts, and initiate a program to improve the stability and reliability of thin film devices ($30 million in FY 1979).

DISCUSSION: Together with the current program, these efforts are designed to reduce the costs of photovoltaic arrays to $.50 per peak watt by 1986,or $1.50 to $2.00 per peak watt for total systems costs. By comparison, total systems costs today are $20 per peak watt. These reductions in array costs, plus expected reductions in the cost of associated storage, structural and power conditioning equipment, should make solar competitive with residential electricity at approximately 7 cents per kwh in 1986 in regions with generally sunny weather.

WIND

BACKGROUND: Wind energy conversion systems have the potential to produce electricity for utilities and central power stations, as well as for dispersed applications. For utilities, a fourfold cost reduction is needed; for small machines and other dispersed applications, a twofold cost reduction may be adequate.
production. As a result, firms which are actively developing technologies will have powerful incentives to proceed with the initial modules (10 thousand barrels per day) of commercial-scale plants. These smaller plants will result in substantially higher production costs than later commercial-scale plants. Five producer groups currently seem capable of initial plant construction (three using surface-retorting and two using in situ methods). If all five groups respond to the tax credit, shale oil production would be 50 thousand barrels per day or more by 1987. The total capacity of the five full-scale plants would be on the order of 250 thousand barrels per day.

Although these initiatives will reduce the expected prices for shale oil produced from these demonstration plants to levels approximating the cost of imported oil, the production economics of shale oil and the ultimate potential for domestic production are difficult to predict. Variations in the quality of the shale, performance of the extraction technology, financing terms, and environmental controls can alter the required price of individual projects by several dollars per barrel. Shale oil, however, will become more competitive in commercial-scale plants.

The cost of the tax credit in reduced revenues to the Treasury would be approximately $1 billion through 2000. If the world price were to exceed the cost of shale oil, the proposal to phase out the tax credit under that condition would reduce the ultimate Treasury loss.

The limited credit will encourage controlled development of shale oil production. DOE environmental research and assessment activities (pollution characterization, monitoring and identification of health effects) will expand to keep pace with increased oil shale development. These efforts will attempt to mitigate any adverse environmental impacts at the one-module plant scale before full-scale plants are built.

PROPOSAL: For large (1-2 mw) utility-scale machines, this initiative will introduce a significant amount of market competition, market testing and user acceptance into the current program. Two competing manufacturers (rather than one as presently planned) will be selected to design, fabricate and field test a prototype of the next generation of wind machines. If these machines meet performance expectations, the Federal government will purchase six more units for the purpose of obtaining manufacturing and operating experience. The proposed initiative will also provide increased funds for test machines which the Government and the utility partners will evaluate in terms of economic, environmental, systems integration and other perspectives. If the evaluations of the prototypes to be developed under this amendment prove favorable, DOE will consider efforts to stimulate their widespread use.

This initiative will also provide for the purchase and installation of at least 50 small (1-15 kw) wind machines for a test program that would lead to early resolution of rate schedule and operational problems with electric utilities and with State and local governments. Efforts will also begin to accelerate design and development of more advanced small systems aimed at single family and rural applications.

The total cost of this initiative would be $20 million in FY 1979. Of that amount, $13 million would be for the large wind machines and $7 million for small machines.

DISCUSSION: Together with the current program, this initiative is aimed at reducing costs for large utility-scale

machines to about 3 cents per kwh by 1985, at which point a sizeable commercial market should be realized. The costs of these large wind systems may ultimately be reduced below 2 cents per kwh. The development of a new generation of small wind machines, together with the proposed NEA tax credit, should speed commercialization in the utility, agricultural and dispersed residential markets.

GAS AND LIQUID FUELS FROM BIOMASS

BACKGROUND: Direct combustion of biomass is already economic and substantial quantities are consumed now in the forest products industry. Technologies for converting biomass to alcohol fuels are relatively well known and some States are already experimenting with gasohol programs. However, biomass also offers the potential for the production of other gas and liquid fuels, using processes that are likely to pose fewer envrionmental hazards than those for producing synthetic fuels from coal.

PROPOSAL: This initiative will accelerate research and foster innovative approaches to convert wood and other forms of biomass directly into methane or liquid fuels. It will place initial emphasis on basic thermochemical processes for the de-oxygenation of cellulose. This effort should open up new approaches for the synthesis and extraction of hydrocarbons from biomass feedstocks. These direct conversion processes will primarily produce fuel oils, residual oil, gases, and other products that closely resemble products now derived from petroleum refining and petrochemical processing ($10 million in FY 1979).

DISCUSSION: Since these processes are not well understood at the present time, the economics are uncertain. However, some of the more promising thermochemical approaches may result in costs that are equal to or lower than other comparable synfuels processes. Biomass technologies could become economic at an earlier time in regions of the country where low-cost waste products would be used. The potential cleanliness of these processes should reduce the possibility of encountering siting problems. The initiative will include active participation by USDA in both planning and implementation.

LOW-HEAD HYDRO

BACKGROUND: During the last several decades, many small hydropower plants in New England and elsewhere have been retired from service because they were unable to compete with lower priced electricity generated by other means. Now that energy prices are increasing, it is frequently cost-effective and desirable to rebuild these and other dam sites and install modern, efficient turbo-generators. Due to their small size, these sites have not attracted widespread interest on the part of utilities. Pending provisions of the NEA, however, require utilities to purchase power at fair rates from small producers. Since the sites are likely

to be developed under disparate conditions, a variety of institutional barriers must be overcome. In addition, power generation costs must be reduced to ensure viability.

PROPOSAL: This initiative will accelerate the commercialization of small hydro turbines by the domestic turbine industry through funding at least two manufacturers to develop packaged turbogenerators. Additional funds will provide loans for feasibility studies to determine the technical, economic and environmental merit of about 100 existing dam sites (loans would be forgiven if a project at that site proves to be infeasible). Also, utilization experiments will be conducted to demonstrate project viability under alternative technical and institutional conditions. Total funding would be $10 million for feasibility studies, $5 million for turbogenerator development, and $5 million for utilization experiments ($20 million in FY 1979).

DISCUSSION: Together with the existing program, this initiative is aimed at reducing the cost of retrofitting existing dams by about 20 percent. Electricity from small hydro projects could economically meet peak demands at some sites, and hence reduce conventional capacity requirements. On streams that are intermittent, the hydropower would simply save fuel for the utility system rather than displace capacity. By 1990, up to 4000 mw could be installed.

APPROPRIATE TECHNOLOGY

BACKGROUND: This program is aimed at developing new ideas for small-scale systems that conserve energy or produce energy from renewable resources. A pilot program to tap this innovative potential was developed in 1978 and implemented in several western states. The first set of proposals under this pilot program were analyzed recently, and expansion of the program is warranted.

PROPOSAL: This initiative will provide sufficient funds to expand the appropriate technology program to all ten Federal regions. The program will encourage individuals and small businesses to develop and prove the feasibility of a variety of small-scale technologies that rely on low-cost, locally available materials. Emphasis will be placed on technologies that may not be universally applicable, but which are appropriate to markets characterized by unique regional, institutional and end-use conditions. Grants are limited to $50,000 each ($5 million in FY 1979).

DISCUSSION: This initiative will allow development of several hundred innovative ideas in all parts of the Nation. Some will be suitable for direct use; others may require follow up or evaluation through other DOE programs.

DISPERSED ENERGY SYSTEMS DEMONSTRATION

BACKGROUND: There are many technologies and small-to-intermediate scale energy systems that do not fall into traditional DOE program categories. For example, more flexibility is needed to demonstrate concepts developed under the appropriate technology grants program, and to fund proposals for energy systems on a neighborhood or sub-municipal scale.

PROPOSAL: Building upon the appropriate technology small grants program and the existing buildings and community systems program, this initiative will provide for demonstrations and evaluations of decentralized technologies utilizing dispersed energy sources. Emphasis will be placed on systems that minimize energy waste and that utilize innovative combinations of known technologies. Possible demonstrations may range from self-sufficient, neighborhood-scale solar heating/storage systems to integrated renewable energy systems for business or industrial use. Examples of technologies that might be demonstrated are aerobic digestion, electrical and thermal storage and waste heat recovery. The demonstrations program will attempt to encourage adoption of such technologies for applications as diverse as industrial parks, commercial/residential neighborhoods or entire communities. Funding would be $5 million in FY 1979.

DISCUSSION: By evaluating the suitability of these technologies under a variety of geographic, institutional and socioeconomic conditions, this initiative will speed commercialization of innovative, decentralized energy systems.

PASSIVE SOLAR HEATING AND COOLING

BACKGROUND: Passive solar buildings capture solar heat with devices such as greenhouses or south-facing windows with overhangs, and store the heat in masonry walls or floors, rocks, or roof ponds. These devices are intended to capture and radiate solar energy into the building for heating or to remove heat from the building for cooling. The potential energy savings are considerable. Since passive solar devices are often integral to the building structure, they are difficult to define for tax credit purposes. Active solar equipment, however, will be eligible for substantial tax credits under the NEA.

PROPOSAL: This initiative will stimulate and publicize innovative, practical passive solar designs through financial awards to architects and builders. Competitions will be held nationally and regionally; they will be structured to include members of the architectural and building communities as well as local government authorities. Projects will be judged on the basis of architectural innovation, marketability and energy savings. Funding for this program would be $5 million in FY 1979.

DISCUSSION: Combined with conservation, passive solar designs can cut energy demands 50 to 80 percent compared to today's designs. The high visibility of the awards competition will not only increase general awareness of passive solar techniques, but should accelerate their adoption by the building industry in all geographic regions of the country.

SOLAR TRAINING AND EDUCATION

BACKGROUND: The solar heating industry has grown from almost nothing five years ago to a level of annual sales exceeding $200 million. The growth of the solar industry could be constrained over the long term by a lack of skilled installation and maintenance personnel.

PROPOSAL: This initiative will establish training programs which will be operated by labor unions, community colleges, trade associations and other qualified groups. Funds will be used to purchase learning aids and materials necessary to acquire knowledge and hands-on skills, and to train instructors who will thereafter include solar skills and/or designer training in their regular curriculum. The trades affected include plumbing, sheet metal work and other occupations connected with conventional heating, ventilating and air conditioning systems ($5 million in FY 1979).

DISCUSSION: This short-lived program is designed to "teach the teachers." When Federal support is terminated, these activities should be self-sustaining. The program should help remove a significant barrier to the solar industry's rapid growth.

LEVERAGING FEDERAL SOLAR EXPENDITURES

BACKGROUND: The Federal government intends to provide a significant impetus to the solar energy industry by making large purchases of solar equipment. It is important that this program not only provide a Government market for solar equipment, but also encourage a private market.

PROPOSAL The NEA is expected to authorize $100 million over three years for the Federal government to purchase solar heating and cooling systems for Federal buildings. DOE is reviewing the possibility of restricting these purchases to vendors whose sales to the government are matched by a specified percentage of sales to the private sector.

DISCUSSION: DOE will begin discussions immediately with representatives of solar industries, Federal agencies, and other interested parties to determine the feasibility of leveraged purchasing. In developing such a program, special care will be taken to promote competition. No budget increment is required for this program.

ENERGY IMPACT ASSISTANCE

BACKGROUND: The President announced on May 4 a new program of assistance to States, Indian tribes, and local governments to meet needs for public services arising from large-scale energy development. Although not part of this initiatives package, this program will aid in reducing institutional difficulties arising from development of new energy supplies.

A large share of new energy development will occur in isolated areas of the West and rural portions of Appalachia. As development is initiated, demands for new public services increase. In contrast, public revenues typically do not increase until development is well-advanced and production commences. This budget deficit, as well as the needs for planning for expansion, can overwhelm the financial and human resources of the small communities now located in these undeveloped areas.

Existing Federal programs do not address the financing needs of these communities, while State and private efforts have proved inadequate. With the exception of assistance programs to communities impacted by development in the coastal areas, existing Federal programs have eligibility requirements which often restrict participation by communities impacted by energy growth. The lack of Federal program coordination requires communities to sort through a bewildering array of requirements in order to obtain assistance. Lack of information on projected resource development restricts communities' ability to influence and respond to energy development decisions. State and private industry efforts to address energy development impacts have been only partially successful.

PROPOSAL: New legislation will provide:

- Annual grants over 5 years to States and Indian tribes to be used to plan for orderly development, and to establish revolving funds to meet front-end financing needs for public facilities, services and housing ($135 million for FY 1979; $725 million in total). The total funding level includes both this initiative and funding under Section 306 of the National Energy Act.

- A total of $15 million annually for 5 years to support Federal loan guarantees, with an interest rate subsidy to assure a borrowing rate equivalent to the average municipal borrowing rate.

- States and tribes will be responsible for projecting local energy development, assessing expected impacts and developing financial plans for meeting community needs.

- States and tribes will be required to provide matching funds and will be expected to encourage private involvement.

In addition, the Federal government will consult States, local governments, and Indian tribes before major Federal energy development decisions are made and will make data on public and private development plans available. The Department of Commerce will coordinate all Federal assistance programs to impacted communities.

DISCUSSION: The impact assistance program is designed to provide flexible Federal financial assistance to the States and tribes which can be used to meet the diverse needs of impacted communities for planning and front-end financing. To encourage the development of institutional capacity, the States and tribes would be responsible for projecting development, identifying and prioritizing related impacts, and developing financial strategies for impact avoidance and mitigation. The matching grants, the planning requirements and allocation formula would provide incentives to the States to institute mechanisms such as severance taxes and facility siting laws to encourage industry participation in addressing such impacts.

A loan guarantee program would be provided at the Federal level to assist communities in financing public service needs. Funding for the program would be used for interest rate subsidies to reduce the effective borrowing rate to the average municipal rate.

To improve the planning and management process, State, tribal and local officials will be given a greater opportunity to influence Federal energy development decisions. Timely and consistent information will be provided on projected energy development. The initiative will also substantially increase coordination of impact assistance from existing Federal programs.

EXPEDITING THE REGULATORY PROCESS

BACKGROUND: Timely development of domestic energy resources already has been delayed by barriers created in public and private institutions. Uncertainty, confusion and delay encountered in siting, constructing and operating new energy facilities has been increased by the growing complexity of regulatory processes at the Federal, State and local levels. Poor coordination among regulatory bodies produces conflicting and duplicative requirements, schedules and information. Frequently, time-consuming and expensive delays (which contribute to inflation) occur in bringing needed energy projects on line.

PROPOSAL: DOE will establish a central point of contact for assisting in the resolution of institutional impediments to specific energy projects.

DISCUSSION: DOE would work with the public and private sectors to anticipate, identify and find solutions to regulatory barriers, which unnecessarily impede the development or operation of energy projects. In this trouble-shooting role, DOE would address procedural or administrative problems which reside between and among Federal or State agencies and

between government agencies and the private sector. DOE would act as a coordinator and as a communications channel to mediate disputes, propose alternative solutions and assist participants in focusing on substantive issues. DOE would not usurp or influence legally established regulatory authorities or processes. In general, this DOE participation would be based on requests for assistance.

PROPOSED REDUCTIONS

The supply initiatives which impact on the FY 1979 budget will be financed by reductions of $130 million in the Department of Energy's FY 1979 budget request. A brief summary of these reductions follows:

Light Water Reactor Technology —$10 million

The purpose of this program is to improve the productivity and safety of existing light water reactors. The reduction would allow continuation of work on safety, generic reliability technologies and programs primarily directed toward nonproliferation objectives. Work on improved plant availability by shortening fueling outages and flow-induced vibrations, as well as construction modularization, will be eliminated. Negotiations are underway with EPRI to increase its program in these areas.

Waste Management Facilities —$51 million

This project provides for the construction of tanks and associated facilities for storage of defense waste at Savannah River. Updated production requirements and several new process changes have resulted in a forecast of reduced defense nuclear waste at Savannah River through the late 1980's, allowing for the reduced scope of this project.

Advanced Technology and Assessment Projects —$ 5 million

The purpose of this activity is to provide the capability to identify promising advanced technology and assessments projects. Actual projects to be undertaken will be determined in part by the evolving character of the DOE R&D program. The revised request will provide a satisfactory level of funding to initiate the required analysis.

National Uranium Resource Evaluation —$10 million

The purpose of this program is to evaluate domestic uranium and thorium resources. Current assessments indicate that the $30 million increase requested for FY 1979 can be reduced without a significant negative impact on this important work.

Vanpooling —$ 9 million

These funds would have been used for purchase of commuter vans for the Federal Employee Vanpool Program. The Congressional Conference action on the National Energy Act prohibits such purchase.

Clean Boiler Fuel Demonstration (Coalcon) —$45 million

Unobligated balances available as a result of the technical infeasibility of this coal conversion project will be applied against FY 1979 appropriation requirements.

TOTAL REDUCTION —$130

SOLAR EMPHASIS OF BUDGET AMENDMENT

Senator HUDDLESTON. Is it true that about $100 million of that $130 million is for solar and related activities? And do they have a substantial near-term impact?

Mr. THORNE. It is true that about $100 million is associated with the solar, dispersed and end-use technologies. The purpose of that is to move those portions of the solar technologies much quicker into the marketplace, and to emphasize the fact that of the solar technologies that will be more applicable in the near term are those of a smaller, decentralized approach, rather than the high-technology, centralized power concepts.

So it is somewhat of a reallocation that we've made from the large programs down to the smaller technologies. But again, we believe that it will first begin to make an impression about the mid-1980s. The impression will not be a substantial one. It will be small, but we hope that it will create some momentum.

Senator HUDDLESTON. Chances are the results, as far as actually adding to the energy supply, will be less for the same amount of effort than the utilization of coal.

Mr. THORNE. Certainly I would agree that $100 million in a coal process would have a much higher payout than $100 million in several solar technologies, yes.

Senator HUDDLESTON. We understand that the Department went to OMB with a proposal to add some $370 million to the budget, the bulk of it for near-term fossil energy development. Can you tell us why the fossil fuel proposals were rejected?

Mr. THORNE. Mr. Chairman, that's a difficult question for me to answer because I was not involved in the negotiations. I think the question was raised with Dr. Schlesinger the other day. It was a negotiation process between he, the President, and OMB. I really cannot amplify on the comment that he made.

TAX CREDITS AND PRICING INCENTIVES

Senator HUDDLESTON. We have noted that, in addition to the budget revisions, the Department also proposes tax credits and pricing incentives to spur the production of oil shale and other synthetic liquids.

What near-term production do you think will result from these proposals?

Mr. THORNE. In the oil shale area, we believe that the entitlements plus the $3 tax incentive, which equates with the larger corporations to the equivalent of about $5 or $6, provide a rather substantial financial incentive to move those technologies along much faster than they have.

As you're probably aware, Union Oil has said for some time now, that given some tax treatment in the neighborhood of $3 to $5, that they would be prepared to go forward with a major production facility. The other night we met with Union Oil and they confirmed that view.

So the Department tends to believe that the Talmadge bill approach, as well as the entitlements, probably will provide the needed stimulus for a rather more rapid implementation of oil shale.

Senator HUDDLESTON. Is it enough incentive, do you believe, to overcome the environmental barriers?

Mr. THORNE. I believe the environmental barriers will tend to constrain oil shale development more down the road than they will right now. The environmental problems are air quality and the competition for water between oil shale and agriculture, which is important in the West.

However, most people believe, including the people in the West, that there is sufficient water to initiate a rather large oil shale industry. How large that industry can grow to, I think, is a more secondary question. The environmental and social constraints will probably place a ceiling on industry growth rather than the financial constraints.

MOPPS STUDY

Senator HUDDLESTON. In the past, the old Energy Research and Development Administration provided us with specific targets for the coal research and development program. For example, in 1976, they projected the need for 70 to 140 coal liquefaction or gasification facilities. Recent program documents do not define such topics. I wonder just what the goals are.

Mr. THORNE. Mr. Chairman, I gather that you're referring to the MOPPS study. If that is the case, the MOPPS study is really not the principal programmatic document that is dictating the Department of Energy's programs.

Senator HUDDLESTON. I think it was even beyond that. I believe the Department itself indicated a specific number of facilities would be necessary.

Mr. FUMICH. Mr. Chairman, I think there are two reasons for that: One, this year the mission of energy technology is not to try to drive technology into the marketplace. Within the Department of Energy, that's the mission of resource applications. What we do is develop technology to a point and then transfer it into resource applications, which decides what the timing is, what incentives are going to be required, whether tax, regulatory, or price, in order to drive the technology into the marketplace.

Senator HUDDLESTON. Do you have any estimates on the specific number of liquefaction or gasification plants?

Mr. FUMICH. Yes, I have. I also have it in barrels per day equivalent.

Senator HUDDLESTON. So which approach are you concentrating on? The results on barrels per day?

Mr. FUMICH. Most people understand that they're using around 18.7 million barrels a day of petroleum, and we produce about 10.7 million, and that we have an 8 million barrel deficit that we're importing. That's as of today. The estimate for 1985 is that we'll be consuming between 21.1 or 22.2 million barrels of oil a day or in that range; and that we'll only be producing between 10.1, and 11.4. So that our deficit in 1985 will be closer to 11 or 12 million barrels a day.

The President's commitment, at least the target we're trying to drive toward, is about 5.8 million barrels, which means that we

have a deficit that has to be made up of about 5.8 million barrels, if indeed we are going to meet this particular target.

Now, we feel that our enhanced oil recovery program, has a good probability of producing between 800,000 barrels per day to 1.8 million.

Our enhanced gas recovery program, we feel, has a good possibility of producing about 500,000 barrels a day of the equivalent. Again, that's a good possibility.

ENERGY SUPPLY GOALS

Senator HUDDLESTON. Are you just setting that as a possibility or are you setting some specific goals to move toward?

Mr. FUMICH. These projections are based on our own program success today. For instance, in the oil shale program, we have a range of about 100,000 to 250,000 barrels a day, based on the new initiatives. We feel that the tax credit would bring on line about three 10,000-barrel-a-day surface retorts and two to five modified in situ projects by 1985. That would be a barrel equivalent of between 100,000 and 250,000.

As far as high-Btu gasification, we think that there's a good chance of two plants being built by 1985. If that's the case, we would have 100,000 barrels equivalent each day.

We would project 8 medium-Btu and 140 low-Btu plants. Again, this would be a 100,000-barrel-a-day equivalent.

Senator HUDDLESTON. Does this represent a different approach here? Are you talking about goals relating to total production rather than the total number of facilities that you might participate in constructing?

Mr. FUMICH. This is a matrix put together by both my planning division and our policy office, under Al Alm, along with some other studies that we've made based on the progress of our programs in these particular areas.

Mr. THORNE. Mr. Chairman, I believe that the approach that we're using now is to take the 6 million barrels per day need as the target, and take a look at all of the technologies, and try to analyze them in terms of what they can really do by that time frame. We then try and drive the particular technology as hard as we can in the private sector to bring it about, rather than trying to predict certain numbers of plants to produce certain quantities of material by a certain time.

In other words, we're really focusing very hard on that 6-million-barrel-per-day import number that we would like to substitute our technology for. That's why we're looking at all the technologies.

Senator HUDDLESTON. What method do you see of forcing, so to speak, these new technologies into the field? What kind of budget requirements do you see for your Department for accomplishing that?

UTILIZING NEW TECHNOLOGY

Mr. THORNE. I think it's a combination of several things. It's loan guarantees which support the private sector in their ability to maintain financing and to provide leverage on the debt-equity

ratio. There are also tax breaks which the Federal Government could provide and in many cases, purchases by the Federal Government of certain products.

So it's a combination of many things, including not just direct budget outlays. To the extent that we possibly can, our approach would be to develop consortia arrangements with the private sector in which the Government would provide most of the front-end financing for the first stage of commercialization. This is the approach which is being talked about with the SRC plants. The private sector would then pick up the financial risks and help finish the plants out.

Senator HUDDLESTON. On the basis of your current and anticipated level of activity, when do you see a coal-based synthetic fuels industry emerging in the country?

Mr. THORNE. I believe that the first breakthrough in providing synthetic liquid and solid fuels will be late 1982 or 1983 at the earliest, when the first train of both SRC plants come on line.

ADVANCED RESEARCH AND SUPPORT TECHNOLOGY

Senator HUDDLESTON. Does the substantial increase in the requests for advanced research and support technology represent a change in the coal R. & D. program priorities?

Mr. FUMICH. We're trying to find what level of effort is best.

Most of the technology that we're developing today is based on old German technology. Much of this dates from World War II or before. We feel that coal must be a major bulwark of our future energy supply. We need more scientists involved. We need more new ideas and we feel that this is a critically important area.

I mentioned before that several of our programs are mature. We have to take another step forward. This is the reason that the fossil energy program is going to be getting away from building big plants. A lot of the commercialization mission is going to go to resource applications. Our primary mission is going to be the development of energy technology. The advanced research and supporting technology activity is going to be looking more and more into the future.

MAGNETOHYDRODYNAMICS

Senator HUDDLESTON. Why is the budget for magnetohydrodynamics doubled from $34.9 million in 1977 to $68.8 million in 1979?

Mr. THORNE. As the Secretary said the other day, that's partially due to the generosity of Congress. Now I'll let George answer the specifics. [Laughter.]

Mr. FUMICH. I think MHD technology is going to be a very large base type technology. There will be very large plants, of around 1,000 megawatts. In order to test this technology and make sure that it's going to pass muster, we will have to work in facilities of the appropriate scale. It's very expensive.

You have to build these large units in order to get the type of information you need. The Russians are already doing this.

There is a positive side to this. Many of the technical requirements have already been met. About 10 years ago, there were three opinions regarding MHD. One was the pro-MHD group, which felt it could be done. They were pretty optimistic. Another group said, well, you'd have to show me. The third group was just as adamant against it. They said, you just can't prove this technology; it's too tough.

I think we've reached a point right now where we have proved that technically it can be done. We have some engineering scale-up and testing that we have yet to do. But I do believe that this technology is moving ahead successfully. Unfortunately, each step that we move ahead is going to cost more money.

CHANGES IN ENERGY SUPPLY EMPHASIS

Senator HUDDLESTON. There seems to be widespread agreement in the country that what we need is additional liquid and gaseous fuels to replace our own diminishing supply. It seems to me, though, the Department's budget request is heavily weighed toward more technologies to improve the generation of electrical power, rather than the reduction of fuels.

What comment would you make on that, Mr. Secretary?

Mr. THORNE. I believe that your observation is generally correct. I think I'd agree. Heretofore, the Department's emphasis has been on electric generation. I think that was something we inherited from ERDA. That was one of their primary missions.

On the other hand, the Department of Energy is now beginning to direct its emphasis more toward the liquid and gasification projects with the big payouts. As Mr. Fumich mentioned earlier, we believe that at least two high Btu gas pipeline projects will be going forward fairly shortly using western coals. And with the drive now on the SRC–1 and SRC–2 processes, we are also addressing the liquid and solid fuels question.

DIFFERENT TYPES OF FUELS

Senator HUDDLESTON. How does the new Department of Energy see the Nation's energy requirements relative to the different types of fuels?

Mr. THORNE. Mr. Chairman, it's a hard question to answer if you try and predict what the country is going to look like many years down the road. Obviously there has been a decrease in the United States in the last several years in the consumption of electricity. On the other hand, the total energy demand has continued to increase slightly.

That tells us that we have to approach the energy problem on a broad sector basis. We just can't direct most of our attention toward the utility approach, but we have to look at all aspects of energy resources and their development.

Senator HUDDLESTON. So you don't have any priorities?

Mr. THORNE. I think our priorities, again, are driven by what we can do between now and 1985. As the Secretary said in his remarks the other day, it's going to take bits and pieces of an awful lot of things. There is not one technology or one approach that we believe is the answer to all questions.

Senator HUDDLESTON. Go ahead, Mr. Fumich.

Mr. FUMICH. Could I add to what Mr. Thorne said?

We've got three problems as far as our energy situation is concerned: One, in the near-term there's a liquid shortage. In other words, the balance of payments. Our conservation program and several other things address this problem.

Then we have an intermediate problem. We know that we're going to have to try to replace the liquids with some of these synthetic fuels. This will be our intermediate problem.

Then we have a longer range problem where we're going to have to replace the finite fuels with the inexhaustible fuels. And this is the planning process that we're going through right now.

Everything that we're doing, of course, can't directly replace oil. We can't convert enough coal into oil right now to resolve that particular problem. As I mentioned to you before, we are doing things to permit coal to be utilized in areas where oil is being used now. We are doing the same with gas, and trying to change the use structure so that over a longer period other fuels can assume more of the burden.

Our coal reserves represent about 80 percent of our fuel reserves. Oil and gas together represent only about 7. We're trying to change this around.

Because of institutional patterns and the millions of dollars of equipment based on fossil fuels, it's not going to be done in a very short time. It's going to take quite some time.

Senator HUDDLESTON. Well, there's no question that sooner or later the oil supply is going to run out, whether we find better ways to produce it here, or whether we find better conservation methods. Still it's finite. So is coal. But there is a more abundant supply of coal.

It seems to me that in order to deal with that period when we're going to be without liquids as we know of them now, that increased emphasis needs to be made on utilizing coal particularly in converting it to oil, which apparently will be in increasingly short supply as time goes on. That's got to be the intermediate step, doesn't it?

Mr. THORNE. Yes, sir, we share that view. I believe that coal and light water reactors will carry the country to the turn of the century.

DEMONSTRATION OF GASIFICATION TECHNOLOGY

Senator HUDDLESTON. The only thing we know of that's going to be here as long as man, I guess, will be the sun, wind, and water.

Now, on the question of Hygas and the need for a demonstration of more than one gasification technology, it's been stated that the Department will support only one plant. Is this a change in policy?

Mr. FUMICH. Sir, as you know, we have two high-Btu gasification demonstration processes moving forward. One of them is the Conoco process and the other is the ICGG process. Both of these are moving ahead concurrently. As I mentioned previously, both look very promising at this point in time. We'll make a decision some time in the first part of next year about whether or not we'll be moving ahead to the demonstration plant phase.

Senator HUDDLESTON. That decision will be one or the other?

Mr. FUMICH. Yes, sir. At this time we have funding for only one plant, and that's our present policy.

Senator HUDDLESTON. Has that been the policy or has it changed?

Mr. FUMICH. I understand that we have an authorization for two plants. But as far as our budget is concerned, we have only had an appropriation for one plant. That's all the funding that we had. This hasn't changed, sir.

Senator HUDDLESTON. I believe Mr. Thorne said on Tuesday that the two gasification projects, Cogas and Slagging Lurgi, were encountering technical problems.

Mr. THORNE. Yes, sir.

Senator HUDDLESTON. What are the nature of these technical problems as far as nature of eastern coal is concerned?

Mr. FUMICH. Sir, Mr. Thorne received a report from my staff, and that's the reason he gave you that report. It was correct at that particular time. I received another report today, and this was the reason I gave you a more optimistic answer.

Senator HUDDLESTON. This technology is moving pretty fast. [Laughter.]

Mr. FUMICH. It's had very dramatic success.

Senator HUDDLESTON. If you come back here next week we might have it solved. [Laughter.]

Mr. FUMICH. My understanding is that the Conoco process, while using western coals—had no problems whatsoever. As soon as they moved into the more highly caking eastern coals, particularly the Ohio coal, they had some serious technical problems.

They have since that time tested Pittsburgh coal, which is a highly caking eastern coal. By mixing it with coke they found that there were no problems whatsoever.

They think this means that they can run the Pittsburgh coal alone, without this added assistance of the coke. If this is the case, we really have reached a milestone. This won't be known for another few months, but it looks very promising.

The ICGG process had some other problems which are on the way to solution. Both of these projects are currently on track. They did have problems before. We did cut out funding for some of the tasks that we thought really weren't necessary at that particular time because of the problems that we were having with the processes. This is no longer the situation. I'm happy to report that we feel a decision can be made, at least based on the present progress, some time around the first of the year.

Mr. THORNE. That decision, Mr. Chairman, has slipped at least 3 months from our earlier schedule. We had hoped to make such a decision in late summer or early fall of this year.

LURGI PILOT PLANT

Senator HUDDLESTON. Do you have any information on the Lurgi pilot plant in Westfield, England?

Mr. FUMICH. Yes, sir, this is the Conoco process. This is the one that looks like it might have climbed that last hurdle.

Senator HUDDLESTON. Assuming that the Lurgi plant did operate on a mixture of coal and coke, does this raise any question regarding the technical feasibility of gasifying eastern caking coals, using the Lurgi process?

Mr. FUMICH. Sir, one of the controversies, that's been discussed all over the country is the capacity of certain technologies to utilize both western and eastern coals. The Lurgi technology utilizes only western coals and is not able to utilize coal fines.

In modern mining technology, unfortunately, 30 percent of the mining product is fines. So we do have economic and other hurdles regarding that particular technology.

The other question involves the efficiencies. We have all kinds of estimates. So there's really a range of viable estimates of between 5 to 20 percent. This is another area that is really not determined, because we don't have the type of input, the type of hard information necessary to firm up those numbers and narrow that particular range.

The slagging Lurgi gasifier is a modification. It is an advancement over the regular dry-bottom Lurgi, and has a much better chance of working on caking coals.

Now, for awhile, as I mentioned, they had some problems with char and the material gumming up. When you heat Eastern caking coals they swell. They're hard to work with and jam up the machinery.

By mixing coke with those coals, they resolved the problems. On the other hand, they added to the costs.

Senator HUDDLESTON. What is the mixture, do you know? How much coke?

Mr. LLOYD. The successful run was late last month, sir. We just got the analysis. It was on a 1-to-1 basis going to the gasifier.

Senator HUDDLESTON. Half coke, half coal?

Mr. LLOYD. Yes, sir. Now, that does not say that that's the optimum mix. If that was successful, perhaps we can get by with less.

Senator HUDDLESTON. Will you identify yourself?

Mr. LLOYD. I'm E. A. Lloyd, Coal Conversion Division.

HYGAS PROCESS

Senator HUDDLESTON. In view of the problems with the slagging Lurgi and the coal conversion projects, is the Department considering giving active support to the commercial demonstration of the Hygas technology?

Mr. FUMICH. Sir, that's another project that we've been involved in for quite some time. Now, the Hygas project looks like it's one of our more promising technologies.

Much of the information is based on assumptions, and we've had some problems trying to get that pilot plant into operation. We had an analysis made not too long ago that stated that we'll have to do some modification there and run that plant some more before we get the type of data that we need to really firm up an estimate.

So all I can say is that, as of right now, that particular project is about 8 months behind the other two processes that we have been talking about.

On the other hand, if the data that we expect to come out of the pilot plant does firm up the assumptions in the estimates, then Hygas would be one of our most promising processes.

Senator HUDDLESTON. And your study from your Morgantown research center indicates a lot of encouraging aspects of that Hygas?

Mr. FUMICH. Yes, sir. As I mentioned, this is highly promising technology.

Senator HUDDLESTON. Secretary Schlesinger indicated Tuesday that the main emphasis of getting conventional Lurgi plants built and operating, rather than Hygas—

Mr. FUMICH. Sir, he had a good point. If the company is going to build something right now the only way to go is Lurgi. That's the only technology that is available, although it's never really been tested on domestic coal. So there would be some risk.

That's the reason why most of the companies that have committed themselves to build these plants want some outside help.

They need incentive in order to lever the technology into the marketplace.

The technology that we've been developing is still chancy. I don't think any company would build one of those plants today.

COST SHARING FOR DEMONSTRATION PROJECTS

Senator HUDDLESTON. The Hygas proposal that was submitted and rejected by ERDA was on the basis of at least partly that it didn't meet the 50–50 cost sharing requirement. It's been argued by many people that the requirement is too severe in view of the capital investment necessary for the risks involved.

What's your assessment now of the 50–50 requirement?

Mr. THORNE. It's true, Mr. Chairman, that the project was rejected by ERDA, principally because of the cost-sharing arrangements. It did not meet the criteria that ERDA had for 50–50 sharing.

Recently, the people who were a part of that consortium came by and we talked about whether they wanted to proceed We discussed whether they wanted to submit another proposal, and if they had sufficient financing and sufficient confidence in the technology to come forward to the Department.

As yet, we have not heard anything further from them, so we cannot answer whether they are prepared to enter into the same kind of arrangement that they had proposed to ERDA or to increase their capital input.

Senator HUDDLESTON. Are you making any effort to reexamine the policy and reconsider whether other options may be available as to greater flexibility in the approach to risk sharing?

Mr. THORNE. Yes, sir. I think generally the Department feels that the 50–50 cost-sharing approach has not been terribly successful for a number of reasons. In order to drive the technology into the marketplace sooner, we now tend to believe that the Government should take more of the front-end financial risk and to demonstrate the first portion of the technology. The private sector then should pick up the rest of the financial risks.

Senator HUDDLESTON. Do you think that would be a workable system to attract the kind of investment that has to be brought into this sort of operation?

Mr. THORNE. Yes, sir, I think we'll find out from the SRC–1 and SRC–2 proposals. I have no reason to doubt now that it will not.

CONSTRUCTION PROJECTS

Senator HUDDLESTON. The fiscal year 1977 budget authority for construction projects accounted for about 12 percent of the total coal budget. For fiscal years 1978 and 1979, it accounted for about 14 and 15 percent, respectively.

In other words, the effort to get coal conversion technologies in the field accounts for no more than 15 percent of the coal R. & D. budget.

Now, the commercial application of coal conversion technologies will not become a reality in the near- to mid-term future without the construction and operation of near commercial scale demonstration facilities supported by the Government and industry.

A far greater effort, it seems to me, should be directed to moving promising technologies from the laboratory and the test facilities into the field. So, what efforts will the Department be undertaking in the near future to move promising coal conversion technologies into the field, and how will this be reflected in the budget request?

Mr. FUMICH. Sir, regarding the first part of your question concerning the percentage for construction this year as compared to the last two, I think that represents a matter of philosophy. We're talking now about the supply strategies, whether something should be pushed by the Government with research and money on the front end, or whether there should be guaranteed loans or market incentives such as tax breaks, regulatory changes or price changes.

Senator HUDDLESTON. Aren't we a little late in the game to be still wrestling with those basic decisions on how to proceed?

Mr. FUMICH. My personal view is that most of the technology has just reached that point now where this decision is timely.

As I mentioned before, our pilot plant projects weren't ready for the demonstration plant phase. There was no basis on which to build a demonstration plant.

Now, these technologies have been driven to the point where you have to fish or cut bait. You have to make a decision—should the Government build it? Should it be a cost-sharing project? Should you have a guaranteed loan, or should you use a price mechanism or a tax incentive?

I think it's timely for that type of decision to be made at this time.

Now as far as using the field organization, we're reorganizing our shop. The thrust in implementing our programs or projects is going to be out in the field.

The people in Washington will be our program people. The projects themselves will be managed onsite or in areas near the site.

As you noticed, for our H-coal project in Catlettsburg, Ky., we sent our man down there. He lives down there. He doesn't come back to Washington. We made that change about a month ago. We're doing this with each one of our major projects.

Senator HUDDLESTON. If he spends much time down in Kentucky, he may never want to come back.

[Laughter.]

Mr. FUMICH. There's a good point.

Mr. THORNE. Mr. Fumich has also delegated a fair amount of authority to his project managers in the field so they can make on-the-spot judgments and decisions, so the process doesn't get involved in abnormally long bureaucracy.

H-COAL LIQUEFACTION PLANT

Senator HUDDLESTON. Are you giving any consideration to any initiatives to support construction of a pioneer commercial-scale H-coal liquefaction plant?

Mr. FUMICH. Sir, the H-coal people in Ashland were granted an audience with the Secretariat. They were seriously considering going ahead. However, I don't know what the situation is regarding funding.

Mr. THORNE. I can amplify a little bit on that, Mr. Chairman.

The H-coal people did meet with the Deputy Secretary and discussed with him whether the Department would be amenable to receiving a proposal somewhat along the same lines as had been received from Gulf and the consortium for SRC-1.

Mr. O'Leary told them, yes, the Department would entertain any type of proposal along that line as soon as it was submitted. To the best of my knowledge, one has not yet been submitted.

Senator HUDDLESTON. You are interested in considering that kind of proposal?

Mr. THORNE. Yes, sir, and in terms of our fiscal year 1978 reprograming actions, we're providing money to accommodate any proposals along that line. We will entertain proposals on H-coal, on donor solvent, and on any other process which might sponsor similar propositions. We might request money through reprograming to carry that out.

SOLVENT REFINED COAL (SRC)

Senator HUDDLESTON. Some questions on SRC, and these are somewhat similar to the ones that we asked on Tuesday.

A major feature of the Department's energy supply initiative was $192 million additional to accelerate demonstration of solvent refined coal, both liquids and solids. Instead, we have a fiscal 1978 reprograming proposed to the launch process design studies, not only on SRC but on several other processes.

Does this deferral of a decision on SRC demonstration actually involve up to a year's delay?

Mr. THORNE. Mr. Chairman, as the Secretary testified the other day, we expect that limitations in the fiscal year 1979 budget will slip the schedules from probably late 1982 until early 1983 in terms of startup of either one or both of those plants.

He also testified that our best guess right now is that the slippage would not be in terms of a year, but more likely in terms of 4 to 6 months.

Senator HUDDLESTON. It appears to us to be considerably more than 4 to 5 months. I hope you're right and we do move ahead.

Secretary Schlesinger indicated on Tuesday that the major feature of the plan is the agreement to move forward on both SRC–1 and SRC–2. But on page 9 of the energy supply initiatives report that was given to us on Tuesday, we find this paragraph:

> If the different process studies in parallel negotiations on cost sharing are successful on the SRC processes, DOE would proceed to detail design for two plants using the funds currently in the President's fiscal year 1979 budget, $23 million. And in fiscal year 1980, it would move into the procurement and construction phases on one or two plants.
>
> If the above conditions are not met by either one or both of the SRC technologies, DOE would be in a position to finance one or more of the other proposals in fiscal year 1980.

That hardly sounds like a commitment to anything except more studies and delays. What's your comment on that?

Mr. THORNE. Mr. Chairman, I don't agree with that interpretation of the words. Certainly, what is intended is that as each one of the technologies, SRC–1 or SRC–2, proceed through each of the phases that the Secretary described. There would be four phases in the construction and operation of the plants. As they proceed through each one of those phases and they meet the technical tests of each phase, the Department would be prepared to move forward into the succeeding stage, including initiation of construction.

So it is not our intent to limit to just one or two processes, but to accommodate any technology that meets the successful criteria of each phase of development.

Senator HUDDLESTON. On page 9 of the same report, it's quoted: "At this point, the SRC processes are at a more advanced stage of development than other processes."

That being the case, why do we have a year of studies before making a decision on demonstrations?

Mr. THORNE. The SRC technologies are at a more advanced stage than, say, H-coal or the Exxon donor solvent process. But in terms of the SRC–1 solids technology, there are still some technical and engineering problems yet to be resolved, principally the filtration process.

So it seems prudent to resolve those problems before large sums of money are committed to a large facility.

Senator HUDDLESTON. Even though they are further advanced, there are still problems?

Mr. THORNE. Yes, sir. The SRC processes which have been operable at the pilot plant scale for some several years still have a few problems, but H-coal is just now in the pilot plant stage, and the Exxon donor solvent pilot plant is just starting construction.

So you're comparing truly a more mature technology with the other two, but it does not yet mean that all problems have been resolved.

EXPEDITING SRC DEMONSTRATIONS

Senator HUDDLESTON. This morning, in discussions of the strategic petroleum reserve, there was an indication that a possible cut of $590 million to $2 billion could be taken and still allow the

Department to reach the goal of 500 million barrels in storage by December of 1980.

How much of this savings would be required to move ahead without the delay and build both SRC–1 and SRC–2?

Mr. THORNE. Mr. Chairman, I have to duck that question. You have the wrong folks in front of you. The project is being administered by Mr. McIsaac and I'm not familiar with the budgetary aspects of that.

I can address the question of should money be available, could it reasonably be put into coal conversion processes?

Senator HUDDLESTON. That's the central thrust.

Mr. THORNE. I believe that we would agree that it could.

Senator HUDDLESTON. Would that expedite or speed up the development?

Mr. THORNE. Certainly more funding in fiscal year 1979 would expedite the technology development to some degree.

Senator HUDDLESTON. How much more funding would be necessary?

Mr. THORNE. I refer to the number that you quoted a minute ago, $192 million. That would be for both SRC–1 and SRC–2 in fiscal year 1979.

Senator HUDDLESTON. So it's well within the possibility, if in fact the savings within the Strategic Petroleum Reserve were achieved, to have the funds available and make the decision to go ahead?

Mr. THORNE. Yes, sir.

SRC PROPOSALS AND JUSTIFICATIONS

Senator HUDDLESTON. I'd like to ask you if you'd submit for the record the details of your original SRC proposals to OMB that involved the additional $192 million, with the usual justification material, if you would, with projected funding estimates for the entire demonstration program of SRC–1 and SRC–2.

Mr. THORNE. Yes, sir, we will.

[The information follows:]

DEPARTMENT OF ENERGY
ENERGY - OPERATING EXPENSES AND CAPITAL ACQUISITION
AMENDED FY 1979 CONGRESSIONAL BUDGET REQUEST BY ACTIVITY
(Tabular dollars in thousands. Narrative material in whole dollars.)

Energy Supply - Research and Technology Development
Coal

	BA
FY 1979 Previous Estimate to Congress	$ 618,195
FY 1979 Amended Estimate to Congress	810,195
Amendment	192,000

Coal is the Nation's most plentiful domestic fuel source, with reserves estimated at 3.2 trillion tons remaining unmined. As such, coal clearly offers a large potential for achieving less dependence on foreign energy sources and relieving the anticipated energy shortfall. In order to realize this potential the principal objectives of the Coal program are: to develop improved extraction technology for increasing the supply of coal at acceptable economic and social costs; to accelerate the development of environmentally acceptable technology for converting coal to liquid and gaseous fuels; to stimulate improved methods for the direct combustion of coal; to foster the rapid development of advanced power conversion systems, including magnetohydrodynamics, for generating electricity from coal; to validate the technical, economic, and environmental acceptability of second generation coal processes by designing, building, and operating near-commercial scale modules; and to expand the technology base and the supply of technically trained manpower to support the evolving coal production, conversion, utilization, conservation and environmental control technologies.

To a large extent, the near-term U.S. energy problem can be charaterized as a scarcity of equitably priced domestic liquid fuels and acceptable substitutes for high sulfur coal. One of the most promising routes for dealing with this situation is to develop a domestic commercial capability to produce synthetic solid and liquid fuels from coal. The FY 1979 amendment would move in this direction by demonstrating at the maximum feasible pace the most mature direct coal liquefaction technology, the solvent refined coal (SRC) process. The SRC process is capable of producing either clean burning solid fuel (SRC I) or a synthetic liquid boiler fuel (SRC II). The liquid and solid products are targetted at different and equally essential markets. The SRC I solid product will serve as a direct replacement for high sulfur coal burned in utility power plants which make up 50% of the total U.S. electric generating capacity. The solid product is clean burning and does not require utilities to install scrubbers. The SRC II liquid product will directly replace fuel oil which is burned in approximately 20% of the Nation's utility power plants, especially those in the oil short northeast. With further upgrading, the SRC II product can also be used as a synthetic crude feedstock for refinery conversion to conventional fuels. Successful pilot plant operations have been conducted since 1974 in both product modes.

The previous estimate to the Congress provided for conceptual design, long-lead procurement, environmental, and other planning support for one SRC demonstration plant. The revised request provides for detailed design, fabrication of long-lead equipment, site acquisition and preparation, related supporting activities, and start of construction for two SRC demonstration plants, one in the liquid and one in the solid mode. Each facility will consist of a nominal 6,000 ton per day module which could be expanded to commercial plant size with several additional modules.

Coal

SUMMARY OF ESTIMATES BY ACTIVITY

Activity	Estimate FY 1978 1/ Budget Authority	Estimate FY 1978 1/ Budget Outlays	Estimate FY 1979 Previous Estimate to Congress Budget Authority	Estimate FY 1979 Previous Estimate to Congress Budget Outlays	Estimate FY 1979 Amendment Budget Authority	Estimate FY 1979 Amendment Budget Outlays	Estimate FY 1979 Amended Estimate Budget Authority	Estimate FY 1979 Amended Estimate Budget Outlays
Operating Expenses:								
1. Mines research and development	$ 62,780	$ 63,443	$ 70,546	$ 65,586	$ 0	$ 0	$ 70,546	$ 65,586
2. Liquefaction	110,200	112,952	104,866	109,926	14,000	14,000	118,866	123,926
3. Gasification	141,600	124,292	122,446	145,326	0	0	122,446	145,326
4. Advanced power systems	25,500	23,800	26,700	25,300	0	0	26,700	25,300
5. Direct combustion	68,700	68,002	54,716	62,726	0	0	54,716	62,726
6. Advanced research and supporting technology	40,000	42,282	57,826	50,526	0	0	57,826	50,526
7. Magnetohydrodynamics	66,800	48,482	68,825	68,325	0	0	68,825	68,325
8. Advanced environmental control technology	0	0	14,000	7,000	0	0	14,000	7,000
Subtotal, operating expenses	515,080	483,253	519,925	534,715	14,000	14,000	533,925	548,715
Capital Acquisition:								
Capital Equipment Not Related to Construction:								
9. Mines research and development	0	0	220	180	0	0	220	180
10. Liquefaction	400	200	200	300	0	0	200	300
11. Gasification	2,400	1,500	1,200	1,300	0	0	1,200	1,300
12. Advanced power systems	200	200	200	150	0	0	200	150
13. Direct combustion	200	100	225	250	0	0	225	250
14. Advanced research and supporting technology	300	200	375	300	0	0	375	300
15. Magnetohydrodynamics	500	300	500	400	0	0	500	400
Subtotal, capital equipment	4,000	2,500	2,920	2,880	0	0	2,920	2,880
Construction Project:								
16. Liquefaction	0	0	20,000	6,000	178,000	45,000	198,000	51,000
17. Gasification	68,000	24,500	63,000	50,600	0	0	63,000	50,600
18. Direct combustion	2,000	500	0	1,500	0	0	0	1,500
19. Advanced research and supporting technology	9,600	5,300	9,350	11,500	0	0	9,350	11,500
20. Magnetohydrodynamics	4,200	4,000	3,000	2,200	0	0	3,000	2,200
Subtotal, construction projects	83,800	34,300	95,350	71,800	178,000	45,000	273,350	116,800
Subtotal, capital acquisition	87,800	36,800	98,270	74,680	178,000	45,000	276,270	119,680
Subtotal, coal	602,880	520,053	618,195	609,395	192,000	59,000	810,195	668,395
Less: general reduction	-23,800	0	0	0	0	0	0	0
Total, Coal	$ 579,080	$ 520,053	$ 618,195	$ 609,395	$ 192,000	$ 59,000	$ 810,195	$ 668,395

1/ Reflects allocation of $26,200,000 of $50,000,000 general reduction in P.L. 95-74. Balance of $23,800,000 remains to be allocated.

Coal - continued

JUSTIFICATION OF ACTIVITY

Operating Expenses	FY 1979 Amendment
2. Liquefaction	$ 14,000

The previous FY 1979 budget request to Congress provided $3,000,000 to initiate process design and environmental and technical support activities required to initiate detailed design and procurement of equipment in support of the solvent refined coal solid demonstration plant (Project 78-2-d) authorized by the Congress in FY 1978. The FY 1979 amendment provides an additional $14,000,000 to accelerate the schedule for the authorized project and to initiate on an urgent basis the necessary design and supporting studies for a second solvent refined coal demonstration plant which will produce a liquid product.

a. Solvent Refined Coal Solid Demonstration Plant (SRC I) ..... $ 7,000

The additional $7,000,000 provides for the development of flow diagrams, definition of major equipment and layout drawings, investment cost estimates and economic analyses, and the conduct of additional pilot plant activities to verify equipment specifications. These funds also support environmental assessment and preliminary site evaluation. The amendment will permit acceleration of the final engineering design, construction and operation of the demonstration plant by approximately six months.

b. Solvent Refined Coal Liquid Demonstration Plant (SRC II) ..... $ 7,000

The additional $7,000,000 provides for completion of process design, development of the detailed process design, heat and material balances, flow diagrams, definition of major equipment and layout drawings, investment cost estimates and economic analyses, and the conduct of pilot plant activities to verify equipment specifications. These funds also support environmental assessment and preliminary site evaluations as well as Government support activities. Availability of these funds will permit acceleration of the demonstration plant by twelve months.

Coal - continued

Construction projects:		TEC	FY 1978 Estimate BA	FY 1979 Previous Estimate BA	Estimate FY 1979 Amendment BA	Estimate FY 1979 Amended Estimate BA	Future Funding Required to Complete Project BA
Project No.	Project Title						
Liquefaction							
79-1-o	Solvent refined coal liquid demonstration plant (SRC II)	$ 138,000[a/]	$ 0	$ 0	$ 138,000	$ 138,000	$ 0
78-2-d	Solvent refined coal solid demonstration plant (SRC I)..	60,000[a/]	0	20,000	40,000	60,000	0
	Subtotal, Liquefaction	198,000	0	20,000	178,000	198,000	0
Gasification							
78-2-c	Low-Btu fuel gas small industrial demonstration plant ..	25,000	3,000	9,000	0	9,000	13,000
76-1-b	High-Btu synthetic pipeline gas demonstration plant	246,000	29,000	40,000	0	40,000	167,000
76-1-c	Low/Medium-Btu fuel gas industrial demonstration plant .	150,000	36,000	14,000	0	14,000	92,700
	Subtotal, Gasification	421,000	68,000	63,000	0	63,000	272,700
Advanced Research and Supporting Technology							
79-6	General plant projects for Energy Research Centers, five locations	9,000	0	9,000	0	9,000	0
79-1-a	Morgantown Energy Research Center warehouse building, Morgantown, West Virginia	350	0	350	0	350	0
	Subtotal, Advanced Research and Supporting Technology	9,350	0	9,350	0	9,350	0
Magnetohydrodynamics							
77-1-d	MHD component development and integration facility, Butte, Montana	12,200	4,200	3,000	0	3,000	0
	Total, Coal construction projects	$ 640,550	$ 72,200	$ 95,350	$ 178,000	$ 273,350	$ 272,700

a/ A new preliminary order of magnitude estimate of the Federal share of construction funds for a "first module" SRC plant is approximately $500,000,000 depending on the degree of Government/industry cost sharing. A preliminary estimate of the total cost of the project including the industry partner's share is on the order of $625,000,000.

Coal - continued

	FY 1979 Amendment
16. Liquefaction	
a. Project 79-1-0	$ 138,000

The project provides for the design and construction of a 6,000 ton per day "first module" of a multi-module commercial plant which will demonstrate the technical, economic and environmental acceptability of the solvent refined coal process (SRC II) for converting high sulfur coals into clean burning liquid fuel suitable for use in utility and industrial boilers as a substitute for petroleum derived fuels. It will also provide a fuel for those facilities that are presently required to install flue gas scrubbers and/or other equipment to meet current and future environmental standards. With further upgrading, the liquid product could also be used as a synthetic crude feed stock for refinery conversion to conventional fuels, such as gasoline.

In FY 1978 an industrial contractor will be selected and funded to complete conceptual process designs. Funds for this effort will be provided through reprogramming. The FY 1979 amendment will provide for detailed design, site selection and acquisition, initiation of procurement of long lead equipment items, development of an environmental impact statement, and the start of facility construction. Provision of the funds requested in the budget amendment in FY 1979 will accelerate completion of the SRC II demonstration plant by twelve months, enabling operations to commence in 1982.

Details of Construction Project Cost Estimate:

A preliminary order of magnitude estimate of the Federal share of Capital Acquisition funds for a "first module" SRC plant is approximately $500,000,000. A preliminary estimate of the total cost of the project including the industry partner's contribution is on the order of $625,000,000. A definitive schedule and cost estimate will be provided upon completion of conceptual design and finalization of cost sharing arrangements.

Funding Schedule of Project Funding and Other Related Funding Requirements:

Not available at this time. It will depend on schedule and degree of industry partner cost sharing.

DEPARTMENT OF ENERGY
ENERGY - OPERATING EXPENSES AND CAPITAL ACQUISITION
AMENDED FY 1979 CONGRESSIONAL BUDGET REQUEST BY ACTIVITY
(Tabular dollars in thousands. Narrative material in whole dollars)
CONSTRUCTION PROJECT DATA SHEET

Headquarters

Mission Name: Energy Supply - Research and Technology Development
Resource Name: Coal
Activity Name: Liquefaction

1. Title and Location of Project: Solvent Refined Coal Liquid Demonstration Plant (SRC II), site undesignated (long-lead procurement, site acquisition and construction)
2. Project No. 79-1-o
3. Date A-E work Initiated: 3rd Q FY 1978 a/
3a. Date Physical Construction Starts: 3rd Q FY 1979
4. Date Construction Ends: 3rd Q FY 1982
5. Previous Cost Estimate: None
   Date:
6. Current Cost Estimate:
   Date: 4-78 $138,000 b/

7. Financial Schedule of Construction Project Funding:

Fiscal Year	Authorization	Appropriation	Obligation	Cost
1979	$ 138,000	$ 138,000	$ 138,000	$ 36,000
1980	0	0	0	$102,000

8. Brief Physical Description of Project:
The project will provide for the design, construction and operation of a 6,000 ton per day "first module" of a multi-module commercial solvent refined coal (SRC II) demonstration plant which will convert high sulfur Eastern coals to a nearly sulfur-free and ash-free clean burning liquid fuel suitable for use in utility and industrial boilers as a substitute for petroleum derived fuels. Both the total cost and financial schedule are tentative.

In FY 1978, an industrial partner will be selected and funded to initiate conceptual design and determine the plant size, location and specific process components. Funds for this effort will be provided through reprogramming.

The FY 1979 amendment of $138,000,000 will enable the Government to accelerate the commercialization of this technology. These funds will be utilized to prepare detailed design of the demonstration plant and an environmental impact statement. Vendors will be selected and funded to begin fabrication of long-lead equipment. Construction bid packages will be prepared and actual construction will begin in the third quarter of FY 1979. At least twelve months will be saved through this amendment, enabling operations to commence in 1982.

9. Purpose, Justification of Need for, and Scope of Project:
As outlined in the Federal Non-nuclear Energy Research and Development Act of 1974, the production of clean burning fuel can be used to broaden the National energy base and promote our future independence from excessively large requirements for foreign oil. In addition, as a result of environmental regulations, many utility companies and industries which have previously used high sulfur coal have been forced to switch to clean coals and petroleum products which are in scarce supply. The utilization of processes which economically convert coal into clean liquid fuel would reverse this trend. This project will demonstrate the solvent refined coal extraction process to convert high sulfur coal to a commercially marketable and economically competitive liquid fuel that can be burned in an environmentally acceptable manner.

10. Details of Construction Project Cost Estimate:
A preliminary order of magnitude estimate of the Federal share of Capital Acquisition funds for a "first module" SRC plant is approximately $500,000,000 depending on the degree of Government/Industry cost sharing. A preliminary estimate of the total cost of the project including the industry partners contribution is on the order of $625,000,000.

a/ Assumes availability of reprogrammed funds in FY 1978.
b/ A preliminary order of magnitude estimate of the Federal share of Capital Acquisition funds for a "first module" SRC plant is approximately $500,000,000 depending on the degree of Government/Industry cost sharing. A preliminary estimate of the total cost of the project including the industry partner's contribution is on the order of $625,000,000.

CONSTRUCTION PROJECT DATA SHEET

Headquarters

Mission Name: Energy Supply - Research and Technology Development
Resource Name: Coal
Activity Name: Liquefaction

I. Title and Location of Project: Solvent Refined Coal Liquid Demonstration Plant (SRC II), site undesignated (long-lead procurement, site acquisition and construction)

2. Project No. 79-1-o

II. Method of Performance:
The project will be conducted in four phases:

Phase I	Process Design (FY 1978-FY 1979)
Phase II	Detailed Design and Procurement (FY 1979-FY 1981)
Phase III	Construction (FY 1979-FY 1982)
Phase IV	Plant Operation (FY 1982-FY 1984)

A contract/agreement and industry partner cost-sharing arrangement is anticipated to execute this project.

12. Incorporation of Fallout Shelters in Future Federal Buildings:
The buildings to be constructed as part of this project will not provide the necessary radiation protection factor for use as a fallout shelter.

13. Incorporation of Measures for the Prevention, Control and Abatement of Environmental Pollution of Federal Facilities:
This plant will be designed and constructed to meet all Federal environmental requirements. The plant will also be required to comply with pertinent provisions of applicable state and local laws, regulations and ordinances. The required pollution control costs have been included in the estimates provided earlier. The environmental acceptability of this facility will be verified analytically prior to construction and proven experimentally by monitoring and testing during plant operation. Toward this end, DOE will submit an Environmental Impact Statement to the Council on Environmental Quality, the Environmental Protection Agency, other pertinent agencies and the public.

14. Evaluation of Flood Hazard:
The proposed industrial partner will suggest the plant location. Flood hazard, if any, will be considered as a criteria in determining the suitability of this location.

15. Funding Schedule of Project Funding and Other Related Funding Requirements:
Not applicable.

16. Narrative Explanation of Total Project Funding and Other Related Funding Requirements:
Not applicable.

DEPARTMENT OF ENERGY
ENERGY - OPERATING EXPENSES AND CAPITAL ACQUISITION
AMENDED FY 1979 CONGRESSIONAL BUDGET REQUEST BY ACTIVITY
(Tabular dollars in thousands. Narrative material in whole dollars)
CONSTRUCTION PROJECT DATA SHEET

Headquarters

Mission Name: Energy Supply - Research and Technology Development
Resource Name: Coal
Activity Name: Liquefaction

1. Title and Location of Project: Solvent Refined Coal Solid Demonstration Plant (SRC I), site undesignated (A-E, long-lead procurement and limited construction)
2. Project No. 78-2-d

3. Date A-E work Initiated: 3rd Q FY 1978 a/
3a. Date Physical Construction Starts: 4th Q, FY 1979
4. Date Construction Ends: 4th Q FY 1982
5. Previous Cost Estimate: $30,000 c/
Date: 12/77
6. Current Cost Estimate:
Date: 4/78 $60,000 b/

7. Financial Schedule of Construction Project Funding:

Fiscal Year	Authorization	Appropriation	Obligation	Cost
1978	$ 30,000 d/	$ 0	$ 0	$ 0
1979 Previous Estimate	0	20,000	20,000	$ 6,000
1979 Amendment	+30,000	+40,000	+40,000	+9,000
1979 Amended Estimate	30,000	60,000	60,000	15,000
1980	0	0	0	45,000

8. Brief Physical Description of Project:
The project will provide for the design, construction and operation of a 6,000 ton per day "first module" of a multi-module commercial solvent refined coal (SRC I) demonstration plant which will convert high sulfur content Eastern coal to a nearly sulfur-free and ash-free clean burning solid fuel suitable for use in utility and industrial boilers as a direct replacement for high sulfur coal. Both the total cost and financial schedule are tentative, to be revised on acceptance of a proposal from an industrial partner.
In FY 1978, an industrial partner will be selected and funded to initiate conceptual design and determine the plant size, location and specific process components. Funds for this effort will be provided through reprogramming.
The FY 1979 amendment of $40,000,000 will enable the Government to accelerate the commercialization of this technology. These funds will be utilized to prepare detailed designs, acquire a plant site and prepare an environmental impact statement. Vendors will be selected and funded to begin fabrication of long-lead equipment. Construction bid packages will be prepared and actual construction will begin in the fourth quarter of FY 1979. At least six months will be saved through this amendment, enabling operations to commence in 1982.

9. Purpose, Justification of Need for, and Scope of Project:
As outlined in the Federal Non-nuclear Energy Research and Development Act of 1974, the production of clean burning fuel can be used to broaden the National energy base and promote our future independence from excessively large requirements for foreign oil. In addition, as a result of environmental regulations, many utility companies and industries which have previously used high sulfur coal have been forced to switch to clean coals and petroleum products which are in scarce supply. The utilization of processes which economically convert coal into clean solid fuel would reverse this trend. This project will demonstrate the solvent refined coal process to convert high sulfur coal to a commercially marketable and economically competitive solid fuel that can be burned in an environmentally acceptable manner.

10. Details of Construction Project Cost Estimate:
A preliminary order of magnitude estimate of the Federal share of Capital Acquisition funds for a "first module" SRC plant is approximately $500,000,000 depending on the degree of Government/industry cost sharing. A preliminary estimate of the total cost of the project including the industry partners contribution is on the order of $625,000,000.

a/ Assumes availability of reprogrammed funds in FY 1978.
b/ A preliminary order of magnitude estimate of the Federal share of Capital Acquisition funds for a "first module" SRC plant is approximately $500,000,000 depending on the degree of Government/industry cost sharing. A preliminary estimate of the total cost of the project including the industry partner's contribution is on the order of $625,000,000.
c/ A-E design and long-lead procurement and limited construction.
d/ $30,000 was authorized in FY 1978 P.L. 95-238 for an SRC solid demonstration plant.

CONSTRUCTION PROJECT DATA SHEET

Headquarters

Mission Name: Energy Supply - Research and Technology Development
Resource Name: Coal
Activity Name: Liquefaction

1. Title and Location of Project: Solvent Refined Coal Solid Demonstration Plant (SRC I), site undesignated (A-E, long-lead procurement and limited construction)

2. Project No. 78-2-d

11. Method of Performance:
The project will be conducted in four phases:

Phase I	Process Design (FY 1978-FY 1979)
Phase II	Detailed Design and Procurement (FY 1979-FY 1981)
Phase III	Construction (FY 1979-FY 1982)
Phase IV	Plant Operation (FY 1982-FY 1984)

A contract/agreement and industry partner cost-sharing arrangement is anticipated to execute this project.

12. Incorporation of Fallout Shelters in Future Federal Buildings:
The buildings to be constructed as part of this project will not provide the necessary radiation protection factor for use as a fallout shelter.

13. Incorporation of Measures for the Prevention, Control and Abatement of Environmental Pollution of Federal Facilities:
This plant will be designed and constructed to meet all Federal environmental requirements. The plant will also be required to comply with pertinent provisions of applicable state and local laws, regulations and ordinances. The required pollution control costs have been included in the estimates provided earlier. The environmental acceptability of this facility will be verified analytically prior to construction and proven experimentally by monitoring and testing during plant operation. Toward this end, DOE will submit an Environmental Impact Statement to the Council on Environmental Quality, the Environmental Protection Agency, other pertinent agencies and the public.

14. Evaluation of Flood Hazard:
The proposed industrial partner will select the plant location. Flood hazard, if any, will be considered as a criteria in determining the suitability of this location.

15. Funding Schedule of Project Funding and Other Related Funding Requirements:
Not applicable.

16. Narrative Explanation of Total Project Funding and Other Related Funding Requirements:
Not applicable.

COAL GASIFICATION LOAN GUARANTEES

Senator HUDDLESTON. We've talked some about your loan guarantee program. Another feature of the budget amendment is $20 million for a program of loan guarantees to accelerate construction of commercial-scale high-Btu coal gasification plants.

Would that require specific authorization as well as advance appropriations?

Mr. THORNE. Mr. Chairman, let me consult with a representative of the controller's office.

Yes, sir, he said it would.

Senator HUDDLESTON. Why have you come forward at this last moment with that kind of a program? Is it very likely that specific project loan guarantees could be authorized and funded in 1979, in view of this timing? It's going to be very difficult, isn't it?

Mr. THORNE. Mr. Chairman, I am not fully familiar with this particular area. It's not in my area of responsibility. But my understanding is that the high-Btu coal pipeline gas projects had been before Federal Power Commission, and had been inherited by the FERC and the Department for resolution of financing. It appeared that because these plants cost in the neighborhood of at least 1 billion dollars each, the consortia would find it difficult to arrange adequate financing. The Department felt that one incentive to help this process along would be to provide loan guarantees such that if the projects did clear the FERC process, that that would help with obtaining adequate financing.

Senator HUDDLESTON. Would $20 million make a significant contribution to that?

Mr. THORNE. Yes, sir, we believe it would. It's just for this particular fiscal year.

Senator HUDDLESTON. Has there been much industry interest in that type of development?

Mr. THORNE. There has been rather substantial interest in loan guarantees in general.

Senator HUDDLESTON. On the basis of commercializing first-generation high-Btu technology?

Mr. THORNE. Yes, sir, mostly in terms of being able to convince the financial community that the technology is supportable, and that it does have behind it the credit of the Federal Government Loan guarantees appear to be something that the private sector is quite interested in to get over the first hurdle. They probably would not be required for succeeding plants.

Senator HUDDLESTON. Do you have any estimate on what impact high-Btu gasification commercial plants would have on energy supplies in the near term?

Mr. FUMICH. Yes; Two plants could produce about 100,000 barrels equivalent per day by around 1985.

Senator HUDDLESTON. Two plants?

Mr. FUMICH. Each commercial-sized plant is projected to produce about 250 million cubic feet of gas a day. It would take about 12 of these to produce about 1 trillion cubic feet. Just to give you an idea of what that means, we consume about 23 trillion cubic feet of gas a year.

COALCON PROJECT

Senator HUDDLESTON. Since your Department is now recommending the reprograming of all funding still available for the clean boiler fuel demonstration plant, can we safely assume that the Coalcon project has been abandoned?

Mr. THORNE. Yes, sir, that project has been terminated.

Senator HUDDLESTON. How much funding has been expended on that project?

Mr. FUMICH. About $17.8 million in that particular project.

Senator HUDDLESTON. I didn't get that figure. I'm sorry.

Mr. FUMICH. That was $17.8 million obligated to date, leaving a balance of $78 million unobligated.

Senator HUDDLESTON. Nearly $18 million spent, and that much obligated. And that's just the Federal portion, isn't that right?

Mr. THORNE. Yes, sir.

Senator HUDDLESTON. What ratio was that to the private expenditure? Was that a 50–50 project?

Mr. THORNE. Yes, sir. The project was conceived to be a 50–50 joint cost shared arrangement. My understanding is that the private sector money was not scheduled to be used until later in the project. So the moneys that have been expended on the project are essentially all Federal money.

UNCONVENTIONAL NATURAL GAS

Senator HUDDLESTON. One of the near-term features of the proposed budget amendment is the additional $10 million for unconventional natural gas, all of it for the geopressured reservoirs.

Isn't there an equally great need to accelerate work on enhanced gas recovery from eastern shales and tight gas sands?

Mr. FUMICH. Sir, we have a $12 million program as you know, in eastern gas shales, and that is in resource characterization.

The question is how much does the government put in on the front end and where does the industry begin to take over. Industry's been doing quite a bit of research in this particular area themselves. This is something the industry should do with their own funds.

We still have to determine what is a realistic program for the Government to pursue and what should be left to incentives such as tax incentives, higher prices, and regulatory changes.

METHANE FROM COAL BEDS

Senator HUDDLESTON. What about research and development on methane from coal beds?

Mr. FUMICH. Sir, we have a $4 million program in methane from coal beds in the inproved conversion efficiency program and about another $2 million in methane drainage activities in the mines R. & D. program. I have been involved in that area for quite some time. I believe that if you go to the eastern part of the country, one of the biggest problems that we have is the legal ownership of the gas.

This is a major problem and is one of our thrusts in the utilization of methane gas from coal.

Senator HUDDLESTON. Are you studying that problem of ownership? How are you approaching that?

Mr. FUMICH. Pennsylvania has had a study on ownership. We have task forces that are still studying that.

Senator HUDDLESTON. Does this represent a pretty substantial potential for gas?

Mr. FUMICH. Yes, it does. My understanding is around 300 quads.

Senator HUDDLESTON. 300——

Mr. FUMICH. Quads.

Mr. THORNE. That's about three or four times today's total energy consumption.

Senator HUDDLESTON. That is a substantial amount.

Mr. THORNE. Yes, sir.

Senator HUDDLESTON. What about gas resource potential in coal deposits that have not been mined yet?

Mr. FUMICH. This would represent the potential methane recovery estimate in all coal deposits. I think it's a very important program. Once you get the gas out, you can utilize it. Plus you have that safety factor as far as mining is concerned.

Senator HUDDLESTON. It would really expedite the mining of it.

Mr. FUMICH. Yes, sir. That's a critically important facet of the program.

Senator HUDDLESTON. As you know, the Senate Energy Committee has authorized additional funding for this particular program. Could additional money be put to good productive use?

METHANE FROM COAL CAPABILITY

Mr. FUMICH. Yes, there is a statement on that, sir, and we can submit it.

Senator HUDDLESTON. That would be helpful to the committee.

[The information follows:]

CAPABILITY STATEMENT

METHANE FROM COAL SEAMS—$+4.0

Presently coal bed methane research activites are conducted in three areas of Fossil Energy namely under the Mines Research and Development, the Improved Conversion Efficiency and the Enhanced Gas Recovery activities. Fossil Energy now plans to focus overall management responsibility for coal bed methane activities in one Fossil Energy Division. A management plan is being developed to describe the program content and responsibility for conducting the various important elements of research.

Accordingly, the focus for the budget presentation will be in the Enhanced Gas Recovery Activity. Specifically, an additional $4.0 million for coal bed methane activities would be used as follows:

Continuation of resource characterization and economic assessment studies initiated in fiscal year 1978.

Design and demonstration of efficient systems for separating methane from gob gas and mine ventilation gas.

Development of a total systems approach for recovery and utilization of methane from coal beds.

Initiate design and demonstration of gas fired turbine capable of on-site electric power generation using low-Btu gas whose quality precludes direct pipeline injection.

Initiate studies for on-site heating and LNG conversion of coal bed methane.

UNOBLIGATED APPROPRIATIONS

Senator HUDDLESTON. You know, because of the continuing high level of unobligated appropriations, the Committee ordered a $50 million reduction in fossil energy operating funds last year. We discussed that with the Secretary on Tuesday. We need to have all of this reduction allocated in the next 2 weeks.

Do you think this will be a problem?

Mr. FUMICH. It'll be a problem but we'll do it. We have about $95 million yet that we have uninitiated or unobligated this year, which means that we're in pretty good shape.

It's something that we should be able to do relatively quickly. I'm not going to promise, however, that we're going to get it down to a zero case at the end of the year, because we do have certain projects we are reassessing, we're taking another look at them. We're not quite sure whether we're going to move forward with them.

If we decide not to proceed, we will have some money that will be unobligated.

Senator HUDDLESTON. You can give the committee a list of those funds?

Mr. FUMICH. Yes, sir, when available.

OUTLOOK FOR COAL DERIVED FUELS

Senator HUDDLESTON. Just looking at our overall coal research strategy, as general interest to the committee and particular interest to me back in 1964 an interdepartmental group of Federal energy experts got together and forecast that a decade would be needed to commercialize the production of coal-derived fuels.

With the investment of millions of Federal dollars that has occurred since that time, are we getting any closer to the goal?

Mr. FUMICH. Sir, most estimates on the time needed to develop technologies—are usually 20 years or so. I think that when they said 10 years, they were pretty optimistic. But I do believe that we have reached that point now. This is the reason that we're proceeding to build these first plants.

Senator HUDDLESTON. You mean after 15 years now, we're up to within a 10-year goal maybe? It seems like every year the goal is still ten years down the road.

Mr. FUMICH. I was asked the other day whether I would live long enough to see the fruits of the effort. I don't know whether I will or not.

Senator HUDDLESTON. When do you think we'll have commercial production of coal-derived fuel on a substantial basis? 1980?

Mr. FUMICH. I think we'll have an emergence into the market place between 1983 and 1985, I think that we'll have a pretty good impact between 1985 and 1990. I don't think it will be until after 1990 that we will get a broad based synthetic fuels industry.

Senator HUDDLESTON. You're not quite within that decade yet, are you? [Laughter.]

Mr. FUMICH. No, to be honest.

Senator HUDDLESTON. Well, in pursuit of all the varying technologies, either for coal or oil shale or any other resource, have we

significantly reduced the cost of a barrel of synthetic fuel over the past decade?

Mr. FUMICH. Sir, I think that we have. You must understand that we're dealing with a moving target. In 1969, you could get a ton of coal in the East for right around $5. Now that same coal will cost you close to $27 a ton.

Coal represents about 25 percent of the costs. You can improve a process efficiency 10 or 15 percent, but the raw material multiplies in price, it's a hard thing to deal with.

Senator HUDDLESTON. If coal had stayed at about the same pricing level, and with the increase in oil, there would be a lot more incentive, would there not?

Mr. FUMICH. Yes, sir.

Senator HUDDLESTON. Economics is bound to play an important part in the effort that's made by private industry.

Mr. FUMICH. Yes, sir.

Mr. THORNE. Mr. Chairman, I would like to make the point that I believe we really have made substantial progress over these last many years.

For instance, during World War II, the Germans operated coal liquid plants. In today's dollar, the cost of that product would be in the neighborhood of $70 a barrel equivalent. South Africa now has the SASOl process. I believe the cost of their product is about $40 a barrel in today's dollar. We believe that the SRC technologies will produce fuels for somewhere between $18 and $20 a barrel equivalent in today's dollars.

OIL EMBARGO

Senator HUDDLESTON. What effect do you think it would have on this effort if we had a prolonged embargo again on oil coming from the Mideast?

Mr. THORNE. We'd be in deep trouble.

Senator HUDDLESTON. Would there be a greater effort to create synthetic fuels?

Mr. THORNE. Certainly, I think that would be the case. But there's only so much that one could really do given the state of technology. It's just how quick you can build plants and that takes 5 to 7 years.

Senator HUDDLESTON. Do you believe that we are moving about as rapidly as we could, even given the economics of it at the present time?

Mr. THORNE. Yes; I believe we're moving at a satisfactory, even somewhat accelerated, pace.

Senator HUDDLESTON. Once the technology is developed and proven, then the economics are still in play as to whether or not that technology will be used, I suppose.

Mr. THORNE. Yes, sir. A lot depends on the world price of oil.

Senator HUDDLESTON. It's cheaper to buy oil from OPEC and it's available, then there won't be any great rush, I take it, to create synthetic fuels.

Mr. THORNE. That's likely to be the case.

Senator HUDDLESTON. Unless we impose some kind of restriction on ourselves as to imports and the rate we use oil.

Mr. THORNE. Yes, sir. I think there's concern on the part of many people that the world should not continue to use petroleum just to produce electricity. Petroleum has many uses in terms of petrochemical feed stocks.

IMPROVED FUEL UTILIZATION

Senator HUDDLESTON. What effort is the Department making beyond what legislation has been enacted or has been included in new energy bills, if we ever have them to try to divert the various fuels into specific uses for which they might be more desirable?

Mr. THORNE. Mr. Chairman, the Department has discussed on a fairly broad basis within the administration the possibility of assessing some percentage to the large consumers of petroleum or natural gas these synthetics on a number like 10 percent initially, to be increased over a period of time. I cannot tell you that that is an active part of the Department's policies as yet.

Senator HUDDLESTON. It would be a reasonable approach to better utilization of the fuel that we do have, I believe, wouldn't it?

Mr. THORNE. Yes, sir.

ENVIRONMENTAL CONTROL TECHNOLOGY

Senator HUDDLESTON. A new line in the fossil energy budget this year is advanced environmental control technology, which involves the transfer of $14 million in research funding formally administered by the Environmental Protection Agency. We understand there is actually a total of $55 million in coal research and development funding involved. Why wasn't the balance of that funding also transferred to DOE?

Mr. THORNE. The EPA program related to coal research includes environmental assessment activities and bench scale research as well as control technology development. Only the control technology aspects are being transferred to DOE. EPA has a legislative mandate in the Clean Air Act to advance the state of the art in these areas and therefore it is inappropriate to transfer the nonhardware aspects of the program.

Senator HUDDLESTON. Is there any particular advantage to having coal research conducted in two different agencies?

Mr. THORNE. The term "coal research" is very broad in scope. Within the field of coal research there are specialties, such as mining, health effects, utilization, and emission control. The different missions (energy, environment, or mining safety) of various agencies require that several become involved in the coal area. Each of the agencies can concentrate their expertise and facilities on their special areas of competence. This concentration will provide national advantages in cost, correctness of results, and timeliness of execution.

Senator HUDDLESTON. Is it likely that the balance of the EPA coal research program will move over to DOE in the reasonably near future?

Mr. THORNE. The EPA has certain statutory areas of responsibility pertaining to environmental protection. Research on areas such as health effects, methods of evaluation of the degree of pollution

and measurements of emissions resulting from coal use should remain in their hands.

COORDINATION WITH EPA

Senator HUDDLESTON. How do you coordinate your research with that of EPA? The EPA problem apparently involves considerable research on fluidized bed combustion including the operation of a miniplant.

Mr. THORNE. Research has been coordinated through joint meetings such as the annual conference on the energy/environment R. & D. program, by issuing joint reports, by joint funding of projects and by personal contact at all levels. In the environmental control program a joint planning process will be initiated in fiscal year 1979 which includes publication of a strategy document and mutual review of program plans. The strategy document will explain the overall direction of the joint DOE/EPA environmental control effort and the specific roles of each agency and will receive public scrutiny.

Senator HUDDLESTON. Where is that plant located and what is the total investment in it?

Mr. THORNE. The miniplant mentioned is a small pressurized fluidized bed combustion research unit located at the Exxon plant in Linden, N.J. The total investment of Government funds in it, for the period starting in 1969 to date, is $10 million.

Senator HUDDLESTON. What achievements, if any, have stemmed from the EPA research into fluidized bed combustion?

Mr. THORNE. The major achievement is an operating facility, in a small size, that can be used to check out sorbent regeneration equipment, particulate control equipment and materials. There have been additional achievements in component improvement—valves, etc.—and instrumentation. The Exxon Co. has done a very professional job in establishing an operable installation but the characteristics of the design are such that it does not have the broad applicability and flexibility that a larger and more up-to-date design would have.

ADDITIONAL JUSTIFICATION

Senator HUDDLESTON. There is little or no justification for the $14 million appropriation request for the environmental control technology program. Please submit specific justification of why you need this particular amount of funding. Include a breakdown of how the funding is allocated among the principal programs.

Mr. THORNE. The proposed funding enables DOE to continue those environmental control activities transferred from EPA and to begin an integrated balanced national program on coal utilization. A breakdown of the $14 million into subprograms and major projects will be provided.

[The information follows:]

Precombustion control—$2.0M.

Myers Process Chemical Coal Cleaning—Pilot plant test program evaluating the iron sulfate pyrite leaching process. (1.5M)

Chemical Coal Cleaning—Bench and pilot testing of emerging chemical coal cleaning technologies. (0.5M)

Flue gas cleanup—$3.0M.

Demonstration of Aqueous Carbonate Flue Gas Desulfurization Process—Demonstrate at 100 MWe size promising sulfur-producing process on coal-fire boiler. (1.5M)

Flue Gas Desulfurization and Denitrification Technology Development—Develop a pilot or demonstration scale promising second generation flue gas cleaning technology. (1.5M)

Gas stream cleanup—$4.6M.

Chemically Active Fluidized Bed Demonstration Program—Demonstration of fluidized bed technology for the conversion of high-sulfur residual oil to low Btu gas for power generation. (1.0M)

Fluidized Bed Miniplant—Small pressurized bed combustion pilot facility aimed at evaluating clean-up technologies. (1.2M)

High Temperature Particulate Control—Program aimed at developing cost-effective, high-temperature/high-pressure gas cleanup technology. (2.4M)

Technology support—$4.4M.

Projects aimed at developing improved technology for the minimization of environmental damage resulting from fossil fuel mining and oil extraction. (2.9M)

Develop Energy Recovery Technology—Development and evaluation of techniques for industrial fuel use and conservation. (2.4M)

COAL MINING RESEARCH

Senator HUDDLESTON. Would you explain basically how coal mining research and technology programs are divided between the Department of Energy and the Bureau of Mines?

Mr. THORNE. The basic distinction is that the Bureau does research on the specialized aspects of coal mine health and safety and the environmental effects of coal mining, while the Department of Energy does research, development, and demonstration activities on the broad range of problems related to coal mining. Consistent with this responsibility, the Department's programs draw on the fundamental research done by the Bureau and other agencies to produce improved mining technology which reduces the cost of coal while assuring improved worker safety, better resource recovery, and improved environmental protection. The Bureau, of course, has the additional role of performing research in support of the inspection and enforcement program now the responsibility of the Mining Enforcement and Safety Administration (MESA) of the Department of Labor.

Senator HUDDLESTON. Have formal arrangements been made for coordinating the two programs?

Mr. THORNE. There is as yet no formal coordination mechanism. However, we do maintain close contact with out counterparts in the Bureau of Mines to insure that there is no duplication of effort.

Senator HUDDLESTON. What informal procedures are followed?

Mr. THORNE. Contact is maintained virtually on a daily basis at the level at which questions can be resolved. For example, the Acting Assistant Director—Mining, in the Bureau of Mines and the Acting Director, Division of Solid Fuels Mining and Preparation in DOE, who have the program management responsibilities in this area for their respective organizations, have worked closely over the last 8 months to resolve problems and issues arising from the establishment of DOE as they relate to coal mining research.

In addition, the Acting Director of the Bureau and the Program Director for Fossil Energy, DOE, meet periodically to discuss outstanding issues, and discussions on the coordination of these activities have been held on the Assistant Secretary level.

Senator HUDDLESTON. Are any other Federal agencies involved in mining research? How are their activities coordinated with DOE and BOM? Does this fragmentation affect the effectiveness of the coal mining research program?

Mr. THORNE. Yes; there are a number of other Federal agencies involved in mining research. These include NIOSH; EPA; the Forest and Soil Conservation Services of DOA; the Fish and Wildlife Service, the Office of Surface Mining, and the Geological Survey of DOI; and others. The coordination is for the most part informal.

The fragmentation does affect the effectiveness of the coal mining research program, particularly since most of these research efforts are of a very specialized nature. However, we are continuing to work with these other agencies to insure that there is no duplication of effort.

Senator HUDDLESTON. I note that when the $7.8 million for the research and development newly authorized under the strip mine bill is subtracted from your budget total, your funding request is equal to last year. Given inflation, this is a decline in real dollar terms. Why the decrease?

Mr. THORNE. The fiscal year 1979 budget request basically reflects the thrusts initiated under the Bureau of Mines. In order to meet the projected fuel requirements for the period 1985 and beyond, an aggressive and radical approach to material recovery must be initiated. We are currently preparing a comprehensive management plan, scheduled to be completed by mid fiscal year 1979, which will delineate the Federal role in this area and provide the framework and the resource requirement for an aggressive mining R. & D. program that will fully support the DOE mission.

Senator HUDDLESTON. Do you believe that sufficient emphasis is being given to improving coal mining technology and reversing the trend of declining productivity?

Mr. THORNE. Declining productivity in the coal mining industry is a major concern and provides the focus for our technology development programs. The budget request for mines R. & D. provides for a balanced program aimed at providing the technology for reversing this decline. The management plan that we are preparing will address the Federal role in mining and the resource needs to maintain a vigorous technology development program.

ADDITIONAL SUBCOMMITTEE QUESTIONS

Senator HUDDLESTON. Gentlemen, we'll have some other questions, of course, to submit to you for written responses.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

SUBMITTED QUESTIONS

FOSSIL ENERGY

Question

We understand that it is a policy of DOE to place management and direction of research and development projects in the field. To what extent does that mean coal development will be dominated by the national atomic facilities rather than utilizing the private sector guided by the energy research centers in their traditional roles?

Answer

The anticipated decentralization thrust currently conceived does not substantially increase the role of the National Laboratories vis-a-vis the Energy Research Centers in the area of coal development. Currently, only about 7% of the Fossil Energy budget is for selective work at the National Laboratories. Project managers currently working in Headquarters will be transferred to nearby or on-site field locations for day-to-day management of Fossil Energy projects or programs. The role of the private sector guided by Energy Research Centers will remain relatively unchanged. The only addition will be the on or near-site presence of these Headquarters project managers to guide private industry in day-to-day management for projects previously managed at Headquarters.

Question

Why have we gone from a situation of severe scarcity of natural gas supplies last winter to one of current surplus?

Answer

There were significant gas curtailments last winter. While the situation varies by gas company, there are still gas curtailments in the interstate market and in many cases this will continue throughout the summer. There is a surplus of gas in the intrastate market in Texas. This gas is not being made available to the interstate market because of the significantly lower price in the interstate market.

Question

What are the prospects for gas supplies in the immediate future?

Answer

When an energy bill is passed, most or all of the gas in intrastate markets will be made available to the interstate market. There will probably also be an increase in natural gas production. Thus, there will probably by increased supplies in interstate markets for the winter of 1978-79. However, it is likely that there will still be some curtailment to low priority customers next winter.

Question

I understand that the sulfur content of coal affects the extent to which coal conversion technologies can be used to convert coal to gaseous or liquid fuels. Illinois Basin Coal, the category into which much of our Eastern coal falls, makes up 25% of current coal production and almost 39% of proven recoverable bituminous coal reserves. Can you tell me what percentage of DOE money used for coal

conversion technologies is being spent on conversion of Illinois Basin coals to liquid and gaseous fuels?

Answer

DOE's coal gasification effort is aimed at developing processes which can utilize agglomerating, high sulfur coals such as the Illinois Basin Coals.

The HYGAS, Synthane and Bi-Gas pilot plants are all capable of processing such coals. In fact the HYGAS and Synthane pilot plants are currently being operated on Illinois No. 6 coal. The Powerton combined cycle test facility to be constructed near Peoria, Illinois will use Illinois coal as its design coal for utilizing gasification as a mechanism for producing fuel gas for industrial and utility use. We estimate that well over 60% of our gasification budget is involved in considering the potential of Illinois and other Eastern coals.

Question

Why is it that less than 8 percent of the Department's research and development funding is allocated to gas-related projects while more than 70 percent is used for electricity-oriented R&D projects that are long-term for the most part?

Answer

The Department's FY 1979 budget request for the Fossil Energy R&D programs total $801.8 million. This includes $25.9 million for the Gas program or about 3 percent of the total request for Fossil Energy and $186.6 million (about 23 percent of the total) for the production of synthetic gas by gasification of coal. The Gas program includes resource characterization and effort to stimulate the production of gas from unconventional sources such as the Eastern Devonian shales, the Western tight sands formations and from oil shale. The coal gasification activities include development of technologies for producting both high-Btu gas as a replacement for natural gas and low and/or medium Btu gas for fuel and other purposes. The Department believes that these developmental efforts for the stimulation of additional supplies of natural, as well as the production of synthetic, gaseous fuels are proceeding at a pace which is consistent with the current state of technology.

While the Department is concerned about the Nation's future energy needs and the part gas will play in it, we feel that the proposed budget for FY 1979 reflects this concern.

General Plant Projects

Question

You are requesting $9 million, an increase of $6 million, for general plant projects. Why is there no breakdown of ERC construction funding? Supply a breakdown.

Answer

General plant projects provide for minor new construction, other capital alterations and additions, and for retirements to land, building and utility systems. Where applicable, this request also includes the cost of installed capital equipment integral to a project. Funding of this type is essential for maintaining the productivity and usefulness of DOE-owned facilities. Since it is difficult to detail this type of project in advance, a continuing evaluation of requirements and priorities may be

expected to result in additions, deletions, and changes to the currently planned projects. In general, the estimated funding for each project is preliminary in nature, and is intended primarily to indicate the relative magnitude of the requirements.

Bartlesville Energy Research Center

Hazardous Testing Lab	$100,000
Replacement Storeroom	100,000
Renovation South Wing & 4th Floor Addition	430,000
Storage Building East Acres	100,000
Renovation Library Building	35,000
Renovation Offices Building #6	100,000

Grand Forks Energy Research Center

New Primary Electric Service	125,000
Pilot Plant Ventilation	150,000
Standby Electrical System	55,000
Library, Conference Room, Information Center	700,000
Vehicle & Ceneral Maintenance Facility	225,000

Laramie Energy Research Center

Relocate, Upgrade Retort Control Room	250,000
Hazardous High Pressure Experiment Lab	250,000
Chemical Storage Building	150,000
Improved Water Supply and Auto Sprinklers at Shale Gas. Building	160,000
Upgrade Wiring, Main Building	65,000
Safety Mods. to Compressor Building, Vernal Site	20,000
Controlled Temp. Sample Storage Facility	320,000
Upgrade Labs, Main Building	100,000
Relocate Stockroom, Office Conversion	150,000
Field Equipment Storage Facility - Laramie	100,000
Field Equipment Storage Facility - Rock Springs	100,000
Material Storage Warehouse - Laramie	100,000
Vehicle Maintenance Building - Laramie	220,000
Field Equipment Storage Facility - Hanna	100,000

Morgantown Energy Research Center

Equipment Cleaning Facility for Hydrocarbon Contaminated Parts	80,000
Dust & Gas Sampling Monitors & Alarms	80,000
Relocation of High Pressure Cells	500,000
Segregrate/Upgrading of Welding Grinding & Paint Spray Areas	150,000
Addition of Scrubbers or Filters to Stacks and Exhaust Systems	225,000
Additional Transformers	220,000
Upgrade Inert Gas System	435,000
Header Replacement System	150,000
Building No. 4 Exterior Covering	230,000

Pittsburgh Energy Research Center

Install Interior Alarm and Notification System	250,000
Extension of Present Safety Inspection and Cylinder Storage Area	85,000
Emergency Power System	200,000
Hygienic Facility for Plant Areas, Building 83 and Building 93	200,000
New Central Compressed Air System	75,000

Pittsburgh Energy Research Center (Cont.)

Safety Elevators for Handicapped - Buildings 83 & 84	220,000
Silo Ladders	10,000
Provide Fire Extinguishing System for Computer Installations	30,000
Explosion Venting	75,000
Electrical Renovation of Building 86	150,000
Industrial Hygiene Facility & Testing Station	200,000
Hydrogen Storage Tank Provided with Inert Atmosphere	90,000
Safety Requirements for Building 93	100,000
Environment & Conservation Facility	700,000
Residual Waste Incinerator Facility	300,000
Dike Oil Storage Tanks	40,000

Total, All Projects-$9,000,000

Question

Why does ERC construction need tripling? What is the priority of this request?

Answer

The Energy Research Centers are being called upon to assume increasing responsibilities in the conduct and management of DOE's Fossil Energy programs. Yet, a large portion of the space and facilities at the ERC's is substandard. The potential to expand operations and house additional personnel at the ERC's is essentially nonexistent. This condition exists because for many years, the ERC's did not receive the priority that is currently assigned to them as part of the fossil energy program.

An effort was begun in FY 1977 to renovate and upgrade the ERC's. The first step was to address worker, property, and environmental protection. Budget authorities of $6.9 million and $3.0 million were requested in FY 1977 and FY 1978, respectively, primarily for safety and environment related modifications to the ERC's. An important consideration in determining the size of those requests was the previously undemonstrated capability of the ERC's to manage simultaneous construction-type projects. Thus those requests did not reflect the total needs to ameliorate conditions at the ERC's after many years of low priority.

The FY 1977 and FY 1978 funds were utilized in an efficient and effective fashion. The level of compliance with OSHA, fire, safety and environmental standards has risen significantly. Important deficiencies still exist, however, and a major portion of the FY 1979 request is planned to meet safety and environment needs as well as to perform other general projects.

A very high priority is assigned to this year's request for $9.0 million. These funds are needed to enable the ERC's to meet their increased responsibilities and to satisfy standards needed for effective operation.

Question

Why have you budgeted $350,000 separately for a Morgantown Warehouse? What will be the ongoing need for this facility.

Answer

The Morgantown warehouse is being handled as a separate request because the project is large enough to exceed the normal limit for a building under "General plant projects" and because it is possible to provide the Congress with more complete information than is normally available for a

general plant project at this time. The Construction Project Data Sheet, provided with this separate request, gives information about the warehouse's purpose, need, scope and estimated cost.

The need for the warehouse is great and continuing. The warehouse will be used for (1) housing a badly needed equipment pool, (2) storing new materials prior to use in specific projects, (3) controlling storage and issue of standard parts, and (4) storing used equipment being processed as surplus.

Question

For the various demonstration plant projects, why does the amount set aside for contingency above cost vary from 17 to 25 percent? Why is such a large contingency amount required?

Answer

Contingency is established on the basis of the many indeterminants associated with estimates produced in the early phases of program development for proposed facility construction. The contingency of 25% is quite nominal when it must cover the unknowns of escalation, labor productivity, construction business activity, pricing of materials and equipment in the long range, changes in the details of design, laws and rules which may be promulgated after the initial estimates are made. Contingency would be, of course, lower for nearer range construction programs. In addition, proposers have indicated that future phase estimates are not more accurate than plus or minus 25%.

Question

The demonstration projects generally have a short operating life. What happens to the facilities after operations are completed?

Answer

There are several options for these facilities once operations have been completed. Fore example, they may be:

- Operated as a small-scale commercial plant.
- Integrated into a larger commercial operations.
- Modified to continue other demonstration programs.
- Disposed of to utilize other standard processes which are independent of the gasification technology.
- Liquidated to recover high value salvageable equipment and facilities.
- Mothballed for future energy programs.
- Dismantled for scrap.

Question

Please provide for the record an explanation of the inconsistencies between R&D expenditures and Plant and Capital Equipment expenditures.

Answer

There is no direct relationship between the level of funding for a particular activity and the funding request for capital equipment to serve that activity. Fossil Energy's requests for capital equipment needs are based on the estimates provided by field project managers for those projects included in their approved program plan for the year and include both equipment to initiate new projects or equipment to replace worn out or obsolescent equipment. The equipment needs are reviewed annually.

COAL

MINING RESEARCH AND DEVELOPMENT

Question

Your $70.5 million request for coal mining R&D involves an increase of $7.7 million over fiscal 1978 funding. This is not much of an increase in terms of real dollars. How does this square with the Administration's commitment to expand coal production?

Answer

DOE considers an aggressive, viable and balanced Federal mining program a key element in the Nation's energy future if significant increased use of coal is to be realized. The Mines R&D program, transferred to DOE from the Bureau of Mines, essentially continues the thrusts begun under the Bureau. Under Fossil Energy, the mine R&D program is being restructured. Ongoing programs will be evaluated. A comprehensive management plan is planned for completion by mid FY 1979. This document will define the Federal role, identify institutional barriers, establish hard productivity goals emphasizing mine development systems R&D and safety/health issues and identify the resources required to carry out the R&D program.

In the interm, until a management plan can be developed, the Department believes that the $70.5 million in operating expenses requested in FY 1979 provides for a reasonable level of funding for this important program.

Question

Do the requested mining R&D increases relate specifically to the Surface Mining Control and Reclamation Act? If so, how?

Answer

Yes, the majority of the money ($6.5 million) is for the initiation of research under Section 908 of P. L. 95-87.

Specifically, $2.8 million is included for mine planning and development to support development of improved methods for underground disposal of wastes and studies on health and safety problems impeding the implementation of advance underground mining technologies. $3.7 million is included for production mining to develop novel mining systems for thick coal seams.

Question

The Surface Mining Act authorized $35 million to develop surface mining technology. The Administration endorsed this legislation, but your budget provides very limited funding. Could you expand your R&D efforts if additional funding were provided?

Answer

The FY 1979 request for Mines R&D includes $12.6 million for Surface Coal Mining, an increase of $1.1 million over the FY 1978 level. These funds provide for essentially continuation of programs, initiated under the Bureau of Mines, to develop and demonstrate improved technology for surface coal mining and reclamation. Fossil Energy currently plans to complete a comprehensive management plan for the overall Mines R&D program by mid 1979. This plan will define the goals and the resource requirements to obtain these goals. The Department feels that a decision to either increase or decrease the R&D effort in surface mining in the absence of the management plan would be premature.

Question

Please supply for the record a statement reflecting your capability to expand mining R&D. Detail how you would allocate the additional funding and explain why.

Answer

The FY 1979 budget request of $70.5 million in Operating Expenses is an increase of $7.8 million from the FY 1978 level. While the request includes $6.7 million to support implementation of provisions of the P. L. 95-87, Surface Mining Control and Reclamation Act, the program for the most part continues thrusts started under the Bureau of Mines. As we have indicated, a management plan for the Mines R&D program is planned for completion by mid FY 1979. Until this plan is completed, we believe that any decision to either increase or decrease the level of effort would be premature.

However, in response to a specific request from the House Science Technology Committees the following capability statement for additional funding of $22.1 million was furnished.

	(Dollars in Millions)
Coal Mining	$7.2
o Accelerate development of cross-pit conveyor system.	
o Initiate development of a second-generation (750-900 ton/shift) mine/boiler	
Implementation of Section 908 (P.L. 95-87)	3.0
o Initiate hardware design/fabrication and preparation for field trials for dry underground waste disposal systems	
o Initiate health and safety studies/research to remove technologic uncertainties showing the development of thick and multiple seam mining technology	
Coal Preparation	7.0
o Accelerate chemical coal cleaning research	
o Initiate expanded program in fine coal handling and treatment	
o Accelerate development of lignite drying process	
o Complete construction of Coal Preparation Facility	
Oil Shale	4.9
o Mine 500 ton samples of dawsonite and nahcolite for pilot plant operations and applications to stack scrubber	
o Accelerate development of technical and economic data for design and operation of a commercial mine	
o Conduct roof stability and fragmentation studies at the 1000,1600,2200 foot levels of the Government's 8' diameter experimental shaft in the Piceance Creek Basin	

Question

At least 60 days before the obligation of any funds under the Surface Mining Act, DOE is required to determine if there is any duplicating research being conducted by any other federal agency. Have any studies been conducted in this area, and were the results published in the Federal Register as required by law?

Answer

Prior to the obligation of any funds under the Surface Mining Act the required studies will be conducted and results published in the Federal Register.

Question

Justify the $2.8 million increase requested for planning and development for underground mining. How much will be used for environmental efforts?

Answer

The $2.8 million increase in mine planning and development supports the implementation P. L. 95-87 research and development as it pertains to this work activity. More specifically, methods for underground waste disposal will be evaluated and field trials initiated on those methods which prove cost-effective. Health and safety studies will also be initiated with emphasis on health and safety problems impeding the introduction of the advanced underground mining technologies currently being developed. These new methods are the product of our research program and ancillary health and safety studies and would not duplicate the ongoing work of other agencies. These studies will include development of the technologic base on such things as face ventilation, dust collectors, water sprays, water additives and methane to allow proper engineering design for new mining applications. Fundamental to all our activities are considerations of the environmental consequences of the advanced coal mining systems under development. However, $1.8 million of this specific increase is estimated for environmental efforts (i.e. underground waste disposal).

Question

Also justify the $3.7 million increase requested for production mining. How will the money be used? How much is for novel mining technology.

Answer

The $3.7 million increase for production mining supports the implementation of P. L. 95-87 as it pertains to novel mining systems for thick coal seams. More specifically, the funding will provide for reducing the development and testing schedule of a longwall caving system and a long-wall multilift method for extracting thick seam coal by one to two years.

Question

What accomplishments do you anticipate will stem from the increase requested for underground mining?

Answer

Since the increases requested for underground coal mining relate to P. L. 95-87 Section 908 we anticipate that these increases will enable us to accelerate development and testing of novel mining

methods for thick seam coal (i.e..longwall caving and longwall multilift) allowing for a more rapid introduction (i.e. 1-2 years) of this technology into a broader segment of industry. The increase will also allow for the acceleration of the coordinated development of environmental, and health and safety related technology (i.e. underground waste disposal, face ventilation, dust collectors).

Question

How much of your underground mining request involves health and safety research? Does this duplicate the work of the Bureau of Mines, which has primary responsibility in this area?

Answer

Fundamental to all ongoing activities are considerations of the health and safety impacts of the advanced coal mining systems under development. DOE has interacted informally almost on a daily basis with the Bureau of Mines to resolve problems and issues arising from the establishment of DOE as they relate to coal mining research and we believe our programs of work do not duplicate the Bureau of Mines research efforts but instead draw on their expertise.

The basic distinction is that the Bureau does research on the specialized aspects of coal mine health and safety and the environmental effects of coal mining, while the Department of Energy does research, development and demonstration activities on the broad range of problems related to coal mining. Consistent with this responsibility, the Department's programs draw on the fundamental research done by the Bureau and other agencies to produce improved mining technology which reduces the cost of coal while assuring improved worker safety, better resource recovery and improved environmental protection. The Bureau, of course, has the additional role of performing research in support of the inspection and enforcement program now the responsibility of the Mining Enforcement and Safety Administration (MSHA) of the Department of Labor. In order to further minimize the possibility of duplication it is planned that the Bureau will be doing about $1 million work of health and safety research in support of our activities under an interagency agreement in FY 1979.

Question

Specifically what are you doing in the area of surface mining to offset declining productivity?

Answer

To offset declining productivity in the immediate future we are continuing to develop and design improvements for conventional mining equipment that presently is in use. Since the lag in placing an order for a piece of equipment and manufacturers delivery time is often several years, modifications to and maintenance of existing equipment is essential to offset declining productivity. Modifications to existing equipment center around coal and/or overburden removal equipment and reclamation equipment.

For the longer term, MRD&D is developing conveyors to haul the overburden and coal to a transfer point outside of the pit. By reducing haulage costs and time, productivity for the entire surface mining operation will be improved. Specifically, a low wall conveyor haulage system for Appalachia will be field tested in FY 1979. Also field trials of a crossridge mountain top mining technique will be completed and is anticipated that this technique will increase resource recovery while minimizing reclamation costs.

Question

Justify the proposed $1.1 million increase in surface mining R&D. Why is the coal preparation program left at the $5 million level? Doesn't this work have a high priority?

Answer

The $1.1 million increase basically provides for the continuation of on-going activities. 'During FY 1979 surveys of alternative mining methods that mitigate the environmental consequenses of mining will be conducted. Studies will be initiated to develop cost effective overburden handling techniques for acid/toxic overburden materials thereby minimizing adverse environmental impacts. Work will continue on land restoration techniques to meet existing standards. Field trials of a dozer power sensor for overburden handling will be conducted and an analysis will be completed on dragline components to improve productivity of extraction. Field trials of crossridge mountain top mining will be completed which will evaluate the projected increased resource recovery for this method. Development of an extended depth auger operated from a contour mining highwall will be continued. Additionally a number of studies will be undertaken to design operating techniques that will minimize the adverse impact of reclamation requirements upon the productivity and economics of surface mining operations. The focus of these studies will include burial of acid forming materials, outslope space deposits, topsoil removal, and replacement and selective spoil burial.

The coal preparation budget request for formulated under the Bureau of Mines (BOM) prior to the transfer of the activity to DOE and reflects the thinking and attitude of BOM officials prior to the impending transfer. The program is a high priority program within DOE.

Question

Why wasn't the $14 million EPA coal research program included in this activity instead being budgeted as a separate line item?

Answer

Only $2 million of the $14 million EPA program transfer is closely related to the mining activities. This $2 million is in coal cleaning. Under DOE all of the coal cleaning activities will be integrated into one program.

Question

Why is the bulk of your coal preparation funding devoted to supporting research?

Answer

Coal preparation is basically an engineered system rather than a process. The ultimate design of a preparation plant is the result of consideration of a number of factors including the mine size, the type of mining, the specific coal seam being mined and the need of the purchaser. Because of this there is a pressing need for the development of a technologic base. With the urgent need to increase coal utilization coupled with the requirement of Federal and State regulations for preventing environmental degradation resulting from coal utilization, new technology is essential for removing and controlling sulfur, ash and deleterious trace elements in coal. Such new technology is being developed through research programs with specific end use application. When research results are promising, the experiments will be scaled up to demonstrate the

technical and economical feasibility of processes. For these reasons, a large part of the coal preparation funds are devoted to research for maximum impact on coal utilization.

Question

Your objectives for coal mining R&D are general and appear to lack urgency. What are your specific goals for the near-term? What milestones have you established to measure progress toward those goals?

Answer

Our analysis of the coal mining problem has shown that in order to have any impact in the near term, an R&D program must bring about system improvements in the wide variety of mining systems now in use. Our analytical studies have revealed which types of improvements result in the greatest benefits in terms of the price of coal. We know, for example, that improvements in labor productivity or reduction in the laps of coal in the preparation process have 1.5 to 2.0 times the effect than work directed at reducing the cost of operating supplies per ton. The goals of the program reflect the broad thrusts of the program because space in summary - type documents prevents the detailed enumeration of milestones and benefits. This summarization does not indicate in any way a lack of urgency or specificity in the program.

Each activity in the program carries its own milestone. For example, one of the development activities which we feel have a significant potential for reducing the time to open new mines or expand existing mines in the development of a shaft sinking machine. A critical milestone is the development of a shaft sinking machine. A critical milestone is the start of field trials which is scheduled for August 1978. It is on the basis of these detailed milestones that we track our progress.

COAL

LIQUEFACTION

Question

The budget request for liquefaction R&D totals $99.1 million, which is down more than $7 million from fiscal 1978 funding. Does this reduction in R&D reflect a declining need to develop new technology?

Answer

When funds for liquefaction construction projects are included, the FY 1979 request for this Activity is $125.1 million, an increase of $14.5 million over the level appropriated in FY 1978. The request provides for continued development of three major coal liquefaction processes including a request to support planning and design of a coal liquefaction demonstration plant. The request reflects a major commitment by DOE to the development of coal liquefaction technology.

Question

Even with the reduction we continue to pursue a large number of liquefaction processes. Why can't we begin to concentrate on the most promising technologies?

Answer

To cut off any of the three second-generation processes currently in the pilot/demonstration plant stage would seriously diminish the capability to produce significant quantities of synfuels from coal in the 1985-1995 time frame. The three process developments are supportive more than competitive. Solvent refined coal is ready to lead the way on scaleup questions; H-Coal and Donor Solvent can then move from large pilot plants directly to pioneer commercial operation. The U. S. will need a large industrial base to build up synfuels capacity quickly and our program will provide the technology to support this activity.

Question

The $5 million reduction in funding for the H-Coal pilot plant apparently reflects the completion of construction in fiscal 1979. When will that plant be completed and in operation?

Answer

We estimate that construction of the H-Coal pilot plant should be completed by the end of March 1979. Shakedown, startup and operation will begin at that time. The plant is presently scheduled to operate for at least 2 years.

Question

Tell us what the $21 million requested for H-Coal will be used for. There is no justification whatsoever for this request. The total estimated cost of the H-Coal plant is $178.8 million. Why is this pilot plant so expensive, and why is industry only paying 20 percent of the cost?

Answer

In FY 1979 the H-Coal project will be completing construction and startup operation; thus the $21 million funding will support these activities. The total cost of the project covers design, construction, and two years of operation of a 600 tons per day pilot plant as well as design and operations supportive laboratory work. This is a large and complex high pressure hydrogenation facility and its cost is commensurate with its capabilities. The 20 percent cost sharing is the best support we were able to negotiate and presumably it is no higher because of the high technical risks, and limited short term profit potential which industry can see for the production of synfuel liquids from coal.

Question

When do you anticipate the pilot stage for H-Coal will be far enough along to make a decision on demonstration?

Answer

It is anticipated that the results of the H-Coal pilot plant combined with scaleup knowledge gained in the SRC demonstration plant(s) will provide a basis for design and construction of a pioneer commercial H-Coal plant without an intermediate demonstration plant.

At the present time, we estimate that construction on the pilot plant should be completed by the end of March 1979.

The plant is scheduled to operate for at least two years to provide the essential data for commercialization.

Question

The Synthoil process development unit is also completing the construction stage. What is the timetable for this project?

Answer

The 10 tons per day PDU at Bruceton, Pennsylvania, which was designed on the Synthoil process, will be nearing completion in FY 1978. In FY 1979 a cost shared arrangement will be pursued (for operation of the facility in FY 1980 and beyond) for a promising industrial liquefaction process involving an advanced disposable catalyst system. This use of the Bruceton liquefaction PDU will support the DOE program on improved third-generation processes.

Question

When in FY 1979 do you intend to make the decision on the operating and process details of the Synthoil PDU?

Answer

As previously stated, in FY 1979 the Department intends to seek an industrial partner to cost share development of a promising third-generation liquefaction process using the PDU at Pittsburgh.

Qestion

What is the total investment to date in Synthoil? How large is the remaining estimated investment for this process?

Answer

The PDU facility at Bruceton, Pennsylvania is nearing completion at a total cost of about $26.5 million. Although this unit was designed on the basis of early Synthoil process data, results do not support its use on this process and no further work directly on Synthoil is planned. The PDU will be made available for an alternative process study (a disposable catalyst process) with an industrial partner.

Question

Please specify what the $4.9 million requested for 1979 will be used for in the Synthoil PDU?

Answer

The $4.9 million listed under the Synthoil PDU will fund two activities. About $2.9 million will support in-house research at Pittsburgh Energy Research Center in support of our direct liquefaction processes, using the bench scale units formerly assigned to Synthoil research. The other $2.0 million will support caretaking on the PDU facility and preparation for its use on the alternative disposable catalyst process study mentioned above.

Question

Why are you accelerating zinc chloride catlayze PDU. Where is it located?

Answer

The funds required from year to year may vary depending on scheduled events, but no specific acceleration of the Zinc Chloride Catalyst PDU is planned. The use of this unit is moving ahead as rapidly as feasible. The unit is located at Library, Pennsylvania at the R&D laboratory of Conoco Coal Development Company

Question

Please justify the $13.5 million request to continue operation of the Takoma SRC pilot plant. How much longer do you think you will have to operate this facility in support of the demonstration proposals?

Answer

The $13.5 million request for SRC is to continue operation of the 50 tons per day pilot plant at Fort Lewis, Washington. This pilot plant directly supports the demonstration plant programs for both SRC-I and SRC-II and should be operated until these plants are safety into operational status.

Question

You are continuing to spend $1 million a year for SRC utilization studies. What has been achieved to date in this program, and what do you expect to achieve in fiscal 1978?

Answer

The SRC utilization funds are intended to support limited but crucial marketability tests on SRC fuels. The very successful utility burn test of solid SRC-I was a major achievement last year; this year a similar utility test of liquid SRC-II is scheduled. Future work will explore various alternative uses, such as turbine combustion, and will also allow attack on problems identified during burn testing so that acceptable, environmentally clean fuels can be assured.

Question

The $4.3 million increase for the donor solvent pilot plant is attributed to the construction phase. When will this facility be complete and operating?

Answer

The $4.3 million increase reflects an increase in procurement and construction efforts in FY 1979.

The 250 tons per day donor solvent pilot plant is scheduled to be completed in November 1979, and is currently on schedule. Operation is scheduled to begin January 1980.

Question

What is the federal and private investment to date in donor solvent?

Answer

Investment by the private sector (Exxon) for the Donor Solvent Liquefaction project has been 100 percent for the initial phases of the project (Phase I, pre-development; and Phase II, planning and engineering) amounting to $32.0 million. In addition, $14.6 million has been expended through April 1978 by the joint non-Federal participants including Exxon, EPRI and Phillips Petroleum for their share of Phases III, IV and V (detailed engineering, construction and operation).

Cost sharing between the Government and the private sector on a 50/50 basis began with Phase III and $32.3 million has been obligated through April 1978 by DOE.

Question

How long will the pilot plant have to operate to provide sufficient experience for a decision on whether to take this process to the demonstration phase?

Answer

The 250 tons per day pilot plant is scheduled to operate for a period of 2-1/2 years (January 1980 through mid-1982). Pioneer plant (first commercial plant) design can begin in 1981. The Exxon commercialization plan does not include a demonstration phase, their plan calls for scaleup to a pioneer plant from the 250 tons per day pilot plant.

Question

Please explain the need for a $1.5 million increase for flash liquefaction. Supply a detailed justification of the $2 million request for this program.

Answer

The $2 million request for flash liquefaction will fund operation of a complete PDU to obtain material balances and collect products for characterization of this advanced pyrolysis process. The difference in funding from year to year simply reflects the type and amount of activity; the process development is moving forward steadily at a prudent rate.

Answer

Why are you stopping the fluid coke studies?

Answer

Work completed on bench scale units has provided data on yields for each coal liquefaction process residue. One larger scale operability test is in the program. However, all coal liquefaction residues behave similarly to EDS residues and since fluid coking will be studied under the EDS program, the separate program is not needed.

Question

What has been the total cost to date for fluid coke research? What has been achieved?

Answer

Total estimated cost for the Fluid Coking program is $1.3 million. The major achievement has been the obtainment of data on yields for each coal liquefaction process residue.

Question

You have a $1.8 million increase budgeted for the Cresap Test FAcility. Please explain and justify this increase?

Answer

Part of the $1.8 million increase to operate the Cresap Facility is inflation and the remainder reflects an updating of cost to operate now that we are gaining this experience. The costs to maintain a coal liquefaction facility are generally underestimated initially.

Question

How much in Cresap is for the two-stage liquefaction process?

Answer

The process configuration at Cresap is a limited type of two-stage liquefaction but the facility could be modified modestly to have a much greater flexibility for two-stage process studies. No money is requested in FY 79 for such modification.

Question

Identify and explain the funding increase proposed for environmental studies. Fully justify the requested increase.

Answer

The environmental support studies are meant to provide overall assessment and characterization of the environmental needs of liquefaction technology. Even though each specific process study will be concerned with process specific needs, it is essential as the pace of development increases and activities move more toward commercialization to increase these general activities and coordination among projects.

Question

The justification states that only "additional environmental activities are required to support projects." What additional activities, and why are they required?

Answer

The additional environmental activities include studies principally involving the timely identification of critical environmental issues that must be solved before a technology is ready for commercialization. Such studies include but are not limited to the identification and characterization of process emissions and ways to remove and/or control those emissions that may be detrimental to the environment. Increased activity is required because of the greater thrust toward commercialization.

Question

Your justification for the SRC plant shows $4 million to support the program in Fiscal Year 1978 when no appropriation was provided. Please identify the source of the $4 million for the record.

Answer

The FY 1978 budget structure located all demonstration plant projects including liquefaction, gasification and direct combustion under the Demonstration Plants subprogram. The Demonstration Plants subprogram included a subelement Design and Technical Support for all demonstration plant activities. The $4.0 million assigned to liquefaction demonstration plants are being used to initiate, support and/or continue activities related to liquefaction demonstration plants. In FY 1978, the funds assigned to liquefaction demonstration plant design and technical support have been obligated for: (1) conducting industrial surveys on private industrial equipment availability for the various unit operations for Coal Conversion processes; (2) providing process modeling support and computer analysis for Liquefaction processes; (3) Engineering Evaluations of Coal Conversion processes including study of coal slurry pretreaters in liquefaction plants, laboratory-scale investigation of new coal liquefaction processes, fabrication of In-Plant environment monitors/contamination spotters, and studies of the physical properties of coal liquids; (4) specific professional A/E and technical services relating to Liquefaction Pilot Plants.

The budget justification for the liquefaction demonstration plant design and technical support refers to the SRC demonstration plant program because that effort provides the principle justification for the liquefaction demonstration plant programs at this time.

Question

How much of the SRC demonstration funding under the operating account is for SRC-I and for SRC-II? Supply figures for both 1978 and 1979.

Answer

The FY 1978 appropriation includes $4,000,000 in Operating Expenses for design and technical support of the liquefaction demonstration plants program, and the Department has requested authority to reprogram $33,000,000 from the Coalcon project to support our efforts to develop the capability to produce synthetic liquids and solids from coal as rapidly as technically feasible. It is proposed to initiate in FY 1978 process design studies of four or five bonafide coal liquid or solid processes, and it is anticipated that each study will cost approximately $6,000,000 and be completed by mid-FY 1979.

Of the several processes under development in the United States to convert coal to synthetic liquid and/or clean solid fuels, the solvent refined coal (SRC) processes are at a more advanced stage of development. However, we propose to extend the opportunity to develop process designs and proposals for the first module of a full scale commercial plant to bonafide proposers of other synthetic fuel processes (e.g., H-Coal, Exxon Donor Solvent and Fischer-Tropsch). The process designs and demonstration plant schedules developed under this program will be aimed at providing the Government with technical and financial information from which to select one or more demonstration plants for the production of synthetic fuels by 1983.

If the process studies and parallel negotiations on cost sharing are successful on the SRC processes, DOE would proceed to detailed design for two plants using the funds currently in the President's FY 1979 budget ($3,000,000 in Operating Expenses; $20,000,000 Capital Acquisition). In

FY 1980, DOE would move into the procurement and construction phases on one or two plants. If the above technical and financial conditions are not met by either one or both of the SRC technologies, we would be in a position to finance one or more of the other proposals in FY 1980.

Question

Please explain why you are budgeting $2.7 million for conceptual design of processes that are not yet in the pilot plant stage.

Answer

The FY 1979 request for design and technical support of $2,740,000 provides for essential engineering support, environmental and socioeconomic studies, and planning and program activities in support of the liquefaction demonstration plants subactivity.

a. Engineering support. Engineering support provides technical capability for evaluation of processes, development and/or review and evaluation of equipment design, and economic analyses of liquefaction process plants.

b. Environmental and socioeconomic studies. Demonstration of environmental acceptability for solvent refined coal is one of the three functions of the liquefaction demonstration plant program. The request provides for the preparation of Environmental Impact Statements (EIS) and technical support for environmental concerns as the demonstration projects move into the construction stage.

c. Planning and program support. During the design phases operational engineering monitoring support will be provided for health and safety, operating and maintenance manuals, operator training program, start-up and shut-down procedures and reliability/quality assurance.

Question

I understand the SRC-II process has been running successfully for several years on a small pilot plant and for over a year on the government's large pilot plant in Washington. Do the results indicate that we can now proceed with a full-scale demonstration plant?

Answer

Yes, the SRC technology has been operated successfully on a pilot plant scale for over 3 years. If process design studies and parallel negotiations on cost sharing are successful on both the liquid and solid SRC processes, DOE would proceed to detailed design for two plants using the funds currently in the President's FY 1979 budget ($23 million). In FY 1980, DOE would move into procurement and construction phases on one or two plants.

Question

I understand the plant is to be a full size portion of a commercial plant that private industry can later expand to a full size coal refiner. Will the technology stay in the public domain so that all can use it once demonstrated? Is that part of the industry proposal?

Answer

If the program proceeds as currently planned, essentially all of the technology will be in the public domain. The contracts being negotiated contain the stipulation that the government owned design and technology of the full scale modules will be made available to the public: however, some components of the plant may be of a proprietary nature based on

information that was developed prior to government involvement. In these cases the technology would be licensed in accordance with normal government and industry practices.

Question

Is it true that other promising coal liquefaction processes are not at the same state of development? For other coal liquefaction processes to reach that stage SRC-II has achieved, is it true that we would have to wait another three to four years before proceeding?

Answer

The SRC process is the most mature liquefaction process having been operated at a pilot plant scale for over three years. Both H-Coal and the Donor solvent processes are still approaching pilot plant operation. SRC demonstration plant experience can assist in expediting these processes in terms of commercial readiness.

Question

Coal liquids offer a chance to start displacing imported oil soon with domestic coal while meeting our environmental standards. To go ahead now, is it true that the government sponsored program that has developed SRC-II needs to proceed using the contractor who has worked on the development for the Government over the last 16 years? Would this program be without fee? Is that part of the industry proposal? Is the contractor offering to share costs and risks?

Answer

In its SRC II program, the Government plans to utilize the contractor who has worked on the development of this program for the past 16 years. Proceeding with this contractor is the best way to ensure commercialization of the process at the earliest possible date. Education of another contractor in the SRC process would delay the program by some two years and such an education would undoubtedly be at Government expense.

The contractor will perform his portion of the work without fee. A fee will be paid on all subcontracts outside of the prime contractor's corporate organization.

In discussions with the contractor, he has indicated a willingness to share part of the cost and risk. The exact percentage of such cost/risk sharing has not yet been determined, but will be determined during the process design phase for the demonstration plant.

Question

Have utilities and industries indicated that they would use SRC-II? Have they studied the economics of their alternatives? Do they expect SRC-II to be economic and environmentally attractive in the 1980's and beyond?

Answer

Industrial firms and utilities will use SRC-II products when they become available. These firms are very much concerned with the National Energy Plan goal of eliminating the use of natural petroleum products and gas to fire boilers. Having studied the economics of their alternatives, the utilities believe they will need synthetic liquid fuel in significant quantities by 1985 and project requirements for large quantities by 1990.

Studies have indicated that SRC-II fuel could be competitive with natural petroleum products as early as 1990. By the year 2000, SRC-II should be considerably cheaper than natural fuel oil.

Question

Is the utility industry willing to support such a program? Would they participate in it by buying the fuel on some premium basis? How much premium are the utilities willing to pay for the fuel over the demonstration period? Is this not also an industry contribution to share costs?

Answer

The utility industry, through the Electric Power Research Institute (EPRI) and other trade organizations, has already rendered support to the SRC program and has indicated that participation by buying fuel at a premium price is feasible.

Preliminary discussions with a group of electric utilities have focused on the utilities paying a premium price of $21 per barrel of oil in current prices. This would represent a $6 premium over the current world price. The discussions involve industry committing up to $100 in premiums. Some utilities are currently discussing this issue with their respective state regulatory organizations.

Participation by paying premium rates does constitute an indirect industry contribution to the costs.

Question

Could others be expected to participate financially such as the Germans and Japanese?

Answer

Since the Germans and Japanese are faced with energy shortages and stand to benefit by the development of this technology, there is reason to believe they might share in the costs. Discussions have been held with both the Germans and the Japanese and these preliminary discussions indicate a strong willingness to participate and share costs of the program.

Question

Is it not true that competitive bidding now does not make sense because the other technologies (H-Coal and Exxon Donor Solvent) have yet to be tested at a large-scale pilot plant and are not ready today for large-scale demonstration?

Answer

It is recognized that the H-Coal and Exxon Donor Solvent processes are two to three years behind the SRC processes in terms of development. Since the H-Coal and Exxon Donor Solvent pilot plants are in the process of construction, data normally available for scale up to a demonstration is not available at this time. This implies that competition on an equal basis would not be feasible at this time.

Question

Going forward with the SRC-II program should not deter the development of other promising technologies as they develop. Will competitive bidding be feasible when those are ready perhaps two to four years from now?

Answer

Going ahead with the SRC-II program would not deter the future development of other promising technologies. Assuming that other technologies prove viable competition for a demonstration plant would be considered. Future plans for these other technologies will depend on their success in the pilot plant operations.

Question

As I understand it, SRC-II promises to deliver fuel oil that can substitute for petroleum less expensively than any coal liquids process. What does this module plant for 20,000 barrels per day of synthetic fuels mean in terms of the amount of imported petroleum we could displace by 1990?

Answer

The objective of the SRC-II program would be to design, construct, operate and evaluate the first module of a commercial size plant. DOE believes this program has a great deal of merit and that it will live up to its expectations to be the beginning of a synthetic fuel industry in this country. Depending on the magnitude of world oil price increases, significant volumes of synthetic liquids could be produced in the 1990's. Some estimates range from 100,000 to 400,000 barrels equivalent per day by 1990.

Question

If we wait, say three to four years, until several approaches have all progressed to the point of SRC-II today, what will the consequences be?

Answer

If we delay the liquefaction process three to four years we will be unable to reach commercialization of liquid synfuels until the 1990's. Based on the National Energy Plan, it is predicted United States oil consumption will be about 25 million barrels per day with imports reaching 14 million barrels per day. If the SRC development was continued on the accelerated schedule, 100,000 barrels could be on line by 1987 to 1988. This could be expanded to 500,000 barrels in 1990's. The delay of three to four years would postpone any meaningful production to the 1990's. A second impact would be to increase the risk of scale up of both H-Coal and EDS which would benefit from scale up of SRC commercial facilities.

Question

Is much of what we will learn pursuing an SRC-II program now going to be useful to the other processes developed when they are ready to be considered for commercial size facilities?

Answer

A great deal of the technology developed on the SRC-II program would be applicable to other processes presently under development. Scale-up problems for commercial sized equipment will be resolved. Construction materials, fabrication techniques, components such as pumps and heaters, are all examples of technology useful to the other programs.

Question

I understand that a large Eastern utility, Con. Edison, is planning to conduct a test burn in the next month or two of several thousand barrels of the SRC-II fuel (that was made at the government's pilot plant). Is it expected that this test will indicate that the fuel is environmentally acceptable? Have any other tests of the oil been performed?

Answer

SRC-II has been subjected to some small-scale tests in industrial boilers and there has been some limited laboratory testing. Results of these tests indicate the fuel will be able to meet environmental standards; however, the tests planned this summer at Consolidated Edison are expected to provide a more accurate and complete set of data on the SRC-II combustion characteristics. No other synthetic product has been submitted to a burn test. It is not anticipated that any other process will have such a test for a least a year.

Question

I understand that a recent DOE study concludes that by 1985 oil imports will range between 9 and 13 million barrels daily and by 1990 between 10 to 16 million a day. The study also predicts a real price of about $25 a barrel in 1990. I assume an inflation adjustment would be added to the $25 estimate. How does this projection compare to the economics of SRC-II and what does it indicate about the market?

Answer

The current estimate of the real price of SRC-II in 1990 is from $20 to $24 per barrel in 1978 dollars, compared to the predicted real price of $25 per barrel for oil in terms of 1978 dollars. These projections would indicate that a market would exist for SRC-II product in 1990.

Question

Some have suggested that there should be a competitive process to select a liquid fuels technology before proceeding to a demonstration plant. Is it not true that the SRC-II process is 18 to 36 months ahead of the other technologies? Would not delay, so that there could be a competition, postpone for at least three years any meaningful production of liquid fuel from coal?

Answer

With the Fort Lewis pilot plant operating in the SRC-II mode since May of 1977, it is at least two to three years ahead of H-Coal and the Donor-Solvent programs. It would not be practical to compete these processes until the H-Coal and Donor-Solvent pilot plants have been brought on-line and thoroughly evaluated. To hold up the SRC program until that time would mean a delay of two to three years before synthetic fuels are in production.

Question

Is it not true that a competition is not really going to prove anything because the Donor-Solvent and H-Coal processes produce a synthetic crude oil which is likely to be more costly than the SRC-II process which produces directly a liquid boiler fuel?

Answer

Generally speaking, each of the processes produce a distillate product. In each case, the process can be adjusted such that the product will be suitable for use as a boiler fuel. In the case of H-Coal and Donor-Solvent, there have been some successful experiments to upgrade the product. Although SRC-II has always been considered a boiler fuel, there is no reason to believe that it could not be used as a feedstock for further processing.

Question

There has been criticism that the government should not assist

major energy companies in fuel research. Is it not true that the patent for SRC-II is government owned whereas donor solvent and H-Coal patents are privately owned?

Answer

The SRC process development has been sponsored entirely with Federal funds and the technology is, therefore, in the public d main for use in the U. S. Both the H-Coal and Donor Solvent processes are being developed on a cost sharing basis and there are proprietary rights held by the industrial partners. However, licensing to others interested in commercial technology is required which makes the technology available.

Question

Based on negotiations to develop the SRC-II process, is it not likely that the ultimate cost to the government of this demonstration will be less than 50%?

Answer

At this point in time, all indications are that the government will bear more than 50% of the cost of the SRC-II demonstration plant. In the absence of a firm proposal, it would be impractical to speculate at this time just what the industrial partner will offer in the way of cost sharing.

Question

Is it not true that there is a market for liquid boiler fuel in excess of 2,000,000 barrels per day on the East Coast? Distillate and Residual.

Answer

The demand for boiler fuel on the East Coast is about 2,000,000 barrels per day.

Question

Provide a detailed justification of the $20 million requested for beginning construction of an SRC demonstration plant. Breakdown costs for a and e design, equipment, site acquisition and other activities. Provide similar justification for the $192 million request for SRC demonstration that went to OMB under your proposed budget amendment.

Answer

The FY 1979 budget request for the SRC demonstration plant program includes $20 million in construction funds. This money would be spent as follows for the SRC-I project:

	(Dollars in millions)
Project management (Contractor)	$ 0.6
Site acquisition	2.0
Detail design	12.4
Government support	1.0
Contingency	4.0
Total	$20.0

The request to amend the FY 1979 budget by adding $192 million ($14.0 million Operating Expenses and $178.0 million for construction) is for support

of both the SRC-I (solid) and the SRC-II (liquid) programs. The breakdown of this request is as follows:

	SRC-I	SRC-II
Project management (Contractor)	$ 2.7	$ 3.0
Site acquisition	0	2.0
Long lead procurement	11.0	32.0
Detail design	2.8	20.0
Construction	20.5	48.0
Government support	2.0	7.2
Pilot Plant support	5.0	7.2
Contingency	3.0	27.6
Total	$47.0	$145.0

Question

To what extent has funding to date for SRC demonstration been committed to either liquid or solid processes?

Answer

To date there have been no funds committed to either the liquid or solid process demonstration plant. The funding to date for the development of the Solvent Refined Coal technology has not been specifically identified by either the solid fuel or liquids fuel made. However, the process was originally developed as a solid fuel process starting in 1962. The process has been developed in two pilot plants since about 1965. In FY 1977, the Fort Lewis, Washington, pilot plant was modified to permit the recycling of the material under reaction to produce a distillate fuel (SRC-II). This pilot plant was operated in the SRC-II mode during the following six month period. The SRC-I and SRC-II processes, therefore, were developed in concert. It would be extremely difficult to isolate costs associated with one process or the other.

Question

The justification calls the SRC demonstration the first module of a multi module commercial plant. How many modules will be needed to constitute a commercial plant?

Answer

The first module has a planned capacity of 6000 tons per day (TPD). A commercial size plant has a projected capacity of 30,000 TPD, therefore, a commercial plant will be comprised of five modules.

COAL

GASIFICATION

Question

I am concerned with what appears to be a lack of interest in coal gasification because of the belief that large industrial users, especially boilers, should be switched from gas to some other fuel. The studies I have seen indicate that gasification could be the most flexible and least expensive option for utilizing coal within the environmental constraints in many cases. Would you like to comment on this?

Answer

Gasification of coal is indeed the most flexible form of synthetic coal fuel. Also, it may be the most economical in terms of the cost of converting existing facilities now using natural gas and fuel oil. The Fossil Energy program recognizes this and there are a variety of programs within the existing fossil energy budget aimed at achieving such conversions.

The Gasifiers in Industry program, the Entrained-Bed Gaification Pilot Plant, the Fluid-Bed Gasification Pilot Plant and the Fuel Gas Demonstration Plants are all aimed at reducing the costs of producing low and medium-Btu and demonstrating end-uses of these fuels.

Question

What major programs does DOE have ongoing now for high, medium and low-Btu coal gasification and what are they intended to accomplish?

Answer

Major high and low/medium-Btu coal gasification ongoing projects funded from Operating Expenses include the following:

High-Btu Gasification	Status	Objective
HYGAS pilot plant	Operational	To provide data base required for optimization of a demonstration plant design.
Bi-Gas pilot plant	Operational	To develop and demonstrate second generation technology for production of synthetic pipeline gas.
Synthane pilot plant	Operational	To develop and demonstrate second generation technology for production of synthetic pipeline gas.
Catalytic gasification pilot plant	Design	To develop and demonstrate third generation technology for production of synthetic pipeline gas.
Hydrogasification process	Feasibility study	To develop and demonstrate third generation technology for production of synthetic pipeline gas by direct reaction of hydrogen with coal.
Low/Medium Gasification		
Fixed-bed gasification	Operational	To develop data to guide commercial facilities in gas production, gas cleanup and effluent disposal.
Fluid-bed gasification	Operational	To develop economic fluid-bed processes for commercial use.
Combined cycle test facility	Design	To adapt low-Btu processes for use in powerplants and provide facility for testing advanced gasifiers on commercial scale.
Gasifiers in industry	Design and construction	To demonstrate the integration of a gasification system with an industrial end-use for the low-Btu gas produced.
Hydrogen from coal facility	Design	To replace natural gas and fuel oil as a feedstock for hydrogen.

Question

Can you supply, for the record, a list of DOE high, medium and low-Btu coal gasification projects currently in the pipeline -- either for feasibility studies, design work, or actual construction, their sites -- if these have been determined yet, and what the Department hopes to gain from them.

Answer

A list of DOE's high, medium and low-Btu coal gasification projects currently in the pipeline is attached.

COAL GASIFICATION DEMONSTRATION PLANT PROJECTS

Project	Site	Status	
High-Btu synthetic pipeline gas demonstration plant	TBD	Contracts have been awarded to CONOCO and ICGG for conceptual design of the slagging Lurgi and COGAS processes. Decision for detailed design and construction will be made in late summer 1978.	To demonstrate production of synthetic pipeline gas from low quality, high-sulfur Eastern coals.
HYGAS synthetic pipeline gas demonstration plant	TBD	Conceptual design contract has been awarded to determine feasibility to proceed with design of commercial scale HYGAS plant.	To demonstrate production of synthetic pipeline gas from low quality, high-sulfur Eastern coals.
Low/Medium-Btu fuel gas demonstration plants:			
Industrial demo plant	TBD	Contracts have been awarded to W.R. Grace & Co. and the City of Memphis for conceptual design and evaluation of a commercial plant to convert coal to fuel gas for industrial users. Selection of detailed design and construction contractor will be made in FY 1979.	To demonstrate production of clean fuel gas for use by industrial consumers.
Small industrial demo plant	Hoyt Lake, Minn.	Contract awarded to Erie Mining Company for conceptual design.	To demonstrate production of clean fuel gas for small industrial users.
Utility demo plant	TBD	Conceptual design contract awards to Combustion Engineering and Foster Wheeler Development Corp., who will be competing for final design and construction of plant, expected to be made by fall 1978.	To demonstrate production of clean fuel gas suitable for use in utility applications.

Question

How does the FY 1979 budget request for coal gasification compare with the FY 1978 budget?

Answer

The FY 1979 request for the Gasification Activity is $186,646,000 or $25,354,000 less than the FY 1978 appropriation. A breakdown of the funding by subactivity is as follows:

	(BA in thousands)	
Operating Expenses	FY 1978	FY 1979
High Btu Gasification	$ 26,000	$ 31,266
Low-Btu Gasification	55,850	35,600
Special Projects and Support Studies	17,850	18,260
In Situ Coal Gasification	11,000	11,800
Gasification Demonstration Plants	30,900	25,520
Total Operating Expenses	141,600	122,446
Capital Acquisition		
Capital Equipment	2,400	1,200
Construction Projects	68,000	63,000
Total Capital Acquisition	70,400	64,200
Total Gasification Activity	$212,000*	$186,646

* Does not reflect $23.8 million of the $50.0 million general reduction in P.L. 95-74 which remains to be allocated.

Question

What new projects will FY 1979 monies be used for?

Answer

Several low-Btu and high-Btu projects will be converted to production of medium-Btu gas during FY 1979. These include:

- Synthane - additional experiments on medium-Btu gas production.
- At the Westinghouse pressurized fluidized bed project, use of oxygen instead of air will permit production of medium-Btu gas (scheduled preliminary tests in FY 1979).
- The Combustion Engineering atmospheric entrained gasifier will be converted to the use of oxygen during FY 1979 for production of medium-Btu gas.

Question

Would more money enable faster progress?

Answer

The FY 1979 request for Gasification activity is $186.6 million. While this amount is $25.4 million lower than the FY 1978 appropriation, reflecting lower requirements for the low/medium-Btu gasification technology development and demonstration activities, the Department feels that the request provides for a balanced program that will enable the orderly and timely development and demonstration of coal gasification technologies.

HIGH-BTU GASIFICATION

Question

How many high-Btu processes in all do you have under research, development and demonstration? Please list them for the record, together with the total investment in each to date?

Answer

The following is a list of high-Btu processes currently under research, development and demonstration, and the Government's investment to date for each process:

Process	Obligations (in thousands) as of 4/30/78
HYGAS	$45,923
Bi-Gas	54,641
Self-Agglomerating Burner	14,707
Synthane	62,258
Hydrogasification	4,730
Steam-iron	25,099
Catalytic gasification	1,019
High-Btu synthetic pipeline gas demonstration:	
Slagging Lurgi process	17,508
COGAS process	14,682

Questions

$7.9 million is requested for the Bi-Gas pilot plant, an increase of $4.9 million. First, what is the extent of the increased operating costs and plant modification encountered in fiscal 1978. To what extent were these increased costs budgeted?

The justification summary states that you will be terminating the operational phase of the Bi-Gas pilot plant in fiscal 1979. Why, then, do you need a $4.9 million increase for this operation?

Please supply specific justification for the $7.9 million requested for Bi-Gas.

Answer

The Bi-Gas pilot plant, located in Homer City, Pennsylvania, is a slagging gasifier for operation at very high pressures to maximize methane formation in the gasifier product gas. It is a cost-shared project under the Joint Government/American Gas Association (A.G.A.) High-Btu Coal Gasification Program, with 2/3 funding by the Government and 1/3 by A.G.A. Construction of a fully integrated pilot plant was completed in FY 1976, but due to the complexity of the process considerable delay was encountered and a long period of shakedown and startup activities were required, and it was not until FY 1978 that short, continuous operations could be achieved.

The original FY 1978 budget request of $11,000,000 for the Bi-Gas pilot plant project was reduced to $3,000,000 to absorb part of the general reduction of $50,000,000 imposed by Congress (P.L. 95-74). Because a large uncosted balance from prior year obligations was available due to the delays encountered in construction and shakedown/startup activities, the $3,000,000 in new budget authority was sufficient to cover modification and repairs of equipment and to develop operating procedures required for initial operations in FY 1978. (Actual costs in FY 1978 for this project through April were $4,800,000 as compared to $7,100,000 in all of FY 1977.)

The FY 1979 request of $7,900,000 reflects the required funding for operation of the pilot plant through the end of FY 1979, which is estimated at $600,000 per month (Government share).

Question

Please justify the $4,500,000 reduction in the Synthane pilot plant operation. Are you planning a full year's operation?

Answer

The Synthane pilot plant was successfully operated in FY 1977 using Montana subbituminous (non-caking) coal. Sufficient data was obtained to establish economic competitiveness of the Synthane process with the most currently available processes. In FY 1978, the Synthane facility is being operated with agglomerating bituminous coal. This testing will continue into FY 1979 to obtain adequate economic and technical data for design purposes. DOE does not currently plan sustained operation of the Synthane pilot plant in FY 1979.

Question

How long has the federal government been pursuing the synthane process? Doesn't it date back to the Bureau of Mines? Why is there no private cost-sharing involved?

Answer

The funding of the synthane process development effort dates back to the Bureau of Mines bench-scale and laboratory work performed out of the Pittsburgh Energy Research Center.

We have had no industrial participation in the synthane project up to the present time but we are now actively discussing participation by the Gas Research Institute.

Question

You have $6.1 million budgeted for the Hydrane process, up $2.6 million. Is there any industry cost-sharing involved in this process?

Answer

The Hydrogasification project is currently funded entirely by DOE. Co-funding by the Gas Research Institute is a specific item in the 1979 budget of this gas industry group.

Question

Please explain why you need an additional $2.6 million to scale the Hydrane process up to the PDU level?

Answer

The hydrogasification process is a promising third generation process. The process development unit, the next logical scale-up in determining the feasibility of the process, will provide for increasing the coal feed to 3 or 4 tons per hour from the present one-quarter ton per hour unit. In FY 1979 the additional funds will be used for equipment procurement for the new reactor and coal handling and gas clean up facilities for the PDU.

Question

You are terminating the steam iron pilot plant and requesting no fiscal 1979 funding for it. What has been spent to date on this process both by government and industry?

Answer

Total obligation for the steam-iron pilot plant project as of May 31, 1978 is as follows:

Design & construction	$19.8 million
Shakedown, startup and test operations	16.3 million
Supporting research	3.0 million
Total	$39.1 million

Funding for this project has been shared between the Government and the American Gas Association on a 2/3 - 1/3 basis.

DOE funds	$26.1 million
AGA funds	13.0 million
	$39.1 million

Question

Why do you need a $3.7 million increase for the catalytic gasification process? You are apparently scaling up this process for pilot plant testing, but there is no indication in the justification why a funding level increase is needed.

Answer

The FY 1979 request of $7,228,000 is required to operate bench scale and PDU systems to obtain essential data for scale-up and to implement detailed design of the modification of the existing Synthane pilot plant which will be used to further develop the catalytic gasification process.

Question

At what pilot plant will the catalytic gasification process be tested?

Answer

Currently, modification of the Synthane pilot plant is planned to accommodate development of the catalytic gasification process.

Question

You are estimating a total cost of $75.5 million for this process. How much has been spent to date, and what has been achieved?

Answer

One of the principal responsibilities and continuing objectives of the High-Btu Gasification activities is the search for and development of alternate and/or advanced technologies for the conversion of coal into a substitute natural gas. This phase of the program is essential to the continued healthy growth of this emerging industry. One of these new advanced concepts is Catalytic Gasification. This process offers considerable promise when suitably developed as a technique capable of generating synthetic natural gas (SNG) more efficiently and economically. The most significant feature of the process is the use of coal

impregnated with an alkali metal catalyst. This treated coal can be converted into SNG within the gasifier reactor or in a single processing step. In present gasification techniques, the synthesis gas generated in the gasifier must be further processed in several additional steps prior to its conversing to SNG. The preliminary studies required in the continued rapid development of this concept were started in FY 1976. During FY 1977 and 1978, bench-scale studies continued on this process. These indicated unusual operating stability with excellent on-stream time; the potential for conversion of up to 90% of the coal directly to methane; and no agglomerating difficulties. Scale-up and conceptual design studies are in process for modifying an existing DOE pilot plant to catalytic gasification so that an accelerated development of this process might be achieved. During FY 1978, these studies will permit initiation of a detailed design effort. Funds requested in FY 1979 will be utilized to operate bench scale and PDU systems and implement the detailed design of the modification of the existing Synthane pilot plant, scheduled for deactivation at the end of FY 1980.

To date DOE has obligated or has procurements in process about $3.0 million for bench-scale predevelopment studies and scale-up evaluation of the existing Synthane facility for demonstrating the catalytic process. In addition, Exxon has spent several million dollars of its' own funds for the development of this process.

LOW-BTU GASIFICATION

Question

Please explain the need for a $1.9 million increase requested for fixed bed gasification. How will the total cost be broken down between the Morgantown and Grand Forks Energy Research Centers?

Answer

The Low-Btu Gasification Activity has two projects underway that are directed toward advancing the technology of fixed-bed gasifiers and expanding their suitability for the generation of fuel gases.

In the first project, minor modifications to the existing, stirred, fixed-bed gasifier at the Energy Research Center in Morgantown, West Virginia, have been completed. These include improved methods for coal feeding, ash removal, stirring, lock hoppers, and data collection. A scrubber and hydrogen sulfide removal system were provided to clean up the product gas for use in combustion and turbine blade corrosion tests. The additional work at Morgantown will involve additional cleanup studies.

The second project is a continuation of effort initiated in FY 1975 at the Grand Forks Energy Research Center, North Dakota, to continue development of a slagging, fixed-bed gasifier. In the current phase of the project, the gasifier is being operated to investigate the characteristics of effluents as well as to determine the comparative amounts being produced. In addition, the suitability of various Western coals for gasification by this process will be determined. The 25 tons-per-day gasifier constructed earlier has been reactivated for this work. Previous results were very favorable in terms of capacity and steam requirements.

During FY 1978, the gasifier will be modified so that continuous operation will be achieved. An expansion of the building, installation of a continuous pressurized coal feeding system and addition of improved auxillary and utility services will be implemented. This will allow process data to be obtained on a variety of coals at slagging, fixed-bed conditions.

As a result of a safety report No. 4250 issued by the Bureau of Mines, it was recommended that the Grand Forks gasifier be isolated in an explosion proof section of the building. Therefore, an additional $1,000,000 will be required to accomplish this. This cost was not anticipated in the original cost estimate and while it is being partially funded in FY 78, operating funds will have to be replaced in FY 79.

The total cost breakdown is as follows:	$ 3,350,000	Morgantown
	$ 3,150,000	Grand Forks
Total	$ 6,500,000	

Question

Your $4 million program for fluidized bed gasification apparently involves continuing the operation of three projects and for designing construction of a pilot plant. How are the costs allocated among these activities, and why does this program involve a $1 million reduction?

Answer

Based on current status and funding for the three fluidized-bed gasification processes, FY 1979 funds will be allocated as follows:

Three-stage fluidized-bed processes	$ 0
Pressurized two-stage fluidized-bed processes	$3,500,000
Fast fluidized-bed processes	$ 500,000

The FY 1979 request shows a $1,000,000 reduction because all three projects will be operated only through first few months of FY 1979 when a decision will be made on the further development of only one or perhaps two of the process concepts at a pilot plant scale. FY 1978 funding will carry operations of the three-stage fluidized-bed process through that point.

Question

Do you have any indication of industry participation in a fluid bed pilot plant?

Answer

Yes. The Gas Research Institute has a budget item for the fluid-bed pilot plant in their FY 1979 budget. This plant will be for the pressurized fluid-bed process currently under small scale development by Westinghouse.

Question

Give us the details on the proposed pilot plant for fluid bed gasification including budgeted costs for design and construction and industry participation, if any.

Answer

The fluidized bed gasifier under development by Westinghouse may be one of the most efficient and most economical methods to produce clean gaseous fuels from coal. We have projected a possible production cost for this environmentally acceptable gaseous fuel at $2.60 to $3.00 per million Btu. The process is very efficient. Close to 90% of the Btu's in the coal can be recovered as product fuel gas. The low and medium-Btu fuel gas produced by this process can be substituted directly for expensive imported oil or scarce natural gas in many industrial and public utility plants.

The development of this process has been going on at Waltz Mill, Pennsylvania on a relatively small scale in a process development unit (PDU) with a capacity of 15 tons of coal per day. The next step is to extrapolate the results to a larger unit of at least 50-75 tons of coal per day to provide data for commercialization. The presently idle, Government-owned pilot plant at Rapid City, South Dakota is an ideal site for this larger unit. Parts of the existing facility could be economically used resulting in considerable savings to the taxpayers. A design study at Government expense, being performed by Westinghouse and Bechtel has confirmed the advantages of the Rapid City site. The FY 1979 budget estimates include $4 million under the Low-Btu Gasification subactivity for continued development of pressurized fluid-bed gasification. Three fluidized-bed gasification PDU projects are described in the FY 1979 budget request. In FY 1978 or 1979 the Department will decide to continue one or two of these projects at an expanded scale. Design and construction of a pilot plant (or modification of an existing pilot plant is planned for initiation in FY 1979). Extent of industrial participation will be explored once a decision to proceed with scale-up has been made.

Question

Explain what the $1,490,000 for entrained-bed gasification will buy. How far along is this project, and how promising is it?

Answer

The atmospheric pressure entrained-bed project is being developed in a process development unit at Windsor, Connecticut. The facility has been completed and is currently undergoing startup/shakedown testing. This process is an advancement of the current state of entrained bed technology, but is near enough to proven concepts to be considered a relatively low risk project from a technical standpoint. The $1.49 million will be used to fund the PDU operations to provide process data on the production of low Btu gas. The project is jointly funded by Combustion Engineering, Inc., and EPRI. It is considered to be a very promising application of gasification technology for utility and industrial use.

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What was the funding provided for entrained-bed gasification in fiscal 1978?

Answer

No funds were requested in FY 1978 for the entrained-bed, atmospheric, gasification project as a total of $14.7 million obligated for the project in FY 1975 through FY 1977 fully funded the design, construction and operation of a 5-ton/hr facility through September 30, 1978.

Question

The justification fails to explain the $10 million reduction for the combined cycle test facility (Powerton). Please supply a justification.

Answer

The $10 million reduction in FY 1979 for the combined cycle test facility (Powerton) was due to rescheduling of the construction phase of the project to begin in April 1979 rather than in September 1978 as originally planned. This delay in construction was required to complete additional environmental requirements imposed by the implementation of the Clean Air Act and its amendments in December 1977.

Question

Since the Powerton Facility is now in the construction phase, why are you slowing down the pace of development?

Answer

Fossil Energy management is currently assessing the Powerton project. The assessment will include the objectives, status, technical problems and resource requirements. This review is expected to be completed shortly at which time the Department will report to the Committee its decision with respect to this project.

Question

What is the private funding for the Powerton facility for 1977 through 1979?

Answer

The Participation Agreement that is part of the contractual arrangements covering this project contains a number of formulas that are to be used in the calculation of the funding to be provided at any time by the participants through the application of these formulas. The private funding available to this project through 1979 is calculated to be $44,000,000.

Question

The hydrogen-from-coal facility,budgeted at $11.6 million also has an unexplained reduction of $3.4 million. What is involved in this reduction and why is it not mentioned in the justification?

Answer

The $3.4 million reduction is a result of the current "holding" position on negotiations and the future of the project. Since the award is being slipped, the requirement for FY 1979 funding is less.

Question

Justify both the reduction and the $11.6 million request for the hydrogen-from-coal facility. Also give us the private investment to date and estimated to Fiscal 1979.

Answer

The $11.6 million request for the hydrogen-from-coal facility is based on a revised schedule that has been stretched out due to negotiations on this program presently being in a "holding" position. The only private investment to date is in the cost to respond to the program opportunity notice and negotiating sessions.

Question

Are you planning to terminate the ash agglomeration operation? Just where does the project stand?

Answer

Modification of an existing atmospheric ash-agglomerating gasifier to permit operation on coal has been completed, and operation of the gasifier was transferred to the Low-Btu Fuel Gas, Industrial, Demonstration Plant program in January 1978. It was decided at that time to modify

the gasifier for 50 psig pressurized operation during a 6-month program with the Memphis Light, Gas and Water Division of the City of Memphis (MGLW), and further tasks under the original contract with the Institute of Gas Technology (IGT) were deleted. It has not yet been definitely decided to terminate the ash agglomeration operation, but further efforts to demonstrate that high carbon utilization can be obtained under ash agglomerating conditions with various types of coal have been postponed pending results of the pressurized operation under the Low-Btu Fuel Gas, Industrial, Demonstration Plant program. Therefore no funds are required under the Low-Btu Gasification subactivity for the ash agglomerating project.

Question

What is the total investment to date on ash agglomeration and what is the goal for this testing program?

Answer

Total investment on the ash agglomeration testing program has been $2,600,000 as of April 30, 1978. It includes $500,000 for modification of an existing ash agglomerating gasifier to operate on coal instead of ash, and $1,900 for operations.

The goal for this testing program is to see if the concept can be successfully applied to the MGLW industrial fuel gas demonstration plant program. The gasifier will be used in support of that program until all required design and operational data have been obtained.

Question

The $2 million request for gasifiers in industry involves a $3 million reduction, which is not explained. Justify that reduction.

Answer

Five of the six projects in this program were fully funded in FY 1978. The other project with Irvin Industries has been postponed because of local objections. It is not possible to predict when and if these objections will be overcome.

The FY 1979 funds will be utilized for additional equipment at the Pikeville facility to remove sulfur from low-Btu for possible use in an industrial park and for studies on economic potential of small low-Btu gasifiers in various industries. The FY 1979 request is adequate to cover these planned activities.

Question

How much funding is being requested for the Pikesville facility? How much for economic studies?

Answer

The FY 1979 request includes $1,500,000 for additional work at Pikesville. $200,000 is available for economic studies in addition to economic data which will be supplied during the normal operating periods of the individual projects.

Question

Please tell us where this gasifiers in industry project is taking us. What is the anticipated 1980 funding, and how long is this expected to run?

Answer

Four of the projects in this program are relatively long term and include three years of operation of the gasification plant after completion of construction. The first plant to begin operations will be at the University of Minnesota in late FY'78. Because of longer negotiations, difficulties with subcontracts and varying requirements, the other three projects so far contracted for will go into operation from one to two years after the University of Minnesota. These projects demonstrate four different gasifiers, different coal and gas uses. Operation of the last of these facilities would run through FY 1983. If the Irvin Industries project overcomes local objections it would continue even longer.

The Department is currently in the early stages of budget formulation for FY 1980. Until this process is completed, data on anticipated funding in FY 1980 for this project are unavailable.

SPECIAL PROJECTS AND SUPPORT STUDIES

Question

You are requesting $1.4 million for hot gas clean up, a reduction of $2 million. What is involved in the reduction?

Answer

The reduction is due to the elimination of the process development effort on a high temperature sulfur removal system using iron oxide. This process was found to be uneconomical.

Question

The justification indicates a decision will be made near the end of 1979 on whether to fund construction for hot gas clean up. What is the estimated design and construction cost, and when would you start construction if your decision to proceed is favorable?

Answer

The objective of this project in hot-gas clean up was to provide a larger unit (than currently being tested) for integration into the Combined Cycle Test Facility (Powerton). A very preliminary estimate of the cost of the hot-gas clean up unit is $8.0 million. However, a decision to go ahead on this unit has not been made and this decision will be influenced by the outcome of the reevaluation of the entire Powerton project which is currently underway.

Question

How is your engineering evaluations program allocated between high and low-Btu? How much of the total is cost-shared?

Answer

$2.0 million of the $2.9 million requested for engineering evaluations will be used to support high-Btu gasification projects ($1.0 million for the DOE/American Gas Assocation (A.G.A.) cost-shared projects and $1.0 million for all other high-Btu projects), and $900,000 will be used for low-Btu gasification projects. A.G.A. will contribute $500,000, their one-third share, for engineering evaluation support of the joint program projects.

Question

Please explain the $1.2 million reduction for equipment, materials and process development.

Answer

Equipment and material studies for several gasification projects --CO_2 Acceptor, Steam-Iron and Agglomerating Burner--will be completed in FY 1978 with the termination of these pilot plant activities.

Question

How much of the $2.8 million request is for equipment and material, and how much for process development?

Answer

Approximately, $800,000 is for equipment and material; the balance is for process development which includes small-scale experimental studies on novel gasification and gas treating systems and special studies such as using peat as a fuel.

Question

Also explain the $4 million increase request for environmental studies. Explain how the $11.1 million that is requested will be spent. The justification mentions the expectation of a decision in fiscal 1979 on whether to proceed to pilot plants scale with peat gasification. Why does that decision have to wait until fiscal 1979?

Answer

The environmental studies effort is to support generic studies applicable to many or all gasification projects and to provide support to both new-start and ongoing projects. Such studies consist of, but are not limited to, environmental assessments, process emissions and effluent characteristics. Studies on detailed evaluation of the effluents from each pilot plant and PDU installation will be expanded in FY 1979. A further effort involves relating the characteristics of these effluents to the operating parameters of each process so that conditions may be selected to minimize adverse environmental impact. Environmental studies are planned to be performed in FY 1979 on the Gasification Combined Cycle Test Facility and the Hydrogen-from-Coal projects.

Supporting research includes laboratory studies on novel approaches to coal gasification and support for project evaluation and trade-off analyses. Special studies planned for FY 1979 will concentrate on medium-Btu application; cost-effectiveness of individual process systems; and potential cost impact of novel materials and equipment. Special projects under this task include laboratory supporting efforts at the Institute of Gas Technology (IGT) the High Mass Flux gasifier project and the evaluation of peat as a raw material for gasification. The use of peat has achieved considerable success in laboratory gasification studies. This effort will be extended to include tests at several existing PDU gasification installations aimed at a decision in FY 1979 for possible pilot plant effort in FY 1980. Additional effort on mining and dewatering peat to be performed by the Bureau of Mines and the State of Minnesota with funding assistance from DOE is necessary to permit peat implementation on a commercial scale. The laboratory studies at IGT are an important information source and will continue in FY 1979. The compilation of a coal conversion data book will be continued in FY 1979 to provide a comprehensive source of information on coal properties and conversion processes for the entire Fossil Energy program.

Question

The House Appropriations Committee is recommending $4.5 million for peat gasification in fiscal 1979. What is DOE's response to that proposal?

Answer

It is the position of the Department of Energy that at this time it is premature to begin planning a peat gasification pilot plant for the following reasons:

- Little is known about how much peat gasification will cost;
- Environmentally acceptable peat harvesting and dewatering technologies have yet to be demonstrates;
- The environmental and socioeconomic impact of large scale peat development is known;
- Bench scale work on the IGT peat gasification process is not yet completed;
- Other potential peat gasification processes may be justified.

It is our feeling that the technical and eocnomic uncertainties in peat harvesting and drying are at least as great as in the gasification process. The Bureau of Mines is currently addressing the former question and we will continue to consider peat gasification within the context of our overall program. The first step will be a full review of the final results obtained from the IGT project. We will take whatever actions seem appropriate based on the results of this review. In addition we are developing an overall 5-year program plan dealing with peat gasification and this effort should be completed by August 1978.

The House Appropriations Committee proposes an increase of $4.5 million for peat gasification. If these funds become available, DOE would support the development of peat utilization technology with work in the following areas:

- Development of a mechanical harvesting and dewatering technology for generating feed peat (approximately 50% moisture content);
- Continued laboratory scale work in determining the chemical and physical properties of peat during gasification to provide data for scaling to a pilot plant effort;
- Assess the environmental and socio-economic impacts of large scale peat utilization.

IN SITU COAL GASIFICATION

Question

The $11.8 million requested for in situ gasification involves no significant change in funding for the various technologies under development. What real achievements do you expect under this program in fiscal 1979?

Answer

The FY 1979 request for Underground Coal Conversion is $11.8 million, an increase of $800,000 over FY 1978 budget. This is essentially a level budget. The Western Low-Btu Gas Project (Linked Vertical Wells) and the Western Medium-Btu Gas Project (Packed Bed) will stay at the same level of funding as the FY 1978 budget. The Steeply Dipping Beds Project would get an increase in funding to meet the contract obligation. This is the only industry-run project and, therefore, would be fully funded to keep

creditability with industry. The Eastern Coal Technology Project (Longwall Generator) would be funded at a lower level in light of the priorities of other projects.

The expected accomplishments during FY 1979 are:

- Allow completion of coring and analysis of Hanna 2 and Hanna 4 field tests.
- Have Hanna 5 (prepilot test) planning and design essentially completed.
- Complete coring and analysis on Hoe Creek 2 field test.
- Allow completion of design on Hoe Creek 3 (three-month steam-oxygen) test.
- Conduct one or two alternate linking field tests using directional drilling in one and shaped charge in the other.
- Complete design of Rawlins 1 field test for Steeply Dipping Beds Project. Initiate design on Rawlins 3 test.
- Complete Pricetown 1 test and run some laboratory experiments on the Eastern coals.

Question

Do you have any cost estimate on the 1980 pilot plant phase planned for the linked vertical wells technology?

Answer

Yes, we have just completed an order of magnitude design and cost estimate for the underground gasification of coal by the Linked Vertical Wells Process.

A preliminary evaluation of the costs associated with the pilot-scale test shows that a total outlay of $105 million is required, including both capital and operating expenses. The capital costs are estimated at $80 million (including pre-pilot tests) and operating costs amount to $13 million per year.

The pilot-scale test is visualized as a two-year operation in which 50 to 60 MW of electric power will be generated from the UCG product gas. The test will verify the reliable operation of a fully integrated UCG process and provide economic, enviornmental, and operating data required to transfer commercially acceptable technology to the private sector. The pilot plant will be designed and operated by an industrial firm under contract to the Department of Energy, with significant cost-sharing by the industrial partner. According to current plans which are still under evaluation, the pilot plant will be designed in 1980, constructed during FY 1981 and 1982, and operated during 1983 and 1984.

The purpose of this design and cost estimate was to formulate a preliminary basis for a LVW pilot plant from an analysis of past experiments at Hanna and to use this basis for developing a preliminary design and cost estimate for the plant. Because experiments are still underway at Hanna and further tests are being planned, it is recognized that the design basis formulated is an initial estimate, and pertinent modifications will be made as more data becomes available.

Because the pilot plant is a research tool, some deviations from probable commercial operation have been made in order that pertinent operating or performance data be gathered. No detailed attempt at optimizing process conditions has been made as the scope of this study is mainly to provide a preliminary estimate of type and size of the processing facilities for the pilot plant.

Question

Why are you deferring work on the longwall generator in fiscal 1979? What is progress to date on this technology and what are the prospects for the future?

Answer

We recognize the need to develop technology applicable to Eastern coal due to close proximity of the markets and the infrastructure. However, it is not certain what process concept will work in the highly caking, thinner bituminous coal seams of the East. A gasification test at Pricetown, West Virginia to address this in situ gasification characteristic of Eastern coal will be started in FY 1978 and completed in FY 1979. No funds are requested in FY 1979. However, laboratory studies in Eastern coals will continue and data from the first test will be analyzed. The Western coals have the greatest promise of commercial success in the near-term, and the program has put a greater emphasis on Western coal.

Question

It appears that most of the $900,000 requested for environmental support is for water studies. Isn't the Geological Survey already conducting these studies for you?

Answer

Environmental support for our Underground Coal Conversion Program includes in addition to water studies, extensive work on ground subsidence caused by in situ gasification. Air quality monitoring and analysis of plant emissions also comprise a significant portion of the environmental effort. The USGS has been actively involved with the water studies for our major field projects since fiscal year 1977. Some of this involvement has been through cooperative efforts with the EPA.

Question

Will USGS be performing water studies for you in fiscal 1979? (If not, why not?)

Answer

The USGS has been actively involved with the water sampling and analysis for our major underground coal conversion field projects since fiscal year 1977 through cooperative efforts with the EPA and these activities will be continued in FY 1979. However, no funds appropriated for Fossil Energy activities are used to reimburse USGS for this service.

GASIFICATION DEMONSTRATION PLANTS

Question

DOE has recently announced its intention to select a winner between ICGG and CONOCO to construct and operate a high-Btu demonstration plant in January 1979 prior to the completion of a full Phase I.

a. Does this action increase the technical risk of building the plant?

b. What has changed in the six months since the CONOCO and ICGG contracts were signed to justify the DOE decision to not fund a full Phase I for both contractors?

c. In order to construct the plant, won't a full Phase I be required for the winning contractor?

d. What is the added cost to fund both contractors through a full Phase I instead of only one contractor before making a decision to build the plant? $15 M? $20 M?

Answer

a. The technical risk would be less if Phase I were completed. However, by January 1979, the Department feels that there will be sufficient technical data on which to base a decision.

b. The competition under which both contracts were signed had been based on the authorization for the high-Btu Pipeline Gas Demonstration Projects. Because only one Pipeline Gas Project has been appropriated, funds are not available to fund both projects through Phase I. This was known and agreed at the time the contract was signed.

c. Full Phase I will be completed for the winning plant and it will be essentially completed prior to the start of construction.

d. Each contract required about 25 million dollars for full Phase I. At the go/no decision point approximately more than half will have been spent.

Question

The DOE FY 1979 budget reqeust contained only $2 million in Operating Expenses for the high-Btu demonstration plant. Is this budget level sufficient to fund both contractors through January 1979 until a winner is selected?

Answer

DOE recently obtained approval for the reprogramming of $11 million from Plant and Capital Equipment to Operating Expenses in order to carry both programs forward. These funds will provide for Phase I design activities for both projects. The $2 million requested in FY 1979 is for the completion of environmental analyses and cost studies. The current level funding is adequate for proceeding with one plant after the proposed January 1979 go/no-go decision date.

Question

The DOE decision to select a winner between ICGG and CONOCO before the completion of Phase I could jeopardize the industrial co-funding.

Has the DOE checked with both industrial partners to determine if they will commit to 50% cost-sharing based on a partial Phase I?

Answer

DOE has not raised this question with the contractors since both contracts commit the Government to fund Phase I.

Question

The DOE FY 1979 Budget Request for the High Btu Gasification Demonstration Program is for $40 million in capital acquisition funds and $2 million in operating expenses. Why are you asking for so much in capital funds when our most recent information is that it will take about $35 million to complete Phase I, the engineering program for both the CONOCO and ICGG project as Congress intended, and only about $7 million for capital acquisition purposes.

Answer

Assuming a worthwhile process is available, we intend to select one project in early calendar year 1979 and proceed with that on a plant basis. It should be noted that after this decision point in phase I, most of the costs are P&CE as conceptual design work will be completed. Only process design, economic studies, and environmental work will be carried as OPEX expenses.

The anticipated FY 78 P&CE carryover is $25.7 million and the requested FY 79 P&CE budget is $40.0 million. This will provide the Pipeline Gas Program a FY 79 P&CE availability of $65.7 million.

Breakout is as follows:

$14,000,000	Needed to complete Phase I (Demo Plant engineering and construction planning)
30,000,000	Needed for Long Lead Procurement (Needed for Phase II Final design and construction) Initiation
700,000	Site acquisition
4,000,000	Government Support
$65,700,000	

Question

Is it reasonble to ask Industry to make a decision as important as funding half of a demonstration plant costing around $300 million without having the detailed engineering and investment quality estimate in front of them?

Answer

The decision to proceed on a 50-50 basis is not required until after Phase I is completed on the winning project at which time a more precise estimate of the cost of the plant and other data would be available to the industrial partner for use in making his decision with respect to cost sharing.

Question

How do you know that the project you select is the project that industry will support both for demonstration plant and for commercialization?

Answer

DOE has no assurance that the process ultimately selected for demonstration will also be commercialized. However, if industry is willing to risk sizeable amounts of corporate funds as their share of the costs of a near commercial demonstration plant and that demonstration plant proves to be a success, it is reasonable to believe, that given the right economic climate, the technology would be commercialized.

Question

Will both processes work equally well with eastern bituminous, mid-western bituminous and western sub-bituminous coals?

Answer

The characteristics of eastern coals make these coals more difficult to process than mid-western and western coals. The CONOCO Project could operate more easily on the latter coals. However, the development of the process on difficult eastern coals could allow the process to be used on any U. S. coal.

The ICGG demonstration plant will be designed to demonstrate the process performance on eastern, mid-western and western coals based on the established COED pilot plant performance.

The ICGG process incorporates the "COED" pyrolysis steps to produce char which is gasified (or burned in air to provide the thermal input to the steam char gasifier). The COED process was operated on a pilot plant scale successfully with eastern, mid-western, and western coals.

Question

Rather than take a chance, hadn't we better improve our probability of successful commercialization by pursuing both projects as long as they continue to meet the original selection criteria?

Answer

Both projects met the original selection criteria, and we will continue to pursue both projects until a selection is made which (if either) of the projects warrant proceeding. However, DOE has construction funds appropriated for only one demonstration plant (Project 76-1-b).

Question

It is difficult from your justification to determine where you are headed in the area of high-Btu pipeline gas demonstration plants. Is it still your intention to go forward with two separate high-Btu demonstration plants?

Answer

The Congress has authorized two plants, but has appropriated funds for construction of only one. From a technical standpoint, should we determine that there were two strong candidates for proceeding into the High Btu demonstration plant constructions, we will so advise the Congress and could recommend proceeding with both. However, currently we plan to proceed with only one plant for which construction funds have been appropriated.

Question

How much of your $10 million request for high-Btu demonstration plants under operating expenses is for the plant for which the slagging Lurgi and COGAS processes are competing, and how much for a second plant involving HYGAS process?

Answer

$2 million in operating expenses is requested for the slagging Lurgi and COGAS demonstration plant efforts. The remaining $8 million will support conceptual design efforts and related environmental analyses, engineering evaluations and testing activities of other high-Btu pipeline gas processes including the HYGAS process.

Question

Can you tell us why it might be necessary to proceed with two separate high-Btu demonstration plants?

Answer

We are currently evaluating two process concepts in Phase I of multiphase contracts. Proceeding with both could be recommended if each of these candidate processes for the construction of the High-Btu Demonstration plant shows such promise and that construction is completely justified

from the standpoints of (1) technical merit, (2) support of our program goals, and (3) each represents a different approach to coal gasification.

From a technical viewpoint, different processes may be required or preferred for different coals.

Question

What is the estimated total cost of these two demonstration plants?

Question 144

What amount would industry contribute to each?

Answer

The total estimated cost of one high-Btu synthetic pipeline gas demonstration plant is $556 million dollars broken down as follows:

	(Dollars in Millions)
R&D and operational costs	$ 64
Plant design and construction	246
Total DOE Funding	$310
Industry Funding	246*
Total Project Funding	$556

* Based on 50/50 cost-sharing for plant design and construction; industry share of operational costs excluded.

Question

The justification notes that additional operation of the HYGAS pilot plant may be required to complete the conceptual design of the second demonstration plant. What funding is there in fiscal 1978 and 1979 for this pilot plant?

Question 146

DOE previously requested a reprogramming to provide HYGAS pilot plant operating funds in FY 1978. Since this reprogramming was rejected, what funding arrangements do you have in mind now?

Answer

No funds were requested in FY 1978 to operate the HYGAS pilot plant. However, in November 1977, the Department submitted to the Congress a reprogramming request to provide $4 million for an extension of operation of the pilot plant in order to generate firm data required for optimization of a demonstration plant design. In anticipation that the reprogramming request would be approved, the contract with the Institute of Gas Technology was modified to permit extension of operation of the pilot plant through September 30, 1978. DOE has funded this modification out of funds available within the High-Btu Gasification program (Unobligated carryover $2.2 million; deobligation of prior contract $1.7 million; and internal adjustment from High-Btu Gasification special projects and support studies funds $0.7 million) to permit plant operation through July 1978 and is currently reviewing and evaluating the project to determine appropriate follow-on action.

In FY 1979, provision is made under the Gasification Demonstration Plant subactivity for operation of the HYGAS pilot plant, if required, to complete the evaluation of this process.

Question

Justify the $40 million request for the high-Btu pipeline gas demonstration project. What will be accomplished with this funding?

Answer

The Department plans to select one project in early calendar year 1979 (assuming that process design studies currently underway warrant such a decision) and proceed with that project on a plant basis. After this decision point in Phase I, most of the costs will be Capital Acquisition costs. The $40.0 million in Capital Acquisition funds requested for the high-Btu synthetic pipeline gas demonstration plant will provide for procurement of long lead time equipment, detailed plant design, site acquisition and initiation of construction.

Question

When will more precise construction estimates be available for this project?

Answer

A more detailed and reliable cost estimate for the high-Btu synthetic pipeline gas demonstration plant project will be available at the completion of Phase I contract(s) currently underway with CONOCO (Slagging Lurgi process) and ICGG (COGAS process). Currently, DOE plans to determine in early FY 1979 which of these two processes (if either) has sufficient merit to warrant completion of detailed engineering design and construction. The Phase I study (for the successful project) is expected to be completed in the summer of 1979 at which time more precise cost estimates on the plant will be available.

Question

You have budgeted $7.3 million in operating expenses and $23 million in construction funding for low-Btu demonstration plants. Where do we stand on the three plants you have under active development. When do you anticipate they will reach the operating stage?

Answer

The low-Btu fuel gas demonstration plants program includes plants dedicated to industrial, small industrial and utility users. The status of these plants is as follows:

Fuel Gas Industrial

Contracts were executed in August 1977 with W. R. Grace and Company and Ebasco Services, Inc. and in September 1977 with Memphis Light, Gas and Water Division of the City of Memphis for Phase I-Conceptual Design which are planned for completion in May 1979. Only one of these projects is planned for continuing into Phase II-Detail Design and Construction.

The operating stage for either plant would begin about mid FY 1982.

Small-Industrial

A contract was awarded to Erie Mining Company in October 1977 for design, construction and operation of a demonstration plant to produce fuel gas

to heat iron ore pellet shaft furnaces in a taconite plant. Phase I-Conceptual Design is expected to be completed by the end of CY 1978. Construction of the plant will be completed and operation started in the spring of 1981.

Fuel Gas Utility

In May 1978, Combustion Engineering (CE) and Foster Wheeler Development Corporation (FWDC) were selected for contract negotiations. Contracts are expected to be awarded in September-October 1978. Present estimates are that Phase I, Conceptual Design would begin in October 1978 and take 24 months to complete. After completing Phase I, either CE or FWDC would be selected to proceed to Phase II. Based on this schedule, construction of the facility would begin in FY 1981.

Question

If successful, what impact will these demonstration plants have on energy supplies in the near-term?

Answer

If successful these demonstration plants will provide the essential technical, economical and environmental information required to move these technologies into the market place with the potential for supplying feedstock for ammonia production, and fuel gas for industrial and/or utility use and replacing millions of cubic feet/day of natural gas for other purposes.

Question

Where available please supply the location of the low-Btu demonstration plants and the industrial participant.

Answer

Fuel Gas - Industrial A

Industrial Partner - Memphis Light, Gas and Water Division

Location - Memphis, Tennessee

Fuel Gas - Industrial B

Industrial Partner - W. R. Grace & Co.
Agricultural Chemical Group
Memphis, Tennessee

Location - Baskett, Kentucky

Fuel Gas Small Industrial

Industrial Partner - Erie Mining Company

Location - Hoyt Lakes, Minnesota

Fuel Gas Utility

Industrial Partner - Contracts not awarded

Location - To be determined

Question

How much of the total available funding will be obligated in

fiscal 1979 if your $14 million construction request is approved?

Answer

All available construction funds will be obligated in FY 1979 for completion of detailed design, some long-lead procurement and initiation of construction.

Question

When do you expect to start construction on the small industrial demonstration plant? Why is this project taking so long?

Answer

The contract with Erie Mining Company for the design, construction and operation of a low-Btu fuel gas demonstration plant for small industrial use was entered into on October 19, 1977. The Conceptual Design Phase, Phase I, was scheduled for 14-1/2 months and is expected to be completed on schedule by December 31, 1978. Contractor has experienced unexpected delays in meeting new environmental requirements in the State of Minnesota which were unknown at the time the contract was signed. These are being met at an increased cost, but, to date, have not required an extension of Phase I.

The original cost plan for this program provided for the early procurement of long lead items. However, work, to date, has not identified any such items.

Phase II construction work on the project is expected to start in January-February 1979, provided all environmental permits can be obtained by that time. The first part of Phase II is the completion of the final design and the procurement of all equipment required for construction. Field construction is expected to start in the spring of 1979 and be completed by the spring of 1981.

At this time, we anticipate no slippage in Phase II or in Phase III, Operation and Evaluation, which is currently scheduled to start in the Spring of 1981 and be completed by the Fall of 1983.

The design and construction of a facility of this magnitude and complexity normally requires a period of 3 to 5 years between the awarding of a contract and the facility is constructed and ready for shakedown and testing.

Question

You have requested $3 million to continue conceptual design efforts on the utility demonstration plant initiated by Congress in fiscal 1978. Why is this project moving so slowly? When do you plan to request construction funds?

Answer

The apparent slow progress in the implementation of the utility demonstration plant project can be attributed primarily to the complexity of the project, requiring extensive evaluations and negotiations and secondarily to the transition of the management of this project from ERDA to DOE.

A selection presentation was made to ERDA management in August 1977, shortly before the establishment of DOE. A decision to select the contractor(s) for negotiation of a contract was deferred to DOE.

The need for the utility project was reassessed by DOE and in May of this year Combustion Engineering and Foster Wheeler Development Corporation were selected for contract negotiations. Contracts are

expected in early fall (September-October 1978). Present estimates are that Phase I, Conceptual Design would begin in October 1978 and take 24 months to complete. After completing Phase I, either CE or FWDC would be selected to proceed to Phase II, Final Design and Construction.

Based on this schedule, detailed design and long lead procurement would be initiated in FY 1980 with construction beginning in FY 1981.

Question

What is your estimated total cost for the utility demonstration plant now? What is industry's interest at this point?

Answer

Combustion Engineering (CE) and Foster Wheeler Development Corporation (FWDC) were selected for contract negotiations in the utility demonstration plant program in May 1978. Contracts are anticipated by early fall 1978. CE and FWDC will be competing in Phase I, conceptual design, leading to a single selection for Phase II, final design and construction. The CE plant at West Lake, Louisiana, is to be a coal-fired addition to an oil/gas fired plant. The FWDC plant at Cabin Creek, West Virginia, is a modification to a coal-fired plant. Depending upon which process (if either) is selected for Phase II, total project cost would be $50-100 million. The Government share would be between $35 and $60 million. The industrial partner will provide direct funding and equipment as part of its 50% share.

Industry interest in this utility project appears high. The CE applications is considered a typical application for coal conversion from oil/gas. The FWDC application is considered such an application for a coal fired retrofit. Both technologies appear to have wide applications in the utility industry. We have estimated this at about 2,000,000 barrels per day oil equivalency.

Question

In fiscal year 1978, Congress appropriated $1 million to initiate design of a low-Btu gasification plant using existing technology for industrial application. What is the status of that project? What funding, if any, is requested in fiscal year 1979 to continue it?

Question 171

Please supply for the record a status report on the industrial applications plant, including development and funding plans for the future.

Answer

The FY 1978 Appropriation included $1 million for design and support of demonstration plants to initiate design of a low-Btu coal gasification plant using existing technology for industrial application. It is intended that these funds would be matched by private industry. It was the Conference Committee's intent, through this appropriation, to stimulate plans being developed in the State of Indiana to construct a plant capable of providing gasified coal as an alternative fuel for the steel industry.

The project has been transferred from Energy Technology's budget to the Assistant Secretary for Resource Applications. Discussions are being conducted with the State of Indiana officials and potential users of the gas to determine the specific needs and requirements for alternative fuel for the steel industry. These discussions are expected to culminate in a specific proposal(s) for a coal gasification facility.

Question

The $9 million request for the low-Btu small industrial demo is an increase of $6 million over 1978. Please explain the increase.

Answer

FY 1978 funds provide for initiation on detail design and procurement.

FY 1979 funds provide for actual purchase of equipment and start of field construction. The $6 million increase is to cover DOE's share of the cost of gasifiers and other such long delivery equipment and DOE's share of site-related costs (R.R, roads, utilities, etc.).

Question

When will this plant be operational? Why is it taking so long?

Answer

Erie is about half way through a 14-1/2 month Phase I. Phase II will start in January-February 1979 and last 24 months. Phase III, Operation and Evaluation, is scheduled to start in the spring of 1981 and last till the fall of 1983.

Erie will complete Phase I on schedule. We have no reason to believe that Phase II will not also be completed on schedule. Therefore, we expect Phase III to be on schedule.

As we have noted, design and construction of a facility of this magnitude and complexity by its very nature requires from 3 to 5 years to design and construct.

Question

What are obligations and accomplishments to date for this plant? Have the original cost estimates changed significantly?

Answer

DOE has obligated to date:

Erie Contract	$2,200,000
Mound Laboratory Support ...	750,000
Other Support	157,000
Total	$3,107,000

The contract between Erie Mining Company and the Department of Energy was finalized in October, 1977. Operations were conducted under a pre-contract cost authorization with DOE from August 17, 1977, while awaiting contract finalization. Award of contract was made October 19, 1977. $2,200,000 has been made available to Erie for use in Phase I, conceptual design.

Accomplishments to date include the following:

1. Site inspections and review of the Stretford process and gasifier operations.

2. Selection, evaluation and procurement of Phase I activities for the gasifier and the Stretford Unit.

3. Definition of basic design parameters for the demonstration plant, commercial plant, and coal handling alternatives.

4. Review and evaluation of new State and Federal Regulations (major areas only) including: MSHA, Clean Air Act, Hazard Waste Disposal, and Minnesota Certificate of Need.

5. Integration of new requirements (Item 4) into the project, i.e., process design, materials handling, feedstock and by-product analysis, preliminary economic re-assessment.

New requirements such as obtaining a Certificate of Need (license) from the Minnesota Energy Agency, Federal Water Pollution Control Act, Clean Air Act of 1977, and the Disposal Act of 1977 have impacted the schedule and have become serious hurdles to progress in this early stage of the project.

Erie has identified a potential cost growth of approximately $1.0 million associated with these new requirements. This is being evaluated at this time. FY 1978 and FY 1979 Operating Expenses funds for this small-scale industrial project (Erie) are adequate for all known or anticipated Phase I requirements. FY 1979 Capital Acquisition funds currently planned for Phase II appear adequate.

Question

What is the cost-sharing for this project?

Answer

The Low-Btu fuel gas small industrial demonstration plant project (78-2-c) will be conducted in three phases:

- o Phase I Conceptual design
- o Phase II Plant design and construction
- o Phase III Plant operation

Phase I will be accomplished entirely at Government expense. Phases II and III will be cost shared 50/50 on a yearly basis with Erie Mining Company, Hoyt Lakes, Minnesota.

Question

What is the status of contractor selection for the low-medium Btu industrial demonstration plant? Identify the firms or organizations that are competing for this project. Where are they located?

Answer

Low-Medium-Btu Program

Fuel Gas - Industrial A	Memphis Light Gas & Water Division City of Memphis, Tennessee
Fuel Gas - Industrial B	W. R. Grace & Company Agricultural Chemical Group Memphis, Tennessee

The low/medium-Btu industrial program has awarded competing contracts to the aforementioned firms to construct, and operate one (1) demonstration plant. A selection between the contractors will be made after the Phase I conceptual design.

Question

Why has there been nearly a year's slippage in negotiations on these contracts?

Answer

The slippage in negotiations on these contracts was due to the generalized nature of the RFP for the low-medium Btu industiral demonstration plant project which left room for a variety of proposals, thus complicating and delaying the selection process. For the same reason, protracted and difficult negotiations were required to arrive at a precise Statement of Work.

Question

Why are engineering, design and inspection costs so high ($36.9 million or 30 percent of total cost)?

Answer

Engineering, design and inspection costs of $36.9 million or 30 percent of the total project cost are normal for a project of this magnitude and complexity. These costs include:

a. Final engineering design of the demonstration plant

b. Support costs for monitoring and inspection of not only the engineering work, but also the construction effort

c. Construction management efforts of the Industrial Partner and the architect-engineer

d. Escalation from FY'77 dollars to current dollars

Question

What are the $13 million in "other related costs?"

Answer

The $13.0 million in "other related costs" for the low/medium-Btu fuel gas industrial demonstration plant is for training and plant startup costs.

Question

Your $8.2 million request for demonstration plant support involves a reduction of $6.2 million. Explain the reduction. Supply a breakdown of demonstration plant support request. We need to know what the $8.2 million will buy.

Answer

	FY 1979 Request	Reduction from FY 1978
Design Studies	$ 1,295,000	$ -2,705,000

Description - Includes studies for planning candidate demonstration plant projects, primarily emerging from pilot plant and PDU operations. Primary candidates for study in the future include catalytic gasification and hydrogasification.

Reduction - Reflects final cost increment of HYGAS which is less than FY 1978 requirements and no further requirement for Plant Conceptual studies in FY 1979.

Equipment Development	2,927,000	- 497,000

Description - Successful operation of large-scale equipment and components is essential for commercial-plant success. There is an array of such equipment which are generic to the operation of all demonstration plants and which must, therefore, be developed and tested hand-in-hand with the plants. Funding for this category is largely for continuation of work previously started.

Reduction - Decrease due to nearing completion of Coal Feeder development contracts.

Engineering Support	2,518,000	-1,410,000

Description - Project technical support will be provided by the National Laboratories, Energy Research Centers (ERC's), U. S. Army Corps of Engineers, Department of the Army Research and Materials Command, and various private engineering firms.

Reduction - This reduction is due to a decreased requirement in the Argonne National Laboratory instrumentation development program and support activities at PERC.

Environmental Support	275,000	- 659,000

Description - Analysis of the environmental impact of large industrial development will continue. Potential social, ecological, aesthetic, and economic impacts and methods for achieving their equilibrium are studied.

Reduction - Due to a reduced requirement in number of Environmental Impact Statements to be prepared in FY 1979.

Planning and Support	$ 1,205,000	$ - 909,000

Description - These support tasks are largely a continuation of established activities. They include modeling and systems studies, economics and financial analyses, technical reports, and management support.

Reduction - Decrease due to delay in demonstration plant schedule requirements for initial plant operations inputs and reduced requirements for general support

TOTALS	$ 8,220,000	$ -6,180,000

COAL
ADVANCED POWER SYSTEMS

Question

You have budgeted a $5.6M increase for open cycle gas turbines, apparently to increase the pace of development. Why doesn't that acceleration bring your completion target any closer?

Answer

The budgeted increase only reflects the planned program. The increase is due to the procurement of test components and equipment to be tested, and then performing the testing.

The major effort under the open cycle area is the high temperature turbine technology (HTTT) development Phase II, which is currently under contract with two industrial suppliers (General Electric and Curtiss-Wright) encompassing four fiscal years (77,78,79,80). This turbine blade cooling technology development (both water and air) requires maximum expenditure in FY 79. Thus, this request is not an acceleration but a negotiated, planned technology readiness development program. Phase III of this program will encompass verification testing of these new advances in coal burning open cycle gas turbines.

Question

Supply specific justification for the proposed increase in open cycle gas turbines?

Answer

The High Temperature Turbine Technology (HTTT) project is the major project in the Open Cycle Gas Turbine Program. Other projects included in this program are the advanced catalytic combustor effort and ceramic technology development. Reliability, diagnostics, instrumentation, materials testing and system integration require less funding but are important to the overall success of the program. The HTTT project includes the following:

Phase I System definition - FY 75 to 76
Phase II Component technology testing - FY 77 to 80
Phase III Verification testing - FY 80 to 83

Phase II has been negotiated with two contractors and is to accomplish technology testing and test support studies as listed:

(1) Final design - fabrication and/or procurement of test rig equipment
(2) Design and fabrication of experimental components
(3) Conduct individual test programs
(4) Conduct analytical efforts
(5) Review experimental data
(6) Prepare detailed turbine subsystem technology readiness verification test program
(7) Prepare Phase III verification test program, procurement and fabrication test program and procurement and fabrication plans

Funding requirements for these tasks under the Phase II contracts will reach a peak in FY 79 which will permit technology development to progress at a reasonable level.

Question

What are the accomplishments to date for open cycle gas turbines? At what cost?

Answer

Phase I of the HTTT program has been completed with four contractors; General Electric Company, Curtiss-Wright Corporation, Westinghouse Corporation and United Technologies Corporation at a cost of 10M which includes:

Program and System Definition

(1) Established overall plant design description (OPDD) for low Btu gasified coal

(2) Established OPDD for coal derived liquid fuel
(3) Established reference design for combined cycle plant (one for each fuel and one each for base load, intermediate load and peaking)
(4) Established reference 2600°F turbine subsystem design approach
(5) Identified research needed
(6) Prepared detailed technology development program plan
(7) Established preliminary description of Phase III technology readiness verification test turbine subsystem prime movers
(8) Prepared 3 full size low Btu combustor preliminary designs
(9) Prepared technology development plan for one combustor

Phase II commenced in FY 77 with Curtiss-Wright and General Electric and is in preparation for component testing. Phase I of the Ceramic Technology Program has been initiated with Westinghouse and Airesearch. The Catalytic Combustion Task has also been initiated.

The diagnostic instrumentation assessment, bearing-seal rotor assessment, engineering analysis, evaluation and assessment of open and closed systems has been initiated and continues.

Funding for the Open Cycle Gas Turbine R&D from commencement through FY 1978 is about $45 million.

Question
You are requesting no funding for closed cycle systems during an "assessment." What does this mean? Are you thinking of terminating this research?

Answer:

Assessment means that a variety of applications for closed cycle coal fired systems are being evaluated and the most flexible design arrangement for the critical primary heater will be defined. The initial assessment study for Phase I was initiated with two Contractors using FY 77 funds and included system definition studies to evaluate the closed cycle system for central station utility applications. These contracts were later modified (Phase IA) using FY 78 funds to include the district heating-cogeneration assessment of these systems. This district heating application of the closed cycle gas turbine has been successfully applied in Europe and Asia and has high potential for burning coal in the primary heaters of similar U.S. systems in an environmentally and economically acceptable manner.

FY 78 funds are being committed late in the year to initiate Phase II primary heater component technology work. Thus no FY 79 funding requirements are anticipated. The results of this assessment studies will be reviewed to determine whether further R&D effort on closed cycle systems is justified and the level of subsequent budget requests.

Question

Where is tne closed cycle gas turbine technical test unit located?

Answer

Site location for the closed cycle gas turbine technical test unit is yet to be determined.

Question

What are the schedule slippages mentioned in the justification summary?

Answer

Considerable concern exists for the market for this system and for the amount of oil and gas it will save. Concern also exists for the vehicle to commercialize this technology. For these reasons DOE has had reviews of the project and redirection of the program to a larger market with earlier commercialization potential.

Question

When do you expect to have significant test results from this unit?

Answer

Test results can be expected in 1980.

COAL
DIRECT COMBUSTION

Question

Your funding request for direct combustion is down by $7.3 million from fiscal 1978. This involves reductions in all program elements except coal-oil mixtures. Please explain the reductions.

Answer

The budget request for FY 1979 is $54.9 million, a decrease of $15.5 million from the FY 1978 level. The decrease reflects lower requirements for ongoing projects, particularly the AFB industrial applications projects for which major expenses for construction will have been made, and for planning efforts on direct combustion demonstration plants. Also, less support studies are needed now that the program has passed from the formative stage into the hardware development stage.

Question

Please justify the $4.7 million increase requested for the 30 Mw fluid bed boiler.

Answer

The FY '79 request for the 30 Mw fluid bed boiler is for a typical years operation. In prior years we had an appreciable amount of funding which carried us into the next fiscal year. In FY '78 we only allocated funds for operation in the portion of that year which was not yet funded. The FY '79 request is for a full year's operation and includes the addition of an air-cooled condenser and boiler feedwater system so that we may operate independently of the host power company's existing boiler.

Question

The justification summary indicates the $8.7 million requested for the 30 Mw boiler actually involves a $2.3 million reduction in the 1979 base. Why is this being reduced on a program basis?

The 1979 base included funds to add an air-cooled condenser and feedwater pump system to the 30 Mw boiler so that we could operate the unit at full capacity independently of the host power plant. In late CY 1977, it was decided to replace the coal feed system with one of greater likelihood of reliable service. With such a coal feed, the boiler could always be operated with the host power plant's turbine and condenser. In anticipation of favorable results with the new coal feed system we are reconsidering the need for a full capacity air cooled condenser.

Question

Please explain the $8 million reduction in industrial boiler.

Answer

The major expenses of the five (5) industrial boiler and heater programs have been obligated. This was done to enable the contractors to commit to long-delivery equipment items as early as they were identified, defined and approved by DOE. This practice minimizes construction time otherwise lost in waiting for components. Only relatively minor costs remain due to price escalation, design changes and for possible expanded level of effort. The net result is savings in program timing and overall expenditures.

Question

What are some accomplishments in the industrial boiler program?

Answer

Accomplishments will generally occur during operation of the industrial boilers. However, during the design and operation of four (4) pilot units in the last twenty-four months these indications have occurred:

1. Laboratory data on overall heat transfer coefficients have been substantiated and enhanced.

2. Materials of construction have been selected.

3. Three (3) viable coal feed configurations have been defined and will be tested.

4. Fluid dynamics concepts which improve the FBC process have been tested.

5. Increased industry awareness and interest in the FBC process, among potential users, suppliers and manufacturers.

6. Renewed realization that direct combustion of coal will be made more attractive through innovative marketing and distribution.

Question

You also indicate a schedule slippage for the atmospheric CTIU, which is being reduced by $1.7 million. Why is there slippage, and why is there a reduction in this program?

Answer

The slippage is due to the impact of changes in the furnace and heat recovery section designs to be consistent with the conceptual

designs of the 200 MW demo unit and 570 MW commercial unit. The modest reduction is because with the slippage several items will not need to be placed on order until the following years.

Question

Who is the cost-sharing contractor being selected this year for anthracite applications program?

Answer

Negotiations were initiated between DOE and the City of Wilkes-Barre, Pa; Fluidyne Corporation; and the Shamokin Area Industrial Corporation. Following negotiations the Department plans to sign contracts with one or more of the proposers.

Question

Where will this work be conducted?

Answer

The anthracite applications projects will be conducted at the following locations:

Wilkes-Barre, Pa. Pope Evans & Robbins, Inc. and Foster Wheeler Energy Corporation propose to design, construct and evaluate an AFB boiler as part of the City's central heating and air conditioning system.

Shamokin, Pa. The Shamokin Area Industrial Corporation team including ing Dorr-Oliver, Inc., Stone and Webster Corporation and Curtiss-Wright Corporation proposes to design, construct and evaluate an AFB boiler to provide steam for reprocessing paper at the Cellu Products Corporation plant in the City of Shamokin.

Towanda, Pa. The Fluidyne Corporation, including Deltak Corporation and Nebraska Boiler Company, proposes to design, construct and evaluate an AFB boiler to supply steam to the GTE Sylvania plant located at Towanda.

Question

What is the total cost of the pressurized CTIU, for which you are budgeting $3.8 million?

Answer

The construction cost of the CTIU is estimated to be $21,716,000. The operation cost for the unit is estimated to be $5,500,000 annually.

Question

Please justify the $4.3 million reduction in the fluid bed combined cycle plant and the $1.3 million increase for the granular bed filter/hot gas clean up program.

Answer

Funds were allocated in FY 78 to enable the contractor to commit to long delivery equipment items as early as they are identified, defined and approved by DOE. The FY 79 request of $2.5 million for the fluid-bed combined cycle pilot plant provides the necessary funds

required to maintain the construction schedule of the pilot plant and continue the small gas turbine test plant.

The $1.3 million increase for the granular bed filter/hot gas cleanup program is to enable the contractor to proceed with the high pressure, high temperature filter development and to permit DOE to solicit proposals for other hot gas clean-up devices.

Question

What is the total amount of the U.S. investment in the IEA combustion research program?

Answer

Total DOE obligations as of May 31, 1978 is $6.3 million. The total U.S. commitment to date is $11 million dollars, which is our share of the completed plant and initial testing program costs. In the event that the three-nation executive committee decides to add a gas turbine to this facility its total cost will increase and the new U.S. share of the total would be $14 million.

Question

Why can't you cut back on the DOE plants under the IEA program?

Answer

There is only one plant under the IEA program. This is the planned pressurized boiler system to be located in the United Kingdom. This facility, under the cost sharing arrangements will provide a large-scale research facility at only a fraction of the cost to the U.S. as a domestic DOE funded facility. The DOE program includes only two domestic PFB plants, the Pressurized Fluidized Bed Component Test and Integration Unit (CTIU) and the PFB combustor associated with the Combined Cycle Pilot Plant. The CTIU will provide the United States with a flexible facility to develop improved components, perform instrumented measurements on the process and the contaminants in the combustion products and in general, enable the United States to be leaders in PFB technology. The IEA complements rather than duplicates these domestic facilities.

Question

You have budgeted a $2.4 million increase in coal-oil mixtures program. How many test boilers are you operating? Where?

Answer

Our present program includes three demonstration projects, an operational test facility (700hp boiler) at our Pittsburgh Energy Research Center (PERC) and supporting base technology projects. The three demonstrations and their locations are:

80 Mw Utility Boiler; Salem, Mass.
(New England Power Service Company)

80,000 lb/hr. Industrial Boiler
Danville Va; (Acurex-Aerotherm Corp.)

Industrial Blast Furnace, Chicago, III.;
(Interlake, Inc.)

Question

What is the total estimated cost of the coal-oil mixtures program and its potential benefits?

Answer

The total estimated cost of the current coal-oil mixture (COM) program is $16.4 million.

Some of the potential benefits of coal-oil mixture combustion technology are:

A readily available (near-term) coal-based alternate fuel capability.

A short down-time requirement for conversion to COM.

Small capital investment compared to new unit.

A conservative estimate of 1.3 quads of oil saved per year by 1985.

Question

Under support studies, what is the cost of the agricultural studies, and how long have they been underway?

Answer

The agricultural utilization program is an inter-agency activity between DOE and the Agricultural Research Service, USDA. Funds in the amount of $350,000 are transferred each year. The program began on July 1, 1976 and was planned to continue for five (5) years. The purpose is to evaluate the by-products from the fluidized-bed combustion process for potential usage in agriculture.

Earlier and much less comprehensive studies were made by the Virginia Polytechnic Institute on peanut culture and by the Tennessee Valley Authority on sweet corn growth and grazing land reclamation.

Question

What results can you report to date on the effectiveness of fluidized-bed waste materials under the agriculture research?

Answer

The Virginia Polytechnic Institute reported that fluidized-bed by-products were as effective as locally-obtained "land plaster", or calcium sulfate, in peanut culture, based on quantity and quality. TVA reported essentially the same on growing corn and its need for sulfur. ARS/USDA has investigated in growth chambers, greenhouses and field tests the growth of grains, fruits, vegetables and forage crops. They find that fluidized-bed combustion by-products exhibit similar growth rates as standard liming materials. Feeding trails will follow and careful attention will continue to be given to trace element probable benefits and

possible detriments. Multiple and consecutive growing seasons will provide more meaningful data than presently in hand.

Question

Where do you stand on design selection for the fluid-bed boiler demonstration for which you are requesting $1.6 million?

Answer

Two planning level concept design efforts awarded in FY 1976 will continue through FY 1978. The FY 1979 request will provide for completion of conceptual designs and design modifications which may be required as a result of new environmental standards.

Question

Please explain what is meant by environmental and technical problems that have been delaying the fluid-bed boiler demonstration. You are reducing the operating funds for the fluid-bed boiler demonstration by $4.4 million and not asking any additional construction funds in fiscal 1979. Why?

Answer

In August 1977 the Congress passed amendments to the Clean Air Act requiring Best Available Control Technology on coal-fire power plants. This means that rather than plants being limited in emissions, presently 1.2 lbs of SO_2 per million BTU's, they will be required to remove a specified percentage of the sulfur originally in the coal. Draft EPA regulations in October 1977 were based on 90% sulfur removal, subsequent information indicates that EPA may only require 85% removal based on the capabilities of present day scrubbers. NOx and particulate emissions regulations are also being tightened by the EPA in performance of their responsibilities under the 1977 Clean Air Act Amendments. Prior DOE AFB utility plant designs were for emissions of 1.2 lbs of SO_2 per million BTU. These designs were based on an SO_2 reduction of 47% with non-compliance Western coal, of 75% with a typical Eastern coal, and of 84% with a high sulfur Eastern coal. Consequently the designs have had to be updated to determine the cost to meet the proposed new emission regulations, the effects of these regulations on conventional technology with scrubbers, and the variations of cost over the range of anticipated emissions. With this data we can then proceed with the plant.

Question

When do you intend to make a decision to move forward with the fluid-bed boiler demonstration?

Answer

A decision to move ahead with the fluid-bed boiler demonstration plant was made in 1976 and preliminary designs of three demonstration size boilers and three conceptual designs of commercial size plants commenced in early 1977. The solicitation of an industrial partner with whom we would continue the program was planned for early FY 78. A decision was made later to delay this solicitation by approximately one year to provide DOE time to properly evaluate the impact of EPA's proposed more stringent New Source Performance Standards (NSPS). The delay also provided additional operating time by DOE's 30 MWe pilot plant and EPRI's 6x6 PDU the data from which would be valuable to prospective bidders and to DOE, in selecting appropriate

design concepts. The delay also provides us the opportunity to evaluate the proposed design on the CTIU (Component Test and Integration Unit) prior to freezing the design. We have now had some time to evaluate EPA's proposed standards and we have acquired additional time on the PDU and Pilot Plant. The Department is currently reviewing program requirements in preparing budget estimates for FY 1980. A decision on whether to move forward on the AFB demonstration plant will result from these reviews.

Question

From the budget justification it appears that no demonstration plant is now even under construction. How do you expect to achieve your objective of commercializing some direct combustion technologies by the early 1980's? What are your milestones for achieving this objective?

Answer

The objective is to commercialize industrial scale fluidized-bed combustor systems, in the early 1980's. We have one 10 MWe boiler starting up in 1979, one in 1980, and an air heater and crude oil heater starting up in late 1979. These units, combined with the operation of Rivesville are expected to lead to commercial sales starting in 1980.

Question

Have you developed a commercialization plan for direct combustion technologies. Do you anticipate government assistance beyond the demonstration phase? If so, what kinds of assistance and how much assistance would be needed to achieve widespread commercialization?

Answer

DOE has a commercialization task force which is presently working on techniques to accelerate commercialization of industrial scale fluidized-bed technology. Various forms of Federal incentives are being studied; however no decision for a recommended incentive package has been reached as yet.

Fluidized-Bed Combustion

The National Energy Plan is designed to reduce our nation's increasing dependence on natural gas and oil by using regulatory and tax mechanisms to stimulate a massive conversion to coal on the part of utilities and industries. Much of the additional coal brought on line will be high sulfur coal from the Eastern and Midwestern regions of the nation. Many of these areas are already having trouble meeting the public health standards established by the Clean Air Act and development of clean ways to use coal will be essential if successful conversion is to take place.

Fluidized bed combustion is one emerging technology which offers the promise of efficient use of coal without attendant environmental problems.

Question

I understand that some of EPA's responsibilities in this area are being transferred to DOE. I would like to have for the record a description of and rationale for the work which has been transferred from EPA to the Department of Energy.

Answer

EPA's fluidized-bed combustion work related to process development, as contrasted to emissions monitoring, is being transferred to the Department of Energy. The rationale is that the engineering development be concentrated in a single agency. Fluidized-bed combustion R&D was started in 1965 in the Office of Coal Research, then part of the Department of the Interior. Around 1970 EPA realized the emissions reduction capability of this technology, and joined in sponsoring R&D. The OCR program became the ERDA program then the DOE program. In order to manage the technology more efficiently, avoid duplication, and facilitate communication the EPA R&D program is being transferred to DOE.

Question

In your opinion, will the new division of labor between EPA and DOE slow progress on FBC technology?

Answer

The new division of responsibility between EPA and DOE should accelerate progress on FBC technology by placing all of the R&D resources and active industrial groups in a single management structure under DOE.

Quuestion

DOE's budget request for FY 1979 for direct combustion activities - - of which FBC is one component - - is below the FY 1978 levels. Why did the Department recommend cuts when it is urging increased use of coal?

Answer

The Department's FY 1979 budget request includes $54.8 million in Operating Expenses for the Direct Combustion Activity. While the request is $13.5 million less than the FY 1978 level, it provides for an aggressive program for development of improved combustion systems. The decrease in operating expenses primarily reflects lower requirements for the Industrial Applications projects for which major construction will have been completed, and for the Direct Combustion Demonstration plants subactivity which, in FY 1979 will be devoted to completion of conceptual designs and design modifications to meet environmental standards.

Question

What percentage of the direct combustion budget is money for FBC?

Answer

The FBC budget is 71.5% of the total direct combustion budget.

Question

How will these cuts affect progress in this area?

Answer

The FY 1979 budget request for the Direct Combustion Activity is sufficient to maintain projects at the planned rate of progress.

Question

Can you provide the Committee with a list of FBC projects in the pipeline, their status, their sites — if determined — and what the Department expects to gain from them?

Answer

A list of the fluidized bed combustion (FBC) project is as follows:

A. Fluidized Bed Combustion (FBC) process is being evaluated in five (5) industrial applications, one (1) utility application and the Atmospheric Component Test and Integration Unit, through the following:

1. Battelle Memorial Institute started the program on July 1, 1976. A pilot plant has been designed, built and operated for nearly 1000 hours at the Battelle Columbus Lab., Ohio. The program will demonstrate the combustion process at a higher fluidization rate than "conventional" combustors (30-40 vs 6-10 feet per second). The claims are (1) higher heat release rate per unit cross section, (2) improved sorbent utilization and (3) enhanced overall heat transfer capability. The program has already established the efficiency of heat exchange external to the combustor. The program will demonstrate ability to configure both new construction and existing installations (retrofit), again at the Columbus facility.

2. Combustion Engineering, Inc. started the program on July 1, 1976. A pilot plant has been designed, built and operated at their Windsor, Conn. engineering center. From that operation will evolve the design of a plant-assembled, packaged boiler design. C-E will install a 50,000 lb/hr unit at the U.S. Navy's Great Lakes Training Center, Illinois starting in March 19/9 with completion for startup by July 1980. The program will demonstrate production of steam used concurrently for space heating and electric power generation ("Cogeneration"). The boiler design will also demonstrate natural boiler water flow during operation. Coal feed will be split to operating bed modules, which will demonstrate turn down and load following, both important parameters in equipment design.

3. Exxon Research & Engineering Company started the program on July 1, 1976. Two (2) pilot systems have been designed, built and operated, with a third unit presently under construction. The purpose are to characterize fluidization in large heat exchange tube environments, to define tube periphery heat transfer differences, to define crude oil coking rates as a measure of heat transter rates and to relate those data to crude oil behavior in high heat flux rates found in fluidized bed combustion. The program will then demonstrate the FBC process in heating refinery crude stock, replacing with coal the 4-12% of crude presently used to heat the remaining oil in refinery processing.

4. FluiDyne Engineering Corporation started the program on July 1, 1976. A pilot plant has been designed, built and operated for nearly 1,000 hours heating air at the FluiDyne Enigneering Facility in Minneapolis, Minnesota. The program anticipates building a 20 million Btu/hr input heater at the Owatonna, Tool Company, Owatonna, Minnesota, plant to demonstrate the production and use of hot, clean, dry air in a metal fabrication environment. Detailed design of the plant system is underway.

5. Georgetown University started the program on July 1, 1976. A boiler system has been designed from earlier data to produce 100,000 lb/hr. 625 psig saturated steam. The steam will be used for space heating and turbine-driven equipment and possibly for electric power generation. Construction of the facility started in the fourth calendar quarter of 1977 and startup is expected by April 1979. The program will demonstrate coal feed through a spreader stoker, thereby eliminating costly coal preparation equipment.

   In all the above programs the announced goal is to provide "sufficient data to enable industry to scale up" the FBC process to plant-sized installations. Also, through program reach we will demonstrate that the FBC process can efficiently burn a wide variety of high sulfur coals in an environmentally acceptable manner.

6. AFB Boiler, 30 MW

   The 300,000 lb Steam/hr Multicell Fluidized Bed Boiler, Rivesville W. Va. has completed its start-up and shakedown operations and is about to begin an extended period of test operations under the varying conditions usually encountered in electric power generation. The purpose of this first and largest fluidized bed boiler in the USA is to confirm and demonstrate the advantages, both technical and economical, of this type of combustion from the several standpoints of (1) being able to burn a wide variety of coals (including high sulfur) in an environmentally acceptable manner, (2) much improved heat transfer to tubes submerged in the bed, (3) smaller (and more economical) size than conventional coal fired boilers with scrubbers (4) feasibility of modular multicell arrangement to enhance shop fabrication, transportation and construction. The successful pursuit of this project will be most influential in determining the direction and intensity of the nation's effort to utilize our most abundant fuel resource in its most efficient direct combustion manner.

7. Atmospheric Component Test and Integration Unit, located at Morgantown, West Virginia will consist of flexible facility, nominally of three stacked beds operating at atmospheric pressure. The design size is close to commercial scale so that the obtained information can be used directly.

   Construction of the atmospheric unit at Morgantown is well under way. The major components have been designed and are on order. Excavation for the building foundation is underway and additional site work is underway.

   The facility will provide the ability to test, at near commercial scale the various major fluidized bed combustion components that may be developed elsewhere. In particular it will be possible to check how these units will work when integrated with the balance of plant that are required for successful overall operation.

B. AFB Anthracite Applications

The objective of this program is to design, construct, and evaluate prototype anthracite culm atmospheric fluidized bed boilers. Experience gained from operation of the units will provide the technical and economic information needed to determine commercial applicability and advance the acceptance and use of alternative fossil fuels, such as anthracite culm, in the commercial sector.

Negotiations are underway between DOE and the City of Wilkes-Barre, Pennsylvania; FluiDyne Corporation, Minneapolis, Minnesota; and the

Shamokin Area Industrial Corporation, Shamokin, Pennsylvania. The three proposers were selected from seven that responded to the former Energy Research and Development Administration's (now DOE) solicitation last summer.

Following negotiations, the Department plans to sign contracts in FY 78 with one or more of the proposers to design, build and operate boiler systems for the clean-burning of anthracite wastes.

C. Pressurized Systems

Pressurized fluidized-bed combustion is a means of potentially effecting an increase in power-generation efficiency with the possibility of reducing the cost of power generation. Objectives for the pressurized program are similar to the atmospheric except that developmental problems are greater and more complex.

1. PFB Combined-Cycle Pilot Plant

This project includes design, construction and evaluation of a 13 MWe coal-fired, pressurized fluidized-bed combined cycle pilot plant located at the Curtiss-Wright Corporation, Woodridge, New Jersey. Phase I of the project, consisting of a study of comparable commercial systems and a preliminary design of the pilot plant has been completed. Phase II, the detailed design of the pilot plant, is underway. Phase III, construction of the pilot plant, will be initiated in FY 79.

2. PFB Component Test and Integration Unit (CTIU)

In April 1976, ANL was given approval to proceed with the CTIU conceptual design. The unit, to be constructed at ANL, Argonne, Illinois, will serve to test components and support the pressurized fluidized-bed combustion program by providing the flexibility to investigate alternative and advanced concepts of PFBC.

The preliminary design of the pressurized units was prepared. A detailed design was started by an architect and engineering firm and this work is now continuing. Evaluation of alternative sites primarily in Ohio and South Dakota is underway including detailed cost estimates to both construct and operate the facilities.

3. Moving Bed Granular Bed Filter (GBF)

In FY 77, a contract was awarded with the Combustion Power Company, Menlo Park, California, to determine the scientific and engineering principles under which granular bed filtration operates. Phase I, consisting of the design, construction and evaluation of a cold flow Moving Bed Granular Bed Filter, has been completed. The project will proceed in FY 78 with design and construction of a high pressure, high temperature filter to evaluate GBF performance under long-duration testing.

GBF is one means to accomplish cleanup of the hot gases produced from PFBC. This is necessary to produce the high turbine reliability and long life required for practical power-generation application and control of emissions to the atmosphere.

4. International Energy Agency, Steam Cycle PFB - Grimethorpe, England

This project will design construct and operate a Pressurized Fluidized Bed Combustor Test Facility. It is based on the use of steam in the boiler.

The project is established under the International Energy Agency and consists of three equal partners, United States, United Kingdom and The Federal Republic of Germany.

The facility, when in operation will run tests utilizing the coal and limestone combination of the three countries and it is designed to be able to operate under a wide range of conditions. The installation is at a utility power station in Central England that already has many of the facilities required for operation.

The design is essentially completed and fabrication of the major components is well underway. The boiler will be ready for its pre-shipping tests in a few days. The steam turbine driven compressor that supplies the fluidizing air is undergoing plant testing.

The United States desires to incorporate a gas turbine and additional gas clean up equipment in the initial configuration in lieu of the originally planned later retrofit. Proposals are being presented to the other two participating countries next week.

A technical design review is being carried out at each of the major component manufacturer during the week of 5-9 June.

The preparation of the detail test and instrumentation program is being negotiated among the three countries.

The principal information to be gained from the facility as now configured will be on combustion, heat transfer, and emission control. With the water/steam in the tube configuration information on the service life to be expected from the tested material of construction will be developed.

The addition of the gas turbine and additional gas clean-up equipment that the U.S. desires to install will provide information on turbine service life, ability to further clean up the hot gas stream, and control information.

Question

What other emerging technologies for environmentally acceptable use of coal appear promising as alternatives to scrubbers for industrial and utility applications in the near-term?

Answer

Other than fluidized-bed combustion, coal preparation, where coal is cleaned prior to direct combustion, offers the most promising near term alternative to the use of scrubbers for industrial and utility applications.

Question

What is the Department doing in these areas?

Answer

The Department's coal preparation research program is aimed at developing improved technologies to upgrade coal by removing sulfur, ash and trace elements (e.g., heavy metals) before combustion, characterizing coal constituents, and alleviating the environmental effects of the coal preparation process itself. Desulfurization efforts include both physical processes to remove sulfur containing impurities from the coal and chemical techniques which will remove organic sulfur bonded within the coal molecule. Trace elements such as

lead may be removed by washing techniques which require production of varying sizes of fine coal. It is necessary then to put the fine size coal in a more convenient form for handling, transport and storage.

Question

What is your FY 1979 request? How does that compare to FY 1975?

Answer

The FY 1979 budget request for Coal Preparation Research is $5,071,000, an increase of $51,000 over the FY 1978 level.

Question

Would more money enable faster progress?

Answer

The request for Coal Preparation Research largely reflects the goals and priorities set by the Bureau of Mines prior to the establishment of DOE. DOE is currently evaluating these and other activities transferred from EPA in the light of DOE's mission. This review will identify programmatic goals and resources required to meet these goals. Pending the outcome of this review a decision to either increase or decrease funding for coal preparation research would be premature.

Question

When do you expect these to come on line?

Answer

Advanced physical coal cleaning is a near term technology which will be ready for commercialization before 1985.

Question

How are these programs divided between DOE and EPA?

Answer

The DOE is responsible for the development and demonstration of these technologies, whereas EPA is responsible for characterization and monitoring the environmental impact of these technologies.

Question

Can you supply for the record a list of projects in the pipeline for these technologies, either in the design or construction phase, their sites--if determined--and what the Department hopes to gain from them?

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Answer:

In response to the research impetus clearly mandated by the Clean Air Act of 1970, research in coal preparation focuses on three objectives: meeting SO_x emission standards; identifying and monitoring trace fugitive elements present in the raw coal (i.e., coal preparation refuse, clean coal, fly ash, or emission exhaust); and meeting stringent standards on these objectives. The Coal Preparation Research subactivity has established four projects:

- o Process test facility
- o Coal preparation technology
- o Waste utilization and control
- o Supporting studies

Process Test Facility

Presently in the U. S. there is no available fully integrated demonstration facility for testing a new coal washing technique, flow scheme, or piece of equipment. Consequently, a significant time lapse occurs between development of new equipment and techniques and their acceptance by the coal industry. Construction of a test facility will begin in FY 1979 and completed in FY FY 1980. Engineering data will be provided on a scope not previously possible. Moreover, the expense of developing various preparation techniques will be greatly reduced.

The plant will have a nominal capacity of 10 to 25 tons/hr of raw coal, depending on the flow scheme used. Process flexibility is a prime design requisite of this plant, which will use off-the-shelf commercial equipment. New coal washing circuits and crushing, screening, dewatering, and cleaning equipment will be evaluated. The plant will be used to process coal from various regions and to provide the optimum operating conditions necessary to produce a coal of acceptable sulfur, ash, and trace element content. An additional, but judiciously exercised, function of the demonstration plant will be to produce ton lots of specification coal for combustion testing, stack gas scrubbing work, or as feedstock to coal conversion processes.

Coal Preparation and Technology

To reduce the sulfur content of coal, improved and innovative physical separation technologies are being developed to effectively separate fine coal from pyrite. Desulfurization can be accomplished through physical processes such as gravity separation, flotation, and magnetic separation techniques or through varying chemical techniques that will remove most of the pyrite sulfur plus some of the organic sulfur intimately bonded within the coal molecule. During FY 1979, an oil agglomeration process demonstration for separating fine rock from powdered coal will be completed. If successful, the agglomeration process will be integrated with a wet high-gradient magnetic separation (HGMS) process to obtain a clean coal product low in moisture, ash, and pyrite. Tests of dry HGMS using prototype equipment will be continued. Chlorinolysis, a chemical desulfurization process developed at the Jet Propulsion Laboratory, has been shown to be both economically and technically feasible. A small-scale facility constructed in FY 1978 will be operated in FY 1979, further testing the feasibility of this process. Since physical desulfurization will remove only the sulfur-bearing mineral pyrite, efforts to combine physical and chemical desulfurization will be pursued if the tests demonstrate feasibility.

With the ever increasing growth in production of fine-size coal due to mining techniques or simply as a means to liberate impurities, it has become necessary to put the fine material in a more convenient form for handling, transporting, and storing. Preparation requirements for lignite and subbituminous coals include sodium reduction as well as the dewatering and pelletizing or briquetting necessary for bituminous coal. During FY

1979, efforts will continue to reduce the sodium in lignite and subbituminous dewatering and pelletizing will be completed. Results of these studies will determine if a major demonstration is warranted.

Efforts to reconstitute bituminous coal will also be pursued, focusing on briquetting and pelletizing. Since considerable knowledge has been accumulated concerning anthracite briquetting and lignite pelletizing, these efforts will concentrate on the engineering improvements of a known technology. Additionally, initial transport feasibility studies associated with coal/gelled oil mixtures and other fine coal transport systems will be initiated.

Waste Utilization and Control

Surface ground waters are contaminated from coal in several ways, including: leachants from waste piles; pollutants in the form of suspended solids from preparation plants; and leachants from surface water percolating through ground contaminated with airborne fallout from stack gases. To control water pollution from process wastes, studies will be initiated to develop a low cost method for dewatering fine wastes to obviate the need for tailing ponds. These studies will concentrate on the optimization of a filter design and disposal system, plus the pelletizing and firing of the fine waste in a fluidized bed to utilize the Btus associated with that waste. Pollution of land downstream from stack plumes will be minimized as efforts continue to reduce the hazardous trace elements in coal by precombustion cleaning.

Supporting Studies

To better understand the characteristics and properties associated with the clean burning of coal, studies will be continued to identify and characterize coal macerals, carbon/sulfur compounds, and trace elements found in various coal seams in the United States. Washability studies, which show the release or liberation of pyrite at various screen sizes, will be continued until samples from most of the major seams have been tested.

Long-term studies on the surface chemistry of coal, pyrite, and ash macerals will be continued in an effort to obtain fundamental knowledge of the effect of activators, collectors, and depressants on coal and mineral particles.

Question

With regard to the fluidized-bed combustion of coal, there is now a 30 megawatt plant in operation at Rivesville, West Virginia, and a smaller unit is under construction at Georgetown University. It has been suggested that what is needed now is to validate this technology's use for major utilities. I believe such a demonstration has been authorized. What plans does the Department of Energy have for the next step in developing this technology? Are there any funds in the FY 1979 budget for this purpose?

Answer

A 200 MW plant has been authorized by Congress in 1976. Plans are underway for a fluidized-bed combustion demonstration plant drawing upon the technological base and data derived from the Rivesville facility. The ultimate goal is to demonstrate the feasibility of burning all ranks of coal cleanly and more efficiently and economically than conventional pulverized-fuel fired plants equipped with scrubbers. The FY 1979 budget request includes $1,600,000 to allow for completion of conceptual design funds and design modifications which may be required as a result of new environmental standards.

COAL
ADVANCED RESEARCH AND SUPPORTING TECHNOLOGY

Question

Your request for advanced research and supporting technology involves a 45 percent increase to almost $58 million, with substantial increases in each of the four subactivities. In each case, please supply an explanation for the increase together with specific examples of expanded research. The justification should detail cost increases and explain benefits to be derived from them.

Answer

AR&ST Funding by Category	FY 1978 Approp.	FY 1979 Request	Increases
Processes	$16,401	$24,450	+ 8,049
Direct Utilization	5,972	9,450	+ 3,478
Materials and Components	9,264	11,090	+ 1,826
Program Development & Coord.	8,363	12,836	+ 4,473
Total	$40,000	$57,826	+17,826

Explanation of Increases (Examples of Expanded Research Projects)

A. Processes:

1. Examples of expanded research in the process liquids area include:

Project - Disposable Catalyst Research ($1,600,000)

This money will be used for Disposable Catalyst Research. Discovery of a process which can use an inexpensive throwaway catalyst could effect substantial economic savings in catalyst cost, hydrogen consumption, and plant capital cost in coal liquefaction

Project - Indirect Liquefaction ($640,000)

Indirect Liquefaction via syngas which could produce finished gasoline or diesel fuel could have significant economic advantages over direct liquefaction. This type of process would do away with the high pressure vessels required in the direct route. Work on this category is oriented towards finding a better catalyst for syngas conversion.

Project - Other Third-Generation Research Process -
Catalytic Flash Hydropyrolysis ($300,000)
Two-Stage Liquefaction - ($1,000,000)

These two projects involve exploratory research into novel liquefaction concepts. Catalytic flash hydropyrolysis offers the possibility of producing high yields of liquids in the gasoline range at a cost substantially lower than existing processes. Two-stage liquefaction is a method to produce distillate syncrudes with much lower hydrogen consumption than standard technology. Since hydrogen cost is responsible for 30-40% of the processing cost in liquefaction, this project offers the promise of significant economic breakthrough.

Project - Coal Structure and Chemistry of Coal Liquefaction ($720,000)

The additional money will be used to continue studies of the mechanism of coal liquefaction. These studies had been funded in FY'78 by obligations from 1977. Such studies have lead to important new concepts in coal liquefaction such as the short contact time SRC.

2. Examples of expanded research in the process gases area includes:

Catalytic Coal Gasification ($1,700,000)

This is respresentative of an advanced process where expanded evaluation is required to effectively assess its economic potential on a timely basis - i.e., on a time scale such that positive results can influence decisions related to "demo" plants and commercial operation. Based upon the current technical data and the results of preliminary engineering and economic analyses, catalytic gasification may offer significant cost savings over alternative approaches to coal gasification. It has been estimated that the capital investment for a gasification plant based on a process under investigation at Exxon is approximately 67 percent of that required compared to Lurgi technology. It is also estimated that end product cost will be approximately 22 to 25 percent lower than from the Lurgi process.

To date, investigations have been directed at examining key aspects of potential process concepts at the bench scale. The results of these studies have continued to indicate the technical feasibility of this approach to gasification. Additional effort is required to integrate process components, evaluate potentially more effective catalysts and gasification reactions.

Gas Cleanup - ($1,000,000)

Increased levels of expenditures are also projected in the general area of gas cleanup. This includes hot gas cleanup, particulate control, alkali metal removal and cold gas cleanup. Some aspects of the overall cleanup are not well defined and experimental effort is required to quantify the problem (i.e., alkali control). Other aspects require evaluation of innovative approaches which could result in improved systems performance (i.e., hot gas sulfur removal and particulate control).

B. Direct Utilization

Specific examples of expanded research in the Direct Utilization category are:

1. Particulate and Contaminate Removal ($1,460,000)

A competitive procurement to be issued during FY 1978 will result in multiple awards during FY 1979 for several advanced or significantly improved techniques for high temperature, high pressure combustor off-gas and gasifier product particulate and other contaminant removal. The objective of this overall research effort is to investigate, test and evaluate new or innovative technology and hardware capable of assuring adequately efficient particulate and alkali metal contaminant removal from the high temperature, high pressure, pressurized fluidized bed combustor off-gas to meet gas-turbine requirements. The requirement exists for supporting the competitive procurement and the two-bench scale programs currently underway to meet contractual commitments.

Coal Slurry Fuels ($500,000)

2. Additional bench scale development testing and evaluation of coal slurry fuels will be undertaken during FY 1979. In addition, bench-scale studies on preparation of coal/oil/water emulsions, currently underway will be brought to the point of economic evaluation and pilot scale-up decision. Successful widespread acceptance and utilization of coal slurry fuels is dependent upon development of an acceptable stable, storable and transportable fuel which will not only permit retrofit of existing units but will also meet the environmental requirements. This research work is necessary to expedite the implementation and commercialization of this technology during the early 1980's.

Pulverized Coal Firing Technology ($300,000)

A competitive procurement will be initiated during FY 1979 to ascertain the benefits accruing to the pulverized coal firing technology as the result of coal cleaning. No work is currently being supported in this area. It is anticipated that one or more contracts will be awarded during FY 1979.

c. Materials and Components

Examples of expanded research in materials and components are:

1. Initiate materials evaluation and development program for third generation coal conversion processes - ($350,000)

Third generation coal conversion projects can reduce the cost of synthetic gases and liquids significantly but have potential materials problems which can lower plant reliability to the point that these savings will not be realized. An example is the effect of alkalies on materials of construction in catalytic gasification. Early resolution of these problems is necessary before third generation processes can be demonstrated.

2. Expand equipment reliability and materials failure analysis activities to cover liquefaction and direct utilization pilot and demonstration plants - ($420,000)

It is presently expected that demonstration of coal liquefaction processes will be accelerated. Materials and equipment performance data are, therefore, urgently needed to assure reliability of pilot, demonstration and commercial plants. The same holds for fluidized bed and low/medium Btu combined cycle power plants.

3. Accelerate development of slurry pumps and liquid/solid separation systems for liquefaction processes - ($280,000)

Liquefaction demonstration and commercial plants need large capacity coal slurry pumps which are not presently available. Development of such pumps is, therefore, needed to simplify plant design and increase reliability. DOE intends to work with industrial partners to develop and build a prototype model.

D. Program Development and Corodination

Examples of expanded efforts in this category include:

1. Environmental and Control - ($270,000)

   - for expanded policy analysis, environmental planning and NEPA compliance activities related to FE program.

2. Planning and Budget - ($250,000)

   - for macro-economic institutional studies and expanded strategy development support.

3. Program Review and Analysis - ($200,000)

   - for expanded process evaluation studies.

4. Project and Policy Coordination - ($3,500,000)

   - for implementation of the performance Assurance System designed to insure program integration and measure results of all FE technology development toward achieving the overall FE R&D objectives. ($1,250,000)

   - for management support activities to perform vital administrative and reporting responsibilities relating to control of travel, procurement, personnel and organizational planning activities ($1,490,000)

   - for special analytical studies required by the Program Director and executive staff to serve as the framework for timely and pertinent policy decisions impacting on the future of FE R&D programs ($760,000)

Question

Given the almost negligable growth in the overall Fossil Energy R&D Budget, why do we need a 50% increase in program development and coordination?

Answer

The FY 1979 request includes $12,836,000 for the Program Development and Coordination subactivity. These funds provide for analysis and support in the development of long term strategy and planning, systematic review and analysis of Fossil Energy programs to assure that key objectives are met, financial planning and support, coordination of environmental activities to assure that emerging technologies meet state and Federal requirements; coordination of university and field laboratory research in Fossil Energy, and for overall management of the Fossil Energy programs. The increase of $4,473,000 over the FY 1978 level reflects the increased complexity of the Fossil Energy program and the increased management support required as technologies mature and move from the laboratory through the PDU and pilot plant stages to commercial demonstration.

Question

What are the specific benefits to be derived from the list of accomplishments for program development and coordination on Pages 53 and 54 of this justification?

Answer

Completion of the management plan for Enhanced Gas Recovery will permit DOE management to properly evaluate programmatic efforts in this field particularly in light of the impending legislative agreement on the Administration's CY 1978 Energy Act. Such a plan developed with full industry participation will permit DOE to properly evaluate the interdependencies and impact of federal funding in this vital technology.

Efforts to comply with the National Environmental Policy Act and other similar Federal laws and regulations in that they affect energy technologies are essential to insure the environmentally sound and acceptable manner of these new industries.

The Department requires an annual update of EPD's. Nine plans for diverse Fossil Energy technologies will require modification in 1979. These expanding technologies and associated environmental programs will require increased coordination, in order to permit large scale commercial operations in the near future to proceed with the assurance that all environmental factors have been considered along with appropriate mitigating measures.

Funding will permit implementation of a Performance Assurance System (PAS) in FY 1979, which will permit quality assurance reliability studies, and hazards analysis on selected major FE projects. The PAS is essential in research projects of large financial magnitude, in order to identify problem areas and modify them during construction or initial operations.

The final design of a Management Information System (MIS) will be completed in FY 1979 and implementation of that system could then begin. The MIS is critical to meet significant changes in departmental policy and evaluation and to facilitate cost effective management of Fossil Energy programs.

Question

What are the total costs of the overall technical systems engineering evaluation of major Fossil Energy (FE) programs, environmental development plan for FE, and the FE project management system?

Answer

These programs are part of the overall program efforts being conducted by the Division of Program Control and Support, Fossil Energy. The technical systems engineering evaluations, important for evaluation and updating the several FE technologies, cost about $2 million annually. Coupled with this, an additional annual cost of $1.5 million, is for the Performance Assurance System, which serves as a vital management tool for evaluating and correcting the larger FE technologies. The nine environmental development plans must be updated annually at a total annual cost of about $600,000.

COAL

MAGNETOHYDRODYNAMICS

Question

Experts in the field have informed me that with an accelerated engineering development program the MHD technology can be shifted from a long-range to an intermediate-range technology given the technology advances in the last two years in this program by AVCO and the U.S.-USSR joint program, has DOE considered supporting such an accelerated effort?

Answer

The MHD program is one of systematic development and integration of components and subsystems at increasing scale leading to commercialization of the coal-fired MHD process. The CDIF and ETF projects represent key steps toward commercialization. Engineering qualifications at 50 MWt, will be accomplished in a series of progressively advanced CDIF tests. It is in the CDIF where technology for the ETF will be proved. The ETF tests, representing a five-fold scale-up of CDIF designs, are necessary to qualify full-scale plant designs. The need for this development approach arises from cost, scaling and risk considerations. A review of past power systems development history reflects this fact. We are proceeding at a pace of MHD development that provides orderly progression in a logical, stepwise fashion which will yield maximum probability of success while avoiding unnecessary risk.

Question

Have you considered acceleration of the MHD program as a part of your National Fuel Supply Study?

Answer

MHD Technology was not considered as a factor in the pre-1985 near term national fuel supply strategy because it cannot be accelerated within that time frame. Consideration of the MHD program will be included in the ongoing post 1985 longer range national fuel supply study to be completed later this year.

Question

Recently, you testified in the House that though you supported the MHD Program, it was technology limited. Experts in the field insist the technology development has progressed well beyond what they expected at

this point in time and that pilot plant development must begin now. Would you be willing to receive a delegation from the MHD community to discuss this situation and reassess the MHD program development schedule?

Answer

DOE is always ready to receive such a delegation and is always open to reassessing the MHD development schedule on the basis of new facts becoming available. We should like to point out, however, that you cannot accelerate any program by initiating the development of large-scale plants, from scratch without an adequate technolgiy base,without entailing unacceptable costs and risks. We believe that such a technology base has not been proven. To initiate a pilot plant now would mean a scale-up by a factor of over ten from the largest generator currently operating in the United States, the Avco Mark VI, and an even greater scale-up from generator development activities at UTSI. We feel that this entails unacceptable risk and that MHD technology must be first proven and qualified at the CDIF scale of 50 MWt. Once we have demonstrated the MHD technology at this scale, then we can proceed to a more modest five-told scale-up to pilot plant scale.

Question

The $68.8 million request for MHD operating expenses involved an increase of $2 million which is needed for "a change in project mix to support additional operations expenses." Please define the changes in project mix and the additional operating costs involved.

Answer

The changes in FY 1979 MHD program mix is shown as follows:

	Budget Authority - Dollars in thousands		
Open Cycle Development	FY 1978	FY 1979	Change
CDIF Project	$17,305	$16,889	$- 416
Engineering Development	27,300	27,096	- 204
Engineering Test Facility	2,941	400	- 2,541
Systems Engineering	6,754	9,886	+ 3,132
Supporting Research	9,300	13,554	+ 4,254
Closed Cycle Development	3,200	1,000	- 2,200
TOTAL	$66,800	$68,825	$+ 2,025

These changes reflect nearing completion of CDIF construction, reduced requirements for the Engineering Test Facility and closed cycle MHD development activities and increased funding for engineering and supporting activities for the overall MHD program.

Question

The total MHD request, including construction and capital equipment, total $72.3 million, an increase of only $825,000 over fiscal 1978. Is that sufficient to meet program goals?

Answer

The Administration request of $72.3 million provides for a balanced program for MHD which focuses on continued development work for MHD test hardware with emphasis on an initial CDIF power train. Start-up of both the CDIF and CFFF are anticipated. Balance-of-plant development activities are included through design and development testing of critical elements of the heat and seed recovery subsystems. Additional MHD technology activities include work on high- and low-ash carry-over generator experiments, air heater development, combustor development and superconducting magnet technology. Also included are elements under the U.S.-U.S.S.R. Cooperative Agreement in MHD such as the large-scale U-25 generator. In addition, important systems engineering and supporting research are to be carried out. ETF activities are to support environmental and site studies. These efforts enable the MHD program to progress at an acceptable pace with the scope sufficiently broad to encompass critical development issues.

The fact that the budget is approximately unchanged is representative of the program being at a current level base technology development phase.

Question

The 1975 Appropriations Act established a goal of a commercial-scale, coal-fired MHD electrical generating plant for possible operations in the mid-1980's. Currently you are stating that the technology is not advanced enough to justify construction of an experimental utility-size plant.

Answer

Yes, this is our present analysis. To answer this question directly, the engineering data is simply not available to provide for the construction of a commercial scale coal-fired MHD electrical generating plant for operation in the mid 1980's that meets industry/utility operational requirements.

Question

Is the congressional goal obtainable, is it desirable?

Answer

Operation of a commercial-scale plant meeting industry/utility design and operation constraints in the mid-1980's is a desirable goal. Our present state of progress in MHD, although encouraging, does not allow us to meet the congressional goal in a cost effective manner, without subjecting the program to undue programmatic risks of not succeeding. The phased program that we are presently embarked on will allow the congressional goal of a commercial scale plant in a time phase consistent with our engineering development progress and with minimum program risk.

Question

Please submit for the record, with a copy to committee staff, a capability statement addressing the total funding authorized in the Senate-reported DOE authorization for MHD for 1979.

Answer

The Administration request of $72.325 million provides for a balanced program for MHD which focuses on continued development work for MHD test hardware with emphasis on an initial CDIF power train. Start-up of both the CDIF and CFFF are anticipated. Balance-of-plant development activities are included through design and development testing of critical elements of the heat and seed recovery subsystems. Additional MHD technology activities include work on high- and low-ash carryover generator experiments, air heater development, combustor development and superconducting magnet technology. Also included are elements under the U.S./U.S.S.R. Cooperative Agreement in MHD such as the large-scale U-25 generator. In addition, important systems engineering and supporting research are to be carried out. ETF activities are to support environmental and site studies. These efforts enable the MHD program to progress at an acceptable pace with the scope sufficiently broad to encompass critical development issues.

A capability statement for a $38 million in FY 1979 increment is discussed in separate increments of $20 million and $18 million dollars as it was previously furnished to Congressional Committees.

The MHD operating budget is broken down into the following five categories:

1. CDIF Project
2. Engineering Development
3. Engineering Test Facility
4. Systems Engineering
5. Supporting Research

In the event that additional funds were to be available, and assuming that the amount added would be $20 million bringing the MHD budget to a level of $92.3 million, the following enhancement could take place:

1. CDIF Project, +$9.4 million: acceleration of MHD generator flow train hardware, initiation of a second generation MHD generator flow train more nearly approximating, at a subscale, ETF hardware, earlier delivery of the CDIF superconducting magnet, and increased operations activities at the CDIF. The overall benefits to the program would be an accelerated CDIF testing schedule thereby providing earlier data at greater depth for ETF design. The result on ETF would be lower technical risk and the possibility of accelerating ETF by one year.

   Specific priorities for the CDIF Project are as follows:

Accelerate MHD generator flow train hardware.	$ 1.2 million
Initiate second generator flow train	3.3 million
Accelerate superconducting magnet	2.5 million
Increase operations	2.4 million
Total CDIF Increase	$ 9.4 million

2. Engineering Development,+$9.6 million: acceleration of downstream plant heat and seed recovery system development, increased operations activities of the coal-fired facility in Tennessee, and increased activities in superconducting magnet construction. The overall benefits to be derived by the program would be accelerated acquisition of elements of the data base, particularly that for generators operating at high field, required for ETF design, thereby lowering the risk involved by ETF and supporting the possibility of accelerating the ETF by one year.

Specific priorities for Engineering Development are as follows:

Accelerate downstream plant development	$ 2.7 million
Increase operations of coal-fired facility ..	1.4 million
Increase superconducting magnet construction.	5.5 million
Total Engineering Development Increase	$ 9.6 million

3. Engineering Test Facility, +$1.0 million: initiate system requirements studies and conceptual design of ETF in consonance with increased activities at CDIF and in Engineering Development.

The addition of $18 million over the $20 million discussed above would result in the following estimated enhancements:

1. CDIF Project, +$7.4 million: upgrading the iron core magnet to 4 Tesla, provision of alternate generator channels and special test equipment as back-up and spares for 1A, and increased operations effort. The benefits to the program would be to increase the capability for testing and to provide back-up hardware and alternate designs thereby providing capability for acquiring increased data for ETF design. The result would be reduced risk on the ETF.

Specific priorities for the CDIF Project are:

Upgrade iron core magnet	$ 4.0 million
Alternate generator channel and special test equipment	2.8 million
Increase operations	0.6 million
Total CDIF Increase	$ 7.4 million

Question

Under your budget proposal, initial generation of power would occur in 1980. Could that be achieved sooner? If so, how?

Answer

The reference here is to the initial start of test operations in CDIF. This milestone will be met in early FY 1980. At the present time, (May 1978) the CDIF facility is about 40 percent complete. This level of accomplishment has been obtained by simultaneously integrating design and construction activities. Progress at the CDIF is preceeding at a rapid and optimum pace with all major activities required for initial CDIF activation now under contract. The cost expenditure to speed up this activity would be excessive in light of the minor schedule improvements that could be anticipated.

Question

MHD accomplishments for fiscal 1978 include 100-hour generator operation and 400-hour preheater operation. What benefits were derived from these operations?

Answer

The accomplishments referred to in this question have actually been surpassed in level of achievement. FY '78 accomplishments to date include

Generators: Successful completion of a scheduled 20 MW 250-hour endurance test under electrode loading conditions simulating commercial service achieving order-of-magnitude improvement in electrode corrosion/erosion.

High Temperature Air Preheaters: Achieved 800 hours simulative testing at 2700°F on direct-fired regenerative air preheater elements under heat transfer, fluidynamic and seed/slag conditions simulating MHD service. Achieved 100-hours continuous run in complete subscale heater at 3000°F, using simulated coal firing involving ash carry-over into the heater matrix.

Some scenerios for MHD power plant operation envision necessary plant availability being obtained using interchangeable moderate life generators. The 250-hour generator run indicates that (1) the interchangeable generator approach is a viable option and (2) significant advancement has been made towards developing long life generators. The important point to recognize is the continuous progress that is being made in generator development.

With respect to preheaters, it is apparent that while there is still a way to go in developing the technology of a complete full scale preheater, progress is being made in defining the building blocks that will go into this device.

Question

How much of the $27 million requested for engineering development is for Soviet test components?

Answer

Of the $27 million requested for engineering development, $2.85 m is requested for the development of U.S. test components for testing in USSR MHD facilities. After completion of joint tests, the test articles will be returned to the U.S. The USSR will provide all the manpower and consumables required for the tests. All U.S. monies spent on the U.S. test articles, therefore, remain in the U.S.

Question

How will the Soviet test benefit the CDIF?

Answer

The basic immediate benefits to the CDIF derived from the joint US/USSR testing of both US and USSR channels in the USSR U-02, U-25B, and U-25 facilities are threefold:

1) Facility Operating Experience:

   The conduct of joint tests in integrated MHD facilities with which the Soviets have over ten years of cumulative experience and the data they are able to provide on their experience can reduce the CDIF shakedown period and improve its operation.

2) High-Magnetic-Field Channel Data:

The CDIF will be used to test high-field subsonic channels (among others). The engineering data base to make critical design decisions for such a channel is in the process of being generated. Joint tests in the USSR U-25B facility which are already underway will make a major early contribution to this data base.

3. MHD Materials Development

USSR data on generator materials behavior and joint US/USSR electrode materials tests in the USSR U-02 facility have lead to a rapid expansion of the ceramic-electrode/materials data base which has broad spectrum application to U.S. channel development.

Question

Supply a breakdown for university research under development for fiscal years 1977 through 1979.

Answer

FY 77	$ 6.925M
FY 78	$ 18.191M
FY 79	$ 16.244M

Question

What is your policy toward industry cost sharing of planned MHD development facilities, including the commercial demonstration plant?

Answer

We fully support cost-sharing activities in all phases of MHD development. However, in a moderate risk technology such as MHD, where costs are significant, we do not believe it is realistic to expect industry cost sharing before a level of overall system demonstration is achieved that meets industry and utility design and operations constraints. This demonstration will be obtained in the CDIF/ETF facilities.

The commercial demonstration plant is a separate situation. In our viewpoint, it is reasonable to expect that, based on previous MHD concept demonstrations, strong cost sharing involvement will be present in this facility's development.

Question

To date, has industry indicated any strong interest in sharing the cost of MHD development?

Answer

Strong interest has not been shown in cost sharing of MHD development because (1) the level of technology is at a risk stage that necessitates the Federal Government's lead in funding and (2) critical CDIF/ETF demonstrations meeting industry/utility design and operations criteria must be obtained before industry participation will develop.

It should be noted, however, that the TVA has expressed interest in MHD power plant development, and that MHD progress is being closely monitored by utility and industry groups.

Question

Given your continuing commitment to MHD, why did the Department, according to a trade publication, cancel a contract with the University of Tennessee for the sale of an important superconducting magnet?

Answer

The Department and its predecessors (ERDA and OCR) did not cancel any contract with the University of Tennessee for the sale of a superconducting magnet. The original contract with UTSI provided for a superconducting magnet to be delivered to UTSI as Government-Furnished Equipment twenty-two months after initiation of work under the UTSI-OCR agreement. Budget restraints, technological priorities and UTSI's schedule delays indicated that a superconducting magnet procurement for the Coal-Fired Flow Facility (CFFF) would not fit within the time frame originally agreed to between UTSI and OCR. This has not impacted either MHD technology development or MHD research at the University of Tennessee. Indeed, the University of Tennessee has made significant recent accomplishments in MHD. A conventional magnet has been funded and procured by UTSI. Funding for a superconducting magnet for the U.S. CFFF at the University of Tennessee is in the procurement plan and will be provided at the proper time in the program.

With respect to magnet development, there are several important factors to consider. The first is that magnet technology development is best achieved by iteratively building new and larger magnets using a steadily increasing magnet data bank. This same level of achievement would not be made if all desired magnets were built initially with the limited knowledge at hand. Additionally, of course, the Department has to prioritize its budget with respect to magnet development.

Let me add one additional point. While a superconducting magnet improves MHD research capability, it is clear to me that important MHD technology contributions can be made with test trains having conventional iron core magnets. Test train 1A at CDIF will also have an iron core magnet initially. The next phase at both the CDIF and the CFFF will include a superconducting magnet capability for bringing us closer to actual base plant requirements.

Question

What is the unobligated balance of funds available for MHD as of April 1, 1978?

Answer

The unobligated balance of the total funds available for MHD is $31,550,000 as of April 1, 1978. This unobligated balance, however,

includes a total of $24,400,000 for procurement actions that have already been initiated and in the procurement pipeline. The remaining $7,150,000 is for planned procurement actions of incremental funding and modifications to existing contracts.

Question

Only $1 million is requested for closed cycle MHD, a reduction of $2.2 million. Explain and justify the reduction.

Answer

The basic conversion process for MHD closed cycle is the same as for open cycle, namely motional electromagnetic inductions. In the closed cycle process, however, the working fluid receives the heat input through a heat exchanger fired with coal rather than using the coal combustion directly. In addition, system studies conducted under the Energy Conversion Alternatives Study (ECAS), which examined a number of advanced power generation concepts, indicated that the efficiencies possible with closed cycle MHD, while respectable, were less than open cycle while the costs of closed cycle would be higher. For these reasons, viz, lower stage of development, lower potential efficiency, and higher potential costs, the main thrust of the MHD program is open cycle. However, effort in closed cycle will be continued. As a follow-on to ECAS, advanced systems studies and parallel economic studies are being initiated to reexamine the performance and cost issues raised by ECAS. Work on the closed cycle heat exchanger will continue and emphasize the direct firing of this device by coal. Resolution of this, of course, is an absolute necessity as direct coal firing of the closed cycle heat exchanger has yet to be demonstrated. In addition, a channel design for a closed cycle MHD blow-down experiment will be initiated.

Questior

What has been accomplished to date with closed cycle research? What are your goals and your milestones for this work?

Answer

The main technological uncertainty in the closed cycle MHD process is a coal-fired heat exchanger to serve as a heat source to deliver a noble gas plasma of high purity. Thus, priority has been placed upon determination of the feasibility of a heat exchanger capable of heating the working fluid (Argon) while keeping it free from contamination from particulates.

To date, this activity has achieved the following:

1. demonstrated that a pilot scale clean fuel regenerative heat exchanger can deliver a high purity argon plasma.

2. developed instrumentation to measure contaminant levels with sufficient sensitivity for the actual ranges.

3. analytically predicted that non-equilibrium electron concentrations can be maintained.

4. carried in January-February 1978, a 100-hour continuous test of the existing heat exchanger simulating coal firing by using propane

with fly ash injection. The results are still being evaluated but the preliminary indications are very optimistic.

5. designed an atmospheric pressure, air-cooled, coal-fired combustor for heat exchanger firing. The combustor has operated for about one hour (May 1978) during a shakedown operation and demonstrated the correctness of the thermal design calculations.

It is planned to initiate parallel advanced systems engineering studies to evaluate system and economic performance. Heat exchanger work will continue and, in addition, a channel design will be initiated.

Within the budget requested, it is anticipated that the following milestones will be achieved:

1. Initiate heat exchanger/coal combustor parametric testing - beginning FY 79.

2. Initiate long duration heat exchanger/coal combustor operation - third quarter FY 79.

Question

Since the $3 million of our request for the MHD CDIF will complete funding for this project, why do you still carry a 19 percent "contingency overcost" amount?

Answer

The CDIF project is now approximately 40 percent complete. It is appropriate and normal construction cost estimating practice to keep the contingency in the estimate through project completion in order to allow for construction cost increases, decreases, and changes.

Question

Does the estimated construction cost of $37M include land acquisition, component costs and other expenses? If not, why not?

Answer

Components that are a permanent part of the facility are included in the estimated construction costs of the CDIF; however, components that basically represent test hardware to be tested, modified, and eventually replaced are funded from operating expenses. The latter are clearly operating expenses for the facility. The operations contractor, component integrator and other miscellaneous aspects are funded from operating expenses. Land acquisition costs were funded from operating expenses because no FY 1976 capital funds were available at the time of land purchase. The reprogramming action had not been completed at that time.

Question

What are these costs.

Answer

The estimated construction cost of $37,000,000 excludes land acquisition of $37,000 which was funded in prior years, and test components such as air-preheaters, superconducting magent and power trains which

will be required after construction. Such costs are included in the CDIF project operating expenses for which $16,889,000 is requested in FY 1979. Operating expense requirements for FY 1979 also includes component integration and pre-operations costs.

COAL
ADVANCED ENVIRONMENTAL CONTROL TECHNOLOGY

Question

Provide a breakdown of the $14 million request for the coal research formerly administered by EPA.

Answer

	(In millions)
Precombustion Control	$ 2.0
• Myers Process Chemical Coal Cleaning - Pilot plant test program evaluating the iron sulfate pyrite leaching process.	(1.5)
• Chemical Coal Cleaning - Bench and pilot testing of emerging chemical coal cleaning technologies.	(0.5)
Flue Gas Cleanup	3.0
• Demonstration of Aqueous Carbonate Flue Gas Desulfurization Process - Demonstrate at 100 MWe size promising sulfur-producing process on coal-fire boiler.	(1.5)
• Flue Gas Desulfurization and Denitrification Technology Development - Develop a pilot or demonstration scale promising second generation flue gas cleaning technology.	(1.5)
Gas Stream Cleanup	4.6
• Chemically Active Fluidized Bed Demonstration Program - Demonstration of fluidized bed technology for the conversion of high-surfur residual oil to low Btu gas for power generation.	(1.0)
• Fluidized Bed Miniplant - Small pressurized bed combustion pilot facility aimed at evaluating clean-up technologies.	(1.2)
• High Temperature Particulate Control - Program aimed at developing cost-effective, high-temperature/high-pressure gas cleanup technology.	(2.4)
Technology Support	4.4
• Projects aimed at developing improved technology for the minimization of environmental damage resulting from fossil fuel mining and oil extraction.	(2.0)
• Develop Energy Recovery Technology - Development and evaluation of techniques for industrial fuel use and conservation.	(2.4)
	$14.0

Question

Why wasn't this program integrated with related coal cleanup work under your mining R&D activity?

Answer

Only $2 million of the $14 million EPA program transfer is closely related to the mining activities. This $2 million is in coal cleaning. Under DOE the coal cleaning activities will be integrated into a single program for cleanup of coal prior to combustion.

Question

How much funding is involved for the Meyers process chemical coal mining facility and the .63 MW fluidized-bed combustion mini plant? Where are these plants located?

Answer

The following is a breakdown on the funding for the Meyers process coal cleaning and FBC mini plant projects:

Facility	Location	Prior Gov't Expenditure	FY 1979 Request
Meyers process coal cleaning.	Capistrano, CA	$ 6.3 M	$ 1.5 M
FBC Mini Plant	Linden, NJ	$ 8.2 M	$ 1.2 M

Question

It would appear the fluid-bed process to convert high sulphur oil and coal to low-BTU gas is much the same as work being conducted under your low-BTU gasification program. Why is this work conducted separately?

Answer

To maintain the integrity of the EPA transfer, all projects were included in one budget activity. This does not mean that this fluid bed process will be conducted separately from other gasification efforts. In fact, this program has been monitored by Fossil Energy gasification personnel even while conducted by EPA.

Question

Give us the funding and location for the fluid-bed process. What is the cost to date and the total estimated cost? Is there any industry participation?

Answer

Chemically Active Fluidized Bed Process:

Location:	San Bonito, Texas
Prior Gov't Expenditures:	$9,600,000
Total Estimated Cost:	$12,600,000*
Industry Contracts:	Westinghouse
	Esso England
	Foster Wheeler

* Includes $3,000,000 for operation of the plant FY 1979 through FY 1981 at $1,000,000 a year.

Question

A year ago the national energy plan called for a six month review of new flue gas desulphurizing technologies to determine feasibility and the possibility of accelerating research and development. What were the results of that review? Are they reflected in this budget request?

Answer

An interagency task force reviewed flue gas desulfurization technology and submitted a report to OMB dated November 30, 1977. The request recommended an expanded effort on solving the problems which have plagued presently available systems and recommended development of a number of advanced systems producing marketable products rather rather than sludge. The DOE has prepared a program plan which addresses the recommended program. The plan and its budget requirements are presently being reviewed by the Administration for possible inclusion in the subsequent budgets.

PETROLEUM
ENHANCED OIL RECOVERY

Question

On another subject, I note that the original FY 1979 budget request for the enhanced oil recovery program is $15 million below the DOE request. The FY 1979 request does not even cover the cost of inflation. What would DOE accomplish if the $15 million you originally requested of OMB were appropriated?

Answer

The budget estimate provides for the enhanced oil recovery projects of the highest priority as identified in the EOR Management Plan. We believe that the substantial commitment by the Federal Government to the technology target areas of the highest expected payoff represents the best program at this time. If an additional $15 million were provided for enhanced oil recovery activities, the next highest priority projects identified by the EOR Management Plan would be undertaken. These would include:

1. Develop adequate and cheaper supplies of carbon dioxide.

2. Determine the applicability of in situ combustion to heavy oil reservoirs.

3. Extend the micellar-polymer process to mid continent sandstone reservoirs.

4. Accelerate the development of an improved carbon dioxide flooding process for application in low residual oil saturation carbonates in the Southwest and Montana.

5. Improve the efficiency of the micellar-polymer process in Illinois sandstones.

Specific activities that will occur if the extra funds are added includes an extensive applied research program into such problem areas of micellar-polymer flooding as emulsion studies, thermodynamic properties, rock wettability effects, mechanisms of caustic flooding, and surfactant system improvements. Applied research will also be conducted on phase behavior and mobility control of carbon dioxide in low residual oil carbonates, and high temperature effects on rock and fluid properties within situ combustion. In addition, the CONOCO micellar-polymer pilot and the General Crude Oil in situ com-

bustion pilot, both begun in FY 1978, will be continued. A caustic flood pilot in a mid-continent sandstone and two carbon dioxide mobility control field tests in low residual oil carbonates will be initiated.

The approximate breakdown of these extra funds will be:

Micellar-polymer flooding	-	$10.0 million
Carbon dioxide flooding	-	3.0 million
In situ combustion	-	2.0 million

Question

The justification notes that a technology implementation plan for enhanced oil recovery is to be completed in the middle of the current fiscal year. Has that plan been completed? If so, what impact does it have on your fiscal 1979 budget estimates which were drawn up in advance of that plan?

Answer

The Technology Implementation Plan (TIP) for Enhanced Oil Recovery has been completed and will be printed and issued in June. This document has no impact on the FY 1979 budget estimates. The TIP describes the specific activities and their interrelationships, funding requirements and milestones for each EOR project based on the project goals and funding profiles specified in the EOR Management Plan.

Question

Some experts think micellar polymer flooding has great potential for increasing oil production after 1990. Why are you reducing research in that area by $6.6 million?

Answer

We agree that micellar polymer flooding has great potential for increasing oil production after 1990. The EOR Management Plan analysis shows that micellar polymer flooding will only account for 4.5% of the incremental oil production goal in 1985, but accounts for 20% of the 1995 goal. However, in the EOR Management Plan analysis, which considers such factors as short and long range production versus R&D costs, two of the three active micellar polymer projects were not ranked as high as some other technology projects with potentially higher near-term payoff. We would anticipate that the development of this technology would be far enough along in the relative near term that the industry, which has a substantial interest in this technology, would proceed based on market considerations.

Question

How can you reduce spending for micellar polymer flooding and still conduct an additional field test? Please give a specific justification for the reduction?

Answer

The five-year program developed in the EOR Technology Implementation Plan calls for a pilot test in a California sandstone to begin in FY 1979. Since the California sandstone project is fully funded, the new pilot test can be initiated even though the total micellar polymer budget has been reduced.

The level of FY 1979 funding for the micellar-polymer technology is determined by the operating cost in that year of the projects selected in the EOR Management Plan. As you know, the EOR Management Plan

identifies advance extraction technology projects in priority order based primarily on the expected incremental yield anticipated with the commercial adoption of the technology. Emphasis is on the near term. The FY 1979 request is reduced from the FY 1978 level because the FY 1979 support of the selected projects requires lower funding levels than in FY 1978.

Question

Also explain the $1.3 million reduction in carbon dioxide flooding. Aren't you starting two more tests in fiscal 1979?

Answer

There are three active carbon dioxide projects in the EOR program. The carbon dioxide flooding project in high residual oil carbonates has a very great potential and is in Priority Group 1 in the EOR Management Plan. The carbon dioxide supply project and the low residual oil carbonate reservoir project, ranked in Priority Group 5, with considerably less potential for increasing oil production in the near term, will be discontinued in FY 1979. No new field tests are planned in FY 1979 using carbon dioxide flooding.

Question

The Office of Technology Assessment rates micellar polymer and carbon dioxide processes as having greater potential for enhanced oil recovery than thermal processes. Why is funding for thermal almost twice as much for the other two?

Answer

It is generally accepted that micellar polymer and carbon dioxide flooding have greater potential for EOR than thermal recovery processes, due primarily to higher recovery efficiencies. However, there are significant technical and economic problems that need to be overcome with these two processes. The EOR Management Plan analysis estimates that 719,000 BBL/day of incremental oil production (79% of EOR program goal) in 1985 and 1,429,000 BBL/day in 1995 (50% of total goal) are attributable to thermal processes. Based on these recovery figures and other factors, the EOR Management Plan ranks most of the thermal projects in the upper priority groups. The high proportion of funding for thermal projects is due to the fact that all thermal projects active in FY 1978 will continue in FY 1979.

Question

What are the costs of the five new tests planned for fiscal 1979 under thermal recovery?

Answer

DOE total costs (in millions of dollars)

A. Demonstration of steam drive with additives, $8.35

B. Two light oil pilot, $2.4 total

C. Two tar sand tests, $2.6 total

Question

Supply detailed justification of the $6.4 million increase for thermal recovery.

Answer

The Agency believes that Thermal Recovery Technology has the highest potential for near term increased oil production. Four pilot tests and several mini-tests will begin in FY 1978. In addition, two projects to demonstrate the use of cheaper fuels to generate steam were begun. The $18.4 million FY 1979 request, an increase of $6.4 million over FY 1978, will support those projects as well as two thermal pilot tests in light oil reservoirs, two in tar sands, and one in a heavy oil reservoir which are scheduled to begin in FY 1979. In addition, the request will support the continued development and testing of a down hole steam generator. Continatuion of these thermal projects on the Management Plan schedule will stimulate incremental oil production by an estimated 719,000 BBL/day in 1985 and 1,429,000 BBL/day in 1995.

Question

How much of the $11.8 million requested for environmental and supply studies is for university research?

Answer

At the current budget level, approximately $3 million from the environmental and support category will be for research conducted at universities. Approximately another $3.3 million of university research will be funded under the specific technologies.

Question

Justify the $460,000 increase requested for environmental studies.

Answer

The FY 1979 request of $11.8 million for Environmental Studies and Other Support provides for research to expand the knowledge base, environmental studies, technology transfer, and studies to accurately determine residual oil saturations. The maintenance of these programs is essential to continue an effective EOR program. The increased request for environmental and support studies will allow these activities to continue at their FY 1978 level allowing for inflation.

PETROLEUM
OIL SHALE

Question

A $5.3 million increase requested for oil shale R&D apparently is for incremental costs. In view of the near-term potential of this resource, why can't you support an expanded program?

Answer

As noted, the requested increase of $5.3 million is for incremental costs, primarily to meet negotiated estimates for the four major eastern in situ technology contracts and to permit continuation of the in-house laboratory program at a level equivalent to FY 1978. This program level is adequate to continue development of four specific in situ methods, each targeted primarily at a geologically different type of oil shale resource at a level that should result in completion of feasibility demonstration by the end of FY 1981. Technical success of one or more of these projects would permit commercial implementation by 1985 if adequate economic incentives exist, and if environmental regulations (as further modified in the future) allow the commercial development of a viable industry.

Question

Supply a breakdown of 1978-79 funding allocations among the principal elements of the oil shale activity. Justify any increases and decreases.

Answer

The FY 1979 request for the Oil from Oil Shale activity is $29,350,000 compared to $24,032,000 in FY 1978. This is broken down as follows and compared with FY 1978 levels:

(In thousands)

	FY 1978		FY 1979	
	Contracts	Field	Contracts	Field
Oil production	$11,013	$10,042	$16,312	$9,888
Environmental	610	770	188	905
Supporting research	234	1,363	193	1,864

The major increase in oil production contracts is to meet estimated incremental funding requirements for the four PON contracts based on the negotiated scope of work. The decrease in environmental contracts reflects the fact that much of the university work previously funded is of a type more properly funded through DOE's Assistant Secretary - Environment programs. The major increase in supporting research reflects the anticipated reversion of the Anvil Points Facility to DOE from the present lessee.

Question

Why is the request for environmental research at such a low level? Isn't this a principal problem in the commercialization of oil shale production?

Answer

The line item request for environmental research includes only that supporting research that is dependent upon samples being produced by active in-house field or large-retort projects, where carefully documented sample history is required and where coordination is required to ensure rapid analyses or other utilization of fresh samples. This includes both in-house research and university projects that require DOE-supplied sample material. The environmental monitoring and research performed as an integral part of the major contract projects, both the western shale oil technology projects and the shale gasification project in Michigan that is included under the Gas from Oil Shale budget line, is not included in the separate Environmental Research request. Broader categories of oil shale environmentally related research that are not real-time dependent on samples from active field projects are the responsibility of DOE's Assistant Secretary for Environment, and are included in budget requests from that office.

Question

How much has DOE contributed to the Navy's oil shale refining project? Give us the numbers for fiscal 1977 through 1979 estimated.

Answer

To date, DOE has made no direct contributions to the Navy's shale oil refining project. A reprogramming request was initiated in November, 1977 that would have permitted DOE to assume responsibility for the refining portion of this overall production-refining-end use testing of military specification products from shale oil. This reprogramming request has not been approved by the Congress. However, in anticipation of such approval, Fossil Energy has provided funding, since December 1977,

on a month-by-month basis to support new initiatives relating to mining and crushing of oil shale and operation of the oil shale pilot plant to meet monitoring and data evaluation requirements under the Development Engineering, Inc., lease agreement at Anvil Points. These funds totaling $1.2 million allowed operation of the Anvil Points facility through mid-May. A breakdown of the funding is as follows:

Date	FY 1978 Funding
December 1977	$191
January 1978	280
February 1978	270
March 1978	200
April 1978	300
	$1,241

Subsequently, DOE's Assistant Secretary-Environment has provided $270,000 to fund a project at the Anvil Points facility to conduct environmental studies related to surface oil shale processing. This project required continued operation of the PARAHO facility. DOE is currently evaluating the PARAHO project to determine appropriate future action.

Also, under an Interagency Agreement negotiated in FY 1977 between ERDA and the Navy that is now the DOE-Navy vehicle for joint activities that pertain to production, storage, transportation, refining and end-use testing of refined products from shale oil, $25,000 was transferred to the Navy to cover costs of transporting and storing shale oil from the Occidental project that may be used in future refining projects. The Navy has agreed to handle the transportation of this oil to DOE's Anvil Points site for storage, in tanks that were previously erected at the Navy's expense for storing oil produced by Paraho.

Question

To date, how do refining cost of oil shale compare to those for regular petroleum? What is the outlook for oil shale refining?

Answer

When the oil shale rock is retorted a liquid, hydrocarbon like material, shale oil, is produced. This shale oil is then amenable to refining to transportation fuels. Shale oil has a high nitrogen content and will always be more difficult to refine than petroleum. However, no one cost penalty can be stated since the refining costs vary greatly depending on the nature of the feedstock and of the products to be produced. In general, the refining of shale oil will cost $3 to $7 per barrel more than refining a crude oil. The lower end of the range would be for a situation in which coking is used to produce low valued fuel oils and the shale oil is compared to a low quality, heavy, high sulfur crude oil. The high end of the range would be encountered when producing high quality crude oil. However, because of its higher hydrogen content, shale oil will cost less to refine than coal liquids.

Because of the cost penalty it now appears that initial shale oil production will be used as boiler fuel or blended into a refinery where existing equipment is not fully utilized and the cost penalty is, therefore, reduced. This can only be the case for the initial low levels of production. A mature shale oil industry can only be developed if the refining cost penalty is reduced.

PETROLEUM
DRILLING AND OFFSHORE TECHNOLOGY

Question

The $1.6 million for drilling and offshore technology maintains a level program. What have you accomplished and what can you reasonably expect to accomplish at this low funding level?

Answer

Past year accomplishments to increase drilling rate has progressed with:

- development and field testing of mud pulse telemetry system;
- development of bonding techniques for synthetic diamond bit;
- development of a drilling research and development blueprint program plan.

Past year accomplishments to provide advanced instrumentation for seafloor hazards has progressed with development of a seafloor instrumentation package.

The FY 1979 budget request will allow:

- bit, material and instrumentation laboratory studies and tests;
- seafloor instrumentation laboratory study and test;
- initial strategy plan development.

Question

How many positions are associated with this program?

Answer

DOE personnel associated with this program total 3 full time, all at Headquarters.

Question

How do you coordinate your $600,000 environmental and advanced concepts program with similar work by Geological Survey, NOAA and others?

Answer

Fossil Energy coordinates with these agencies (and with private sector activities) through:

- o Jointly funded projects (three on-going currently).
- o Ad hoc meetings of technical people.
- o Attendance at each other's staff meetings, as appropriate.
- o DOE representation at selected USGS-NOAA Coordinating Committee meetings.
- o Joint particaption in symposia and workshops held by professional societies, various Government agencies and universities.
- o Exchange of technical reports, proposals and other literature.
- o Regular and special focus meetings of the Marine Board of the National Academy of Engineers.

Question

How much are you spending on seafloor and earthquake stability for offshore drilling?

Answer

Through FY 1978, $900,000 has been spent in this area.

Question

What are the overall goals for the near and long-terms under your drilling and offshore technology program?

Answer

The objectives for the Drilling and Offshore Technology program are:

Short-term: Increase average drilling rate 20% by 1985; provide advanced instrumentation for OCS seafloor hazards by 1980.

Long-term: Increase average drilling rate 30% by 1990; stimulate earlier development of advanced systems for arctic offshore.

GAS

Question

Explain and give a specific justification for the $2 million decrease proposed for the $12 million Eastern Gas Shales Program. In view of its potential, why isn't this program expanding instead?

Answer

The FY 1979 budget request includes $12 million under Operating Expenses for the Eastern Gas Shales project. While the request is $2 million less than the FY 1978 level it provides adequate funds to continue this major thrust in the Enhanced Gas Recovery Activity. Resource characterization studies on the gas-bearing Devonian shales will continue at about the same level as in FY 1978 to determine the true magnitude of the gas reserves and the physical/chemical parameters that are important in stimulating the production of gas. Additionally, cost-shared field tests of stimulation technologies will continue as an important basis for the prompt orderly development of the Eastern Gas Shales resource.

Question

Also detail and justify the original $17 million request to OMB for this program.

Answer

The Department's FY 1979 estimates to OMB included $17.1 million at the enhancement level for the Eastern Gas Shales project. A breakdown of the request and justification of the request is as follows:

- Resource Characterization: $6.0M

  The basic geologic evaluation would be continued. Core acquisition from up to 10 wells would be acquired and anlayzed.

- Technology Development: $5.5M

  Up to 20 wells would be stimualted by advanced hydraulic fracturing. One new lab testing project to study design and evaluation of an explosive fracture technique would be started. New drilling and completion techniques would be designed and tested for configuration drilling , dual and open-hole completions.

- Technology testing and verification: $5.5M

  Up to 18 wells at 6 sites would be drilled to test state-of-the-art technology in the virgin areas of the shale.

The program outlined was designed to narrow the range and increase the reliability of natural gas resource estimates for the eastern Devonian shales.

Question

You have $1.2 million increase budgeted for Western Gas Sands, but apparently only to maintain the current program level. Please detail and justify the $10.9 million level recommended as maximum to OMB.

Answer

The FY 1979 request of $5,500,000 for the Western Gas Sands (WFS) project porvides for a balanced program including resource characterization studies being conducted by the U.S. Geological Survey and field stimulation testing aimed at the timely development of the Western Gas Sands resource.

The FY 1979 Department estimates to OMB included $10,900,000 at the enhanced levels of funding for the WGS project. A breakdown of the request to OMB is as follows:

Resource Characterization: $4.0 million

Resource characterization and evaluation studies would be continued in the Uinta (Utah), Piceance (Colorado), Green River (Wyoming) and Northern Great Plains Province (Montana) basins.

Technology Development: $6.9 million

Work planned in these areas is among the high priority projects in the EGR strategic plan currently under development. One field test in each of these four basins would be initiated.

Question

What accomplishments are there under the Western Gas Sands Program?

Answer

The two ongoing massive hydraulic fracturing projects, one in the Piceance basin and the other in the Uinta basin, have produced successful results. Gas Producing Enterprises has treated five wells in the Uinta Basin; four have shown production increases from approximately 40 Mcf to 800 to 1200 Mcfd. Mobil Research has treated three zones in a well in the Piceance Basin. The well produced 1 to 1.5 Mcfd to the sales line over the winter. Two additional zones in this well are to be treated this spring.

Fracture mapping technology has been developed for optimizing infield drilling in fields where hydraulic fracturing is required. Advances in modeling and the rock mechanics of fracturing have been made.

Question

Why are you not budgeting any field experiments in Western Gas Sands for fiscal 1979?

Answer

The FY 1979 request for this project does provide for continuing resource characterization studies including coring, testing, logging and special studies including fracture mapping; and for field testing of stimulation technologies at a level comparable to that in FY 1978.

Question

After only one year, why have you cancelled your work on methane from unminable coal seams? Give a specific justification of the zero funding for this program.

Answer

While the FY 1979 budget request for the Enhanced Gas Recovery activity does not include funds for the Methane from Coal project, the budget does provide for continuing R & D on coal bed methane.

Presently coal bed methane research activities are conducted in three Fossil Energy activities: Mines Research and Development efforts focus on methane drainage from coal to increase mine safety and productivity; projects under the Improved Conversion Efficiency activity deal with methane utilization from both minable and unminable coal seams and seeks the best utilization system for each situation; and in the Enhanced Gas Recovery Activity, FY 1979 efforts will be limited to completing resource evaluation studies initiated in FY 1979.

The FY 1979 budget request includes $4 million under the Improved Conversion Activity for the methane utilization studies and an estimated $2 million under the Mines Research and Development Activity for the methane drainage studies.

A recent Fossil Energy management decision locates overall management responsibility for coal bed methane activities in one Fossil Energy division with the budget focus to be under the Enhanced Gas Recovery Activity. A management plan is being developed to describe the necessary programs and resource requirements for exploiting this potential source for additional supply of methane. This document will provide the basis for any future budget requests for coal bed methane work.

Question

What is the near-term potential of methane from coal? What are the main barriers to gas production in this area?

Answer

There are enormous quantities of gas within coal seams. However, due to the speculative nature of the resource and the uncertain capacity of existing technology to exploit it except in areas where individual seams are being mined, only a wide range of near-term production estimates can be made. Recovery from seams as an adjunct to mining will be limited by the pace of mining to an estimated potential of between .02 and .07 Tcf/yr which could be extremely important for local usage and on-site power generation in the East. The real potential for methane from coal as a national energy supply will lie in the drilling of many additional wells specifically for production of methane. The objective of the DOE

program is to gather enough engineering data to reliably assess near-term potential. No reliable near-term production estimates presently can be made.

Some of the constraints to overcome in developing this resource are that the coal industry will not accept application of a technology that might decrease coal production, gas quality from methane drainage in association with mining may be low quality for pipeline use, ownership of gas is a problem in some states, potential economics must be determined before industry will be attracted to any large-scale development.

Question

The Senate Energy Committee has increased the authorization for enhanced gas recovery by $17.5 M above the budget. These increases are to fund additional field tests in devonian shale, methane from coal seams and western tight sands. What would be the percentage of cost-sharing that could be expected from industry?

Answer

Industry could be expected to contribute from 30% to 70% funding for these field tests. The level will depend on the confidence that industry has in the specific unconventional geologic resource and the specific R&D demands imposed by the Government in the field experiment.

Question

Since industry is participating in these field tests, would the $17.5 million increase or reduce the technical risk associated with producing gas from these resources?

Answer

The technical risk associated with the field tests that DOE is participating in with industry will be greater than normal due to the added formation testing. However, one of the objectives of the technology development in EGR is to reduce the technical risk of producing gas from these resources by developing formation evaluation technology to better understand the reservoir before stimulation is attempted.

Question

Would the funding increase speed up the technology transfer to industry through the cost-sharing?

Answer

Yes. Cost-sharing would be expected to accelerate technology transfer.

Question

How cost-effective are expenditures for gas stimuation R&D?

Answer

Our recent analysis indicates that gas stimuation R&D is a very cost-effective way to acquire natural gas production from the unconventional gas resources. Research cost for the increment of ultimate recovery that potentially could be attributed to federal R&D is less than a half cent per million Btu for the 18 research projects in the EGR strategic plan.

Question

Under your $4.3 million request for gas from oil shale, how much is for fracturing your experiments and how does that compare to fiscal 1978?

Answer

The entire Eastern shale gasification project (Dow contract) is directed to evaluating four specific in situ fracturing concepts. Funds for the individual fracturing steps are not separately broken out from the total scope of work that includes all necessary related activities such as drilling, coring, fracturing, geochemical and geophysical tests on shale samples, combustion tests and environmental monitoring. The total incremental funding of this work in FY 1979 is estimated at $3.8 million, up from $2.9 million in FY 1978.

Question

How realistic is your goal of commercializing gas from oil shale by 1985?

Answer

The objective of the Gas from Oil Shale subactivity is to develop the technology base to support commercialization by 1985. In the case of Western oil shale commercialization of gas production would probably be linked to oil production since any commercial shale oil production will also produce synthetic gas as a byproduct in amounts equivalent to 15-50 percent of the Btu value of the shale oil. The amount produced is a function of process control parameters. The specific retorting process will determine whether a low-Btu or high-Btu gas is produced. Much of this gas may be utilized in the oil shale plant as fuel. Some preliminary plans for selling gas excess to plant requirements have, for example, been publically discussed by Occidental.

In the case of Eastern shale gasification, we have not set a goal of commercial production by 1985. The present work, scheduled for completion by the end of FY 1980, is to determine if any of four specific in situ methods shows sufficient technical promise to warrant further development attempts. Technical feasibility demonstration is not included in the present contract. At best, this Eastern gasification technology is unlikely to reach commercial application prior to the 1990's.

Question

How is the program allocated between eastern and western shales?

Answer

Direct FY 1979 expenditures for the Dow contract project in Michigan to test in situ methods in the Antrim Shale (a Devonian shale) are estimated at 11.4 percent of the oil shale budget. Additional supportive research by the Laramie Energy Research Center includes laboratory and engineering-scale studies of Devonian shale as a part of broader studies.

Question

Why are you concentrating on Michigan oil shale? Is this the only area with substantial industry interest?

Answer

We began work on eastern oil shale in the Michigan deposits specifically because of the industrial interest evidenced by the expenditure of some

$7.5 million over a 20-year period by Dow Chemical Company, and because the extensive data base resulting from Dow's prior work indicated that the Antrim Shale is the most concentrated known deposit of Devonian-type shale (estimated equivalent to 2.5 trillion barrels in place) and has geologic characteristics particularly suited to attempted in situ development. A further consideration at the time of beginning this work was the announced plans of Canada to curtail energy exports to the upper United States, and the resulting strong interest by the State of Michigan in the potential development of this domestic energy resource.

To date, this is the only work proposed to ERDA or DOE that has concerned development of a specific eastern oil shale resource for synthetic oil or gas production. Although other proposals have been received to develop technology that could be applied to eastern shale, such proposals have not come from potential shale developers with resource positions to which the technology might be applied.

Question

One of the near-term features of the proposed budget amendment is the additional $10 million for unconvential natural gas, all of it for geopressured reservoirs. Isn't there an equally great need to accelerate work on enhanced gas recovery from eastern shales and tight gas sands?

Answer

Yes. The President's Budget includes $12 million for enhanced gas recovery from eastern gas shales and $5.5 million for western tight gas sands.

Question

What was the Department's original budget amendment request for enhanced gas recovery? Please supply details for the record.

Answer

The Department's FY 1979 budget amendment submitted to OMB included a request for an additional $7.0 million for the Enhanced Gas Recovery activity. This request was further broken down to include:

- Eastern Gas Shales Project ..... $2.0 million

  To provide for investigation of dual completion technology for recovering gas from Devonian shales.

- Western Gas Sands Project..... 5.0 million

  To provide for joint Federal/Industry field testing of improved fracturing technology in the Uinta and Piceance Basins.

Question

What about research and development on methane from coal beds? Isn't there a great near-term potential in this program?

Answer

There are enormous quantities of gas within coal seams. However, due to the speculative nature of the resource and uncertain capacity of existing technology to exploit it except in areas where individual seams are being mined, only a wide range of near-term production estimates can be made. Recovery from seams as an adjunct to mining will be limited by the pace of mining to an estimated potential of between .02 and .07 Tcf/yr

which could be extremely important for local usage and on-site power generation in the east. The real potential for methane from coal as a national energy supply will lie in the drilling of many additional wells specifically for production of methane. The objective of the DOE program is to gather enough engineering data to reliably assess the near-term potential. No reliable near-term production estimates presently can be made.

Question

Did your original budget amendment request contain any funding for methane from coal? If so, please submit details for the record. If not, what additional funding do you think could be effectively used for this program?

Answer

The Department's FY 1979 budget amendment to OMB did not include an amended request for methane from coalbeds.

The President's FY 1979 budget request includes $4.0 million under the Improved Conversion Efficiency Activity for coalbed methane utilization. Additionally, the Mines R&D activity provides an estimated $2 million to continue studies on methane drainage as a way to increase mine productivity and improve safety as well as provide for recovery of methane for use as fuel. Fossil Energy management has reviewed the diverse projects underway in the coalbed methane program and plans to focus overall management responsibility for these activities in one Fossil Energy Division. A management plan is being developed to describe the program content and responsibilities for conducting the various important elements of research including:

- o Economic assessment of the resource.
- o Extraction/separation techniques.
- o Utilization of coalbed methane.

Until the management plan is completed and the program needs clearly identified, the Department believes that the requested level of funding is adequate to maintain this important program.

MULTI-SECTOR
IMPROVED CONVERSION EFFICIENCY

Question

The DOE Office of Fossil Energy now has the funding responsibility for the Thermionic Energy Conversion Technology Development Program. It is my understanding that most of the program was recently transferred from the Office of Nuclear Energy. Is the budget request by the Office of Fossil Energy sufficient to support the whole program? Why not? What additional amount is necessary?

Question

What would be the impact on the program if the $4.0 million Thermionic and Materials Research and technology task is eliminated?

Answer

As indicated, the total Thermionics Program was transferred to Fossil Energy only recently. The FY 1979 budget request of $1.9 million provides for a power module evaluation project and permits a short term evaluation of current levels of technical and economic performance.

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While the Department believes that the amount requested is adequate to conduct the project planned for FY 1979, a capability statement for additional funding of $4.0 million for the Thermionics program has been submitted in response to specific requests of Congressional Committees. We have stated that the additional funds would be used for thermionic and materials research and technology development designed to improve converter performance and reliability and to provide the understanding and physical models required to adequately describe the characteristics of thermionic converters for a given application.

Question

At full funding, do you see a future for the thermionic program? Could it become a commercially viable technology?

Answer

Thermionic Energy Conversion shows every indication of becoming a commercially viable technology, as a topping system for steam electric central station powerplants. It also has the potential for use in solar, nuclear, MHD and magnetic fusion power systems.

Thermionic power systems posses a number of features which make them ideally suited to coal-fired powerplant topping and cogeneration systems. By virtue of their modularity, thermionic power systems have the potential for retrofit into existing powerplants. Current fossil fuel powerplants efficiency is approximately 36%. The objective of the DOE thermionic program plan is to improve this efficiency to over 50%. Thus, potential fuel saving associated with implementation of thermionic retrofit topping units is sizeable.

Like other high temperature technologies, however, thermionic converters must demonstrate their long-life capability in the harsh combustion furnace environment. To this end, tests are in progress in the DOE program to demonstrate compatibility in the combustion environment. Thusfar, silicon carbide hot shells - hot shells are the components in direct contact with the combustion gases - have demonstrated over two years life in a simulated combustion environment with the tests continuing.

Question

The request for the heat engine and heat recovery subprogram is $29,600,000 and is apparently heavily weighted toward large engines. Does the Improved Conversion Efficiency program have responsibility for small engines that could be used by on-site solar or in advanced heat pumps? If so, how much of the $30 million will be spent in this area? If this program does not have responsibility for improved small engines, what DOE program does?

Answer

The improved conversion efficiency program has the responsibility to develop advanced technology small stationary engines. These engines have application in a number of areas including on-site solar and advanced heat pumps. The Division of Solar Technology and the Division of Buildings and Community Systems have the responsibility of developing the complete energy systems that will make use of the advanced technology small stationary engines in the on-site solar and advanced heat pump applications. The small stationary engines are part of an overall program to develop advanced fuel flexible energy conversion systems in two size ranges, 1 to 50 kw and 500 to 2000 kw. The current effort in both size ranges is concentrating on Stirling engines. The small Stirling has application for refrigeration, hybrid electric vehicles, generator

powerplants, and residential total energy systems, as well as the on-site solar and advanced heat pump applications. The large Stirling has application for total energy systems for communities and industrial locations and generation of electricty for other applications such as rural electric cooperatives. The Stirling engine is attractive for all of the above applications because of its fuel flexibility, low noise levels and its high efficiency. The fuel flexibility includes the use of any heat source from coal to municipal refuse as well as industrial waste heat or solar collectors. The Stirling engine in either size range also has the capability of efficiently providing cryogenic fluids for use with electric transmission systems currently under development by the Conservation Division of Electric Energy Systems.

The planned FY 1979 expenditures for the Stirling engine effort in the improved conversion efficiency program is $1.1M.

Question

In the budget document you state an objective of increasing base load utility plant efficiency from 34 percent to 50 percent. Please briefly summarize how this is to be accomplished? What role will the utilities themselves play in this?

Answer

There are various technologies under development which offer increased efficiencies of up to 50%. They are: Thermionics, Fuel Cells and MHD.

Thermionics:

The efficiency of fossil fuel-steam cycle plants is severely limited by our inability to fully utilize available combustion temperatures that normally range upward of 3000°F. Instead, the available energy is degraded by the ultimate extraction of work from this heat source at steam cycle temperatures essentially limited to approximately 1000°F.

A thermionic topping cycle would provide the capability to extract energy in the 3000°F to 1000°F range thereby increasing overall efficiency with no increase in fuel use. Studies completed to date indicate that with a thermionic efficiency of 35 percent, a combined thermionic-steam cycle could attain an overall efficiency of 50 percent. Thermionic converters to date have demonstrated an efficiency of 15 percent in the laboratory.

Fuel Cell Technology

The fuel cell is a device that electrochemically converts fuel energy to electricity in a highly efficient and environmentally acceptable manner. Fuel cell power plants can be factory built and located close to the point of electrical demand, reducing energy losses associated with transmission and distribution and permitting effective use of waste heat. It's modular construction permits size flexibility from kilowatt to megawatt capacity.

The Energy Conversion Alternatives Study (ECAS) indicated that a large central station power plant using molten carbonate fuel cells integrated with a coal gasifier could operate at projected efficiencies of 50% from coal to AC electricity.

MHD

Activity in MHD R&D is directed toward the development of electrical utility sized combined MHD/Steam-cycle power generating plants burning

coal directly in a process that is highly efficient and that inherently meets all environmental standards. The process is based on direct conversion of heat to electricity by passing a high temperature high velocity electrically conducting fluid through a magnetic field. The exhaust heat is used to fire a conventional type steam plant.

The ECAS study concluded that the combined open cycle MHD/Steam system offers the greatest potential for significant improvement in overall plant efficiency and cost improving potential with efficiencies of approximately 50% from coal pile to bus bar and competitive cost of electricity at about 32 mill/kwt. There are also significant environmental advantages inherent to this technology with SO_2 and NO_x emission levels projected below 0.55 and 0.3 lbs/million Btu, respectively.

The utilities will eventually serve as demonstration sites for these technologies. In the meantime, close coordination is being maintained with the Electric Power Research Institute and engineering firms with heavy utility experience who are responsible for performing systems, economic, and application analysis.

Question

Under heat engines and heat recovery, you are pointing to large energy savings of 1.5 quads by 1985 and 10 quads by 2000. How attainable are those goals and how will you reach them.

The energy savings goals of 1.5 quads by 1985 and 10 quads by 2000 are attainable depending on the mix of advanced technology equipment to eventually be employed. In addition to the development of new technology, there are impediments such as regulatory and institutional barriers which must be overcome for cogeneration and waste heat recovery to be widely adopted as an energy savings option. The savings estimates quoted were based upon reasonable levels of market penetration for new technology and assumed that regulatory and institutional barriers would be resolved. If this proves to be a correct assumption it is felt that the goals are attainable.

Cogeneration and heat recovery technology are expected to produce the most immediate results by increasing fuel utilization efficiency in the industrial and residential commercial sectors. Cogeneration and integrated coal conversion and utilization systems, on the otherhand, offer the greatest longer-term savings by permitting the substitution of coal for critical gas and oil fuels. The total energy savings goals are thus to be reached by developing advanced heat engine and heat recovery systems to maximize energy saving in all three energy entensive market sectors: utility, industrial, and residential/commercial. Of the quoted goals, the resultant savings anticipated in each sector is:

Sector	Estimated Savings (Quads)	
	1985	2000
Utilities	0.16	2.19
Industrial	0.81	4.93
Residential/Commercial	0.53	2.48

Question

Do these estimated savings under heat engines and heat recovery include any energy savings claimed under other activities?

Answer

The heat engines and heat recovery activity is the only program charged with the development of advanced heat engine and heat recovery technology for use in the industrial, residential/commercial, and utility stationary power markets. The energy savings goals were determined by calculating market penetration of these new technologies on the basis of their anticipated cost and performance relative to current technology. We are not aware of these savings estimates being claimed under other activities.

Question

Your budget of $14.9 million for advanced cogeneration is up $6.3 million. What are some of the specific achievements you are working on in the fuel flexibility area?

Answer

There is a $6.3 million increase in the FY 1979 budget as compared to FY 1978 due to the fact that several programs in gas turbines, diesels and Stirling engines have progressed beyond design and will be starting research, development and initial test programs. The primary objective of these programs is to provide the engine technology necessary to operate reliably, efficiently and cleanly on more abundant fuels as compared to current fuels such as natural gas and light distillates. Success in these programs is vital if heat engines, beginning in the mid to late 1980's, are to be able to initiate commercial operation on residual oils and coal/coal-derived fuels without sacrificing reliability, economy or the environment.

By the end of FY 1979, several new gas turbine low NOX corbustor concepts will have been fabricated and rig testing will be initiated on high nitrogen content residual oils and coal derived liquids. By mid FY 1980, screening tests to find a low NOX concept will be completed by several manufacturers and one or more concept worthy of two year full scale rig development for an advanced engine will be pursued competitively. A mating program to identify and initiate development of advanced ceramic coatings for protection of high temperature gas turbine hot parts against the contaminants found in the more abundant fuels will complete its rig screening tests in FY 1979. Coating concepts worthy of further development for engine application and subsequent engine test will be selected and pursued in FY 1980. For diesel engines, European technology will have been implanted in FY 1979 to permit US diesel engine to burn residual oils without adversely affecting its reliability. Also, on diesels, major testing will have been initiated to define the efforts of micronized culloidal coal fuels on emissions and reliability. In FY 1979, an initial fabrication and test program will be started to determine if steam injection and exhaust gas cleanup/water collection and recycling equipment can reduce harmful gas turbine emissions from low quality fuels. The test program will continue into FY 1980. FY 1979 will also be the year for initial testing of the 1st generation in a small Stirling engines - a potential ultimate fuel flexible engine since it uses external combustion and can work on virtually any fuel source.

Question

How does cogeneration under improved conversion efficiency tie into cogeneration under other activities? Which activity has the cogeneration lead?

Answer

Within DOE there is considerable coordinated interest and activity in cogeneration. The cogeneration activity which takes place under "Improved Conversion Efficiency" is DOE's Advanced Cogeneration

effort which is aimed at the selection and development of power systems for cogeneration applications in the 1985-2000 time period that will use non-critical fuels. This lead R&D work will provide the advanced technology necessary for application and demonstration programs to be conducted by DOE's Conservation/Solar end use Divisions of Buildings and Community Systems and Industry Conservation. These groups are currently engaged in programs involving the applications of current fuels and current technology to overcome institutional/regulatory /legal barriers to cogeneration. As successes and technological achievements occur in the Advanced Cogeneration effort they will be transferred to the end use groups for application and demonstration.

Question

Why don't you have any projects in basic combustion research? If this is going on under the basic energy sciences program, how do you plan to use that program's results?

Answer

The Assistant Secretary for Energy Research is responsible for the conduct of basic research programs in DOE. Through close coordination between the Assistant Secretaries for Energy Technology (ET) and Energy Research (ER), basic research results are transferred to ET to support ongoing R&D projects or to provide the basis for new conversion and utilization processes. For example, specific tasks under the Alternate Fuel Utilization and Advanced Combustion Technology sub-elements would make use of basic research results in the areas of aerodynamics, chemical kinetics, numerical modeling and computational techniques, and advanced combustion diagnostics would be applied to the specific end use areas.

Question

One of the four principal aims of the combustion systems subprograms is to develop and demonstrate the technology required to capture and utilize methane from coalbeds. Why are you doing work on methane use technology when natural gas contains about 90 percent methane? Isn't methane use technology pretty well established already?

Answer

Where high purity coalbed methane can be extracted in large quantities near existing gas pipelines there is no utilization problem. Unfortunately, a significant quantity will have to be recovered under conditions where production rates are too low for economic construction of pipelines to the normal natural gas distribution system or where a low methane content precludes direct pipeline injection or combustion in traditional equipment designed for operation on pipeline quality natural gas. The technology for utilization of methane under these conditions is not presently established and the utilization program addresses the development and/or demonstration of appropriate options to insure that this gas can be economically used.

Question

How much was spent for methane recovery in FY 78? With what results? How much was requested for FY 79? What was the original FY 79 request from the DOE program manager?

Answer

In FY 78 the budget for coalbed methane was $2.7 million under the Improved Conversion Efficiency Activity. With these funds the on-site power generation project at Ebensburg, Pa. was initiated with power production to the mine grid to begin in mid-July; system engineering and environmental impact assessment for the Waltz Mill, Pa. project will be completed as well as site selection for the Beckley, W. Va., Beckley seam-pipeline injection demonstration plant.

The FY 1978 appropriation also included $2 million in the Enhanced Gas Recovery program for resource characterization.

Recently, a decision was made to integrate all DOE coalbed methane activity under one program.

The FY 79 budget request for this activity is $4 million.

Question

The fuel cell subprogram (BA request $35,500,000) appears to be heavily weighted towards demonstration of 4.8 MW fuel cell power plant. This cell requires natural gas or hydrogen as fuel, but future fuel cells offer the potential for direct use of coal and the attainment of higher efficiencies. Why isn't more effort being expended on R&D on advanced fuel cells?

Answer

The fuel cell subprogram funding breakout is as follows:

	(In millions) FY 78	FY 79
4.8 MW powerplant development	$16.5	$ 5.5
Phosphoric acid systems development .	14.3	14.0
Molten carbonate systems development.	2.2	12.0
Applied research	2.2	4.0
Total	$35.2	$35.5

As can be seen, the 4.8 mw project has decreased from FY 78 to FY 79 and at the present time the FY 79 budget is not heavily weighted toward the 4.8 mw powerplant development. Advanced fuel cells which are being developed under the molten carbonate and applied research subactivities have increased significantly in funding.

The 4.8 mw fuel cell powerplant as well as the advanced cells such as improved phosphoric acid, molten carbonate and solid oxide electrolyte cells are comprised of three major subsystems: a fuel processor, fuel cell stack and DC-AC inverter. The fuel cell stack requires hydrogen gas as an input fuel stream. The fuel cell stack electrochemically converts hydrogen and air to DC power and steam. The DC-AC inverter converts the DC power to AC. The fuel processor converts raw fuel to hydrogen. Present state-of-the-art fuel processors allow the conversion of steam reformable hydrocarbons to hydrogen; the steam being provided by the fuel cell stack. Present steam reformers are compatible with light distillates, such as naphtha, alcohols, liquified petroleum gases and methane. These basic hydrocarbons could also be supplied from nonconventional sources such as biomass, coal or waste conversion. Development efforts are underway to extend the fuel flexibility of fuel cell powerplants to other alternate fuels such as heavier distillates and coal derived liquids. The integration of a fuel cell powerplant (either phosphoric acid or molten carbonate) with a low-btu coal gasifier holds promise of being

an efficient and environmentally advantageous method of generating power from coal. A molten carbonate fuel cell powerplant integrated with a low-btu coal gasifier has been estimated at 50% efficiency (coal pile to bus bar) and phosphoric acid in a similar configuration at 38-40% efficiency.

Phosphoric acid technology leads molten carbonate by 5-10 years. Commercialization of first generation (phosphoric acid) systems is considered necessary and desirable in the near term with advanced fuel cell systems with even greater efficiency and fuel flexibility to follow.

Question

Fuel cells produce DC electricity. Most electrical applications require AC. Are you developing the DC to AC conversion technologies to use with your fuel cells?

Answer

Sigificant development work on DC-AC inverters for fuel cell applications has preceeded the DOE fuel cell program through the sponsorship of electric utilities, manufacturers, gas utilities, DOD and NASA. The performance of state of the art inverters is sufficient so that minimal further development is required, primarily in the area of reliability improvement.

Question

Will the fuel sources for advanced cells that use gaseous or liquid fuels (e.g. from coal or biomass) be ready when the cells are? Who is doing the coordination work to ensure this?

Answer

Alternate fuel sources such as liquids and gases from coal, biomass and waste are anticipated to be available when the advanced fuel cells are ready for commercialization. A fuel processor development program is underway to develop the equipment required to allow fuel cell powerplants to operate efficiently with alternate fuels. Low Btu coal gasifier development efforts are managed under the fossil energy coal conversion program. It is anticipated that demonstrations of fuel cells operating from coal gasifiers will be conducted in 1980-81.

Question

Serious consideration is being given by the authorizing committees in Congress to a 7-year, $250 million commercial demonstration program for fuel cells. The proposal is to initiate this program in fiscal 1979 with $25 million. First, is fuel cell technology to the point where it can be effectively demonstrated in such a program.

Answer

The technological feasibility of the fuel cell for the generation of electricity has been demonstrated through operation of a 1MW powerplant for a period exceeding 1000 hours. High quality power was supplied to an electric utility system and total compatibility with an existing network was confirmed. The Presidents' budget provides for a program to determine operational feasibility, the next step towards commercialization, and involves construction of a

4.8 MW fuel cell powerplant, installation on an electric utility site (Consolidated Edison of New York, at E. 15th St. and F.D.R. Drive, New York City), and evaluation and test of the system in the environment that will provide practical data on operational, performance, and maintenance characteristics. No problems have been identified or are anticipated in the areas of system improvement that would require technical breakthroughs for solution.

Question

What is the current interest of industry to date in such a demonstration program? Is industry willing to cost-share on a 50-50 basis?

Answer

Industrial interest in the generation of power via fuel cell energy conversion technology has been substantial since the mid-1960's. In recent years, the level of interest has increased since the system characteristics are such that fuel resources are conserved through uniformly high operating efficiencies, the environment is preserved due to minimal energy conversion emissions, and capital commitment is for lesser periods because of modular construction and shorter lead times. The expression of substantial interest has been supported by substantial participation in development programs through the sharing of costs. The 1MW program expenditures were assumed completely by the electric utility industry and the developer. Fabrication costs of the 4.8 MW powerplant are being shared by the Government as included in the President's FY 1979 budget request, the Electric Power Research Institute (EPRI), and the manufacturer. Construction of the test site and evaluation of the powerplant will be shared by the Government, EPRI, and a seven member electric industry consortium lead by Consolidated Edison. In aggregate, the cost share on these programs between Government and industry, to date, approximates 28% and 72% respectively. While expressions of the level of cost share that the industry would provide for the demonstration program under consideration cannot be quantified at this time, it is reasonable to presume that the increasing interest and past participation would justify the expectation that such sharing would be substantial.

Question

Could DOE effectively utilize $25 million in fiscal 1979 to launch such a fuel cell demonstration program? If so, how would the funds be utilized? Please provide details for the record.

Answer

The FY 1979 President's budget includes $35.5 million for fuel cells R&D. This level provides for a balanced program aimed at establishing the commercial feasibility of phosphoric acid fuel cell powerplants in electric utility applications and for continuation of other fuel cell development efforts.

Question

The $5.5 million request for the 4.8 MW electric utility powerplant in New York involves an $11 million reduction, apparently because construction on this fuel cell project is nearly complete. When do you expect to have this plant in operation and what results are expected from it?

Answer

The reduction in the level of funding requested for the 4.8 MW powerplant program reflects the decreasing financial outlay required

for hardware design and fabrication. The Fabricated Fuel Cell module should be available for shipment to the Consolidated Edison site during calendar 1979. Installation, debugging, acceptance, validation and supplemental testing will be initiated at that time. It is expected that the completion of these test programs will provide the experience and data on design, installation, operation, and maintenance needs necessary to establish the information base required by industry for competent decision making. This will permit selecting the "how" and "where" of fuel cell electric generation implementation to best serve consumers and producers of power.

Question

The $12 million requested for the molten carbonate system triples funding for that development project. When do you anticipate this technology will be ready for commercialization?

Answer

If the presently planned program is successful, the molten carbonate fuel cell powerplant could be ready for commercialization by 1987-1990.

Question

How firm is your schedule for operating large generating plants with molten carbonate fuel cell system in 1987 and 1989?

Answer

The schedule for operating large generating plants with the molten carbonate fuel cell system in 1987 and 1989 is a realistic one. To meet this schedule, the following major milestones must be accomplished:

FY 79 - Successful testing of laboratory-scale cell stacks with advanced components; definitions of tolerable impurity levels for contaminant resistant materials; completion of cell-modeling studies; and design of a 100 kw test rig.

FY 80-84 - Full-scale cell testing and short stack testing; operation of 100 kw full-scale test rig with prototype mass production hardware; operation of test station with coal gasifier; and operation of megawatt - scale powerplant with commercially viable technology.

FY 85 - Technology base established allows a "go" decision to construct and test a 500 + MW powerplant.

Question

To what extent is industry involved in the molten carbonate systems development?

Answer

Present molten carbonate development efforts are with GE, Energy Research Corporation (ERC) and IGT. It is anticipated that three systems contractors, UTC, GE and Westinghouse/ERC will participate in further development on a cost-shared basis. These activities are coordinated with the Electric Power Research Institute. Groups such as IGT, national laboratories, Energy Research Centers and universities will continue to provide technology support.

INDIAN ASSISTANCE

Question. The justification for policy and management discusses a program of technical assistance to Indian tribes which own energy resources. It says projects were started in the current fiscal year and are expected to be completed in fiscal 1979 at a level of $1.7 million. Can you tell us how this program was funded in the current fiscal year?

Answer. The project mentioned with the Council of Energy Resource Tribes was undertaken in Fiscal Year 1978, but without Department of Energy funding. The Bureau of Indian Affairs, Economic Development Administration, Community Services Administration, and Department of Health, Education, and Welfare provided Fiscal Year 1978 funding to support the policy, planning and technical efforts of the Council. The Department of Energy plans to contribute to this joint effort in Fiscal Year 1979.

Question. Last year, before the creation of the Department of Energy, the Federal Energy Administration requested funding for an Indian assistance program. This funding was specifically eliminated and transferred instead to the Bureau of Indian Affairs. In view of this Congressional action, how is it that the Department can initiate the very program that was denied funding?

Answer. The funding requested by the Federal Energy Administration was for the development of energy resources. The funds requested by the Department of Energy will be to support the Council of Energy Resource Tribes and other energy projects. More specifically, these funds will be used to encourage and facilitate wise development as well as conservation and protection of Indian energy resources, by helping the tribes to establish the capacity to define, understand and manage the financial, technical, social, economic, legal, etc., aspects of energy development.

Question. What Indian assistance projects were funded by the Department of Energy this fiscal year?

Answer. Two projects were funded this fiscal year under the Environment Mission. The first of these, a $180,000 grant to the Crow Coal Authority, provides funds to improve the Tribe's energy planning ability through assessment of the environment and socioeconomic aspects of development of coal resources. Another $200,000 has been made available for community college Indian training programs concerned with the biological and geophysical aspects of reclamation activities.

Question. This committee has taken the position in the past that Indian assistance programs should be coordinated through the Bureau of Indian Affairs in order to avoid the extensive duplication that already exists. Why shouldn't this technical assistance program be managed by the Bureau, which can reimburse the Department of Energy for its expert assistance?

Answer. The efforts of the Department of Energy are being undertaken at the specific request of the 25 member tribes of the Council of Energy Resource Tribes and with the consultation of the Bureau of Indian Affairs. At present, there is no duplication of Department of Energy and Bureau of Indian Affairs energy resource development efforts. The Bureau of Indian Affairs is currently authorized to do mineral, including non-energy, inventories on all reservations. The Department of Energy's authorities are more extensive and can perhaps be more instrumental in the long run in helping the 25 energy tribes to realize equity production.

ENERGY INFORMATION ADMINISTRATION

Q. Under the Department of Energy Organization Act, the EIA was given responsibility for collecting information on the financial structure and operation of the energy industry in order to assess the extent to which competition exists in the industry, the effect of horizontal and vertical integration on development of energy supplies and the effect of federal policies on the structure of the industry.

-- What progress is EIA making in its investigation of these questions?

A. The Financial Reporting System (FRS) is being developed in response to Section 205 of the DOE Act. Following an extensive development effort, which has included a public panel meeting, consultations with other agencies, and protests, EIA now plans to submit a forms clearance package to OMB in June, 1978. Data systems development has been started. The tentative schedule now calls for receipt of completed forms at DOE in early 1979 and publication of initial reports during the summer of 1979. The reports will provide extremely useful data to support studies of the financial structure and operation of the energy industry.

Q. What kind of information is FRS collecting?

A. The Financial Reporting System (FRS) is designed to collect both financial and statistical information from energy producing companies on a company-segmented basis. The reports that are submitted by each company will provide data on revenues, profits, cash flows, and investments in total, as well as by energy source, function (such as producing, refining, and marketing), and geographic area. Specifically, FRS will collect data on:

- horizontal diversification and vertical integration, i.e., what are the patterns, trends, and relationships with firm type, size or profitability
- profitability of the oil and natural gas industries at different points in the supply stream
- economic environment of crude oil and natural gas production
- balance sheets, income statements, funds flow statements, and operational data of energy companies

Q. The EIA is also responsible for generating independent assessments of the Nation's oil and gas reserves. One of the most perplexing aspects of considering the National Energy Plan was the inability of anyone in our government to accurately estimate domestic oil and gas supplies and the price truly necessary to induce increased production.

-- What is the status of EIA's efforts in this area?

A. Perhaps the best way to answer this is to provide you with the attached implementation schedule for the Oil and Gas Information System (OGIS). This implementation plan indicates the various steps, with estimated due dates, for the different steps proposed to implement OGIS.

FORM EIA-23 IMPLEMENTATION SCHEDULE

TASK	COMPLETION DATE	
FY 78		
Begin OGIS Project	12/12/77	(Completed)
Complete Form Design, Draft Instructions, Definitions and Supporting Statement	01/05/78	(Completed)
Submit Agency Preliminary Review Package	01/09/78	(Completed)
Complete Agency Preliminary Review	01/20/78	(Completed)
Mail Consultation Questionnaire	02/03/78	(Completed)
Hold Congressional Staff Briefing Session	02/13/78	(Completed)
Publish Federal Register Notice	02/17/78	(Completed)
Meet informally with OMB Staff	02/28/78	(Completed)
Receive Consultation Results and Federal Register Comments	05/08/78	(Completed)

TASK	COMPLETION DATE
Submit Final Agency Review Package	06/23/78
Complete Final Agency Review	06/30/78
Submit OMB Clearance Package	07/20/78
Receive OMB Clearance	
Mail Questionnaire to Respondents	

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FY 79

Receive Completed Questionnaire and Begin Processing	October, 78
Submit Preliminary In-House 1977 Report	12/30/78
Publish Final 1977 Report	04/15/79
Commence 2nd Year Data Collection and Processing Cycle	
o Data on Geologic Characteristics to be added	
o Expand Verification of Collected Data by having Engineering Teams Evaluate and Prepare Independent Estimates of Reserves in Selected Fields and Reservoirs	
o Commence Basic Analytical Studies of the Reserves Data	

TASK	COMPLETION DATE
Mail Questionnaire to Respondents	01/15/79
Receive Completed Questionnaire and Begin Processing	04/15/79
Submit Preliminary In-House 1978 Report	06/15/79
Publish Final 1978 Report	09/30/79

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FY 80

Commence 3rd Year Data Collection and Processing Cycle

- o Full Reporting of Reservoir Data
- o Addition of Natural Gas Liquids Data
- o Verification Program Fully Operational with Maximum Number of Government Auditors
- o Integrate U.S. Resource Data into Program
- o Analytical Studies on Resources and Reserves, and Production Forecasts to be Performed

Mail Questionnaire to Respondents	01/15/80
Receive Completed Questionnaire and Begin Processing	04/15/80
Submit Preliminary In-House 1979 Report	06/15/80
Publish Final 1979 Report	09/30/80

Q. When can Congress expect to receive its first report with respect to these responsibilities?

A. Section 205 of the DOE Act of August 4, 1977, requires that EIA make effective for use during the second full calendar year following the date of enactment the format for an energy-producing company financial report. First reports are scheduled to be available by September, 1979.

Q. Does DOE have any plans to share this information with the FTC or DOJ?

A. Yes. The present plan is for the Department of Justice and the FTC, along with GAO and the Department of Interior, to be given access to the company specific FRS reports. In addition, various tabulations will be developed for DOJ and the FTC as analytical needs dictate. Publication of FRS information for the general public will be in aggregate form.

QUESTION: Under your multi-resource activity you are zeroing out the $450,000 for a study on power applications of electricity. What has been learned to date? Is the study completed yet? If not, when do you expect to complete it?

ANSWER: There was no single study which was to be financed by the $450,000. In February 1978, due to a reorganization of the Department, the Office of Utility Systems was created within the Economic Regulatory Administration (ERA), which absorbed the electricity applications function supported by the Multi-Resources budget entry. As a consequence $200,000 was transferred to ERA for support. The remaining $250,000 will be used to support direct combustion programs in the Office of Coal Programs. This is a related function, because the direct combustion of coal is of primary concern to electric utilities.

The $200,000 transferred to ERA has all been obligated during the last 60 days on four contracts which are listed below.

Amount	Purpose
$9,000	To develop a computer model capable of analyzing Energy Information Administration (EIA) power plant data.
$27,000	To Oak Ridge Labs, for a set of projections on fuel supply and consumption by electric utilities.
$55,000	To the National Governors Conference for a power review with the states.
$109,000	To the Argonne National Labs, for an Evironmental Impact Statement on a northern states interconnection with Manitoba Hydro.

QUESTION: Who will use the results of the study for developent work? Will that be another division of DOE?

ANSWER: Internal to DOE, the studies will be of primary use to ERA and the Energy Information Administration . Outside of the Department, we expect the state energy offices to use the material developed through the National Governors' Conference. This same data will be used by the Regional Representatives of DOE in providing services to the states. Of course, the northern tier states will have a high interest in the Manitoba study.

Q. The only other program under multi-resource is an alternate fuels demonstration program, for which you propose an initial appropriation of $1 million. Is this effort limited to oil shale commercialization?

A. Yes, it is intended to use these funds primarily to support oil shale commercialization.

Q. It appears from the justification that this effort will be limited to various studies and the development of a market plan. Will the FY 1979 funding allow anything beyond studies?

A. Yes, funding at this level permits studies and development of plans. We are hopeful the funds may extend to the design and detail cost estimating phase for oil shale projects selected for further development.

Q. Where is this program headed? Do you envision demonstration funding in future years?

A. We are hopeful that appropriate incentives will result in industry taking the lead in developing our oil shale resources. If any government demonstrations do occur it is anticipated they will involve higher risk activity that industry cannot undertake.

Q. Doesn't this work duplicate conservation and fossil fuel programs?

A. No, this is an extension of R&D in Fossil Fuels to the true commercial phase.

Question: How soon will the Department have an in-house capability for determining the accuracy of industry reserve estimates and the costs of extracting additional energy supplies?

Answer: The accuracy of industry resource information will be able to be verified for the first time by government audit procedures as a result of the new Oil and Gas Information System (OGIS) which, beginning this year, will require certified reports from individual oil and gas operations. Current estimates under the existing industry systems are not verifiable bu audit. These systems will be replaced

over the next two years by the OGIS. Moreover, over the next two years, assuming adequate resources, the Energy Information Administration expects to hire significant numbers of the necessary specially skilled individuals to provide an in-house capability for determining the accuracy of industry reserve estimates. In the interim, EIA is seeking to arrange with other agencies such as the U.S. Geological Survey, Bureau of Mines and the Naval Petroleum Reserve Office, to use their experts to supplement its growing staff.

The Office of Energy Information Validation, with the assistance of EIA's field offices in Dallas, Denver, and Pittsburgh, and Oak Ridge National Laboratory and Lawrence Berkeley Laboratory, is presently developing a growing capability to determine the validity of industry's reserve estimates and costs of extracting additional energy supplies. In addition, we are presently conducting geostatistical research to gain a better understanding of reserve estimation techniques. The national laboratories can and must provide significant contributions if the quality of our understanding of energy resources and reserves, particularly those of the hydrocarbon fuels, is to attain satisfactory levels.

SUBCOMMITTEE RECESS

Senator HUDDLESTON. That will conclude our session today. I appreciate very much your coming.

Mr. THORNE. Thank you, Mr. Chairman.

Senator HUDDLESTON. The committee will be in recess, subject to the call of the Chair.

[Whereupon, at 3:45 p.m., Thursday, May 18, the subcommittee was recessed, to reconvene at 10:15 a.m., June 8.]

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1979

THURSDAY, JUNE 8, 1978

U.S. Senate,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, D.C.

The subcommittee met at 10:15 a.m., in room 1114, Everett McKinley Dirksen Office Building, Hon. Ted Stevens presiding.

Present: Senators Burdick, Young, and Stevens.

DEPARTMENT OF THE INTERIOR

STATEMENT OF CECIL D. ANDRUS, SECRETARY

OPENING REMARKS

Senator STEVENS. Mr. Secretary, this is the time scheduled to resume hearings on the Department of Interior and its fiscal 1979 budget. This morning, we will be inquiring about activities of the Department tending to influence public opinion and congressional decisions.

The subcommittee took action last year to curb what we considered to be abuses of some of the so-called public information and congressional relations activities of the Department that came to our attention. In particular, this subcommittee last year took exception to certain publications and displays produced and distributed by the National Park Service in connection with Alaska lands proposals coming before Congress. The subcommittee wrote a prohibition into the general provisions of the fiscal 1978 appropriation bill directed at these kinds of activities. This language was subsequently strengthened in conference with the House.

Our colleagues in the other body apparently shared our concern over use of public moneys to influence the public. The result was the following language, that I am sure you are familiar with:

> No part of any appropriation contained in this act shall be available for any activity or the publication or distribution of literature that in any way tends to promote public support or opposition to any legislative proposal on which Congressional action is not complete, in accordance with the act of June 25, 1948 (18 U.S.C. 1913).

That limitation on the use of funds appears to be clear and explicit. Nevertheless, a recent series of speeches, press releases, pamphlets, and other so-called public information devices have come to the attention of the subcommittee. It would appear from this significant amount of information which is being produced and

distributed by the Department that there is an increase—not a reduction—in the very type of activities that were to be curbed by the language in the fiscal year 1978 appropriation bill.

At the request of the committee staff, your office has provided a summary of various publications emanating from your Department, together with estimated costs for some of those publications and other related activities. We will include those summaries in the record at this point. Individual publications will be discussed later in this hearing.

[The information follows:]

Cost of Statements and
Releases by Secretary Andrus
Regarding Alaskan d-2 Areas

Time spent on d-2 statements, addresses and related releases----------		$ 1,220
Printing and mailing costs for releases on d-2 statements and addresses----------		2,828
Secretary's travel costs related to addresses regarding Administration d-2 proposal----------		774
	Total	$ 4,822

Time Spent on d-2 statements, addresses and related releases with estimated labor costs

	Est/Cost
March 27, 1978, release on signing of Redwood National Park legislation	$ 24
Writing - 1 hr at $20 hr = $20 Typing - 30 mins at $8 hr = $4	
March 21, Address for the 43rd North American Wildlife and Natural Resource Conference, and release.	148
Writing - 6 hrs at $20 hr = $120 Typing - 3 1/2 hrs at $8 hr = $28	
March 8, Address for the Seattle Rotary Club, and release.	148
Writing - 6 hrs at $20 hr = $120 Typing - 3 1/2 hrs at $8 = $28	
Jan. 27, Address for the 3rd International Waterfowl Symposium, and release.	188
Writing - 8 hrs at $20 hr = $160 Typing - 3 1/2 hrs at $8 hr = $28	
Jan. 19, release on statement to Senate Energy and Natural Resources Committee	24
Writing - 1 hr at $20 hr = $20 Typing - 30 mins at $8 hr = $4	
Sept. 15, 1977, 2 releases and attachments announcing and explaining Administration d-2 proposals	688
Compiling & writing - 24 hrs at $20 hr = $480 Typing - 11 hrs at $8 per hr = 88 Maps - 8 hr at $15 120	
TOTAL	$1,220

Statement of Cost of Press Releases Issued By
Department of Interior Concerning Alaskan d-2 Proposals [1/]

Releases issued by DOI for the period April 1, 1977, to March 31, 1978, total 760 releases. This figure covers all nationwide releases issued by all Bureaus and Offices on all subjects. Of the total, only 6 were primarily concerned with the D-2 lands issue, and all of them were based on a Secretarial statement to Congress or an address to organizations outlining the Administration's position.

9/5/78	Statements provided to press on Secretary's presentation of Administration d-2 position to House Interior and Insular Affairs Committee	
	Total	$1,237.19
1/19/78	Statement to Senate Energy Committee	
	Total	150.13
1/27/78	Address at the Third International Waterfowl Symposium, New Orleans, La.	
	Total	240.10
3/8/78	Address to the Seattle Rotary Club	
	Total	160.03
3/21/78	Address at the 43rd North American Wildlife and Natural Resource Conference, Phoenix, Arizona	
	Total	974.53
3/27/78	Statement on signing of bill enlarging Redwood National Park (two paragraphs devoted to Alaska d-2--total cost of release $553.76 d-2 portion figured at 12 percent of total cost)	
	Total	66.45
	GRAND TOTAL	$2,828.43

[1/] All figures include printing and mailing costs.

Cost of Trips by Secretary Andrus
Where He Made an Address on Administration
Alaskan d-2 Proposal

TRIP				D2 COST
January 26-29:				
Washington, D.C. - New Orleans				
Overview of drilling operations				
Speech and press conference				
Total Cost:	Air Fare	$ 208	(1/2)*	$ 104
	Per Diem	106		53
				157
March 6-9:				
Washington, D.C. - Salt Lake - Seattle				
Meeting with Governors, business leaders				
Speech				
Total Cost:	Air Fare	$ 455	(Salt Lake - Seattle, return)	$ 164
	Per Diem	116	(1/3)*	39
				203
March 20-21				
Washington, D.C. - Phoenix				
	Air Fare			$ 356
	Per Diem			58
				414
			Total Cost	$ 774

*Note: Two trips involved multiple purposes. A percentage of time was applied based on estimated time spent on the address.

May 25, 1978

Mr. Dwight Dyer
Committee on Appropriations
Subcommittee on Interior
and Related Agencies
United States Senate
Washington, D. C. 20510

Dear Mr. Dyer:

This is in response to your recent request to Interior's Office of Budget asking for a more up to date and comprehensive listing of informational materials on the D-2 lands in Alaska which have been given general distribution by the Interior Department and its component Bureaus and Offices. We understand you are interested primarily in items distributed beginning with September 15, 1977, the day on which Secretary Andrus first announced the Administration's position on that issue.

You will recall that early in April the Office of Budget gave you an accounting that covered news releases issued by the Office of the Secretary through the month of March, which was complete as far as it went.

Today we are enclosing a list of news releases issued since April 1 with costs of printing and mailing those items. The releases are attached to the list.

Also, we are enclosing several other items rounded up from regional offices of the National Park Service and the Fish and Wildlife Service. We are not yet certain that this is a complete listing, but we have asked the two Services to renew their search and give us a listing of costs of each item. It appears that by far the largest print order in that category is $807 for the enclosed bookmark-size flyer titled: "Important Supplement, Proposed National Park Lands--Alaska." This item consisted of information to update material contained in a publication prepared and printed some months prior to September 15, 1977 by the Northwest Regional Office of the National Park Service; parts of that publication became obsolete after September 15 and the purpose of the Supplement was to bring the information up to date.

The material we are sending you today does not include costs of printing and mailing the news releases dated May 19 and May 22 because Interior's Office of Printing and Publications has advised us it needs a few more days to come up with the figures. Similarly, we have no figures as yet on expenses of the Secretary's trip to Bellingham, Washington, where he delivered the remarks quoted in the news release dated April 7; these figures also will be supplied as quickly as we can get them together.

When the Office of Budget sent you our initial report early in April, it also included an estimate of the cost of employees' time spent in preparing these items. We can attempt to do the same for the Secretarial news releases which we are sending you today. As you know, these are only estimates because we have never found it feasible to maintain detailed cost accounting systems for employees' work. We can try to obtain such figures from the Park Service and Fish and Wildlife Service on items they prepared, but we would hesitate to vouch for the consistency of the results.

We have excluded from this package such essentially "internal" items as briefing books prepared for internal use and for Members of Congress and given out to the media and the public upon request; copies of two or three single-sheet newspaper articles and editorials, prepared and distributed on that basis also; one or two typescript texts of Secretarial speeches which were distributed in-house but never mailed out on a general basis; and a U. S. Geological Survey map of the D-2 proposals which has never been given general distribution.

We will send you the missing information as soon as it can be gathered. I realize we have been a bit slow to respond, but I hope you can agree that delays are largely attributable to our desire to be as complete and accurate as possible. Your patience is appreciated.

Sincerely,

Harmon Kallman
Assistant Director of Public Affairs

Statement of Costs of Printing and Mailing Press Releases Issued by Office of the Secretary, Dept. of the Interior, on D-2 Since April 1, 1978

4/4/78 Statement by Assistant Secretary Herbst Before House Merchant Marine and Fisheries Committee

Total $911.26

4/7/78 Remarks by Secretary Andrus Before Alaska Symposium at Western Washington University, Bellingham.

Total $810.98

5/78 "Alaska...Year of Decision" editorial column mailed to 2,400 weekly newspapers in 17 Western States

Total $403.56

5/19/78 Bureau of Mines Appraisal of Mineral Resource Potential of Mt. McKinley Region, Alaska

(figures will be provided shortly)

5/22/78 Appraisal of Arctic Wildlife Range Oil and Gas Potential, Based on Report by U. S. Geological Survey

(figures will be provided shortly)

ASSISTANT SECRETARY HERBST URGES HOUSE COMMITTEE
TO ADOPT ADMINISTRATION ALASKA LANDS PROPOSALS

The Carter Administration's 92.5 million acre Alaska National Interest Lands proposal was designed as a "coherent" approach to conservation in Alaska and should be adopted by the Congress, Assistant Secretary of the Interior Robert Herbst told the House Merchant Marine and Fisheries Committee today.

The proposals include 14 additions or expansions of the National Wildlife Refuge System totaling 45.1 million acres;13 expansions or additions to the National Park System totaling 41.77 million acres and additions to the National Forest and Wild and Scenic River systems for the balance of the acreage.

The House Merchant Marine and Fisheries Committee has jurisdiction over the nation's Wildlife Refuge System.

The House Interior and Insular Affairs Committee has already reported out an Alaska National Interest Lands bill which Herbst said is "in many respects, stronger and more workable than the original version" of the legislation.

"In every case the management system or approach we propose is an essential element of a coherent program to protect certain resources," Herbst said. "Modifying either the boundaries or the management systems creates the real possibility that resources will not receive the protection they need."

For example, he said, the delicate Arctic National Wildlife Range and its Porcupine Caribou Herd should be managed to protect the herd, so the Administration chose to continue management by the Fish and Wildlife Service and opted for an additional layer of protection in the form of wilderness.

The ANWR is the only complete cross section of the arctic remaining in the United States without significant industrial activity at some point between the arctic circle and the Arctic Ocean.

Herbst, Assistant Secretary for Fish and Wildlife and Parks had line responsibility for overseeing development last summer of the Alaska National Interest Lands proposals. Initially, he told the committee, he recommended adoption of a proposal covering more than 120 million acres. However, he said, Interior Secretary Cecil D. Andrus was able to cut nearly 30 million acres from those proposals by carefully matching resources and management systems and avoiding many potential use conflicts.

"Opponents of conservation in Alaska," he said, "have said the Administration is merely playing a 'numbers game' with Alaska acres. Such statements reflect either a basic misunderstanding of the Administration's proposals or a deliberate distortion of them."

Rather, he said, the Administration is able to offer balanced recommendations for Alaska National Interest Lands aimed at protecting both the natural heritage and the economy of the State of Alaska.

Herbst also:

--Urged the committee to drop language written by the House Interior and Insular Affairs Committee establishing formal procedures for opening mines in and building roads through new National Parks and Wildlife Refuges in Alaska.

--Reminded the committee that the State of Alaska has no legal right to select land withdrawn by the Secretary of the Interior under Section 17 (D) (2) of the Alaska Native Claims Settlement Act.

--Told the committee the Administration was "unalterably opposed" to development of large scale agriculture within the boundaries now proposed for the Yukon Flats National Wildlife Refuge.

--Urged the committee to remember that the major objective of the Administration's Alaska National Lands proposal is conservation.

NO ROOM FOR TRADEOFFS IN THE ARCTIC,
INTERIOR SECRETARY ANDRUS TELLS ALASKA SYMPOSIUM

"In the high latitudes there is no room left for tradeoffs -- nature doesn't bend, it breaks," Secretary of the Interior Cecil D. Andrus told an Alaska symposium at Western Washington University, Bellingham, Friday.

Speaking about the Carter Administration's 92.5 million acre proposal to designate federal lands in Alaska as units of the four national conservation systems, Andrus said "too often we try to impose our standards and values on nature. We seek compromise and tradeoffs. But in the Arctic Refuge and other parts of Alaska, the network of life is already stretched as far as it will go."

The Administration has proposed wilderness protection for the existing areas of the Arctic refuge totalling more than eight million acres. Recently the House Interior Committee mandated an oil and gas exploration program in a small but critical coastal area of the refuge that is part of the Porcupine Caribou Herd's calving grounds.

Andrus said the Arctic refuge is home to caribou, musk oxen, Barren Ground Grizzly Bears, Dall Sheep and Polar Bears. Sixteen species of fish swim in refuge waters. During the summer and fall millions of waterfowl and shorebirds use the refuge for breeding, feeding and migration staging areas.

He pointed out that the Porcupine Caribou Herd which summers in the Arctic refuge and calves on the Arctic coastal plain comprises nearly half the caribou remaining in the United States. This herd which numbers 120,000 annually migrates over millions of acres in Alaska and Canada's Yukon Territory

A single Barren Ground Grizzly may use up to 100 square miles, Andrus said.

Administration proposals call for designation of 45.1 million acres as units of the National Wildlife Refuge System and 41.7 million acres to be added to the National Park System. Additions to the Wild and Scenic River System and the National Forest System account for the balance of the acreage.

Andrus said the proposals are a "balanced" approach to conservation and development in Alaska, protecting only as much of the Alaskan land as necessary to protect its essential natural heritage.

However, he said in some places such as the Arctic National Wildlife Range, proposed for wilderness designation, the natural values "transcend the value of any mineral that might lie beneath the surface. Such minerals are finite," he said. "Production means changes whose impacts will be measured in geologic time in order to gain marginal benefits that may last a few years."

ALASKA....YEAR OF DECISION
By Cecil D. Andrus
Secretary of the Interior

By December 18, Congress must deal with the biggest conservation proposal in this nation's history--to add millions of Federally-owned lands in Alaska to our systems of National Parks, Wildlife Refuges, Wild and Scenic Rivers and National Forests.

The requirement stems from section 17-D-2 of the 1971 Alaska Native Claims Settlement Act, giving rise to the designation of these lands as "D-2" lands.

The D-2 issue is a complicated one which goes back 20 years to Alaskan Statehood.

Before 1958, Alaska was a vast wilderness dotted with villages, a few small towns, and one small city. Its total population would have fit into the suburbs which surround some of our larger cities.

After 1958, the State government began choosing the 103 million acres of Federal land it is eligible to receive as an economic base under the Statehood Act.

When oil was discovered on the North slope in 1968, Alaska's Native people began to press their aboriginal claims before permitting construction of a trans-Alaska pipeline. Ultimately, these claims were settled by Congress with 44 million acres and nearly $1 billion in cash. The pipeline was completed last year.

These legal events were pivotal in Alaska's history. They set in motion a procedure--which continues today--for resolving the major claims on the vast state; an evolution that began with Statehood.

The D-2 process is aimed at setting aside adequate amounts of land, in the right places and of the right kinds, to protect some of the unique grandeur that is Alaska.

Debate now centers on the question of how much is enough. Some proposals called for up to 122 million acres. Our studies indicate this was too much. We want to set aside the amount necessary to protect entire ecosystems but still leave as much as possible to State, Native and private interests for needed development.

Others have proposed as little as 25 million acres. This is clearly too little if we are to protect selected portions of Alaska's treasure--indeed, America's "Crown Jewels"--of scenic beauty and wildlife for future generations.

The recommendations we made to Congress call for 92.5 million acres--a big figure, but not excessive considering how much land is needed to support life in the Arctic region. The plan envisions 29 additions and expansions

of national parks, wildlife refuges and national forests; and 33 wild and scenic rivers.

The choices were difficult, and followed many years of intensive study as we attempted to balance the nation's need for oil, gas and other minerals with the needs of wildlife and other environmental considerations. We know that in the process, we had a shot at avoiding the many mistakes that characterized settlement of the lower 48 states.

A prime example is California's Redwood National Park, where we now are buying back, for hundreds of millions of dollars, land that once was in the public domain, and which could have been kept for all Americans at no cost.

Some have said that 92.5 million acres are too much, and offhand it does add up to a rather large estate. But keep in mind that it's America's estate. This is land the American people already own.

Remember too that bigness is a relative thing in a land where a single Arctic Grizzly needs about 100 square miles of territory to survive, and where 120,000 animals in the Porcupine caribou herd migrate over millions of acres in their annual travels.

We know that once the caribou herd is broken up by exploration activity, it may never regroup again.

On the other side, geologists and mining engineers want much of this land open to exploitation because "minerals are where you find them."

In urging Congress to act favorably on our recommendations, President Carter and I are saying we have to balance development with protection. A caribou herd, a Mount McKinley, a glacier as big as Rhode Island--these, too, are "where you find them."

But, unlike oil or minerals, these are unique in North America--and we know exactly where they are.

MINERAL RESOURCE POTENTIAL OF MT. McKINLEY REGION, ALASKA, APPRAISED

The mineral potential of 7.2 million acres surrounding Mt. McKinley National Park is appraised in a report just placed on open file by the Interior Department's Bureau of Mines.

The appraisal was made under a $200,000 Bureau contract by C.C. Hawley and Associates, Inc., an Anchorage consulting firm. The total area described in the report is slightly more than 9 million acres and includes the park itself, which was evaluated solely on the basis of existing data. For the area around the park, existing data were supplemented by field studies that were intensive, but highly selective, because of the time and funds available.

The total area covered by the Hawley appraisal includes all major proposals for additions to the existing 1.9 million acre Mt. McKinley National Park. The Administration's proposal, one of the several now before the Congress, would add approximately 3.8 million acres to the existing park. These additions would protect vital mammal habitat to the north of the park and would also include on the south large portions of Mt. McKinley itself. Mt. McKinley, America's tallest mountain at 20,320 feet, is bisected by the Park's current southern boundary.

According to the report, "The Mt. McKinley region is significantly mineralized" with a variety of metallic and nonmetallic minerals, and potentially commercially valuable coal deposits which are inside the study area but mostly outside the lands being proposed for addition to the park. The Bureau noted, however, that determination of the overall commercial significance of the study area was beyond the limits of the study, which was intended only as a general overview.

The Hawley report, entitled "Mineral Appraisal of Lands Adjacent to Mt. McKinley National Park, Alaska," is on open file in Washington at the Department of the Interior Library, 18th and C Streets, N.W.; and in the Office of the Assistant Director--Field and Environmental Studies, Bureau of Mines, Room 1061, 2401 E Street, N.W.; and in Alaska at Bureau of Mines offices in Juneau (Douglas Island), Anchorage (Suite 110, 2221 E. Northern Lights Boulevard), and Fairbanks (Room 212, Resources Building, University of Alaska).

ARCTIC NATIONAL WILDLIFE RANGE'S OIL AND GAS POTENTIAL IS REAPPRAISED

The Arctic National Wildlife Range (ANWR) in northeast Alaska could contain some medium to large oil and gas reservoirs, but is unlikely to hold a "supergiant" accumulation such as Prudhoe Bay, Secretary of the Interior Cecil D. Andrus said today.

Under proposals now before Congress and recommended by the Administration, the huge wildlife range would be designated a wilderness area and expanded into additional territory considered to have low oil and gas potential--the areas away from the Arctic coastal plain.

Andrus said the remote region's spectacular but vulnerable wildlife resources outweigh the possibility that significant amounts of oil and gas exist there in commercially attractive concentrations. "Oil and gas are finite and rapidly expended. The ANWR and its existing surface resources can go on for many centuries if they are not disrupted. They are part of our national heritage and belong to future generations, not just to our own. Mineral development and transportation could severely damage this frail tundra and the thin but invaluable web of life it supports; once gone, it may never recover," Andrus said.

"We know the surface resources are unique. They accommodate very special kinds of wildlife, habitat for millions of birds that migrate all over North and South America, and the Nation's largest herd of caribou, whose survival is essential to Eskimos and Indians and their ancient culture. It would be a poor gamble to risk all that for uncertain short-term gains."

Andrus' comments accompanied the issuance of a report by Interior's U.S. Geological Survey, which concluded that the ANWR is more likely to have a number of "medium to large" oil and gas accumulations than a "supergiant" one, "as previously available data, considered alone, seemed to suggest," in the words of the report.

The ANWR, established in December 1960, contains about 8.9 million acres, and is located in the extreme northeastern part of Alaska. It is bound on the north by the Beaufort Sea; on the west by the Canning River; on the south by the Shoenjek River; and on the east by the Yukon Territory of Canada. In general, mountainous terrain of the Brooks Range dominates the central and southern portions of the range, with the Arctic coastal plain constituting about a fourth of the range in the north.

The report is based on data consisting of:

- Reconnaissance geologic mapping and gravity surveys in ANWR and adjacent areas by the USGS, 1971, 1974, and 1975.
- Compilations of subsurface (borehole) information, derived from petroleum exploration in northern Alaska west of ANWR, by oil industry and USGS geologists, 1972.
- Reconnaissance geologic mapping in northern Yukon Territory and geologic interpretation of two seismic profiles on the continental shelf north of Yukon Territory by the Geological Survey of Canada, 1977.
- Multichannel seismic reflection surveys on the Beaufort Shelf adjacent to ANWR obtained by the USGS in 1977.

Although described as "substantial," the available data are considered to be "incomplete," according to the report; thus, while noting that the data establishes that the Arctic coastal plain is the only portion of ANWR with significant petroleum potential, the report notes that "the coastal plain contains relatively few exposures of the underlying geologic formations," and that "the geologic structure beneath the coastal plain is too complex to be adequately deciphered from the available outcrops."

"Accordingly," the report says, "the present analysis was based on extrapolation of additional data now available from adjacent areas, including the continental shelf. The extrapolations were guided by the character of the limited outcrops and gravity data available on the coastal plain."

In a summary discussion of the potential of ANWR, the report says, "There is general agreement that the petroleum potential of ANWR south of the Arctic coastal plain is low."

"On the other hand," the report says, "a range of opinions have been expressed for the potential of the coastal plain itself. The area would appear to have potential because it contains at least three oil seeps and two outcrops of oil-stained sandstone; and because promising, although not yet fully evaluated, discoveries of oil and gas have been found at Flaxman Island and Point Thomson, both at the coast immediately west of ANWR. In addition, apparently modest-sized gas fields have been found at Kavik and at Kmik, 10 kilometers (about 6 miles) and 40 kilometers (about 25 miles) west of the Wildlife Range on the southern part of the Arctic coastal plain, and the supergiant Prudhoe Bay field lies on the coast 80 kilometers (about 50 miles) west of ANWR."

The report speculates that Brookian rocks in ANWR have good potential for a number of moderate, and perhaps large, oil and gas deposits in Cretaceous-Cenozoic (about 115 million years ago to the present) strata, but it is unlikely that supergaint fields will be found within them.

The report adds, "As a rough estimate...typical Brookian fields in ANWR might contain in the range of 10 to 200 million barrels of oil, and 0.1 to 5 trillion cubic feet of gas."

"Recent discoveries by Dome Petroleum of oil and gas in mainly Brookian rocks on the continental shelf north of the Mackenzie delta are reportedly much larger than these, but the trend of geologic structures offshore of ANWR suggest that Dome's discoveries are more relevant to the potential of the continental shelf north of ANWR than to the potential of the Wildlife Range itself. If the reported Dome discoveries have relevance for the potential of the Wildlife Range, or if the Flaxman Island and Point Thomson discoveries are as large as their initial rates of flow during testing (1175 and 2300 barrels of oil per day) suggest, then the potential of the ANWR coastal plain could be significantly larger than indicated.

"In any case," the report concludes, "the geology of the ANWR coastal plain and adjacent areas permits the speculation that a number of Brookian fields could occur there, and available knowledge does not preclude the possibility that some of these might be very large."

Copies of the report, "Preliminary Analysis of Petroleum Potential of the Arctic National Wildlife Range, Alaska," by Arthur Grantz and C. G. Mull, published as Open File Report No. 78-489, may be obtained from the Open File Services Section, Branch of Distribution, USGS, Box 25425, Federal Center, Denver, Colorado 80225 (303-234-5888). Prices are $11.25 each (paper copy) or $5 (microfiche). Prepayment is required (checks or money orders payable to U.S. Geological Survey.)

Copies also are available for inspection only at the following USGS libraries: 1526 Cole Blvd., Golden, Colo; 345 Middlefield Road, Menlo Park, Calif.; and Room 4A100, USGS National Center, 12201 Sunrise Valley Drive, Reston, Va.

The attached items were prepared and distributed by Regional Offices of the National Park Service and the U. S. Fish and Wildlife Service. Detailed costs are not presently available but we are seeking to obtain them and will send them along when received.

February 14, 1978

AT STAKE: FUTURE OF AMERICA'S LAST FRONTIER

Anchorage--It was known as Seward's Folly in March of 1867 when the United States purchased it from Russia for about two cents an acre or $7.2 million. Today it is the subject of heated debate as the U.S. Congress goes through the process of passing legislation which will determine the ultimate fate of America's 49th State and last frontier, Alaska.

Its land area is so vast and varied it almost defies human comprehension. Interior Secretary Andrus has recommended to Congress that 92 million of its 375 million acres be designated as National Parks, Forests, Wild and Scenic Rivers, and Wildlife Refuges.

Gordon Watson, the U.S. Fish and Wildlife Service's Alaska Director, focuses on one national wildlife refuge proposal to give a visitor to his Anchorage office some perception of what the American people must decide now.

To the existing 8.9 million-acre Arctic National Wildlife Refuge, 8.8 million acres more should be added, the Department of Interior has concluded after intense research and study. The combined area--slightly larger in size than the State of West Virginia--is located in northeast Alaska. It joins the Canadian border on the east, in places the Alaska Pipeline on the west, the Yukon basin on the south, and the Arctic Ocean to the north.

It includes samples of all types of the nation's arctic and subarctic environments: broad and colorful glacial valleys; vast expanses of undulating tundra with numerous wetlands; the largest glacial lakes in northern Alaska; rushing rivers and streams; stormy ocean beaches; biologically productive lagoons; and the rugged mountains and alpine glaciers of the Brooks Mountain Range.

It produces and nurtures fish and wildlife of national and international importance: the 120,000-member Porcupine Caribou herd, which migrates between the U.S. and Canada; the barren ground grizzly bear; polar bears; wolves; wolverines; dall sheep; muskox; moose; 140 species of birds, including the endangered peregrine falcon and the most northerly nesting golden eagles; lake trout; chum salmon; northern pike; whitefish; arctic char and grayling; and waterfowl by the thousands.

Some 200,000 to 400,000 snow geese, 500,000 old squaw, a million eiders and numerous other species of ducks and geese rest and feed in the area in their migrations between Russia, Canada and America's western, southwestern and Gulf Coast States.

The present Arctic National Wildlife Range is the only large segment of public land in Arctic Alaska left undisturbed by man. Roadless, it is essentially free of man's influence. Interior has recommended it be designated as wilderness according to the Wilderness Act of 1964.

Within the proposed refuge boundaries, the northeastern Brooks Range has been identified as potentially rich in mineral resources. All known major mineral deposits have been excluded from the suggested refuge. Large oil and gas reserves have been discovered 60 miles west of the Arctic National Wildlife Range at Prudhoe Bay and to the east in the Canadian Arctic.

Watson admits that the high potential for finding oil in the proposed wildlife range will precipitate a major battle in Congress. "The argument," he says, "will be that our country's need for petroleum is so great that it should override all other considerations."

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He does not accept that reasoning. "We lose nothing by choosing not to develop the potential energy and mineral resources now. On the other hand, if we allow hasty and unwise exploration and development in some of these areas, we stand to lose the scenic and wildlife resources forever. I'm sure we can't afford that."

JUN 6 1978

Mr. Dwight Dyer
Committee on Appropriations
Subcommittee on Interior
and Related Agencies
United States Senate
Washington, D. C. 20510

Dear Mr. Dyer:

As a follow-up to our May 25, 1978, letter to you, we are attaching a recapitulation of costs--both actual and estimated--involved in producing news releases on the D-2 issue which were printed through the auspices of the Office of the Secretary in Washington, D. C., from April 1 until today. Also attached are estimated costs of the sole Secretarial trip out of town which was devoted to D-2 issues during that time frame.

The response to our urgent request to the Bureaus for a full accounting of items, plus actual estimated costs involved, has yielded limited results thus far. We are renewing our demand for cost figures. Meanwhile, I am enclosing one Bureau of Land Management Alaska State Office reprint (excerpted from a BLM-Alaska newsletter and given some additional distribution), plus two U. S. Fish and Wildlife Service newsletters produced in Alaska, containing some factual D-2 material on page 2 of each item, and an October 11 news release from USFWS-Alaska.

We will continue to follow up with you as more information becomes available.

Sincerely,

(s) Harmon Kallman

Harmon Kallman
Assistant Director of Public Affairs

Time Spent on D-2 Statements, Addresses and Related Releases with Estimated Labor Costs of Preparation (Since April 1, 1978)

	Est/Cost
April 4, 1978, statement by Assistant Secretary Herbst	$ 43.00
Typing statement - 3 hrs @ $8 hr = $ 24.00	
Writing news release - 1 hr @ $15 hr = 15.00	
Typing news release - 1/2 hr @ $8 hr = 4.00	
April 7, 1978, remarks by Secretary Andrus before Alaska Symposium, Western Washington Univ., Bellingham	185.00
Drafting remarks - 10 hrs @ $15 hr = $150.00	
Typing remarks - 3 hrs @ $8 hr = 24.00	
Drafting release - 1/2 hr @ $15 hr = 7.50	
Typing release - 1/2 hr @ $8 hr = 4.00	

May 1, 1978, "Alaska...Year of Decision" editorial column, etc. 86.40

Drafting - 8 hrs @ $10.30 hr	= $ 82.40
Typing - 1/2 hr @ $8 hr	= 4.00

May 19, 1978, Bureau of Mines Appraisal of Mineral Resource Potential of Mt. McKinley Region, Alaska 51.13

Drafting - 2 hrs @ $16.32 hr	= $ 32.64
Typing - 2 hrs @ $6.40 hr, plus 1 hr @ $5.69 hr	= 18.49

May 22, 1978, Appraisal of Arctic Wildlife Range Oil and Gas Potential, etc. 68.00

Writing release - 3 hrs @ $20 hr	= $ 60.00
Typing release - 1 hr @ $8 hr	= 8.00

Costs of Printing and Mailing Press Releases
Issued by Office of the Secretary Since May 1978 (an updating)

5/19/78 Bureau of Mines Appraisal of Mineral Resource Potential of Mt. McKinley Region, Alaska

$839.71

5/22/78 Appraisal of Arctic Wildlife Range Oil and Gas Potential, Based on Report by Geological Survey

$1,053.53

Cost of Secretary Andrus' Trip to Bellingham, Wash., April 7, 1978

Transportation, round trip plus per diem expenses.....$857.50

Visitors can drive to the Nabesna Glacier in the proposed Wrangell-St. Elias National Park.

D-2 Lands: Protecting the Crown Jewels of Alaska

Information Provided by Office of the Secretary, U.S. Department of the Interior

"The creation of 92.5 million acres of new National Parks, Wildlife Refuges, Wild and Scenic Rivers and National Forests is at the top of this Administration's environmental priority list," Secretary of the Interior Cecil D. Andrus said to the Senate Committee on Energy and Natural Resources on Jan. 19, 1978.

That same day, President Carter said in his State of the Union address, "I hope Congress will adopt these measures, which are needed this year to preserve the unique natural treasures of Alaska, and at the same time, permit the orderly development of Alaskan resources."

The Carter Administration's proposal to protect 92.5 million of Alaska's 375 million acres was made under provisions of Section 17(d)(2) of the Alaska Native Claims Settlement Act of 1971.

These d-2 lands, which are already in Federal ownership, would constitute approximately 45.1 million acres in National Wildlife Refuges and 41.7 million acres in the National Park System, more than doubling the size of each system. Also recommended are 33 rivers and river segments for inclusion in the National Wild and Scenic Rivers System totaling some 2.45 million acres, and nine rivers for study, plus additions of some 3 million acres to existing National Forests.

The "Four Systems" management plan proposed would establish 10 new units of the National Park System while expanding three existing parks. The U. S. Fish and Wildlife Service would acquire nine new refuges and expand five others. Additions would be made to two existing national forests.

(CONTINUED ON NEXT PAGE)

By including entire ecosystems and watersheds in parks and refuges at the onset the Interior Department proposals would attempt to avoid costly mistakes made for more than a century in setting aside lands and waters for preservation in the "Lower 48" states.

the need

"In Alaska, we have an opportunity to look to the future as we learn from the past," Andrus has said. "Alaska is a rare second chance for us as a people, a chance to preserve a major portion of our natural heritage, to strike a balance between extracting important natural resources and protecting our last great region of wildlands.

"Through enactment of our proposals, we can be certain that the crown jewels of Alaska -- its most spectacular natural environments, recreation areas, and wildlife habitats -- will remain intact for the benefit of our Nation's citizens."

conflicts

Some people seem to fear that the Interior Department proposal would hoard resources needed by Americans today and in the immediate future. Andrus said, "That is not the case. Our proposal has been prepared with sensitivity to the resource needs of Alaska and America both now and for the coming years."

"There are conflicts between some of our proposed parks and refuges and potential petroleum and mineral activity," he said. "We have not tried to gloss over them, nor have we exaggerated their importance. It would be impossible to make recommendations on this scale without encountering some potential use conflicts."

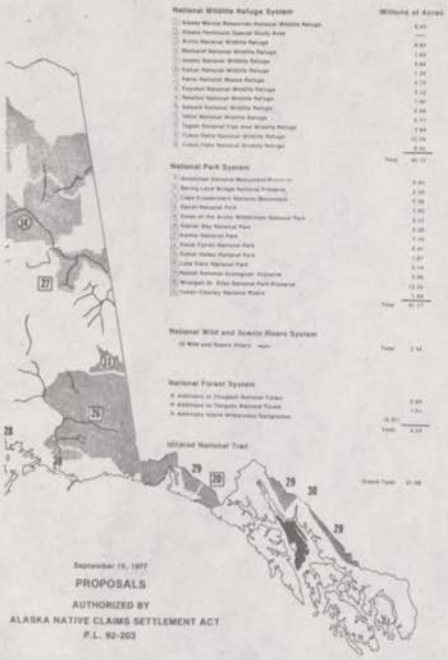
"There are roughly 375 million acres in Alaska," he said. "Our proposal involves approximately 92.5 million acres. The State of Alaska will be receiving over 103 million acres, much of which will be open to development. Alaska Natives (Eskimos, Indians and Aleuts) are receiving more than 44 million acres, some of which will be developed. And, in addition, there will be up to 100 million acres of Federal land remaining outside of parks and refuges which will be available for mining, timber harvesting, hunting, fishing, and other multiple uses for the benefit of Alaska and the Nation."

Andrus said, "It is not our intention

'lock up' the State of Alaska, and our plan provides sufficient latitude for needed development."

"If we err..."

Andrus said, "If we err in this decision and exclude some precious and delicate areas from the four systems, they could be lost forever. But if we err by setting aside too much, that decision can always be changed in the future. Our system of government responds to pressures from the people. In the future the people may decide they so urgently need the resources from one of the protected areas that they will act to redesignate it, or allow development under stringent control."



A short description follows of each of the areas in the proposal. Numbers refer to the legend on the map above.

① Alaska Marine Resources National Wildlife Refuge. 430,000 acres comprising the rocks, islands, spires and capes which host millions of breeding seabirds and most of the marine mammal species around the Alaskan coast.

② Alaska Peninsula Special Study Area. Not designated on the map, the proposal requests a report to Congress by June 1983 on the best future land use pattern on federal lands south and west of the proposed Becharof National Wildlife Refuge (4).

③ Arctic National Wildlife Refuge additions. The 8.85 million acres include critical lands for the 120,000 member Porcupine Caribou Herd and millions of migratory birds.

④ Becharof National Wildlife Refuge. 1.03 million acres including major denning areas for giant peninsula brown bears and other wildlife habitat.

⑤ Innoko National Wildlife Refuge. 2.84 million acres producing 350,000 ducks that migrate to West Coast yearly.

⑥ Kanuti National Wildlife Refuge. 1.2 million acres including nesting areas for White-Fronted Geese that winter along the Gulf of Mexico.

⑦ Kenai National Moose Range additions. 234,000 acres to round out habitats for Kenai moose, trumpeter swans, Dall sheep, mountain goats, and other wildlife.

⑧ Koyukuk National Wildlife Refuge. 3.33 million acres producing 75,000 geese and 300,000 ducks yearly; also key habitat for furbearers and moose.

⑨ Nowitna National Wildlife Refuge. 1.45 million acres producing 250,000 birds for the Central Flyway; also home to bear, caribou and moose.

⑩ Selawik National Wildlife Refuge. 2.15 million acres which is home to grizzly bears, caribou, wolves; breeding ground for birds migrating 12,000 miles.

⑪ Tetlin National Wildlife Refuge. 765,000 acres used by breeding Redhead and Canvasback ducks when Canadian potholes are dry.

⑫ Togiak National Fish and Wildlife Refuge. 3.84 million acres supporting land and marine mammals, eagles, falcons, millions of seabirds, 1.7 million salmon.

⑬ Yukon Delta National Wildlife Refuge. 10.59 million acres from which 3 million geese and 100 million other birds migrate south each year; also a salmon run.

⑭ Yukon Flats National Wildlife Refuge. 8.45 million acres with 40,000 lakes and potholes which are most productive waterfowl breeding habitat in Alaska.

⑮ Aniakchak National Monument/Preserve. 495,000 acres containing remains of an ancient volcanic explosion, one of world's largest dry calderas.

⑯ Bering Land Bridge National Preserve. 2.34 million acres containing remains of land bridge between Asia and N. America.

Some 115 miles of Yukon River near Eagle are in the Yukon-Charley National Rivers proposal.

17 Cape Krusenstern National Monument. 360,000 acres containing horizontal beach ridges with evidence of human use going back 4,000 years.

18 Denali National Park. 3.85 million acres of additions to the present Mt. McKinley National Park which includes the 20,320-foot Mt. McKinley.

19 Gates of the Arctic Wilderness National Park. 8.1 million acres of mountainous Central Brooks Range, north of the Arctic Circle.

20 Glacier Bay National Monument additions. 580,000 acres important for wildlife habitat and migration routes.

21 Katmai National Monument additions. 1.1 million acre additions including critical brown bear denning/feeding areas.

22 Kenai Fjords National Park. 412,000 acres including the great Harding Icefield and associated coastal fjords.

23 Kobuk Valley National Park. 1.67 million acres with Arctic Caribou Herd migration routes, Kobuk Sand Dunes, and important archeological sites.

24 Lake Clark National Park. 3.14 million acres of diverse mountain scenery in the Bristol Bay watershed.

25 Noatak National Ecological Preserve. 5.96 million acres containing the largest river system in the country still unaltered by man.

26 Wrangell-St. Elias National Park/Preserve. 12.05 million acres with portions of the largest mountain and glacier systems in North America.

27 Yukon-Charley National Rivers. 1.7 million acres including an untouched river basin and critical nesting areas for falcons. (See photograph above.)

28 Chugach National Forest additions. Not designated on the map in green shading, these areas include 940,000 acres proposed in September 1978 and an additional 500,000 acres in the Juan and College Fjord areas.

29 Tongass National Forest additions. 1.6 million acres comprising isolated forest areas in Southeast Alaska.

30 Admiralty Island Wilderness Designation. 870,000 acres of virgin forest that is home to some of the Nation's great populations of bald eagles and brown bears.

other concerns

In addition to Admiralty Island, wilderness designations are recommended for 30.2 million acres in three existing and four newly-proposed park areas, and for 13.1 million acres in four existing and two newly-proposed national wildlife refuges.

"Areas of environmental concern" adjacent to D-2 lands where resource use and development are critical to protection also would be designated under the proposal.

Generally, subsistence hunting would be permitted in specified zones on all D-2 lands, with sport hunting also permitted on wildlife refuges and national park preserves. Snowmobiles would be allowed for subsistence purposes in wilderness areas.

An advisory statewide cooperative commission to foster cooperation among State, Federal and Native land managers is planned.

U.S. FISH & WILDLIFE SERVICE—Alaska

Wildlife Update

VOL. 2. NO. 6 OCT. · NOV., 1977

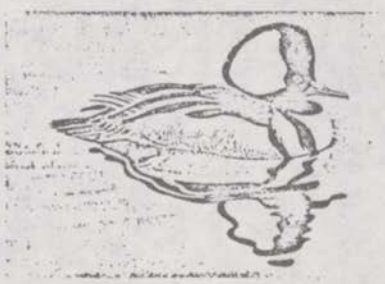
Duck Stamp Winner Announced

A watercolor painting of a drake hooded merganser in full breeding plummage swimming across a glassy pond will be depicted on the 1978-79 duck stamp. The painting, by Albert Earl Gilbert of Washington, Connecticut, was selected as the winner of the annual duck stamp competition held during the first part of November in Washington, D.C.

His work won over those of 295 other entrants, a record for the contest, scoring 44 out of a possible 50 points. The annual competition is the only art contest regularly sponsored by the Federal Government and is open to all artists who are residents or citizens of the United States. While the government offers no financial reward, the prestige of winning the contest and the interest of commercial wildlife art dealers in marketing limited edition reprints for the winner provide added incentive.

Gilbert, 38, has been a freelance wildlife artist for the past 18 years. He has never had any formal art training and this was his first entry in the Duck Stamp competition. He has, however, done considerable work for the National Audubon Society, National Wildlife Federation and is currently serving as the first vice president of the Society of Animal Artists.

The Migratory Bird Hunting Conservation Stamp is purchased by waterfowl hunters 16 years of age or older, philatelists and conservationists. Revenues from the stamp are used to buy additional wetland habitat under a program administered by the U.S. Fish and Wildlife Service. Since the stamps first went on sale in 1934, over $200 million in revenue has been collected and used for the acquisition of 2.1 million acres of prime waterfowl habitat. The Interior Department encourages non-hunters who also enjoy the wildlife resources through photography, birdwatching, and other activities to contribute to the U.S. conservation effort by buying a stamp.



A Drake Hooded Merganser
By Albert Earl Gilbert
This is the 45th in the series of Migratory Bird Hunting and Conservation Stamps.

Administrative Officer Named

Frank Pratt has been named as the new Administrative Officer for the Alaska Area Office.

Pratt, a native of Spooner, Wisconsin, started working for the Service in 1966 as a refuge clerk at the Sand Lake NWR in South Dakota. He has since held a variety of administrative positions including assignments in the Minneapolis Regional Office and the Washington, D.C. Office.

Before coming to Alaska he held the position of Administrative Officer for Research in Washington, D.C.

Some of Pratt's immediate plans for the Area Office include development of a staff of support service personnel to serve all Alaska programs. His long range plans include the implementation of modern organization concepts and systems to update and improve the various support services required by the programs.

Pratt, his wife Valerie, and three children reside in Anchorage.

Welcome aboard Frank!

Agency Corner
A Look at D-2 Proposals

As mentioned in the last issue of "Wildlife Update," Interior Secretary Cecil D. Andrus recently appeared before Congress to present the Carter Administration's recommendation concerning new and additions to existing wildlife refuges, parks, forests, and wild and scenic rivers. Beginning with this "Agency Corner" and to be continued in subsequent issues is a more detailed look at the various lands contained in these refuge proposals and the wildlife resources dependent upon them.

The proposed 1.2 million acre Kanuti National Wildlife Refuge lies along the Kanuti River basin approximately 160 miles northwest of Fairbanks.

This interior basin is characterized by lakes and marshes interspersed throughout the broad, rolling plain of Kanuti and Koyukuk valleys. Its habitat produces significant populations of migratory waterbirds which travel to many points of the continent and Mexico. Nesting populations of ducks average about 34,000. In spring the area supports 46,000 Canada and white-fronted geese, the latter nesting in greater density numbers than in many other waterfowl areas of the State. In total the area contributes at least 150,000 waterfowl to the fall migration.

The proposed refuge also supports large populations of furbearers and moose and is a traditional wintering area for portions of the Arctic caribou herd. Black bears, grizzly bears, wolves and wolverines also are found in the Kanuti area. Northern pike, whitefish, grayling, sheefish, and chum and chinook salmon are the most common fish species.

A bottomland forest of white spruce with balsam poplar and paper birch occurs in scattered patches along the narrow band of well drained terraces, and flood plains of these rivers, with an understory of willow, alder, rose, dogwood, berry bushes and a carpet of ferns, lichens, moss and bluejoint grass. These scattered stands have survived the recurring fires which favor a disclimax of willow, paper birch and quaking aspen.

The proposed 1.45 million acre Nowitna National Wildlife Refuge is located 200 miles west of Fairbanks in the Central Yukon Valley.

These wetlands support high density waterfowl populations averaging 110,000 nesting ducks such as scaup, pintail, mallard and wigeon.

Spring populations of white-fronted and Canada geese average 35,000 and 17,000 respectively with substantial numbers of Canadas remaining to nest along the Nowitna River. Approximately 60—100 pairs of trumpeter swans also nest here—one of the northernmost nesting populations known for this once threatened species. All species combined, the Nowitna contributes nearly 1/4 million birds to fall waterfowl migrations, with most of these following the Central Flyway into the lower 48 states.

The southern part of the unit is used by caribou of several small remnant herds, black and grizzly bears. Moose are found throughout but lowlands adjacent to the Yukon River are major concentration areas in winter. The entire area is high quality furbearer habitat.

The Yukon River is important to migrating chum, coho and chinook salmon. The Nowitna River is also an important area for sheefish spawning.

The proposed 0.77 million acre Tetlin National Wildlife Refuge is located about 200 miles southeast of Fairbanks.

Average density of 67 breeding ducks per square mile is second in Alaska only to the Yukon Flats. Better areas within the Tetlin basin often support nesting densities exceeding 200 ducks per square mile. Limited areas of prime habitat have been known to contain over 600 ducks per square mile. Seventeen species of nesting ducks have been identified, including species such as redhead and ring-necked ducks and blue-winged teal seldom found in other parts of Alaska. Habitat conditions are far more consistent from year to year than in the prairie pothole regions of Canada and the lower U.S., thus providing vital overflow habitat for birds displaced by drought in these areas.

Sandhill cranes nest in open wetlands and as many as two to three hundred thousand cranes migrate through the area during fall. Loons, grebes and a variety of other waterbirds are common nesters. Ospreys, bald eagles and other raptors common to Interior Alaska also are present. Rock, willow and white-tailed ptarmigan are common. Ruffed and spruce grouse are abundant and sharp-tailed grouse approach their greatest density in Alaska.

Lowlands provide excellent habitat for moderate numbers of moose. Black bear utilize the area year around and grizzly bear frequent the area during spring. Beaver, muskrat, marten, mink, otter and weasel are common to abundant and there are moderate numbers of wolverine, lynx, wolf, coyote and red fox. Grayling, burbot, whitefish, and suckers are the most common fish and lake trout and northern pike are present in larger, deeper lakes.

Bear Heads for Russia

A pregnant polar bear is wandering somewhere in Siberia sending her location by radio signal through an American sattelite to U.S. Fish and Wildlife experts in Barrow.

After being tagged last June by a polar bear research team north of Barrow the bear strayed over 500 miles west across the Bering Sea ice.

Biologists say the bear is one of two tagged last spring. The other one headed east. Attempts are being made to obtain permission from the Russian government to follow the wandering bear's trail into Siberia to check her condition and recover the radio collar. So far, there has been no response from Soviet wildlife officials.

The Saving of an Eagle

By Michael B. Rearden, Kodiak National Wildlife Refuge

Kodiak Island boasts a population of about 200 nesting pairs of bald eagles—more than many states can claim. Kodiak also claims one of the highest incidences of eagle injury and death.

Throughout the year many eagles are turned over to the staff at the Kodiak National Wildlife Refuge which is managed by the U.S. Fish and Wildlife Service. Most of the eagles are dead upon arrival or wounded fatally. Occasionally, a bird is brought in with minor injuries that can be helped.

Most injuries and deaths are caused by shooting. However, birds are also found that have fallen into water and died of exposure, succumbed to disease or parasites, or have simply died of old age.

Bald eagles are fully protected by the Bald Eagle Act. The first conviction for the killing of a bald eagle or even have one in possession is punishable by a fine of not more than $5,000 and/or one year of prison. Another provision of the Act states that any person providing information which leads to the conviction of a person that violates the Act shall receive up to one-half of any fine, but not to exceed $2,500.

In late June of 1977 Ed Wickersham, a staff member of the Kodiak National Wildlife Refuge, was called to pick up a live, injured eagle at Bell and Kathy Burton's ranch at Narrow Cape. The bird seemed to be in good condition other than being undernourished. It appeared that the injury was limited to a bruised wing. An eagle injured in this manner is unable to hunt for food properly and in all probability will succumb to starvation or be killed by a predator. Dr. Michael Cathey, a local veterinarian, generously donated his time in bandaging the bird's wing and providing medication.

The Kodiak National Wildlife Refuge has no facilities for caring for injured eagles. Kim Hallat-Jones, a Kodiak resident and expert in the care of captive birds, offered to care for the eagle until it could fly again. U.S. Fish and Wildlife Law Enforcement agents in Anchorage issued a permit allowing Kim to keep the bird until it was able to return to the wild.

The eagle was an adult bird. A bald eagle does not acquire the white head and tail until it reaches five years of age. Young bald eagles look more like their cousins the golden eagle in early life.

Kim, and her husband Bob, constructed a cage out of wire mesh near their home in Kodiak and began gathering food for the hungry bird. Local canneries provided a source of protein-rich fish. Shrimp trawlers often bring in small forage fish intermixed with their catch. Kim sorted these out and took them home to the eagle.

Kim Hallat-Jones with injured eagle.
Photo Credit—Bob Jones

The eagle ate well, began to appear more full-bodied, and its wing healed rapidly. Then the bird began to molt. All birds molt, some so severely that they are flightless for awhile. Birds of prey usually lose only a few flight feathers at a time so they are able to maintain flight. The captured eagle, however had suffered extreme shock from being handled. This will often cause a bird to molt extensively—and that is what this eagle did. The bird's stay was extended until it could regrow feathers.

In October Kim determined that the bird was capable of flight and released her back to the wild. The bird, apparently healthy, simply walked out of the pen and flew off.

We all are indebted to those in our community that cared enough to help save a priceless bald eagle.

Editor's Note:

A similar incident occurred recently near Cordova. Two wounded eagles were found during an outing of a conservation group. The birds were brought to Cordova and subsequently sent to Service special-agents in Anchorage. They were placed under the care of a local veterinarian. The immature bird did not respond to treatment and died. The adult of the pair lived but is not capable of making it on his own in the wild. Plans are to donate it to a zoo or other such facility.

Wildlife Resources of Southcentral Coast Inventoried

The U.S. Fish and Wildlife Service has contracted with the Arctic Environmental Information and Data Center, an institute of the University of Alaska, to develop a fish and wildlife profile for the coastal region of southcentral Alaska.

Melvin Monson, Fish and Wildlife Service project officer for the study says the effort will identify critical wildlife habitats of the region and conflicts which could occur between wildlife resources and manmade developments by the year 2000. The critical wildlife areas and their relationship to development will be displayed on large graphic illustrations and maps designed to rapidly convey the information to concerned people.

Monson states the rapidly expanding populations in southcentral Alaska and accompanying widespread development could have a massive impact on the welfare of fish and wildlife resources useful to resource managers and decision makers in both public and private sectors in planning for sustained resources.

The study area extends from Cape Fairweather to Unimak Pass, seaward to the 100 fathom depth line and shoreward to the coastal mountain ranges. Now underway, the study will be completed in the spring of 1979 and will cost $326,000.

Steel Shot Proposed For Waterfowl Hunting in Upper Cook Inlet

A small area of Alaska would be affected by steel shot proposals for the 1978-79 waterfowl hunting season, according to the Interior Department's U.S. Fish and Wildlife Service.

The proposed regulation published in the *Federal Register* on November 23, provides for the use of steel shot in all areas within ten miles of saltwater in Upper Cook Inlet. The area is defined as including an area north and east of a line running from the village of Tyonek on the west side of Cook Inlet due south to the Kenai Peninsula and includes both the Knik and Turnagain Arms of the Inlet.

Public comment of the proposed ruling will be accepted until December 31, 1977. The proposal for Alaska is part of a nationwide move underway for two years to phase-in the use of steel shot in certain areas where the deposit of lead shot by waterfowl hunters is the highest, and ingestion of spent lead pellets by waterfowl occurs most frequently. Lead pellets are toxic to waterfowl when mistaken for seeds or grit, and the resulting lead poisoning is estimated to cause the deaths of 2 million waterfowl each year. The current proposal involves 32 states and parts of all four waterfowl flyways.

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U.S. FISH & WILDLIFE SERVICE—Alaska

Wildlife Update

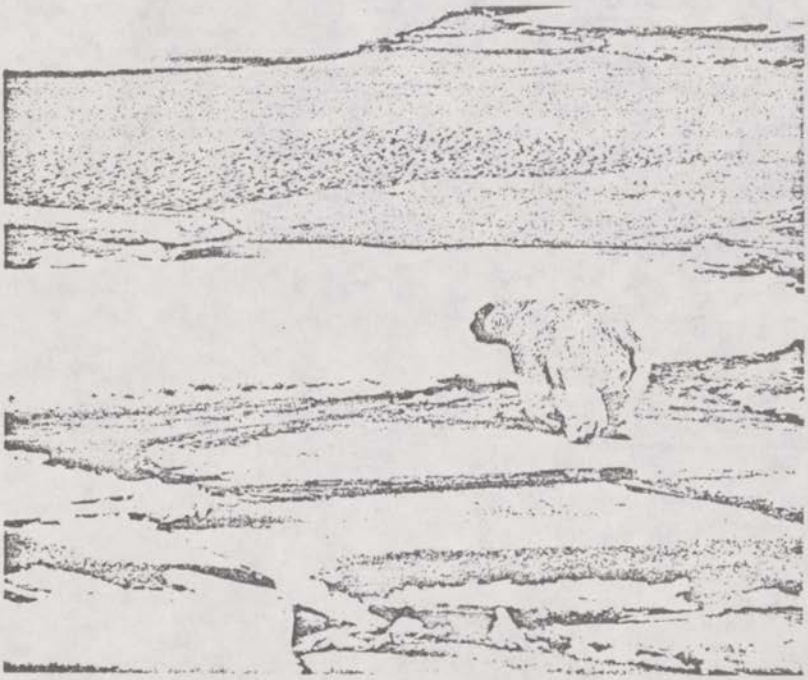
VOL. 3, NO. 1 DEC. 1977 · JAN. 1978

Of Satellites and Polar Bears

The bleak vastness of the polar ice cap and the incredibly cold climate associated with it has limited efforts to study the life of the polar bear and its migratory movements. During the last decade, researchers have utilized tagging methods to try and chart the wanderings of this species as it roams the barren pack ice in search of seals, its major food source. To date, the information obtained was limited and remarkably little is known about this giant carnivore of the north.

But with the aid of satellite technology, it appears as though researchers have found the tool necessary to track the movements of these bears and learn more about their numbers and life cycle. In the late 1960's scientists began investigating the idea of placing a radio collar on a bear. Signals from the collar would be received by a satellite circling approximately 600 miles above the earth and it would then be possible to record the movements of the bear across the vast ice pack.

(Continued on page 4)



U.S. Fish and Wildlife Service Photo

Agency Corner

More D-2 Proposals

The following is the second in a series of articles detailing the Interior Secretary's recommendations for new and additions to existing National Wildlife Refuges in Alaska under provisions contained in the Alaskan Native Claims Settlement Act.

The proposed 3.33 million acre Koyukuk National Wildlife Refuge is located roughly 320 miles northwest of Fairbanks in west central Alaska. The proposed new refuge lies within a roughly circular basin connecting with the flood plain of the Koyokuk River just north of its confluence with the Yukon River.

High summer temperatures and long hours of sunlight during the summer produce rich vegetation in the numerous lakes which supports a wide variety of wildlife. Waterfowl production in the unit is estimated to contribute 75,000 Canada and white-fronted geese and 330,000 ducks, largely pintails, wigeon, scaup and scoter to National and International flyways. The area represents the northwestern nesting limit of the trumpeter swan with 150 breeding birds and approximately 100 whistling swans also breed in the region. The sandbars found in the Yukon River portion of the proposal are major staging areas for migrating geese. The wetland habitats are also important to the shorebirds, of which the common snipe is the most abundant nester.

The entire area is part of the winter range of the currently depleted Arctic caribou herd. Moose are abundant and form an important element in the subsistence economy of the villages. With the presence of moose and caribou, wolves are common in the area and black bears inhabit the forested areas while grizzlies roam the open tundra habitat. The wetlands also make the area productive beaver country while supporting other furbearers such as muskrat, mink, and marten.

The rivers and streams within the proposal support important chum and chinook salmon fisheries. Whitefish and northern pike can be found in the lowland waters while Arctic grayling are found in the colder headwater streams.

The proposed 2.84 million acre Innoko National Wildlife Refuge is located just southwest of the Koyukuk proposal. The area encompasses the drainage of the Innoko River and its primary tributaries, with (in several proposals) the adjacent Kaiyuh Flats, another extensive floodplain of over 80 percent water or wetlands.

The proposal is also a major waterfowl nesting area, producing an estimated fall flight of more than 380,000 ducks and 65,000 geese. White-fronted geese migrate primarily through the Central Flyway to Mexico while scaup scatter to all four flyways with many ending up on the Atlantic Coast. Lesser Canada geese, mallards and other ducks orient primarily to Washington and California. A total of 140 species of birds can be found within the proposal including sandhill crane, bald eagle, osprey and the endangered peregrine falcon.

Moose are also abundant and are of major importance in the subsistence economy of the local villages. Other mammals include the wintering caribou of the Beaver Mountains herd, black bears, and grizzlies are found in the upland habitat. The Innoko is famous for its high quality beaver. The area's population is estimated at 20,000 and 40 percent of the annual harvest is said to come from the area.

The area is somewhat unique in a climatological sense. The characteristic arctic climate of interior Alaska is moderated by the maritime influence of the Bering Sea. As a result, the Innoko occupies a unique transitional area between tundra of western Alaska and the boreal forest of the interior valleys. Much of the area is muskeg with islands of black spruce surrounded by vegetation more common to tundra than forested regions.

Spot-Billed Duck Sighted at Kodiak

A spot-billed duck, a bird native to southeast Asia, was recently spotted by several biologists on Kodiak Island. This is only the second report of a visit by the Asiatic species to the North American continent. The first was one of the birds which remained at Adak, in the central Aleutian Island, for nearly a year in 1970-71.

The question is one of why this bird apparently strayed thousands of miles from its natural range. Service Biologist John Trapp speculates the bird may have been blown off course by a strong storm system and westerly winds which buffeted southwestern Alaska with winds exceeding 100 miles per hour on October 25 and 26, five days before sighting.

National Hunting/Fishing Survey Completed

Almost half the U.S. population hunted, fished, or participated in some wildlife-related recreation in 1975, according to survey results released recently by the Interior Department's U.S. Fish and Wildlife Service.

The *1975 National Survey of Hunting, Fishing, and Wildlife-Associated Recreation* - found that almost 96 million Americans 9 years of age and over participated in one or more forms of wildlife-related recreation. Included in this figure are some 20.6 million hunters, 53.9 million anglers, and over 49 million persons who simply observed wildlife.

The Survey is conducted every 5 years for the U.S. Fish and Wildlife Service to measure the degree of participation in hunting and fishing. The 1975 study found 11 percent of the population participated in hunting as compared to 12 percent of the population in 1970. The percentage of the population who fished remained at 29 percent for the five-year span. The two sports also represent some impressive economic figures. Hunters spent $5.8 billion compared to $15.2 billion spent by anglers.

One especially significant change from the 1970 survey was a threefold increase in the number of individuals who photograph wildlife. The figure jumped from five to 15 million.

Hunters queried said the posting of lands and the loss of game habitat were the most serious problems facing their recreational activity. Anglers perceived water pollution to be the most serious threat to their sport.

Survey results provide State and Federal planners with information useful in the management of fish and wildlife resources and in providing adequate recreational opportunities for the public.

Copies of the survey may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20240 at a cost of $3. However, a limited number of free copies are available from the Public Affairs Office, Alaska Area Office, USFWS, 813 D Street, Anchorage, AK 99501.

Steel Shot Delayed One Year

FWS Director Lynn Greenwalt recently announced a one year delay for the implementation of steel shot zones in Alaska. It had earlier been proposed that a steel shot zone be established in Upper Cook Inlet during the 1978-79 waterfowl hunting season.

An almost certain lack of availability of steel shot for the season played a major part in the decision. During a public meeting on the proposal held in Anchorage, local ammunition suppliers said it was doubtful they could have steel shot on their shelves for hunters by the time the upcoming season opened. They said owing to ordering and shipping problems, they have to place their orders for ammunition during November and December—nearly a year prior to the next waterfowl season.

The phasing in of steel shot in certain areas where the deposit of lead shot by waterfowl hunters is the greatest has been underway in the lower 48 for two years. The lead pellets are toxic to waterfowl when ingested and the resulting lead poisoning is estimated to cause the deaths of some 2 million waterfowl each year.

New Aleutian Islands Film Released

The unique Aleutian Islands National Wildlife Refuge is the subject of a new 16mm color film released by the Alaska Area Office of the U.S. Fish and Wildlife Service. The half-hour film, entitled "Chain of Life—the Aleutian Islands" depicts the natural beauty of the wind swept Aleutian Chain and the varied wildlife species found there. The film also examines the intense efforts aimed at rebuilding the populations of the endangered Aleutian Canada goose. Owing to the introduction of foxes on many of the islands as part of a fur farming effort in the past, the only remaining wild population of this species is found on tiny Buldir Island near the western end of the chain.

The film also deals with the history of the Aleutians, and the several waves of human intervention which have swept across the islands—from Russian trappers to World War II. The film is to be available shortly from the Alaska Area Office in Anchorage and several refuge offices throughout the state as well as Regional Offices in the lower 48.

Of Satellites and Polar Bears

(Continued from page 1)

At first it was doubtful whether a radio collar could be securely attached to a polar bear owing to its tapering neck which would mean the animal might be able to slip out of the collar. Tests subsequently proved a collar could be securely attached. Other technological problems such as finding batteries which could function for long periods of time in the below zero weather and developing a collar which could stand the frequent submersion resulted from the frequent swimming a bear does also had to be tackled.

A collar which could meet these criteria was finally developed and last spring the first experiment of this type was set into motion. On June 18, 1977 two female polar bears were fitted with radio collars 50-60 miles north of Point Barrow, Alaska. U.S. Fish and Wildlife Service Biologists thought the bears might be pregnant at that time. Every fourth day the collars sent a signal to the Nimbus 6 satellite and the researchers began to follow their movements.

One bear was tracked for twenty days. In the latter part of July the collar transmitter quit operating for some reason. During that time she traveled to a point 370 kilometers (227 miles) east of the Point Barrow release site and 75 kilometers offshore.

The other bear also headed east for about ten days but then reversed and headed west into Soviet territory. By mid-November she was 1000 kilometers west of Point Barrow, approximately 350 kilometers northwest of Wrangell Island. This area was known as an important bear dening area in the Soviet Union. Since that time her movement has been very slight and researchers have speculated she has hollowed out a maternity den on the heavy ice pack. The recorded movement may be that of the slowly drifting ice.

Soviet scientists have been informed of the bear and have agreed to attempt to immobilize the bear and retrieve the collar. If successful, this will provide researchers with valuable knowledge concerning the condition of the bear and the collar after being carried for an extended period of time. The Soviets are planning to retrieve the collar sometime during March when they have more light to work with in the extreme northern location.

Prior to the advent of this satellite technology, researchers knew the bears traveled vast distances in search of food. Some biologists feel the wanderings of this particular female may be an extreme case, pointing out the need for further study. The polar bear inhabits the Arctic ice cap which includes the territory of the U.S., Canada, Russia, Denmark, and Norway. This species has become the subject of international research of which this project is just a part. Virtually all five countries recognize the need for further research and protection of this wandering giant of the north.

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FISH AND WILDLIFE SERVICE
ALASKA AREA OFFICE
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U.S. MAIL

October 11, 1977

There is little doubt public interest concerning the D-2 lands question in Alaska and proposed new and additions to the National Wildlife Refuge, Parks, Forests and Wild and Scenic River systems will remain high.

The attached material is a brief description of those wildlands proposed by the Administration for inclusion in the National Wildlife Refuge System. Recommendations for these areas were made under Section 17 (d-2) of the Alaska Native Claims Settlement Act and include a total of 45.1 million acres being proposed as new or additions to existing refuges.

Several of the areas proposed were not contained in the proposals of the previous Administration. It is hoped this material will help you become acquainted with all the refuge proposals and wealth of wildlife resources dependent upon them.

For further information on these proposals, please feel free to contact the Alaska Area Office, U.S. Fish and Wildlife Service, 813 D Street, Anchorage, Alaska 99501 (970) 265-4891.

While there is little doubt the state of Alaska is huge, its very size can sometimes be deceptive. When speaking in terms of wildlife, Alaska is actually a fragile giant.

While her surrounding seas, still in a pristine state, are among the most productive in the world, an average inland acre of Alaska land/water is about five times less productive than the average acre in Michigan. On a year round basis Alaska's vast acreage supports only a relatively few hardy species of wildlife and even these may be required to migrate up to 1,000 miles to satisfy their basic annual needs.

During brief, highly productive summers Alaska seemingly teems with life. But there again, only selected areas possess that combination of nesting birds, calving caribou or spawning fish. Between them, these special areas support the nurseries of such nationally and internationally significant Alaskan-born resources as 100-200 million shore and waterbirds; 13 million waterfowl; 100+ million migratory perching birds; 100+ million seabirds; and undetermined numbers of marine mammals, large land mammals, furbearers, salmon and other fish.

These special areas for fish and wildlife are the focus of the Department of Interior's proposals for new or additions to existing National Wildlife Refuges in Alaska.

ARCTIC NATIONAL WILDLIFE REFUGE — 8.35 million acres

Located in the extreme northwest corner of the state, this refuge is one of the great wilderness expanses of the Nation. Stretching from the plains of the North Slope through the majesty of the Brooks Range to the Northern reaches of Alaska's forest land, the Arctic Refuge is home to such hardy species as grizzly, black and polar bears, dall sheep, wolves, wolverine, foxes, seals, muskoxen, 16 species of fish and a wide array of birds.

Arctic's wildlife inhabitants do not recognize manmade boundaries. The 120,000 member Porcupine caribou herd spends summer and fall months in the Arctic Refuge raising young, then retires to Canada's Yukon Territory for the winter. Wave after wave of waterfowl moving to and from Canadian nesting grounds and wintering areas along the California Coast or the Aleutian Islands National Wildlife Refuge pass through the refuge to rest and feed. Such movements may number up to 200,000 snow geese, 500,000 oldsquaw or 1,000,000 eiders.

YUKON FLATS NATIONAL WILDLIFE REFUGE 8.45 million acres

Not all of the Porcupine caribou always winter in Canada; some occasionally move into the proposed Arctic additions or uplands of the adjoining proposed refuge. Here the Yukon River floods across a vast basin, recharging some 40,000 lakes, oxbows and potholes. Long Arctic summer days and the insulating effect of surrounding mountains create conditions in these wetlands resulting in the most productive per acre waterfowl habitat in Alaska.

This basin contributes an annual flight of 2,100,000 ducks and 16,500 geese as well as 11,000 sandhill cranes, 15,000 loons and 100,000 grebes to Flyways touching all parts of the Lower 48, Canada and Mexico. Major populations of wolves, black and grizzly bears, moose, furbearers and production of over a quarter of a million salmon also contribute to the fish and wildlife values of the Yukon Flats.

Solar basins -- pond dotted valleys rung by high hills and drenched by long summer sunlight characterize a number of other refuge proposals along the Yukon River, its tributaries, and other major rivers in Interior Alaska. Although superficially similar, each of these basins has different mixtures of plant communities and wetlands attracting birds and mammals of different species, densities -- and winter destinations.

KANUTI NATIONAL WILDLIFE REFUGE 1.20 million acres

Across the Trans-Alaska Pipeline from Yukon Flats is a small basin enclosing the refuge. Contributing at least 75,000 waterfowl to many parts of the continent and Mexico, Kanuti is particularly noted for providing high density nesting habitat for white-fronted geese which spend their winter along the Gulf of Mexico.

The refuge also supports large populations of furbearers and moose and is a traditional wintering area for a second major caribou population, the Arctic caribou herd.

NOWITNA NATIONAL WILDLIFE REFUGE 1.45 million acres

This refuge is another key nesting area for white-fronted geese as well as several other species of waterfowl, that together send nearly a quarter of a million birds down the Central Flyway of Canada and the Lower 48 to coastal Texas and Louisiana.

The southern portion of the proposed refuge is home to caribou and grizzly bear, while moose concentrate in large numbers in northern willow thickets along the Yukon River in winter. The Yukon River also is important to migrating salmon: the Nowitna River (a Wild River proposal) being a valuable spawning ground for the sheefish, an Arctic species often dubbed the "freshwater tarpon."

TETLIN NATIONAL WILDLIFE REFUGE 765,000 acres

Enter Alaska on the Alcan Highway and you are in the proposed Tetlin Refuge - the northernmost terminus of many migratory birds such as redhead and ring-necked ducks and blue-winged teal, seldom seen in other parts of Alaska.

Aside from its regular nesters Tetlin, like the Yukon Flats proposal, becomes increasingly important in years like the present one when waterfowl normally nesting in Canada overfly drought-striken pothole areas seeking stable water conditions in Alaska. This year, waterfowl nesting

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densities in Tetlin increased 50 percent with significant increases in nesting canvasbacks (up 82 percent) and redheads (up 700 percent).

KOYUKUK NATIONAL WILDLIFE REFUGE 3.33 million acres

North of the Yukon the Koyukuk River floods a forested basin dotted with many lakes. Waterfowl production from the unit contributes 75,000 Canada and white-fronted geese and over 300,000 ducks, largely pintails, wigeon, scaup and scoters. The area also boasts the northwesternmost nesting trumpeter swans (150) on the continent.

Moose, black bear and wolves are abundant; members of the Arctic caribou herd winter over the entire unit; and the area provides excellent habitat for such furbearers as beaver, muskrat, mink and martin.

Chinook and chum salmon and whitefish are important fishery resources; northern pike abound in lowland lakes and Arctic grayling in colder headwater streams.

The occurence of the attractive Nogahabara sand dunes in the northern part of the proposal adds a unique geological dimension to the ecology of the refuge.

INNOKO NATIONAL WILDLIFE REFUGE 2.84 million acres

In this transition area between the tundra of western Alaska and the boreal forest of the Interior valleys is a major waterfowl nesting area whose ducks (380,000) migrate primarily to Washington and California, although the scaup reach the Atlantic Coast. Geese (totaling 65,000) split, with white-fronts migrating through the central U.S. to Mexico and the Canada geese orienting to the Pacific Coast. Along with more snipe, other notable bird species of the area include sandhill cranes by the thousands, bald eagles, osprey and peregrine falcons, an endangered species.

Moose are of primary importance among the large mammals with major wintering concentration along the Kaiyuh River. Black bears and beaver are abundant as are many other species of furbearers.

YUKON DELTA NATIONAL WILDLIFE REFUGE 10.59 million acres

As the Yukon joins the Kuskokwim River there is created one of the wetest spots in this nation. This proposed area is a vast, expanse of water dotted tundra. Probably no area of similar size is so critical to so many species. Fish and wildlife resources include at least 100 million shorebirds of several species; 3 million ducks, 50 thousand swans (80 percent of the Pacific Flyway flight) and 720 thousand geese (including 80 percent of the world's emperor geese, all of its cackling Canada geese, and half the continental population of black brant); and a large fishery resource (chinook, chum, coho, sockeye and pink salmon, northern pike, blackfish, sheefish, several species of whitefish, grayling and Arctic char) which is the mainstay of the 42 Native villages encompassed by the refuge.

Add to these a mammal resource including foxes, otters, mink, hares, lemmings, bears, lynx, wolves, bears, wolverine, moose, harbor seals and walrus; another 100 nesting bird species scattering to six continents and the Yukon Delta becomes a remarkable wildlife wildland.

SELAWIK NATIONAL WILDLIFE REFUGE 2.15 million acres

This area northwesternmost of the great wetland basins. Here, at the crossroads of Asiatic and North American Flyways, can be found blue-throats and yellow wagtails from Asia; bar-tailed godwits from Australia and New Zealand; Arctic terns from Anarctica; upland and pectoral sandpipers from South America and wheatears from Africa.

Waterbirds nesting in Selawik also disperse to all parts of the Lower 48; greater scaup to the Atlantic Coast; lesser scaup to Louisiana; white-fronted geese to coastal Texas national wildlife refuges and numerous species such as pintails, mallards and green-winged teal to refuges in California, Oregon and Washington.

Selawik is also migration and wintering area for such diverse wildlife as the sheefish and caribou and the year-around home to many moose, bears and wolves.

TOGIAK NATIONAL FISH AND WILDLIFE REFUGE 3.84 million acres

South of the Yukon-Kuskokwim Delta the low wetland tundra gives way to a mountainous peninsula. Three major river drainages, the Kanektok, Goodnews and Togiak Rivers, provide critical freshwater contributions to the rich Bristol and Kuskokwim Bays. In doing so the area helps support some 10 species of whales, harbor seals, sea lions, salmon during marine life stages and literally millions of migrating shorebirds and waterfowl using near shore waters.

Fish - 1.7 million salmon strong, live in rivers and streams of the proposal during summer and fall months. Numerous other fish can also be found such as steelhead, rainbow and lake trout, Arctic grayling, Dolly Varden and Arctic char.

Other summer residents of Togiak include 1 to 2 million seabirds, waterfowl, eagles, gryfalcons and peregrine falcons. This refuge would encompass one of the most diverse mammal assembleges in Alaska with over 32 species of land mammals ranging from tiny shrews to brown-grizzly bears. Some of these mammal populations are currently at low levels but would be expected to increase under refuge management and protection.

KENAI NATIONAL MOOSE REFUGE ADDITIONS 234,000 acres

South across Cook Inlet from Anchorage is the existing Kenai National Moose Refuge to which additions of 234,000 acres are proposed. This area of mountain ranges, glaciers, forests, lowland lakes, wetlands and rivers support a wide diversity of fish and wildlife resources including the Kenai moose for which the area was originally established, one of the greatest loon populations in North America, 3 percent of the world's nesting trumpeter swans and one third of the salmon caught in Cook Inlet.

The more than 2800 lakes and hundreds of miles of streams are home to such animals as mink, muskrat, weasels, otter and beaver. Dall sheep, mountain goats and a variety of smaller mammals and birds inhabit mountain areas, with caribou, bears (black and grizzly), lynx, wolves and coyotes in lower transitional zones.

The variety of habitats for fish and wildlife, the scenic beauty of the refuge and its nearness to Anchorage lend ample opportunity for quality environmental awareness and wildlife-oriented recreation programs.

BECHAROF NATIONAL WILDLIFE REFUGE 1.03 million acres

Jutting into the Pacific Ocean from the southwest corner of Alaska is the Alaska Peninsula. Near its northern end is one of the major brown bear habitats in Alaska. The giant peninsula brown bears are free-ranging, feeding in salmon streams and coastal marshes over a wide area and hibernating in mountain dens. Some 232 dens have been located in mountain sides and on islands in the Becharof area.

Caribou and large members of moose range through the refuge proposal; streams abound with salmon, rainbow trout and Arctic grayling; and rocky seacliffs host tens of thousands of seabirds of several species.

ALASKA PENINSULA SPECIAL STUDY AREA

Most of the remainder of the Peninsula from Becharof south to the existing Izembek National Wildlife Range at its southern tip is proposed as a study area. Currently an area of complex land ownership, the Peninsula is to be studied by the Department of Interior, the State of Alaska and several Native Corporation landowners to determine how best to reorder

the land ownership and land use patterns to assure orderly use of the Peninsula's resources and the long-range maintenance of today's high quality fish and wildlife habitats.

With an eye toward the nationally significant populations of brown bears, caribou, moose, salmon, trout, marine birds, waterfowl and migratory shorebirds of the area, review of other natural resources and the land management desires of the various landowners, this study will make recommendations to Congress and the Alaska Legislative by June of 1983, or sonner, for a more orderly, resource-oriented balance of Native State and refuge lands.

ALASKA MARINE RESOURCES NATIONAL WILDLIFE REFUGE — 430,000 acres to 11 existing refuges

This is perhaps the most far flung, remote and colorful wildlife refuge proposal. Rocks, islands, spires, reefs and headland cliffs dot the marine waters of Alaska from the Chukchi Sea to the Aleutian Island chain to the Southeast panhandle.

In sharp contrast to the million acres required for nesting shorebirds and waterfowl inland, many million of seabird utilize every suitable foot of the proposed refuge. Marine bird resources of Alaskan waters probably amount to over a hundred million birds of at least 55 species. To date, over 135 nesting locations have been described outside the Aleutian Islands, of which 26 contain over a million.

In addition, all units are important to one or more species of mammals--including sea lions, harbor and hair seals, walrus, sea otters and polar bears. Sixteen species of whales, many endangered, also use waters lying immediately off the shore of these areas.

The value of these marine resources is often underated. Estimates place food consumptions by these birds at 0.6 to 1.2 million tons with a return of 120,000 to 240,000 tons of nutrients to these seas each year. Marine bird and mammal numbers are awesome today, yet any factors adversely effecting them would undoubtedly greatly upset local fertility of the seas and subsequently the fisheries so vital to humans.

PUBLICATIONS ON ALASKA D–2 PROPOSALS

Senator STEVENS. All of the publications and activities we will be discussing at the outset deal with the Alaska lands issue now before the Congress. This is the so-called D–2 legislation, and it is no doubt one of the more important issues before the 95th Congress.

Mr. Secretary, publications that have been supplied to us range from simple one-page press releases to fancy brochures. Most of them deal persuasively and at great length with the administration's D–2 proposals. They extoll administration proposals and, in many cases, sharply criticize alternative proposals. Even in the absence of the specific prohibition that I just read, how can you justify this kind of a propaganda campaign with public funds?

Secretary ANDRUS. Mr. Chairman, let me first of all say I do not come before you this morning with a prepared statement, or opening statement, for the record, in that I am here in response to verbal requests by your staff and yourself that I be here to discuss activities with reference to the D–2 legislation that you referred to.

Senator STEVENS. Let me interrupt you.

You know I have high regard for you personally. You are a distinguished former Governor from a Western State. I consider you to be a westerner, and to understand western prejudices and problems.

I also believe that we have a task in determining whether we should put this same language in the bill again this year, or whether we should make it more explicit. So this is not a vendetta on anyone's part; it is something that has to be justified before the committee before anyone strengthens the language. I anticipate, as a matter of fact, that we may very well strengthen the language. I assure you, at the beginning, that there is no intent to create any personal conflicts, as far as you and I are concerned, or the members of your staff or my staff are concerned with regard to this issue. This is a substantive matter of considerable importance to us which I think extends not only to this issue, but to a series of issues that are before the Department.

I am sorry to interrupt you, but I would hope that we are in agreement on that.

Secretary ANDRUS. Mr. Chairman, let me say that I concur. I think—digressing from your first question, if I might—you and I both said on several occasions that we would personally be pleased when the issue was resolved and behind us so that it does not have any impact upon any personal recognition and respect for one another. I was just pointing out that I do not have an opening statement to present. I will respond to the questions.

Your first question was with reference to those materials which have been prepared by the Department, and by myself, for presentation. I do not feel, Senator—and I have asked this question within the Department of Interior—that there have been any violations of the law and/or regulations. You must understand, Mr. Chairman, that the Interior Department has a responsibility to the American people to respond to congressional requests, to respond to invitations for me to speak to give the administration's viewpoint.

And I would say to your second question: I would hope that, if there is consideration this year for additional language in the appropriations act, that it would not infringe upon article II of the Constitution, or appear to infringe upon the rights of the President and his Cabinet to propose programs for the benefit of the American people and to explain those programs to the Congress and to the American people.

ALASKA DISPLAYS IN FEDERAL BUILDINGS

Senator STEVENS. Mr. Secretary, I just returned from Seattle. A hearing was conducted there on another subject. As I walked into the Federal Building, there was a huge display on the Alaska lands proposals set forth in detail with big, enormous pictures expounding the administration's approach.

The language—and again I point out, the House strengthened the language that this committee put in the bill last year; the House insisted that it be strengthened—prevented.

> Any activity or the publication or distribution of literature that in any way tends to promote public support or opposition to any legislative proposal on which Congressional action is not complete * * *.

I understand that the President and his Cabinet certainly have a right to propose legislation to Congress, and certainly have a right to defend those proposals. But when it comes to the point of spending the public's money to put up displays in public buildings throughout the country on a one-sided basis, when there is substantial opposition to the program. I think you have come too far. That was the reason for the House and the Senate joining together to ban the use of public funds for the purpose of propaganda.

That seems to me what we are facing: How, in view of the language of the law that was passed last year, does the Department justify the displays and the activities that are being conducted throughout the country with public funds?

Secretary ANDRUS. Mr. Chairman, first of all, it has been declared by the President of the United States that the No. 1 conservation-environmental priority of the administration for fiscal year 1978 is passage of the D–2 proposal. We have said that to Congress and to the American people. I am not familiar with the display that you are referring to, but if a display is in a public building that would depict Alaska as it is, one of the beauty spots of the world, and the fragile ecosystems that are there, I would not think that that would be promoting one side or another of the legislation. If in fact the display—keep in mind that you have seen it; I have not—was promoting a certain bill, or soliciting support from the public to the Congress, that would be something else, but I really doubt it. I haven't seen it, Senator, but the point I am trying to make is that there is a difference.

Senator STEVENS. Again, I think there is a difference, but in that display which I just saw, there is a complete outline of the administration's proposal and what it intends to do. It doesn't say, as the original brochures did that led to the language last year, "write your Congressman and specifically oppose the legislation being suggested by the Senators from Alaska." That has been changed; I will agree there. But the whole concept of using public money

throughout the country to build up support on a one-sided basis for legislation that is in serious dispute in the Congress, is just the sort of thing that led to the inclusion of the language.

Where is the fairness for the opposition if the administration can use public funds to build up support for legislation that has opposition which does not have similar public funds available to it?

EDITORIALS

We had, for instance, an editorial column that was reproduced in 2,400 newspapers. They were given a three-page editorial column under your byline. It was entitled "Alaska: The Year of Decision." That was sent, we understand, to those newspapers, not in response to a request from the newspapers but by your public information people. It was reproduced at public expense and sent to those newspapers for their use.

Now why is that not in violation of the specific language of the bill that was passed last year? It was specific: No part of the moneys "contained in the act shall be available for any activity or the publication or distribution of literature that in any way tends to promote public support or opposition to any legislative proposal on which congressional action is not complete * * *."

How can you, as Secretary of the Interior, mail out information prepared at public expense, distribute it at public expense to 2,400 newspapers, in view of that language?

Secretary ANDRUS. Mr. Chairman, once again let me point out that we utilize, sometimes because of lack of availability of our own staff, reprints that give both sides of this issue. I don't have fixed in my mind the one that you are referring to. I am thinking of a Seattle Times reprint where all sides were mentioned.

The editorial column that you are referring to—the piece that you have in your hand now, Senator, if that is an example, that clearly gives all sides of the issue.

Senator STEVENS. Mr. Secretary, it is immaterial whether it gives all sides or not. This is using a Government frank to send out a reproduction of stories from the Seattle Times which deal with D–2 legislation. There is nothing in here that is a Government publication.

We will insert a copy of this material in the record at this point.

[The information follows:]

Alaska: the biggest land game of all

18 The Seattle Times Sunday, January 29, 1978

by JANET HORNE

Awesome mountain ranges that have been encased in ice as long as man has known them. Miles and miles of untouched tundra, flowering for a bright, fragile moment, then subsiding for another year.

Dazzling glaciers, sparkling unnamed lakes, dark forests that seem to stretch forever. Wolves that howl in the night, whales that whistle and blow, and flocks of waterfowl that darken the sky.

Alaska is all of this, and more.

It is Anchorage, Fairbanks, Juneau, Ketchikan . . . typical American cities in many ways, yet still only isolated pockets of civilization on the edge of a vast frontier.

Many Americans want to keep things that way.

Others do not.

THE BATTLE OF Alaska has become a giant game of Monopoly, pitting high-rolling conservationists against the nation's powerful mining giants, timber barons, labor unions and other pro-development forces who argue that Alaska, with its wealth of untapped resources, offers an irresistible solution to a growing nation's needs.

Earlier this month, in a crowded House subcommittee room, mark-up hearings began on landmark legislation that will determine Alaska's future — and, in a larger sense, will show just how serious this nation has become about protecting its environment.

Congress, in its role as master planner, has just 11 months remaining to determine who will win the great Alaska land caveat.

When Alaska became a state in 1959, Congress gave it the right to select 104 million acres of public land to establish its economic base.

Non-native residents of the new state were pleased with the California-sized birthday present. Alaska's natives were not: The Statehood Act had given them nothing.

Long frustrated by the federal government's failure to deal with their native claims dating back to the 19th Century, Alaska's Eskimos, Aleuts and Indians put together a strong case for themselves.

In the face of a powerful lobby and a growing national consciousness over neglected native rights, Stewart Udall — then secretary of the Department of the Interior — slapped a freeze on Alaska's lands in 1966. No one would lay claim to another square foot of the state until the natives' claims were resolved, he ordered.

The freeze did not hamper the enthusiasm of American oil companies, who previously had acquired exploration rights on Alaska's North Slope. In 1968, drills struck the Prudhoe Bay bonanza.

DISCOVERING OIL was one thing. Building a pipeline across public lands, frozen both by nature and the secretary of the interior, was another.

Alaska's natives suddenly found their claims being swept along by a swifter current. Spurred by oil-industry lobbyists, Congress passed the Alaska Native Claims Settlement Act within three years of the Prudhoe Bay discovery.

The act gave natives the right to select 44 million acres as their own and awarded them nearly $1 billion for relinquishing further claims and aboriginal hunting and fishing rights.

Influential environmental groups lobbied for the natives' cause, and at the 11th hour they succeeded in amending the Native Claims Act. The amendment called for a study of federal lands in Alaska and selection of parts to be set aside, in the national interest, as permanently protected forests, parks, wildlife refuges and wild and scenic rivers.

The amendment, Section 17 (d) (2), gave Congress until December 18, 1978, to make final judgment on the "D-2" lands.

As the deadline draws near, three major proposals have emerged as front-runners among many. The three are:

1. **The UDALL BILL**, introduced last year by Representative Morris Udall, Arizona Democrat, as House Resolution 39, this measure calls for a radical new "ecosystem" approach to land-use planning.

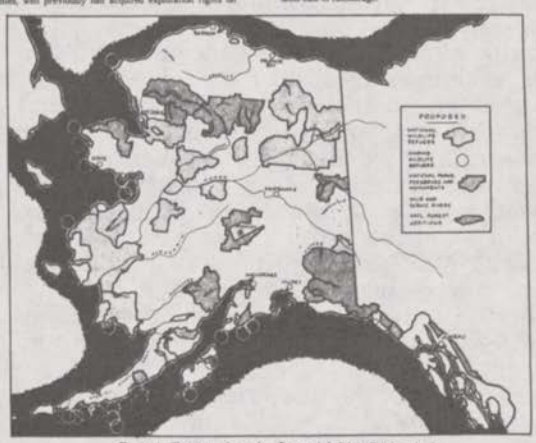
Instead of setting aside an isolated valley here or a lone river there, the bill recommends that entire mountain ranges, watershed systems and animal-migration routes be given permanent protection.

The bill, in its original form, would have placed slightly more than 116 million acres under protected classification. Udall further proposed combining these lands with Alaska's existing parks and refuges and wrapping the entire gigantic package in a supplementary classification of "wilderness."

But the House subcommittee on Alaska lands has sliced about 16 million acres from the H.R. 39 proposal and pared its wilderness provisions to 83 million acres. Udall has backed the changes.

Even with the trims, the bill remains impressive. Washington State has three national parks comprising a total of less than 1.7 million acres. If H.R. 39 would create or expand 13 national parks, preserves or monuments in Alaska that would include 28 times as much land. Examples:

— A new 8.7 million-acre park in the rugged Wrangell Mountains east of Anchorage.



The map illustrates how the Carter Administration wants to stake out Alaska's "D-2" lands. The proposal is one of several competing bills and recommendations before Congress. — Staff map by Alan Pratt.

— An 8.2 million-acre park near the Gates of the Arctic, in the desolate high country and steep-walled valleys of the Brooks Range.

— A 2.4 million-acre park around Lake Clark, bordering on Cook Inlet.

3. THE CARTER PROPOSAL. In his environmental message last year, President Carter told Congress it "now has an opportunity of historic dimension to conserve large, unspoiled sections of the American wilderness in Alaska." No conservation action that Congress could take, he said, "would have more lasting value than this."

Cecil Andrus, interior secretary, has come up with a proposal that is strikingly similar to the Udall bill.

Andrus recommends that 92 million acres — an area more than twice the size of Washington State — be protected under various classifications, with slightly less than half of that to be designated as wilderness.

Although some of the boundaries would be smaller than those specified in H.R. 39, Andrus has proposed creating or expanding 13 national parks and 14 wildlife refuges.

Thirty-three rivers would be protected from development, and national forests would be expanded by 2.5 million acres under the administration proposal.

Like H.R. 39, the proposal would protect entire ecosystems and watersheds. Andrus has emphasized that this is the only way to safeguard what he calls the "crown jewels" of Alaska. "If we err by conserving too much, this can always be changed in the future," he said.

3. THE STEVENS BILL. Alaska's Senator Ted Stevens, Gov. Jay Hammond and Representative Don Young want the state to retain control over as much land as possible. Stevens has proposed a bill that would protect only 25 million acres under conservation systems.

That is less than one third of the acreage once proposed for protection by the Nixon and Ford administrations — and one fifth of the 25 million acres would be in multiple-use national forests.

Stevens proposes that 57 million more acres, which he considers "resource-conflict" areas, be under a new federal-state "cooperative-management" commission, which would have authority to open them up to a number of uses, such as logging and mining.

Under this plan, the secretary of interior could veto future decisions concerning federal lands, and Alaska's governor would have veto powers over state lands in the cooperative program.

Backing the Stevens bill is a long list of pro-development forces eager to tap the oil, minerals and timber located in areas they say would be "locked up" by the Udall bill or the administration proposal.

Those interests include a committee of the Seattle Chamber of Commerce, which has budgeted $60,400 this year to lobby for legislation that would preserve a minimum of Alaska lands.

The giant Kennecott Copper Corporation also has expressed "whole-hearted" support for the Stevens bill.

"The spectre of Appalachia and our past misuse of the land should not be allowed to permeate our decisions" about Alaska, a company official testified last year before a congressional subcommittee. America, he said, "must leave all her options open . . . to explore for minerals."

ALASKANS ARE sharply divided. Some say they would be proud to have the Great Land serve as a great nation's environmental conscience. Others argue that Alaska is a state, not a deep freeze, and that Alaskans should not be denied the right to control their own land.

An Alaska-backed group called the Citizens for Management of Alaska Lands is among those promoting a "multiple-use" concept for the D-2 lands.

Among other things, it contends that many of the proposed wilderness areas are so remote that only backpackers would have the opportunity to see them.

Conservationists say history has disproved this argument. They point out that when Yellowstone National Park was established more than 100 years ago, many people complained that the huge new park was so far from civilization that only the rich and the hearty would ever get to see it.

But last year, Yellowstone drew nearly 2.5 million visitors.

CONSERVATIONISTS FACE heavy odds in the financial firepower and lobbying forces that pro-development interests can marshal against them. But they see Alaska as a deceptively fragile giant that must be handled with extreme care.

They argue that piecemeal preservation will not work in a land so harsh that a spruce tree in the far north may struggle 50 years to reach a height or 4 or 5 feet, where a wolf must roam for 60 miles in search of a meal.

The D-2 controversy is an issue "that's sure to appeal to the greediest . . . the greediest are just licking their chops," said Doug Scott, Northwest representative of the Sierra Club.

Scott calls the Stevens bill the "miners' and gougers' bill" and says it is based on fallacious arguments.

One such argument, he said, is the contention that countless Americans will be deprived of jobs if environmentalists win the battle over Alaska.

"What they're talking about are possible jobs — not real jobs," Scott said. "They are no more real than the jobs I could create by slicing up the Statue of Liberty and selling it, in little pieces, as souvenirs for the mantel piece."

"And Bozeman, Montana, would surely become a boom town if we capped off the geysers and turned Yellowstone into a giant energy farm," he added. "But that doesn't make it right."

Competing proposals for protecting areas of Alaska have prompted a lot of rumors. What's the truth?

Here's a true-or-false quiz:

1. Congress is considering legislation that would post a giant "no trespassing" sign on 147 million acres of land in Alaska.

Answer: False.

2. There would be a blanket ban on hunting and fishing in all Alaska "D-2" lands that are given permanent protection.

Answer: False.

3. Float planes, snowmobiles and other established methods of transportation would be outlawed in any area of Alaska that is designated as wilderness.

Answer: False again.

IT IS TRUE that to some degree, at least, all the proposals before Congress would place definite limits on what will be allowed in Alaska. But the controversy that has developed over the race to stake out the last frontier has led to some inaccurate generalizations.

One has to do with numbers.

Conservationists originally backed a bill that would have designated as "instant wilderness" a whopping 147 million acres of existing or proposed parks, forests, wildlife refuges and wild and scenic rivers in Alaska.

That figure now is obsolete, but it continues to be tossed about — generally by those who do not favor establishing huge new wilderness areas.

In fact, nobody really knows yet just how much land Congress will be asked to designate as wilderness because the figures keep changing.

The House subcommittee on Alaska lands, which is working on the "D-2" legislation, says it may be weeks yet before it comes up with a final figure. As of last week, the subcommittee had pared its wilderness recommendation to 82 million acres.

One reason for some of the confusion is that the 49th state is unique, and guidelines which may work well elsewhere in the country may not address some important distinctions in Alaska.

For example, it is safe to say that hunting is allowed in wildlife refuges, national forests and national preserves (companions to national parks). But it is forbidden in the parks themselves. Fishing, on the other hand, is not prohibited in any conservation system.

Those same guidelines would hold true in Alaska, with certain important modifications.

In Alaska, many residents, particularly natives, still follow a traditional "subsistence" life-style of hunting, fishing and supplying all their basic needs from the land.

THE PROPOSALS before Congress recognize this. Generally, they would give subsistence users priority over sport and commerical hunters, in the event of limited wildlife resources. But none of the proposals would place a complete ban on nonsubsistence hunting and fishing.

Another issue: Some parts of Alaska are so remote and inaccessible that residents must rely on snowmobiles, float planes and similar methods of transportation to get around.

Many of these isolated areas are being proposed as additions to the wilderness system, and there has been confusion as to what is and is not allowed in a wilderness.

The revised Udall bill spells out the answer this way: "Customary use of aircraft, motorboats and snowmobiles, where such use has already become established, shall be permitted to continue in areas designated as wilderness . . ."

The administration proposal makes similar provisions. It would permit the continued use of float planes and motor boats in wilderness areas where they are the customary method of transportation.

Persons who use snowmobiles for subsistence purposes also could continue to use them in areas designated as wilderness.

Sunday, January 29, 1978 The Seattle Times A

Alaska-park, preserve plans compared

Who wants what in Alaska?

Measures proposed by Arizona Representative Morris Udall, the Carter administration and Alaska Senator Ted Stevens each contain differing plans for parks, wildlife refuges and other conservation units, each providing a different degree of protection for the land.

New mining claims, grazing, commercial logging and hunting are not allowed in parks. In national preserves, hunting is allowed but logging is not. Sport hunting and fishing also generally are allowed in wildlife refuges, but grazing and logging must contribute to the wildlife habitat before they are allowed.

Here is a summary of some of the highlights of the three major proposals (figures given for the Udall bill, H.R. 39, reflect changes made last year by the House subcommittee on Alaska lands; areas designated by the Stevens bill as "federal cooperative lands" could be opened to a variety of uses, including logging and mining):

Wrangell-St. Elias National Park:

The Udall bill calls for a 9.7 million-acre park, plus a 2.3 million-acre preserve.

The administration proposal calls for a 9.6 million-acre park, plus a 2.3 million-acre preserve.

The Stevens bill would establish a 4.9 million-acre park.

The area is east of Anchorage and includes the Wrangell Mountains in the north and the Chugach Range in the south, which contain the nation's largest collection of peaks over 16,000 feet and the continent's largest assemblage of glaciers.

Gates of the Arctic National Park:

Udall: 8.2 million-acre park, plus 1.1 million-acre preserve.

Administration: 8.1 million-acre park.

Stevens: 3.6 million-acre park.

The park, about 200 air miles northwest of Fairbanks, would span the north and south slopes of the Brooks Range. The rugged, remote area is laced with rivers said to be among the best in the nation for white-water rafting and canoeing.

Noatak National Preserve:

Udall: 7.4 million acres.

Administration: 6 million acres.

Stevens: No preserve, but would designate 11.5 million acres as federal-cooperative lands.

The area is mountainous country northeast of the Seward Peninsula. It includes the largest river system in the country, still essentially untouched by man.

Denali (Mount McKinley) National Park:

Udall: Would add 3.9 million acres to the existing park.

Administration: Would add 3.8 million acres.

Stevens: Would add 1.1 million acres.

Both Udall and the administration propose renaming the park in recognition of the ancient Alaska native name for North America's highest peak. The existing park, 240 miles north of Anchorage, drew more than half a million visitors in 1976.

Lake Clark National Park:

Udall: 2.4 million-acre park, plus 710,000-acre preserve.

Administration: Same.

Stevens: No park, but would designate 3.5 million acres in the area as federal-cooperative lands.

The Lake Clark area is about 100 miles west of Anchorage, between the Aleutian and Alaska mountain ranges. Scores of lakes dot the area, and glaciers and volcanoes border its scenic hiking trails.

Kobuk Valley National Park:

Udall: 1.7 million-acre park.

Administration: Same.

Stevens: 100,000-acre Kobuk Sand Dunes National Monument.

The proposed park, in Northwestern Alaska, includes the 25-square-mile area known as the Great Kobuk Sand Dunes. A gentle valley, boreal forest and clear, slow-moving rivers also characterize the area. The proposed park would include archeological sites believed to date back 8,500 years.

Katmai National Park:

Udall: Expand existing Katmai National Monument by 1.3 million acres and designate it a park.

Andrus: Expand by 1.1 million acres and designate it a park.

Stevens: Expand by 400,000 acres and designate it a park.

The existing monument, 300 miles southwest of Anchorage on the Alaska Peninsula, was created in 1918 to preserve the site of the 1912 volcanic eruption that formed the Valley of Ten Thousand Smokes. Lakes, streams and waterfalls abound in the area, and its forests, grasslands, swamps, salt marshes, beaches and islands support a wide variety of wildlife.

Yukon Flats National Wildlife Refuge:

Udall: 16.3 million acres.

Administration: 8.5 million acres.

Stevens: 2.1 million acres of national forest.

Long Arctic summer days and the insulating effect of nearby mountains make these Northeast Alaska wetlands among the most spectacular waterfowl-breeding areas in North America. The flats also are home to several dozen mammal species, including bear, moose, caribou, mink, muskrats and river otters.

Nowitna National Wildlife Refuge:

Udall: 1.5 million acres.

Administration: Same.

Stevens: No recommendation.

The proposed refuge in Central Alaska is an important nesting area for waterfowl and home to caribou, bear and moose. The Nowitna River is a valuable spawning ground.

Innoko National Wildlife Refuge:

Udall: 3.3 million acres.

Administration: 3.8 million acres.

Stevens: 800,000 acres.

This proposed refuge, between the tundra of Western Alaska and the boreal forest of the state's interior valleys, is a spongy wetland inhabited by beavers, moose and black bear. It also is a major nesting area for ducks, geese and other waterfowl.

Colville River:

Udall: Would establish a 700,000-acre wild river area.

Administration: 300,000-acre wild river.

Stevens: No recommendation.

The Colville rises in the Brooks Range, flows east and north and empties into the Beaufort Sea west of Prudhoe Bay.

Utukok River:

Udall: 270,000-acre wild river area.

Administration: 254,000 acres.

Stevens: No recommendation.

The Utukok rises in the far-western Brooks Range and flows into the Chukchi Sea off the northwest coast of Alaska.

Alaska land showdown

* * * * * * * * *

Who will get which for what?

by JANET HORNE

Some of the finest real estate in the world is up for grabs in Alaska, and the battle over who gets what is headed for a showdown.

This year Congress must decide whether vast chunks of rich and wild federal land in Alaska should be opened to development or preserved for future generations.

The stakes are immense. With 375 million acres, Alaska boasts this nation's highest mountain peaks and longest scenic rivers. It is a last retreat for many species of wildlife, including the caribou, grizzly bear and wolf.

But the Great Land also is a storehouse for other kinds of vanishing resources. Beneath its panoramic splendor are undetermined reservoirs of oil, natural gas, hardrock minerals and other raw materials.

Almost everyone agrees that some areas should be preserved as national parks, forests, wildlife refuges and wild and scenic rivers. But how much?

Section 17 (d) (2) of the Alaska Native Claims Settlement Act, passed by Congress in 1971, authorized the secretary of the interior to withdraw up to 80 million acres of undesignated federal land in Alaska for study as possible additions to the nation's protected parks, forests, wildlife refuges and rivers.

Studies have been going on ever since. Now Congress is trying to come up with a final plan based on numerous proposals. It must act by December 18, when temporary protection of these so-called "(d)-2" lands will expire, opening the door to logging, mining, grazing and oil exploration.

The gap that must be bridged is great. At one end of the scale is House Resolution 39, introduced by Representative Morris Udall, Arizona Democrat. It proposes preservation of nearly 106 million acres (down from an earlier figure of 116 million) and has the strong backing of almost every environmental group in the nation — from the Garden Clubs of America to the Sierra Club.

At the other extreme is a bill introduced by Alaska Senator Ted Stevens, which would give permanent protection to only 28 million acres. Anything more than that, Stevens argues, would "lock up" badly needed resources and "negate Alaska's great potential for creating new jobs."

Members of Alaska's congressional delegation also contend that putting a "federal padlock" on much of the state would infringe on the rights of the state and its native people to control the share of federal land promised them by Congress.

But conservationists argue that Congress is obliged, by law, to consider the interests of ALL Americans. Alaska, they say, is America's last chance to make up for 201 years of ecological savagery.

(Related articles, A 16, 18.)

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DISTRIBUTION OF SEATTLE TIMES ARTICLES

Senator STEVENS. If a Member of Congress did this, he would be censured. It is against the law for a Member of Congress to send out anything like this. We could send it out if it was in the Congressional Record, but to send out reproductions of newspaper articles under Government frank would be a violation of the law, as it applies to us—the same kind of law that applies to you.

Now how can you take editorials from the Seattle Times and reproduce them at Government expense, put them under a frank from your Department—your Department has to pay that out of its allowances—in violation of the law we passed last year that says that no part of the funds can be used for the distribution of this kind of material pertaining to legislation where action of the Congress is not complete?

I think it goes beyond the D–2 issue, and so did the House. We don't think that the Department ought to be able—or any department ought to be able—to work up public opinion at taxpayers' expense in support of legislation that has been proposed to the Congress. That is what this amounts to.

The Seattle Times articles do in fact mention the opposition, but they allege that in my bill the proposals are based upon false facts.

"Congress is considering legislation that would post a giant 'no trespassing' sign on 147 million acres of land." That is called false.

"There would be a blanket ban on hunting and fishing in all Alaska D–2 lands that are given permanent protection." They say the answer is false.

That appears in a discussion of my bill, assertions I never made. It also says:

"The D–2 controversy is an issue that's sure to appeal to the greediest * * * the greediest are just licking their chops," said Doug Scott, Northwest representative of the Sierra Club.

Scott calls the Stevens bill the "miners' and gougers' bill" and says it is based on fallacious arguments.

One such argument, he said, is the contention that countless Americans will be deprived of jobs if environmentalists win the battle over Alaska.

"What they're talking about are possible jobs—not real jobs," Scott said.

That is being distributed. I can't answer that, as a Member of Congress. My bill and my character are being maligned by something sent out at taxpayers' expense and I can't answer it under the law because I am abiding by the law of the Congress that prohibits me from doing so; but you are not abiding by the law that Congress passed, as far as the use of taxpayers' funds for your Department. I want to know how you justify that.

Secretary ANDRUS. In my opinion, that column, the analysis written by Janet Horn in the Seattle Times, dated January 29,

1978, if you read the entire story, and taking into account and consideration all of the pieces of legislation described, is a very professional job of analyzing legislation.

The comments you referred to were attributed to another person, which I think, in the journalistic profession, is proper. It referred to the——

Senator STEVENS. There is no criticism here of the administration's proposal at all, no criticism in Ms. Horn's article, not one single word. There is criticism of my bill and of the State's position. There is criticism, as I recall, of Senator Gravel's approach. But there is no criticism of the Department.

If you had done so, it might be more balanced, but it doesn't. Now the real question is how can we prevent the Department from using public funds to influence legislation pending before Congress?

USE OF FRANKING PRIVILEGE

As Senators, we prohibit ourselves from doing that and it is therefore unethical. We would be subject to censure by our own body if we did it. And, we also put it in the law that you can't use funds for it, and I think since we did, the Department has increased its activities, not decreased them.

You have other legislation that is involved. In addition to this, there is a penalty for private use of the frank. Why shouldn't that be considered in view of the prohibition in the legislative appropriations bill last year? Why isn't this a private use of the frank on your part?

Secretary ANDRUS. Mr. Chairman, to my knowledge, and I have inquired about this, the frank on the piece which you are referring to has not been used. When it was printed, it was printed on there for convenience.

To the best of our knowledge the franking privilege has not been utilized. But it has been distributed to the Members of Congress and other people that have requested information on the bill. I don't know of a case where it has been mailed under the franking privilege.

DISTRIBUTION OF SEATTLE TIMES ARTICLE

Senator STEVENS. Could you tell us what mailing list was used for the Seattle Times franking article, and to how many people it was sent?

Secretary ANDRUS. I can supply that to you, Senator. I think we have the total number to date of about 1,500. But I could supply that to you. It went to Members of the Congress, and I can supply you the balance of the list. I do not have it with me.

Senator STEVENS. I make a specific request that you give us for the record a list of the numbers of these that were printed and the numbers that were mailed, and to whom they were mailed.

Secretary ANDRUS. I think——

Senator STEVENS. What kind of mailing list?

Secretary ANDRUS. I can supply that for you. The cost of printing was $450. The number that were printed—I believe it was 5,000.

If you wait just one second, I can tell you exactly, the cost was $450. I can't tell you how many were actually printed, but somewhere between 1,000 and 1,500 have been distributed.

I will supply that for you.

[The information follows:]

SEATTLE TIMES MAILER

Question. With respect to the Seattle Times feature story January 29, 1978, please provide cost data for the preparation, printing and mailing of that item.

Answer. It cost $450 to reproduce 5,000 copies. Pasting it up for the Department's duplicating shop took a few short minutes at negligible cost. Since distribution has been all, or practically all, in bulk lots, we have no figures on mailing costs; as previously stated, few if any copies left the Office of Public Affairs as individually mailed pieces.

Question. Please provide a list of all recipients of that mailer, including addresses.

Answer. As indicated by the reply to the preceding question, we cannot supply a list. Of the 5,000 copies printed, there are still about 3,500 copies on hand. No special controls have been maintained. According to the best recollection of persons who have handled these reprints, about 500 were delivered in small batches to congressional staff people who asked for material to respond to constituents' inquiries; 500 or more were distributed internally through public affairs offices of the various Bureaus; another 200 were supplied on request to persons conducting a seminar on Alaska at Sand Point, Idaho, last spring; and some 200 were picked up on request by another workshop group, which was interested in H.R. 39, this one located in Washington, D.C.

VIOLATION OF REGULATIONS REGARDING FRANKED MAIL

Senator STEVENS. The law on frank mails says—and I am looking now at section 3202 of title XXXIX:

A department or officer authorized to use penalty covers may enclose them with return address to any person from, or through whom, official information is desired. A penalty cover may be used only to transmit the official information and endorsements relating thereto.

Now what makes the Seattle Times articles official information? You are under the same prohibition we are. We can only send official information under a frank.

Now how did that become official information?

Secretary ANDRUS. Mr. Chairman, first of all, as I stated earlier, to my knowledge and what I have been able to find out, that has not been mailed under the franking privilege. However——

Senator STEVENS. This isn't franked?

Secretary ANDRUS. It has the printed "frank" on it. It was not distributed via the mails utilizing the franking privilege. But let's go back to the article itself.

I think part of that is self-explanatory. It would be helpful in this discussion that we are having to note that it is a professionally done journalistic endeavor. It does refer to all of the different pieces of legislation.

We at the time were looking at the possibility of putting together an analysis. This article was called to the attention of my Department and we determined to utilize it because it did refer to all of the pieces of legislation involved. That is how we decided to reprint it. I don't believe that it has been mailed through the mails with the franking privilege.

However, I recognize the franking is printed on it.

Senator STEVENS. I don't think that we can become the judge of the balance of the articles written by Janet Horn.

I wouldn't want the record to indicate that I am criticizing her articles. I am criticizing the Department using public funds to distribute literature pertaining to legislation that is pending before the Congress on which action is not completed, whether the literature is balanced or not.

As I understand that, you couldn't send out something that supported a bill which I introduced that you wanted to support, and I don't believe that you should be able to support something else at public expense. You can make public appearances and make your public speeches. But in my opinion it is wrong to distribute literature in support of legislation at public expense that can set forth a procedure that would lead to expenditures of public funds that would be almost uncontrollable.

PRESS RELEASES

We have other press releases here. We have one issued by the Bureau of Mines that deals with mineral assessment in Mount McKinley National Park, and another one issued by the Office of the Secretary which deals with reports from the USGS. We will print both releases in the record at this point.

[The information follows:]

MINERAL RESOURCE POTENTIAL OF MT. McKINLEY REGION, ALASKA, APPRAISED

The mineral potential of 7.2 million acres surrounding Mt. McKinley National Park is appraised in a report just placed on open file by the Interior Department's Bureau of Mines.

The appraisal was made under a $200,000 Bureau contract by C.C. Hawley and Associates, Inc., an Anchorage consulting firm. The total area described in the report is slightly more than 9 million acres and includes the park itself, which was evaluated solely on the basis of existing data. For the area around the park, existing data were supplemented by field studies that were intensive, but highly selective, because of the time and funds available.

The total area covered by the Hawley appraisal includes all major proposals for additions to the existing 1.9 million acre Mt. McKinley National Park. The Administration's proposal, one of the several now before the Congress, would add approximately 3.8 million acres to the existing park. These additions would protect vital mammal habitat to the north of the park and would also include on the south large portions of Mt. McKinley itself. Mt. McKinley, America's tallest mountain at 20,320 feet, is bisected by the Park's current southern boundary.

According to the report, "The Mt. McKinley region is significantly mineralized" with a variety of metallic and nonmetallic minerals, and potentially commercially valuable coal deposits which are inside the study area but mostly outside the lands being proposed for addition to the park. The Bureau noted, however, that determination of the overall commercial significance of the study area was beyond the limits of the study, which was intended only as a general overview.

The Hawley report, entitled "Mineral Appraisal of Lands Adjacent to Mt. McKinley National Park, Alaska," is on open file in Washington at the Department of the Interior Library, 18th and C Streets, N.W.; and in the Office of the Assistant Director--Field and Environmental Studies, Bureau of Mines, Room 1061, 2401 E Street, N.W.; and in Alaska at Bureau of Mines offices in Juneau (Douglas Island), Anchorage (Suite 110, 2221 E. Northern Lights Boulevard), and Fairbanks (Room 212, Resources Building, University of Alaska).

ARCTIC NATIONAL WILDLIFE RANGE'S OIL AND GAS POTENTIAL IS REAPPRAISED

The Arctic National Wildlife Range (ANWR) in northeast Alaska could contain some medium to large oil and gas reservoirs, but is unlikely to hold a "supergiant" accumulation such as Prudhoe Bay, Secretary of the Interior Cecil D. Andrus said today.

Under proposals now before Congress and recommended by the Administration, the huge wildlife range would be designated a wilderness area and expanded into additional territory considered to have low oil and gas potential--the areas away from the Arctic coastal plain.

Andrus said the remote region's spectacular but vulnerable wildlife resources outweigh the possibility that significant amounts of oil and gas exist there in commercially attractive concentrations. "Oil and gas are finite and rapidly expended. The ANWR and its existing surface resources can go on for many centuries if they are not disrupted. They are part of our national heritage and belong to future generations, not just to our own. Mineral develop-

ment and transportation could severely damage this frail tundra and the thin but invaluable web of life it supports; once gone, it may never recover," Andrus said.

"We know the surface resources are unique. They accommodate very special kinds of wildlife, habitat for millions of birds that migrate all over North and South America, and the Nation's largest herd of caribou, whose survival is essential to Eskimos and Indians and their ancient culture. It would be a poor gamble to risk all that for uncertain short-term gains."

Andrus' comments accompanied the issuance of a report by Interior's U.S. Geological Survey, which concluded that the ANWR is more likely to have a number of "medium to large" oil and gas accumulations than a "supergiant" one, "as previously available data, considered alone, seemed to suggest," in the words of the report.

The ANWR, established in December 1960, contains about 8.9 million acres, and is located in the extreme northeastern part of Alaska. It is bound on the north by the Beaufort Sea; on the west by the Canning River; on the south by the Sheenjek River; and on the east by the Yukon Territory of Canada. In general, mountainous terrain of the Brooks Range dominates the central and southern portions of the range, with the Arctic coastal plain constituting about a fourth of the range in the north.

The report is based on data consisting of:

- Reconnaissance geologic mapping and gravity surveys in ANWR and adjacent areas by the USGS, 1971, 1974, and 1975.
- Compilations of subsurface (borehole) information, derived from petroleum exploration in northern Alaska west of ANWR, by oil industry and USGS geologists, 1972.
- Reconnaissance geologic mapping in northern Yukon Territory and geologic interpretation of two seismic profiles on the continental shelf north of Yukon Territory by the Geological Survey of Canada, 1977.
- Multichannel seismic reflection surveys on the Beaufort Shelf adjacent to ANWR obtained by the USGS in 1977.

Although described as "substantial," the available data are considered to be "incomplete," according to the report; thus, while noting that the data establishes that the Arctic coastal plain is the only portion of ANWR with significant petroleum potential, the report notes that "the coastal plain contains relatively few exposures of the underlying geologic formations," and that "the geologic structure beneath the coastal plain is too complex to be adequately deciphered from the available outcrops."

"Accordingly," the report says, "the present analysis was based on extrapolation of additional data now available from adjacent areas, including the continental shelf. The extrapolations were guided by the character of the limited outcrops and gravity data available on the coastal plain."

In a summary discussion of the potential of ANWR, the report says, "There is general agreement that the petroleum potential of ANWR south of the Arctic coastal plain is low."

"On the other hand," the report says, "a range of opinions have been expressed for the potential of the coastal plain itself. The area would appear to have potential because it contains at least three oil seeps and two outcrops of oil-stained sandstone; and because promising, although not yet fully evaluated, discoveries of oil and gas have been found at Flaxman Island and Point Thomson, both at the coast immediately west of ANWR. In addition, apparently modest-sized gas fields have been found at Kavik and at Kmik, 10 kilometers (about 6 miles) and 40 kilometers (about 25 miles) west of the Wildlife Range

on the southern part of the Arctic coastal plain, and the supergiant Prudhoe Bay field lies on the coast 80 kilometers (about 50 miles) west of ANWR."

The report speculates that Brookian rocks in ANWR have good potential for a number of moderate, and perhaps large, oil and gas deposits in Cretaceous-Cenozoic (about 115 million years ago to the present) strata, but it is unlikely that supergaint fields will be found within them.

The report adds, "As a rough estimate...typical Brookian fields in ANWR might contain in the range of 10 to 200 million barrels of oil, and 0.1 to 5 trillion cubic feet of gas."

"Recent discoveries by Dome Petroleum of oil and gas in mainly Brookian rocks on the continental shelf north of the Mackenzie delta are reportedly much larger than these, but the trend of geologic structures offshore of ANWR suggest that Dome's discoveries are more relevant to the potential of the continental shelf north of ANWR than to the potential of the Wildlife Range itself. If the reported Dome discoveries have relevance for the potential of the Wildlife Range, or if the Flaxman Island and Point Thomson discoveries are as large as their initial rates of flow during testing (1175 and 2300 barrels of oil per day) suggest, then the potential of the ANWR coastal plain could be significantly larger than indicated.

"In any case," the report concludes, "the geology of the ANWR coastal plain and adjacent areas permits the speculation that a number of Brookian fields could occur there, and available knowledge does not preclude the possibility that some of these might be very large."

Copies of the report, "Preliminary Analysis of Petroleum Potential of the Arctic National Wildlife Range, Alaska," by Arthur Grantz and C. G. Mull, published as Open File Report No. 78-489, may be obtained from the Open File Services Section, Branch of Distribution, USGS, Box 25425, Federal Center, Denver, Colorado 80225 (303-234-5888). Prices are $11.25 each (paper copy) or $5 (microfiche). Prepayment is required (checks or money orders payable to U.S. Geological Survey.)

Copies also are available for inspection only at the following USGS libraries: 1526 Cole Blvd., Golden, Colo; 345 Middlefield Road, Menlo Park, Calif.; and Room 4A100, USGS National Center, 12201 Sunrise Valley Drive, Reston, Va.

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CONTRASTING PRESS RELEASES

Senator STEVENS. If you contrast the two press releases, the one from the Bureau of Mines deals simply with the mineral assessment issues on a factual basis; the other although dealing with the USGS, was issued by the Office of the Secretary and is used as a means of justifying wilderness recommendations for the Arctic Wildlife Range.

Why wasn't the USGS release, which was factual, stating that the information was available and not referring to the legislative recommendations, sufficient to handle the release of public information?

Secretary ANDRUS. Mr. Chairman, with respect to the press release that was prepared from the USGS report on the Arctic Wildlife Range, the Director of the U.S. Geologic Survey determined that it was in fact an accurate analysis of the press release for that report. It is normal practice in, I think, all departments, and will continue to be, that a press release of this kind is a synopsis of the report.

We think that press release was an accurate representation of the USGS report on the Arctic Wildlife Range.

Senator STEVENS. The USGS put out at public expense the release on the availability of the report they just released without reference to legislation. The Department took that release and used it as a justification to support the administration's proposals pertaining to that portion of the legislation that deals with the Arctic Wildlife Range in violation of the section we put in the appropriations bill last year.

There was no reason to issue the release, except for the purpose of promoting the legislation that the administration has submitted on which action is not complete.

Secretary ANDRUS. I do not concur that it was in violation of the act. This administration, as other administrations, has not only the right, but the responsibility, to see that the public is informed and that these public documents are made available. We have done that. The USGS has done it and will continue to do it.

AVAILABILITY OF BUREAU PERSONNEL FOR CONSULTATION

Senator STEVENS. On a recent trip to Alaska I was told that your Department has instructed the Bureau of Mines and the USGS not to discuss with the Members of Congress or with the press the work that has been conducted by people in your Department and those two agencies in carrying out the mineral assessment studies that were funded by specific add-on requests that the Congress granted at my request in 1975, 1976, and 1977. In response to arguments I made that they didn't have sufficient information concerning these areas under consideration, Congress provided specific moneys for specific reviews.

I was told that the Bureau of Mines people could not talk to me because of the fact that there is a specific order from your Department saying that they were prohibited from discussing the progress of these reports until they were reviewed on the Secretary level.

Is that true?

Secretary ANDRUS. Mr. Chairman, my office has not instructed any employee of the Bureau of Mines that he cannot talk to you. The documents themselves will not be released until they are completed.

The appropriation referred to was $300,000 additional in 1975 and 1976, and $600,000 in 1977 to complete these studies.

Four of them have been completed and they have been released to you, to the public, to the world. We have two more that will come to the Assistant Secretary for Energy and Minerals—four more, I believe, tomorrow and the next day, or tomorrow and Monday.

Those will be reviewed and released and all of those are on schedule. They are 20 in total, encompassing 35 different consulting contracts. These will be released as soon as they are completed. The reports are not released as a public document until the process has been completed. I don't know what level of Department of the Interior employee you might have been talking to. There has never been an order that, "You cannot talk to Senator Stevens." That would be ridiculous.

Senator STEVENS. My staff has just given to me abstracts of the mineral appraisals completed or in process by contracting consultants, covering areas of interest in Alaska, dated June 7.

I have just received it. I haven't had a chance to look at it, and I will. But when we made moneys available for the Department, the Bureau of Mines, to study the difference between Canadian mining laws and U.S. mining laws, as far as the economics of mineral development on public lands, the members of your Department from the Bureau of Mines came to me and asked what was the general intent of such an add-on. As the work progressed, they came and I met with them at least three times, going over what information they had. And my staff and I were given the opportunity to suggest avenues that they had not pursued.

The Department never prohibited those people from discussing the progress in review, or the rate of progress, or to review the progress. I reviewed the draft and made some suggestions, never censoring, but just pointing out some of the areas that I thought they should pursue.

MINERAL ASSESSMENT REPORT

Now on these mineral assessments, we have never been contacted once. We have been told that they cannot work with us. With regard to this, the USGS and the Bureau of Mines studies have, as I understand now, started the process of being rewritten.

I spent 4½ years in the Department of the Interior and I can never remember a Bureau of Mines or USGS scientific report being rewritten on the policy level. If these reports are rewritten on a policy level, I intend to make a first-class national issue out of it because it seems to me that people who are doing this on a basic factual basis should not be disturbed, whether it is by you or by me in terms of politics or policy.

I have never questioned such a process. I think the Canadian study, to give an example, didn't turn out really the way I would have liked to have seen it turn out, but it was a necessary study. And these mineral studies may not turn out the way I would like to see them turn out, but I do not think they ought to be rewritten

by environmentalists at the Secretarial level, nor do I think there should be any political control whatsoever over scientific studies where we have authorized the expenditure of public funds to find out the mineral content or the mineral probabilities on public lands.

Why is it that there is a difference between your Department's procedure with regard to a study of Canadian laws financed at Federal expense and the study of the probable mineral content of lands in my State? Why can't those people talk to me and show me what is going on, the rate of progress as it goes on?

Secretary ANDRUS. There is no prohibition in my Department that those people can't talk with the Senator of a State.

Senator STEVENS. Are you sure of that? I am informed a directive was issued by the Assistant Secretary not to discuss those activities, not to release the reports, and that they were to be consolidated at the Secretarial level once they were received into 12 documents, as opposed to 35. Are you certain that that is not the case, Mr. Secretary?

PUBLICATION OF MINERAL REPORTS

Secretary ANDRUS. If I may finish and explain the difference in what we are talking about here: There has been no prohibition from my level, or any other policy level, on any consultation or conversation that they may have with you or any of your colleagues.

The reports will not be released until they are put together and become a public document. It would be improper to release the reports to you before they are complete.

Let me clarify one other point in your statement, or respond to perhaps an allegation that the scientific document will be changed or altered. The accusation, whoever it comes from, is totally erroneous and false.

Senator STEVENS. Why would they be consolidated at all?

Secretary ANDRUS. If I might be permitted, I will explain that.

When the money came in for us—the $300,000 in the 2 fiscal years, the $600,000 in the third year—to permit us to do the minerals studies, we didn't have a staff in Alaska. I think in the Bureau of Mines we probably have 15 or 17 people up there. They have had their hands full for many years doing the work.

We went to the use of consultants. The Bureau of Mines divided some of the assignments in areas among several consultants. Those consultant reports and analyses have to be put together before it is a complete study.

They are coming up for review. For example, our technical experts—these people that are in the USGS—are not involved in the Bureau of Mines area. They are responsible for the mapping. The maps have to be compared to the scientific data that the USGS has. That is the "review process." There is no altering of design, nor would it be permitted, of the scientific data; but it does have to be compiled to correspond with the requests of you and others for this mineral study.

I can't recall the words you used, but there is no editorializing within the scientific docket center, I assure you.

Senator STEVENS. Why wouldn't the Bureau of Mines put them together themselves?

Secretary ANDRUS. Mr. Chairman, because of the technical expertise that they do not have that the USGS does have. There has to be a consultation between the two. They are not foreign entities. They work together on a daily basis. But the standard procedure has been followed and will continue to be followed that their reports will come in. They will be looked at by the USGS on, again, a scientific and factual basis to see that they are in a proper form and then they will come up, and they will be cleared, and they will be released.

I told you a moment ago we had two more today—the Eastern Brooks Range and the Porcupine Region—to go to the Assistant Secretary's office, and tomorrow the 40-Mile River District, and the Circle Mining District will go to the Assistant Secretary's level.

I have a status report that I would make available to you for the record that names all of the studies. It tells where they are and what completion dates are anticipated. Those have not been changed from the time they were started. We are on schedule on each of those study areas.

Senator STEVENS. We will be happy to put your document in the record, and let me put this in the record since I obtained it from the Director of the Bureau of Mines. It is on the subject of reports in progress concerning Alaska. It will follow your document.

[The information follows:]

Bureau of Mines Alaska Investigations

The Bureau of Mines Alaska Field Operation Center, Juneau, has been assessing Alaska's mineral deposits and the economic and environmental factors of their development for some 35 years. Our permanent staff is small, consisting of 15 professionals and 7 support personnel, some of whom are in Anchorage and Fairbanks to better serve the Department, State, and the public.

When the Congressional add-ons of $300,000 in FY 75, $300,000 in FY 76, and $600,000 in FY 77 came about, we had to rely heavily on consultants to accomplish the accelerated field work and to synthesize information that was already available in files of the State, the private sector, and the USGS. The difficulty of choosing consultants under the RFP process, especially outside the normal planning of the Bureau and when the funds became available after the start of the fiscal year, resulted in understandable delays in the cycle. The contractors we chose are competent and reliable individuals and companies, but the job of reviewing their reports has taken time to be sure that what is reported is supportable.

At the same time our Juneau office has been conducting a number of other studies such as the feasibility of mining certain deposits, mineral transportation studies, environmental studies, wilderness studies (jointly with the USGS) and the NPR-A mineral study.

The list below summarizes the studies of the proposed d-2 areas or of regional areas in which the d-2 areas lie. Some of the studies that were started first were, of course, of the earlier proposed d-2 areas that recently have been changed in Congress. We have listed the portfolio of "Alaska's Mineral Potential 1978," a set of eight maps and explanation, that is an update of the 1975 portfolio. We have also shown the outline information presented by the Bureau of Mines at the Alaska minerals hearing before the House Subcommittee on General Oversight and Alaska Lands on June 23, 1977, and used to brief the Senate Energy and Natural Resources Committee staff on June 24, 1977.

We have not included special maps we prepared such as Alaska's oil and gas potential areas used by the House subcommittee and the Department in the preparation of testimony.

Title of Study	Service	Status
Alaska's Mineral Potential 1978 (Portfolio of eight maps and explanation)	Bureau personnel	Released 1/11/78
Briefing material for House Subcommittee on General Oversight and Alaska Lands and Senate Energy and Natural Resources Committee staff.	Bureau personnel	Presented 6/23/77 at House Subcommittee hearing and 6/24/77 Senate Committee staff briefing
Special map of the earlier proposed Chukchi-Imuruk area showing mineral and other resource areas	Bureau personnel	Presented 6/23/77 at House Subcommittee hearing and 6/24/77 Senate Committee staff
Mineral Appraisal of Lands Adjacent to Mt. Mckinley Park, Alaska	Contractor: C. C. Hawley and Assoc.	Open filed 5/19/78
Mineral Deposits of the Tanana-Yukon Uplands, Alaska: A Summary Report	Bureau personnel; Contractors: Resource Exploration Consultants and D. P. Colp, consulting mining engr.	Sent to AS/EM 5/26/78; returned 6/1/78 for revision
Fortymile River Placer District, Alaska	Contractor: D.P. Colp, consulting mining engineer	Ready for clearance by AS/EM
A Trace Element Study of the Circle Mining District, Alaska	Bureau personnel; assistance from Alaska Div. of Geol. and Geophys. Surveys	Ready for clearance by AS/EM
Mineral Investigation of Certain Lands in Eastern Brooks Range: A Summary Report	Bureau personnel; Contractor: Resource Exploration Consultants	Under review by USGS, 6/2/78
Mineral Deposits of the Porcupine Region: A Summary Report	Bureau personnel; Contractor: Resource Exploration Consultants	Under review by USGS, 6/2/78

Mineral Deposits of the Kanuti River Area: A Summary Report	Bureau personnel	Sent to USGS for review, 6/6/78
Preliminary Mineral Appraisal of Certain Lands in Selawik Area, Alaska (Includes only 1.4 million acres (original d-2 proposal) of 2.15-million-acre present proposal. Assessment of existing information from various sources)	Bureau personnel	Received from Bureau's Juneau office, 6/6/78
Kobuk Valley National Monument: A Summary Mineral Appraisal	Bureau personnel; Contractor: WGM and consulting mining engr. on placers	Received from Bureau's Juneau office, 6/6/78
Mineral Appraisal of the Wrangell-St. Elias Region: A Summary Report	Bureau personnel; Contractors: Wallace McGregor, Consultant; George Moerlein, Consultant; D. E. Renshaw, Consultant	Received from Bureau's Juneau office, 6/6/78
Mineral Evaluation of the Western Brooks Range	Bureau personnel; Contractor: WGM	Received from Bureau's Juneau office 6/6/78
Gates of the Arctic: A Summary Mineral Appraisal (Correlation of WGM report and Bureau information)	Bureau personnel	Sent from Bureau's Juneau office 6/5/78
Noatak National Ecological Preserve: A Summary Mineral Appraisal (Correlation of WGM report and Bureau information)	Bureau personnel	Sent from Bureau's Juneau office, 6/5/78
Map of the Red Dog Prospect (Summary, map, sample data)	Contractor: J. T. Plahuta, University of Montana	Sent from Bureau's Juneau office, 6/5/78
Mineral Deposits of the Lake Clark Region: A Summary Report	Bureau personnel	Bureau's Juneau office expects completion by 6/6/78

Mineral Deposits of the Mt. McKinley Region: A Summary Report (Summary of C. C. Hawley report)	Bureau personnel	Bureau's Juneau office expects completion by 6/7/78
Mineral Appraisal of Alaska Peninsula	Contractor: Resource Associates	Bureau's Juneau office expects completion by 6/9/78
Individual summaries of 9 wild and scenic river areas from existing contract and other studies data: Killik Salmon Colville John Alatna Utukok North Fork Koyukuk Noatak Kobuk	Bureau personnel	Bureau's Juneau office expects completion by 6/9/78

U.S. GEOLOGICAL SURVEY
Alaska Mineral Resource Assessment Program
Budget Authority
Fiscal Years 1973 - 1979
(Dollars in thousands)

Fiscal Year	Budget Authority
1973	$1,584
1974	1,662
1975	3,549 *
1976	3,582
1977	4,549
1978	4,527
1979	4,663

* Includes $1,000 Congressional add-on.

U.S. Geological Survey Studies
Related to d-2 Lands in Alaska

The Alaska Mineral Resource Assessment Program was started by the Geological Survey in 1974. The program aims at rapid evaluations of the mineral potential of the state using systematic geologic, geochemical, and geophysical mapping, information from satellite imagery, computerized data storage, and geostatistical projections of the mineral resources. The program functions on four levels.

(A) Level I studies, useful for broad overviews of mineral resources, are basically maps that show locations of known mineral prospects, occurrences, and mines. These maps are accompanied by reports that list the metal commodities present and may briefly describe them. By the end of 1977, Level I studies included: statewide (375 million acres) compilation of geologic terranes and mineral deposit data at 1:2,500,000-scale. Studies completed and administrative reports furnished to requestors in June 1977.

(B) Level II studies are designed to develop quantitative estimates of mineral resource potential in huge regions. Started early in 1976, and completed in January 1978, the Level II studies of Alaska were undertaken to provide a report on the current state of knowledge of mineral information upon which land use decisions could be based.

The assessment of metallic mineral resources is summarized in four of 37 reports. Each of the four summary reports covers one of four major regions of Alaska: Brooks Range, Seward Peninsula, Central Alaska, and Southern Alaska. Each report consists of a map which outlines areas of metallic mineral resource potential, plus an accompanying table. For each designated area, the table briefly describes types of known mineral deposits; type of deposits that could occur in the geologic terranes but have not yet been discovered; geologic controls of the mineral deposits; production data; extent of geologic data available; and a summary of the mineral resource potential. In areas for which sufficient data are available on specific types of deposits, the table also provides a probabilistic estimate of the number of deposits potentially present.

(C) Level III studies, known as the Alaska Mineral Resource Assessment Program (AMRAP), constitute a long-range program designed to provide a systematic assessment of all potentially mineralized lands in Alaska. They are made by a team of scientists that specialize in the disciplines of geology, geophysics, geochemistry, or mineral economics. The studies are presented in a packet of quadrangle maps at a scale of 1:250,000 (1 inch equals about 4 miles), with each quadrangle containing between 5,500 and 6,500 square miles. The packet includes a geologic map; a map showing mineral occurrences, prospects, and mines; an aeromagnetic map and another showing interpretation of the magnetic patterns; in some areas, a gravity map; several geochemical maps; and a map showing interpretation of satellite imagery. All of these maps, which are accompanied by descriptive texts, are used as building blocks to produce a map that outlines areas of mineral resource potential. Within an area, for those types of deposits for which adequate information is available, a quantitative probabilistic estimate of the mineral resources is made.

By the end of 1977, the program included:

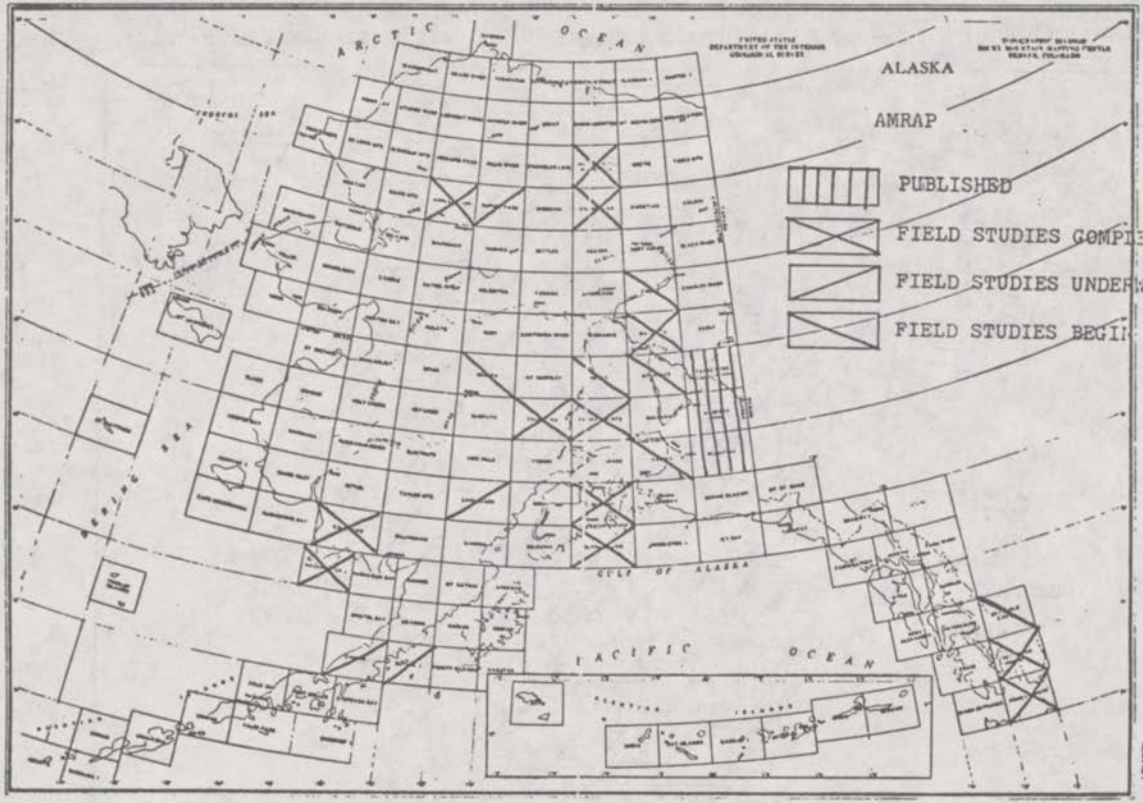
1. Field studies leading to multidisciplinary resource assessment completed to date in 15 1:250,000-scale (1^{o} x 3^{o}) quadrangles and underway in four others. These quadrangles aggregate approximately 67 million acres.

2. Mineral resource assessment (MRA) folios published, in press, or in advanced preparation for 14 quadrangles. They encompass about 47.3 million acres.

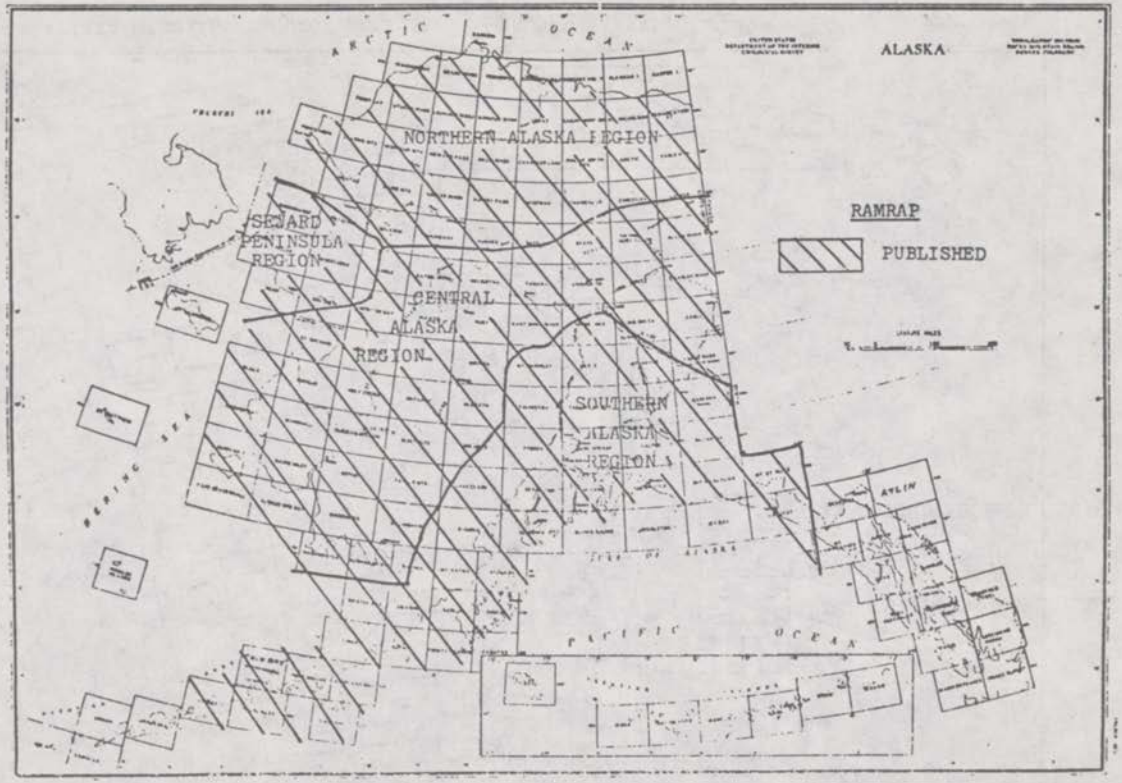
3. Publication of more than 45 other AMRAP-sponsored topical research reports on the geology, geochemistry, geophysics, and mineral resources of Alaska.

(D) Level IV studies are investigations of specific mineralized areas. They provide detailed information that is, in essence, a quality control in predicting the total resource potential of an area. By the end of 1977, AMRAP-sponsored Level IV studies of ore genesis or of other mineral deposit research problems are underway or completed in five Alaskan mining districts:

1. Aleutian Peninsula porphyry copper district;
2. Kennecott sabhka copper deposits;
3. Willow Creek gold district;
4. Hope gold district; and
5. Orange Hill porphyry copper deposit.



STATUS OF ALASKA MINERAL RESOURCE ASSESSMENT PROGRAM (AMRAP), 1/1/78



STATUS OF REGIONAL (LEVEL II) ALASKA MINERAL RESOURCE ASSESSMENT PROGRAM (RAMRAP), JANUARY 1978

MEMORANDUM

TO: Assistant Secretary
Energy and Minerals

FROM: Director, Bureau of Mines

SUBJECT: Reports in Progress Concerning Alaska

Our Alaska field operation center in-house or under contract has recently completed, or has in progress, 39 studies relating to mineral occurrences, their economic development and related environmental impact of mining in Alaska as shown on the attached list. Funds for mineral resource studies were never requested in our budget but Congress mandated the work under a $600,000 add-on in FY '75, $300,000 in FY '76 and $300,00 in FY '77. We also include an in-house library list of all the reports that we have prepared--some published, some open-filed, and some prepared to assist other agencies and natives--going back to 1911.

J. D. Morgan
Acting Director

Alaska Mineral Report 1977-1978

Title - Technical and Economic Feasibility Surface Mining Coal Deposits in North Slope Alaska

Source - Contract Kaiser Engineers

Status - Released 1977

Title - Mineral Appraisal of Lands Adjacent to Mt. McKinley National Park

Source - Contract C. C. Hawley and Associates

Status - Final Report transmitted Washington, D. C. for open file approval

Title - The Venetie Reservation Oil Shale Study

Source - Bureau of Mines Staff, Anchorage

Status - Interim Report presented to BIA
Final Reports scheduled for April 1978

Title - Trace Element Study of the Circle Mining District, Alaska

Source - Bureau of Mines Staff, Fairbanks

Status - Transmitted to Washington, D. C. for open file approval

Title - OPI 20-73 Alaska 1:250,000 scale quadrangle map overlays showing mineral deposit location, principal minerals and number and type of claims

Source - Bureau of Mines Staff, Fairbanks

Status - Report undergoing updating

Title - Feasibility Study of Mining Alaska Coal
Cook Inlet Coal: Economics of Mining and Marine
Slurry Transport (2 parts)

Source - Contract University of Washington

Status - Under review in Washington

Title - Mineral Investigation in the Bear Mountain Area
Eastern Brooks Range, Alaska

Source - Contract Resource Expiration Consultants

Status - Completed Contractor Report undergoing technical
review at AFOC-Juneau, pending transmittal to Washington, D.C

Title - Mineral Resources of the Granite Fiords Wilderness Study
Area, Alaska

Source - Bureau of Mines staff, Juneau and U.S.G.S. staff

Status - Published 1977

Title - Mineral Resources of the Tracy Arm-Force Terror Wilderness
Study Area and Vicinity

Source - Bureau of Mines staff, Juneau and U.S.G.S. Staff

Status - Manuscript released in open file report no. 77-649, 1978

Title - Mineral Evaluation of the Western Brooks Range, Alaska

Source - Bureau of Mines Staff, Anchorage

Status - Draft prepatation. Interim completed in February 1978.
Summary scheduled for completion May 1978.

Title - Wrangell Mountains-St. Elias Study: Gulf Coast Area, Alaska

Source - Contract A. L. Renshaw

Status - Report completed March 1978. Data will be incorporated
in preceding report.

Title - Map of the Red Dog Prospect, Alaska

Source - Bureau of Mines Staff, Anchorage

Status - Draft completed February 1978.

Title - Mineral Appraisal of Alaska Peninsula Data, Alaska

Source - Contract Resource Associates of Alaska

Status - Report undergoing technical review.

Title - Exploratory Oil and Gas Well Locations in Alaska
(OFI 69-73)

Source - Bureau of Mines staff, Anchorage

Status - Report updated-current to 12/31/77

Title - Placer Mining Potential of Kobuk Creek Area: Noatak-Kobuk District, Alaska

Source - Contract Douglas Colp Consulting Mining Engineer

Status - Report undergoing technical review at Afoc-Juneau Pending transmittal to Washington, D. C. for open file approval

Title - Placer Mining Potential of the 40-mile Placer District, Alaska

Source - Douglas Colp Consulting Mining Engineer

Status - Manuscript delayed for open file at the suggestion of staff at F and EA and AFOC pending additional technical review

Title - Interim Report: Mineral Assessment, National Petroleum Reserve, Alaska

Source - Bureau of Mines Staff, Anchorage, Juneau

Status - Report submitted to BLM-NPR-A Planning Staff

Title - Geology Mining and Transportation Costs of Cape Beaufort Coals, Alaska

Source - Bureau of Mines Staff, Juneau and J. Callahan, USGS

Status - Draft in progress

Title - Mineral Evalution of the Northern Wrangell Range, Alaska

Source - Contract Wallace McGregor Consultant

Status - Manuscript under local review

Title - Mineral Appraisal of Lands Adjacent to the Artic Wildlife Refuge, Alaska

Source - Bureau of Mines Staff, Fairbanks

Status - Summary report draft stage

Title - Mineral Investigations in the Porcupine River Drainage Alaska

Source - Bureau of Mines Staff, Fairbanks

Status - Report in draft stage

Title - Mineral Appraisal of the Tanana-Yukon Uplands, Alaska

Source - Bureau of Mines Staff, Fairbanks

Status - Summary in draft stage

Title - Preliminary Mineral Appraisal of the Cape Krusenstern Area, Alaska

Source - Bureau of Mines Staff, Anchorage

Status - Draft completed

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Title - Chemical and Petrographic Data on Selected Samples from the Drench Water Creek Area, National Petroleum Reserve, Alaska

Source - Bureau of Mines Staff, Anchorage

Status - Report in draft stage

Title - Mineral Resources of the Glacier Bay National Monument Wilderness Study Area, Alaska

Source - Bureau of Mines Staff, Juneau and USGS Staff

Status - Draft in preparation

Title - Mineral Investigation of the Misheguk Mountain and Howard Pass Area, National Petroleum Reserve, Alaska

Source - Bureau of Mines Staff, Anchorage

Status - Draft in preparation

Title - Wrangell Mountain, St. Elias Mineral Investigation, Alaska

Source - Bureau of Mines Staff, Anchorage

Status - Summary Report due April 1978
Open File Report due June 1978

Title - Preliminary Mineral Appraisal of Certain Lands in the Selawik Area, Alaska

Source - Bureau of Mines Staff, Anchorage

Status - Draft manuscript due for completion in late 1978

Title - Mineral Samples Data, Chukchi-Imuruk Area, Alaska

Source - Bureau of Mines Staff, Anchorage

Status - Draft manuscript due for completion in late 1978

Title - Preliminary Mineral Investigation, Lake Clark Area, Alaska

Source - Bureau of Mines Staff, Anchorage

Status - Summary Report due April 1978

Title - Characterization and Evaluation of the Washability of Alaska Coals (turned over to DOE)

Source - Contract University of Alaska

Status - Work still under way

Title - Compilation of Existing Information on Gold and Silver in Alaska

Source - Contract University of Alaska

Status - Report completion June 1978

Title - Evaluation of Mineral Potential of Pipeline Corridor

Source - Contract University of Alaska

Status - Report completion October 1978

Title - Factors Affecting Cost of Mining in Alaska

Source - Contract University of Alaska

Status - Completion April 1978

Title - Behavior of Mine Tailings in Arctic and Subarctic Environments

Source - Contract University of Alaska

Status - In progress

Title - Identification of Significant Parameters of Mining Properties Located in Arctic and Subarctic Areas of North America and Russia

Source - Contract University of Alaska

Status - Report in draft preparation

Title - Constraints on the Development of Coal Mining in Arctic Alaska Based on Review of Eurasian Practices

Source - Contract University of Alaska

Status - Report completed

Title - Effects of Placer Mining in Alaska (2 parts)

Source - Contract University of Alaska

Status - In progress

Title - Mineral Deposits in the Philip Smith Mountains and Chandalar Mining District

Source - Contract University of Alaska

Status - In progress

Senator STEVENS [reading]:

BUREAU OF MINES REPORTS

Our Alaska field operation center in-house or under contract that are recently completed or has in progress, 39 studies relating to mineral occurrences, their economic development and related environmental impact on mining in Alaska, as shown on the attached list. Funds for the mineral resource studies were never requested in our budget but Congress mandated the work under a $600,000 add-on in fiscal year 1975, $300,000 in fiscal year 1976, $300,000 in fiscal year 1977. We also include an in-house library list of all of the reports that we have prepared—some published, some open-filed, and some prepared to assist other agencies and natives—going back to 1911.

Signed by Mr. Morgan.

It shows the Alaska mineral reports for 1977-78, and their status, and where they are. Those are the ones that I was informed that would be consolidated on the departmental level and would no longer—four of them have been released. Those four were released, incidentally, individually as I understand it. The 35 will be released in the form of 12 documents on a departmental level and not, according to my information, by the Bureau of Mines as an individual study.

As we have all known, anybody who has talked with the Department—and I have, now, for some 28 years—known the Bureau of Mines' publications; they are separate publications with maps in the back. They deal with outcropping, scientific studies, and nobody has ever said that they contain any policy at all. They have not been policy documents at all. They are factual documents by people—dedicated public servants in the Bureau of Mines. And the USGS, at times, has made some of the maps in the back, but that still didn't make it a Secretarial document.

Are these 35 reports going to become departmental documents?

Secretary ANDRUS. They are, and they will continue to be, scientific documents compiled by the Department of the Interior.

Senator STEVENS. Issued by the Bureau of Mines?

Secretary ANDRUS. Issued by the Department of the Interior—through the Department of Interior by the Bureau of Mines. The consultation has taken place for many years, Senator. I know, from your personal involvement in the Department of years gone by, that you know the USGS and Bureau of Mines worked together on it.

Senator STEVENS. I know that. There is no question about it. They are tremendous agencies. I did my best to keep them from being fractionated when the Department of Energy was created.

The problem is—and while the Secretary's name appears inside the front page, or wherever it shows that credit is given to whoever it is, the Secretary of Interior, and deservedly, as far as I'm concerned—that is a nightmare to manage as far as the Department of Interior. Anybody who has been there knows that that is the case. I'm sure that you're doing the same as any other Secretary of Interior, but they have still been Bureau of Mines documents.

My question about them, as it relates to this hearing, is in terms of the press releases. Because if the press releases are Bureau of Mines press releases about factual data and the availability of factual studies, it is one thing. But if they become—as in the case of the USGS report on the Arctic Wildlife Range—a way to issue

assertions that the study supports the administration's positions with regard to wilderness designations in the Arctic Wildlife Range, and therefore becomes—again, in my opinion—and it remains to be seen what happens with this bill as it goes through, to see what the Members of Congress believe—but that is using public funds to disseminate information to seek support for legislation, a position taken on legislation, that the administration has taken, contrary to the law.

It is not just a release about factual information that has been completed by the Bureau of Mines. It is the Department using the Bureau of Mines, and the USGS study, to support a position taken by the administration on legislation.

I certainly didn't add $600,000 to the budget in 1975 so that you could use it to defeat the Alaska position on the D–2 legislation. I am sure you and I would agree with that.

Secretary ANDRUS. Yes, sir.

Senator STEVENS. How do we get to the position where this can happen?

Secretary ANDRUS. We are not in that position. As you said, neither yourself nor myself nor any other Secretary of the Interior has any idea what the end results of those scientific evaluations are going to be. The document is there. It has been submitted by the scientists. It has not been changed by policymakers. The press release was deemed to be accurate by the scientists, and it was distributed.

Frankly, if I had had my preference, they would have shown that there is no oil under the Arctic Wildlife Range. That was not the case. Other people would like to see it determined to be a gigantic Prudhoe Bay find. That was not the case. But I think it was a scientific analysis of the area, the best they could do. I think if you had that, you also have in those mineral studies Dr. Morgan's cover letter that states that these are analyses by professionals, but not to be determinative of an economic evaluation of them—if I recall the language that was used.

I would just simply have to disagree respectfully, Senator, that that was devised to support the administration's position on the Arctic Wildlife Range. I think it was a factual representation of the scientific study which was not changed or altered.

PREVIOUS ALASKA BROCHURES

Senator STEVENS. Let me turn to another document that we have. In case you don't know it, the provision of last year's bill got there because when I was in Haines, I was approached by a woman who is vice president of the League of Business and Professional Women. She was from Kentucky.

When she came through Alaska, she had been given a brochure issued by your Department which urged her to write to her Senators and Congressmen to support the administration's position on the D–2 lands. As a matter of fact, she happens to have been an ex-candidate for the U.S. Senate who was from the other party—from your party, sir, not mine. She jumped me and said, "How can you justify allowing the administration to use funds—taxpayers' funds; my money—to lobby me on this proposal?"

When I came back, I looked into it, and the Department did in fact rewrite that brochure; they took out one paragraph, the part about "writing your senators." It is being handed out in the lobby of the Seattle Federal Building. It is a four-color brochure that is being given out to those who stop and look at the display that I mentioned.

Just so we know the background of it, it was not my initiative. It was the initiative of a woman holding national office in a woman's organization that said, "Why do you let them use funds for this?" She didn't know, really—she wasn't taking a position; she was saying: Why do you use taxpayers' funds to lobby the public in order to get them to lobby the Congress?

Here is an issue that is called D–2 lands, protecting the crown jewels of Alaska, with information provided by the U.S. Department of Interior. It talks about your testimony on January 19, 1978, President Carter's message in the State of the Union address, and then it describes the Carter administration proposal to protect the 92.5 million acres of Alaska's 375 million acres under this proposal. It has a map, and it is obviously for distribution.

We asked for but have not received information as to the cost, to whom it was sent, and who produced it. Could you have someone in your Department give us that information? And was it mailed out?

Secretary ANDRUS. That information will be made available to you, Senator, as quickly as it can be compiled. There have been numerous telephone requests from staff to us for documents of this type. I think we are supplying them to you as rapidly as we can identify them from the areas that you have requested.

You want to know the number of copies, the cost, and were they mailed out?

Senator STEVENS. How was it distributed? The language prohibits "distribution," not mailing.

The brochures within the Seattle Post Office that are being distributed to support the administration's proposal on D–2 are clearly in violation of the language, even though they are not being mailed; they are lobbying to get public support for legislation on which action is not completed, using taxpayers money to lobby the public to come in and lobby the Congress.

[The information follows:]

"D–2 lands" was produced and distributed by the Bureau of Land Management's Alaska State Office in Anchorage. It was designed and printed as a four-page segment of that office's May 1978 newsletter. That edition of the newsletter totaled 32 pages, and 2,460 copies of that edition were printed. The reproduction branch of the Bureau of Land Management Alaska State Office did all the printing, and as part of the same press run, the "repro" branch ran off an additional 2,000 copies of the four-page segment that was devoted entirely to D–2.

Distribution of the full newsletter was as follows: National media, 75 copies; Alaska State officials, 54; Alaska media, 126; Alaska State legislators, 47; Regional corporations, 33; Village corporations, 95; Alaska business community (Change of Commerce, etc.), 154; local government officials, 116; National environmental publications, 22; BLM State Directors and District Managers, 70; special interest groups, 89; soil conservation groups, 7; post offices and judicial districts, 231; historical associations, 36; general public, 405; employees, 900—Total, 2,460.

The extra 2,000 copies of the D–2 pages were ordered and run off to provide materials for replies to inquiries that come in by mail, and for individuals who walk in with requests for information. Of the 2,000, distribution was as follows: 500 to the Special Assistant to the Secretary in Anchorage; 100 to the Fairbanks District Office; 100 to the Alaska State Office; and 1,300 to other BLM State Offices. The

cost of printing the 4,460 copies of the D-2 insert is estimated at no more than $200, including preparation and paste-up by BLM employees who typed the words and designed the layout.

The information, map and photographs were all in hand and required virtually no time to assemble.

Mailing costs can be estimated at one-eighth the cost of mailing 1,600 copies of a 32-page newsletter in May 1978 before the recent postal rate increase. At first-class mail rates applicable at that time, mailing costs would be around $25. The 2,000 four-page inserts were distributed by inter-office mail for which no figures are available. We estimate that at most only a few hundred have been mailed under government free-mailing permit, all upon request of the recipient to the best of our knowledge.

The segment, or insert, was not identified as BLM-produced because it was part of a BLM newsletter.

PROMOTING ADMINISTRATION PROPOSALS

Secretary ANDRUS. It is not used for lobbying. We have the responsibility of telling the story of the Department and the President to the American people. It is not lobbying the Members of the Congress.

What you are describing would be no different than the brochure that I have in my hand right here, that was clearly prepared by one of my predecessors, Walter J. Hickel, Secretary. His picture is in it, showing Alaska. Thousands of those were made. It is really a pretty nice handout.

Senator STEVENS. I am familiar with that. That doesn't say: Support legislation.

Secretary ANDRUS. No, sir.

Senator STEVENS. This is talking about legislation. Where in that does it say that Hickel asked members of the public to write their Congressman or even to take a stand?

I admit you have taken out the line that says "write your Congress," but it still says "we urge your support for the administration's proposal." There is only one way that can be expressed, and that is to write your Congressman or Senator. That is a brochure. That is just the same as when you prepare a brochure about any portion of the country under your jurisdiction.

Particularly, the Arctic was one, and that is a very interesting booklet. I have seen it all over the country. It has nothing to do with legislation, does it?

Secretary ANDRUS. No, sir. This does not promote legislation. But if you are familiar with it, I think it goes into quite a bit of detail with reference to the mineral potential that is being explored in the Arctic, the potential that is there.

I find no fault with it. I think it is an excellent piece. I would say that the endeavors that you are referring to are in the same light. We are not asking anyone to lobby their Members of Congress, but we do have a responsibility to the American people to put forth the administration's proposal as an educational response to requests of Congress, the public.

The speaking engagements that I am personally involved in are not solicited by myself but are in response to invitations, and frankly, I do as many of them as I possibly can.

Senator STEVENS. Mr. Secretary, the "D-2 lands: protecting the crown jewels of Alaska," wasn't that put out to procure public support of the administration's proposal?

Secretary ANDRUS. Mr. Chairman, that was put out to tell the public what our position is on the D–2 selection. It was not soliciting any lobbying effort, as has been implied.

Senator STEVENS. Wouldn't that tend to promote public support of the legislative proposals?

Secretary ANDRUS. Mr. Chairman, there has been a tremendous amount of information put out on all sides of this issue. You and I both know how complex it is, how the forces are working outside of the Government, as well as inside of the Government.

Yes, it is an area where you and I have a disagreement.

Senator STEVENS. But wouldn't it tend to bring about public support for a legislative proposal of the administration?

Secretary ANDRUS. Public awareness and understanding of our position, yes, sir; I would hope so.

PROHIBITION ON LOBBYING MEMBERS OF CONGRESS

Senator STEVENS. That is what Congress prohibited in 1948, section 18 under title XVIII, section 1913, the Criminal Code of the United States. And this was the section that was referred to by the conference committee in terms of the specific language of the bill last year.

It says:

> No part of the money appropriated by any enactment of Congress shall, in the absence of expressed authorization by Congress, be used directly or indirectly to pay for any personal service, advertisement, telephone, telegram, written or printed material or other device intended or designed to influence in any manner a member of Congress to favor or oppose by vote or otherwise any legislation or appropriation by the Congress, whether before or after the introduction of any bill or resolution proposing such legislation or appropriation.
>
> This shall not prevent officers or employees of the United States departments from communicating to members of Congress on the request of any member of Congress or to Congress through proper official channels requests for legislation or appropriations which they deem necessary for the official conduct of public business.
>
> Whoever, being an officer or employee of the United States or any department or agency thereof, violates or attempts to violate this section shall be fined not more than $500 and imprisoned not more than a year, or both, and, after notice of hearing by the superior officer vested with the power to remove him, shall be removed from office or employment.

That criminal law is on the books today. It says that you can't use any of the money that we make available to you for support of legislation or proposed legislation or to support or oppose legislation, whether it is pending or not, except to Members of Congress at their request, or except by official channels when you present it to the Congress of the United States.

That goes much further than the language in the appropriations bill. Last year, the House insisted that we put a reference to that section in the bill.

How do you justify the tremendous expenditure of money on the D–2 issue by your department, the dissemination of pamphlets, the traveling that you and your staff have done to seek public support, particularly in the Seattle area?

I must say that you have really gone to the Seattle area, you and your colleagues, to a considerable amount. It is beautiful country, I will admit that. It is next to God's country. We both admit that. You have come into the Seattle area with great intensity. I can

understand why. Senator Jackson is the chairman of the committee, and he is going to consider the legislation.

Don't you think that the actions that you are taking in Seattle have tended to bring influence upon Senator Jackson in the performance of his duties as a Senator of the United States?

Secretary ANDRUS. I doubt that. I know Senator Jackson too well to. [Laughter.]

Senator STEVENS. That is whether or not he is going to be influenced; the question is whether the action will tend to influence him. This criminal law prohibits that.

Secretary ANDRUS. You are citing 18 U.S.C. 1913. Let me cite the same section, if I might. I am speaking from an opinion signed by Kent Frizzell, solicitor of the Department of the Interior, dated August 14, 1975:

> It is apparent that 18 U.S.C. 1913 and section 607(a) of the General Appropriations Act were enacted for essentially the same purpose, "to prohibit attempts by the executive branch to influence the Congress through the public. However, applied literally they would seem to preclude the exercise of legislative responsibilities grounded upon Constitutional doctrine"—

That is referring, in my words now, referring to article II of the Constitution. If I may continue the quote:

> "Therefore, the statutes have been observed by both the Legislative and Executive Branches in the light of their common purpose.
>
> These provisions should not be construed to limit the right and the responsibilities of the Administration to inform the public of its programs and policies. Furthermore, as noted, there are legislative duties imposed upon officials of the Executive Branch which permit or require lobbying directly with Congress.

Senator STEVENS. With regard to lobbying Members of Congress, the statute clearly says that we go through official channels. As a member of an executive department, you have a right to approach Congress directly. We are talking about putting pressures on Members of Congress.

REGIONAL PRESS RELEASES

I have two new news releases, one on the Atlantic Flyway, one on the Rocky Mountain Flyway. These are from the Interior Department.

We will print copies of these releases in the record at this point.

[The information follows:]

FEBRUARY 14, 1978.

WATERFOWL MILLIONS TIE GREAT ROCKY MOUNTAIN-PLAINS REGION CLOSELY TO ALASKA

DENVER.—Chances are good that many of the V-formations of birds seen flying over the Rockies and Great Plains in the continental waterfowl flight annually are Alaskan-reared waterfowl, according to the regional director of the U.S. Fish and Wildlife Service.

"Alaska seems remote to many living in this region, but we will have a lot less ducks and geese in our skies here if the Alaskan flocks are allowed to diminish" Regional Director Harvey Willoughby said. "Unfortunately, millions of Americans in the lower 48 States who hold the future of Alaskan wildlife in their hands are taking little active interest in conservation of the unique surface resources of our northernmost State—some see Alaska only as a huge oil reservoir."

Willoughby said that while Alaska's mineral wealth is important to all of the United States, wildlife and other renewable resources merit a permanent place in the future of the Nation.

Willoughby said about 13 million waterfowl depart Alaska annually, with about 35 percent of these joining migrations of the Central and Mississippi Flyways. Banding records indicate that some 6 million ducks, geese and swans from Alaska follow the Pacific Flyway west of the Continental Divide. Another 10 percent of the Alaskan birds enter the Atlantic Flyway, and still others winter in Central and South America, Asia, and the Pacific Islands—making the importance of Alaskan wildlife international in scope.

"If we strip the minerals from Alaska and destroy the 49 State's fragile ecosystem, without providing a balanced plan to preserve the more historic values, we will be doing a great disservice to generations of future Americans," he said. "Obviously there is room in Alaska—a State of tremendous mineral wealth and some 375 million acres in size—for designation of key wildlife habitat areas."

Willoughby said the Congress will make the crucial decisions, possibly this year, that will determine whether more than 45 million acres of Alaska will be designated National Wildlife Refuge lands. He noted that Secretary Cecil Andrus, in an address to the Third International Waterfowl Symposium in New Orleans January 27, listed Alaska as the Department of the Interior's No. one legislative priority for this year.

FEBRUARY, 27, 1978.

ATLANTIC FLYWAY SHARES ALASKAN WILDLIFE RESOURCES

One generally thinks of migratory waterfowl coming from the North or perhaps from Canada in the fall. In the spring, the birds are destined again for someplace in the far north. Chances are that many waterfowl we see during migrations are Alaskan-reared according to the regional director of the U.S. Fish and Wildlife Service.

"Alaska seems remote to many living in this region, but we will have a lot less ducks in our marshes, rivers, and bays here, if the Alaskan flocks are allowed to diminish," Northeast Regional Director Howard N. Larsen said. "Unfortunately, millions of Americans in the lower 48 States who hold the future of Alaskan wildlife in their hands are taking little active interest in conservation of the unique surface resources of our northernmost State—some see Alaska only as a huge oil reservior."

Larsen said about 13 million waterfowl depart Alaska each fall bound for traditional wintering areas in the south, east, and west parts of the United States. Over a million of these waterfowl from Alaska, mostly ducks and swans, join migrations of the Atlantic Flyway. Whistling swans, scaup, and some canvasback ducks make up the bulk destined for the Atlantic wintering areas. Over 50 percent of Alaska waterfowl follow migrations to the Pacific Flyway, with the remaining 35 percent joining migrations in the Central and Mississippi Flyways. Alaska birds winter in Central and South America, Asia, and Pacific Islands. Wildlife species and numbers from the State are clearly international in importance.

"If we strip the minerals from Alaska and destroy the 49th State's fragile ecosystem, without providing a balanced plan to preserve the more historic values, we will be doing a great disservice to generations of future Americans," he said. "Obviously there is room in Alaska—a State of tremendous mineral wealth and some 375 million acres in size—for designation of key wildlife habitat areas."

Larsen said the Congress will make the crucial decision, possibly this year, that will determine whether more than 45 million acres of Alaska will be designated as National Wildlife Refuge lands. He noted that Secretary Cecil Andrus, in an address to the Third International Waterfowl Symposium in New Orleans January 27, listed Alaska as the Department of the Interior's "number one legislative priority for this year."

Andrus said that before this year is out, the Congress is to make crucial decisions concerning how much of Alaska is to be designated as national parks, wildlife refuges, wild and scenic rivers, and national forests.

"If we have the vision and courage to protect the vital ecosystems of Alaska, we will be maintaining a lifegiving reservoir to support a rich array of wildlife for decades and centuries to come," the Secretary said. "We will enhance the likelihood that our children and their children will have the opportunity to experience the joy associated with ducks and other waterfowl which migrate southward each fall—we will enrich life for everyone."

But Andrus warned that if the congressional decision puts a secondary importance on the wildlife and scenic treasures of Alaska, then the future is bleak. It would be a loss for sportsmen, for all people who enjoy nature, for the quality of life in much of the world.

PROTECTION OF FLYWAYS IN ALASKA

Senator STEVENS. Each of the releases talk about the value of Alaska's ducks. The one from the Rocky Mountain area, from Denver, says: "* * * while Alaska's mineral wealth is important to all of the United States, wildlife and other renewable resources merit a permanent place in the future of the Nation." It says Congress will make a crucial decision to determine whether 45 million acres in Alaska will be designated as national wildlife refuge lands. They noted in your speech to the Third International Waterfowl Symposium in New Orleans, that this was the No. 1 priority for the year.

The other one, issued from Massachusetts, says: "Unfortunately, millions of Americans in the Lower 48 States who hold the future of Alaskan wildlife in their hands are taking little active interest in conservation and the unique surface resources of our northernmost State—some see Alaska only as a huge oil reservoir."

It goes on to say that—and I am quoting: "Andrus said that before the year is out, the Congress is to make crucial decisions concerning how much of Alaska is to be designated as national parks, wildlife refuges, wild and scenic rivers, and national forests.

It goes on to say: "But Andrus warned that if the congressional decision puts a secondary importance on wildlife and the scenic treasures of Alaska, then the future is bleak."

If you are a member of the public and you read that, you would think that there is no protection for Alaska wildlife at all. As a matter of fact, the reproduction grounds for the Alaska migratory waterfowl were protected 17 years ago. We have the waterfowl production areas already drawn.

Here are two releases which say that if you don't support the legislation that the administration has before the Congress, you are going to lose the ducks.

Mr. Secretary, let me tell you I sweated blood on those. I know what I am talking about because I lost an election because I supported those withdrawals. The Arctic Wildlife Range, the Eisenbeck Range, the Aleutian Islands reserve, all of those migratory waterfowl areas were withdrawn. Those were necessary to protect the flyways. They were withdrawn in 1961. These are false——

Secretary ANDRUS. No; they are not.

Senator STEVENS. There is no necessity to support the administration's position in order to protect the ducks or the flyways.

DEGREE OF THREAT TO WATERFOWL

Secretary ANDRUS. I don't know if it is permissible for me to ask a question, but let me state it, and maybe you would choose to respond.

From the Arctic Wildlife Range—which is a large portion—and the Yukon delta area—which is another large area—we have about 13 million migratory waterfowl come out of Alaska to the Lower 48 each year. If those areas were developed by drainage to dry them up, if they were developed for oil and gas and we had a contamination problem in the water quality, I submit to you, Mr. Chairman, it would have a disastrous impact upon the migratory waterfowl that come into the Lower 48.

That not only is my personal opinion; I think that scientific units of the Fish and Wildlife Service would concur with it.

Senator STEVENS. I agree. But you are the one that is—you have the discretion to permit the oil and gas in the wildlife refuges. In my knowledge, it has never happened. No one, since I have been a Senator, has come to me and told me that additional areas of Alaska needed to be withdrawn to protect the production of migratory waterfowl.

We are not approaching D–2 and that issue. The wildlife refuges are being presented here. They are being justified in terms of migratory waterfowl production, but the production for these flyways are already protected there.

Clarence Road, Eisenbeck, and the Arctic Wildlife Range, those areas your predecessors determined, on the advice of their employees, that that was sufficient to protect the flyways.

As a matter of fact, your immediate predecessor, Secretary Udall, after 8 years, he suggested all of the lands that he considered to be necessary to protect Alaska's wildlife and scenic areas. He sent it to President Johnson. It was 8.6 million acres. Not one of those areas was justified, to my knowledge—there was one, and it was Adlai's; it was a small addition to an existing area. But there was no wholesale withdrawal necessary to protect the production of migratory waterfowl. And if there was another area that I knew of that was absolutely necessary, I would be right there beside you, my friend.

The real point is: How do you justify, as Secretary of the Interior—someone in your Department must be looking at these releases. These are releases from regional offices. It's clearly in violation of the law as passed by the appropriation bill saying no funds would be used for these purposes.

And this one goes back to the blatant thing about getting congressional support for the administration's proposal. How do you justify that in view of the action of Congress last year and in view of title XVIII, section 1913? It is a violation of both laws.

Secretary ANDRUS. Mr. Chairman, you mentioned that we have the right of protection. That is correct, in some of those areas that are refuges now, the Arctic Wildlife Range, for example. But some of the proposals before the Congress would change the level of protection we have in those areas.

I, frankly, have a serious personal reservation that the same thing will happen in Alaska that has happened in the Lower 48 with the destruction of the wetlands. We can cite example after example of the removal of the wetlands where the migratory waterfowl have deteriorated. The same thing will happen in Alaska.

Senator STEVENS. With due respect, sir—and I don't disagree with you—if it was happening in Alaska, I would be screaming. But you are getting, not to another subject, you are getting to the merits of the D–2 proposals, which we will argue somewhere else.

You can't tell me that it's being framed in Alaska or any proposal of any of the Alaskans to do so. These would lead hunters throughout the country to believe that unless the administration's proposal on D–2 is passed, the migratory waterfowl coming from the north will be changed. Chances are that many waterfowl we

see during migrations are Alaska-reared. We would have a lot less ducks if Alaskan flocks are allowed to diminish.

Secretary ANDRUS. That is accurate.

Senator STEVENS. Yes, but it leads you to believe that the passage of the proposal is necessary to prevent that. What action taken by my State has led to the diminishment of reproduction of migratory waterfowl in my State? We have supported the refuges. It was our request that created them.

Secretary ANDRUS. That's true.

Senator STEVENS. There is nothing in this D-2 legislation that I know of that was based upon any proof that action or proposed action would diminish the productive capability of the existing wildlife refuges.

The point is that these press releases are in violation of the law that we passed last year, and you apparently feel and your Department feels that there is no way that Congress can prevent it.

SOLICITOR'S REVIEW OF PRESS RELEASES

Secretary ANDRUS. With reference to that, the press releases and the speeches that I give, those have been looked at by the Solicitor's Office. They are reviewing them again at the present time. We do not think that there is a violation of that statute that you refer to.

Senator STEVENS. I would like to have a copy of the Solicitor's opinion. I would like to refer it to the Attorney General and ask him, before we go to conference on this bill, if he concurs with that—if he concurs with the fact that there is no way that Congress can prevent the expenditure of public funds to seek support from the public of legislation that is pending before Congress.

Again, I want to get away from D-2. I put it in the Senate version because of D-2. The House strengthened it because of the action of the Department on all legislative proposals. I think that the blatant disregard of the section, in terms of D-2, is going to lead to further restrictions.

PUBLIC AFFAIRS BUDGET

I have some specific questions:

Your budget includes $450,000 and 12 full-time positions for Public Affairs. Can you tell us how much of that budget is devoted to preparation and production of speeches, press releases, or other literature developed for distribution to the press?

Secretary ANDRUS. Relative to the D-2 issue?

Senator STEVENS. No; in total.

Secretary ANDRUS. We were requested to bring the figures, Mr. Chairman, which I do have, with reference to my travel and the cost of press releases, with reference to D-2, and that was—let me find this figure here—that was about $10,000.

Senator STEVENS. Could you give us the other for the record? What is the breakdown in your office budget of $450,000 and 12 positions for Public Affairs that relate to the preparation and production of speeches, press releases, literature developed for distribution to the press.

Can we have that for the record? And can you tell us the volume of press releases produced in the Public Affairs Office? How many were produced in fiscal 1977, and how many in 1978?

Secretary ANDRUS. I do not have those, but I do have the others. I will provide them for the record.

[The information follows:]

Our most recent complete year figures cover the year from April 1, 1977 to March 31, 1978, inclusive. During that year the Interior Department, through the Office of Public Affairs, issued 758 news releases in Washington, D.C. Of that total, 304 carried the heading "Office of the Secretary," because they involved major or policy matters in which the Secretary or Under Secretary or Solicitor or Assistant Secretaries were quoted or involved. But most of those 304 releases were drafted in the various Bureaus. We calculate that a total of 131 news releases were actually prepared by, and written in, the Office of Public Affairs. We have no figures for fiscal year 1978 because it is still under way.

PUBLIC AFFAIRS WORKLOAD

Secretary ANDRUS. There are about 63,000 requests annually for information through the Public Affairs Office. In my office, we have a total of 22 persons, including 2 part-time employees, on a budget of $839,000 total. That is a reduction from my predecessor's number of $1 million and 30 employees. Frankly, the workload up there is devastating, as you can well imagine.

Senator STEVENS. You are creating it for yourself with these releases.

Secretary ANDRUS. Much of it I do voluntarily, Senator.

Senator STEVENS. I understand that there is nothing in the law that prohibits you from responding to requests from the press or a member of the public for information; that's no problem.

The question is when you distribute. You get a request from one individual, and you determine that you have to put out a press release, or a mailing to a series of individuals because of one request.

Do you have regulations that have been issued by the Department concerning the use of penalty or frank mailing labels for official business? Have they been issued by the Department in compliance with the existing law?

Secretary ANDRUS. Yes, I have those with me. I will submit them for the record.

[The regulations are available in the committee files.]

DEPARTMENTAL POLICY ON FRANK MAILINGS

Senator STEVENS. It is my recollection that the policy in the Department used to be the same as the Congress; that if the material was not the work product of the Department, it was not official business, and therefore it would not be sent as penalty mail, or using frank mailing privileges.

Is that still the policy of the Department of Interior?

Secretary ANDRUS. Mr. Chairman, I beg your pardon, but would you repeat that question for me, please?

Senator STEVENS. My recollection of the policy of the Department of Interior when I was there was that if material was not the work product of the Department, it was not "official business," and

therefore it could not be sent out under penalty mail, or frank mailing labels.

Has that policy changed?

Secretary ANDRUS. Mr. Chairman, I don't think that has been the policy, with all due respect, even back many years. There are times when products that are not generated internally are used as supporting data. I believe——

Senator STEVENS. Are you talking about franked mailing?

Secretary ANDRUS. Yes, sir. And many times—not many times, but there are times when data that is used is from a source other than the Department of Interior—is utilized in our evaluations. In general, the answer is "yes."

Senator STEVENS. Have you changed the regulations?

Secretary ANDRUS. No, sir, we have not changed the regulations.

UNIT COST OF PRESS RELEASES

Senator STEVENS. You have indicated, in answer to one of our questions, that the average cost of producing a straight press release is $24 in connection with the question that was given to your staff pertaining to the volume of literature produced in connection with the Alaska lands issue.

If that is the amount—$24—to produce a press release, then are we justified in reducing your budget request for public information?

Secretary ANDRUS. No, sir.

Senator STEVENS. Can you divide the number of press releases you have issued by the cost of the budget that is presented to us? It is more than $24 a press release, even though that is what you said that these were that were Alaska related.

Secretary ANDRUS. Those that we were specifically asked about were computed on the basis of time, because the press releases were taken from a prepared text.

Any person in a staff role, or from the world of journalism, or anywhere else, can tell you that if you are writing a press release from a prepared text it is much easier and can be done in a shorter period of time by a professional than if you are not dealing with a prepared text from the material at hand. It varies, those that you asked about, yes.

I don't recall that the amount of $24——

Senator STEVENS. It would cost $24 just for the messenger service to carry it from desk to desk. There would have been at least six surnames on a press release. Do you have automatic clearance? Don't these go through the bureaus if they affect the bureaus?

Secretary ANDRUS. No, sir, we do not have automatic processes. But we do have a process whereby, yes, it is cleared by the agency within the office that is involved. Many of these, we can, in fact, walk down to the office, get clearance and get back up to my office for signoff, if it is one that I am personally involved in before it is released, in 1 to 1½ hours time.

Senator STEVENS. What does it cost? This $24, what does it relate to? We've gotten a response of $24. Is that the cost of the paper, and running it off?

Secretary ANDRUS. That is the time involved with the person—the technical person—that puts the press release together. That is the time that it takes the individuals to go to the other agency within the Department to my office and back to the surname process and preparation of the press release. It does not include the distribution—but let me clarify that, if I might. It does not include distribution.

Senator STEVENS. We are faced with the problem where a total of 760 press releases were issued. You put that into a $24 category. You have about $18,000. We have a budget for this activity of——

Secretary ANDRUS. Mr. Chairman, your staff knows full well that the Public Affairs Office does a lot more than just prepare press releases. Any implication that is different than that is totally misleading, and, frankly, desirous of being misleading.

Senator STEVENS. I think $24 is misleading.

Secretary ANDRUS. You've been there.

Senator STEVENS. That's why I know the $24 is misleading. You can't do that for $24, figuring overhead, the time of the people involved, and everything else. It just seems to me to be an attempt to belittle the issue that we are raising.

The Department says it just costs $24, so who is going to argue about $24 when we are talking about nearly a billion dollars. It is a de minimus thing. There is no question about it. But it costs a lot more than $24 to produce a press release.

I really think you ought to check your responses. If your response is correct that you can produce a press release for $24, and we have the information as to how many of your people—your 12 people—produce, then the $454,000 seems to be a lot of money for that activity.

Secretary ANDRUS. May I correct one item? I think you used the words "almost a billion." For the record, I think you are referring to my public affairs budget, which is between $800,000 and $1 million.

Senator STEVENS. I am talking about the total that this committee will work on. It would be somewhere around——

Secretary ANDRUS. I would not want the record to show $1 billion for——

Senator STEVENS. Not for propaganda; don't misunderstand me. But I am saying that the $24 would be de minimus. Who is going to argue in the conference about $24? There is a lot more of that, as far as I can see.

SECTION 603 OF THE BLM ORGANIC ACT

I want to ask you about two other things. When we had our formal hearings, we established in testimony not only from BLM but from Assistant Secretary Martin, that section 603 of the BLM Organic Act was not meant to apply to Alaska. Now there appears to be a sudden change in that policy. We are confused.

I am shifting gears on you, Mr. Secretary, but the BLM says that section 603 does not apply to State-selected lands; but now my constituents are being told that mining on State-selected lands will be prohibited until the lands are transferred to the State.

Has there been a change in the Department with regard to section 603? And do we need to reopen the testimony concerning section 603 that was established here when BLM representatives and Assistant Secretary Martin were here?

Secretary ANDRUS. Mr. Chairman, I don't think so. I think I can probably clarify it for you today, and then it would be in your judgment as to whether you would need further clarification from them. But we in the executive branch do not have the right to ignore or to violate Federal statutes.

Public Law 94-579, which is the BLM Organic Act, is very explicit. It says—and I quote from section 603: "Within 15 years after the date of approval of this act, the Secretary shall review"—it doesn't say may, it says shall review—and I think you are familiar with the language.

Then in paragraph (c), it says: During this term of review, that other matters will continue, but "in a manner so as not to impair the suitability of such areas for preservation of wilderness."

That is what the law says. I think Alaska—my personal opinion is that Alaska should be exempt. We are supporting the amendment in the legislation before the Congress to exempt Alaska from section 603. I think the D-2 selection, and all of the studies up there, should be in lieu of section 603. That is my personal opinion. That is the position of the Department with reference to the legislation.

But, Senator, if that exemption is not passed either in the legislation that is before Congress or some other way, this is staring me right in the face, which is something I simply cannot ignore, sir.

I might even be considered on thin ice by waiting to see what happens to the legislation before we implement it. I think it would be totally unfair to the State of Alaska to impose the 603 provisions upon them, but the law doesn't give me any latitude.

Senator STEVENS. It is one of those things where the understanding exists, but it was not spelled out. We are still trying to find that. It was stated somewhere in the official proceedings on that bill, on the Organic Act, that because of the pending legislation pertaining to the D-2 issue, that this was not—did not pertain to Alaska.

I agree with you that, unfortunately, it didn't go into that section.

SECRETARY'S TRIP TO ALASKA

Again, I understand press trips and the necessity to keep the press informed as to what the Department is doing. But I have been told that you have invited representatives of the press, specific invitees, to participate in a trip to Alaska to review the lands covered by the D-2 legislation.

Secretary ANDRUS. That's true.

Senator STEVENS. I am told that the press people have been given a specific figure as to the cost of that trip from Washington to Alaska and back at $1,200.

Secretary ANDRUS. No, sir, that's not true. Your source of information is——

Senator STEVENS. That is what I was told. Why is it that with regard to the invitees, that people who oppose the administration's position who are members of the press were not invited?

Secretary ANDRUS. That is also not true.

Senator STEVENS. Has Mary Anne Means been invited?

Secretary ANDRUS. I don't know the individual by name that you're referring to. Let me clarify that point. I think it is a valid point that you raise, Senator. The invitations went out without any consideration as to who would support and who would oppose from the Lower 48. They provide their own transportation to Alaska. They provide their own cost of meals and lodging in Alaska.

They will be involved on the legs of our trip from Anchorage throughout Alaska and back to the point of departure. But they will also be paying a $500 fee for that portion of the trip. They will provide their own transportation up.

As to those who are going, there was a broad range of invitations that went out with reference to the press, because again, we feel, Senator, that the American public has a stake in Alaska. They must know what the issue is.

Senator STEVENS. The person who writes in the largest newspaper in Alaska, she specifically asked to be invited and was denied.

Secretary ANDRUS. There are only so many that we can take. I would submit to you that the writers in Alaska are much more aware of the issue itself and the area, than those who have never been to Alaska.

I have made myself available to press conferences in Alaska for the sole purpose of letting the Alaska press ask the questions, to say whatever they want to say about this issue.

I don't think that somebody from a Florida newspaper could be expected to be as knowledgeable as an Alaskan on the issues.

Senator STEVENS. But you will be spending taxpayers' money for the transportation of Departmental employees that will accompany these people. You will be using taxpayers' money to fly the Office of Aircraft Service's planes that are there. You will be using taxpayers' money to pay per diem in support of the people who are accompanying the press.

I don't have any objection; the press can come there any time. They can do the same thing I do. They can charter to go out to look at some of these areas. There are transportation mechanisms.

Isn't the purpose of your trip to get publicity, to seek support for the legislation that the administration has submitted to Congress?

Secretary ANDRUS. No, sir. The purpose of this trip on the part of myself and my staff is to become more aware ourselves of all of the various areas and the issues that have been raised by the hearings in both Houses of the Congress. So that we will have the opportunity to be better informed ourselves and, therefore, we are in a better position to inform those Members of Congress and those members of the public and the administration who have not been to Alaska.

Senator STEVENS. This is similar to the President taking a trip and the press going along with him. This is a press trip. You issued a specific invitation and you denied the right of people who were here in Washington who write for papers in the West who oppose your administration's position to go along. So that their newspapers are going to have to go out and charter. They are not going to have the Interior air force flying them around.

That is what it is. Alaska is the only place in the Union where you operate an aircraft service like the Office of Aircraft Service.

We have gone over that before. You don't have that anywhere else in the United States; but in Alaska, the Interior has an air force. That air force will be put at the disposal of the press and it is going to be paid for by the taxpayers as far as your transportation and your staff's transportation.

It is not an inspection trip of the Secretary with the press going along. It is a press trip. The invitation was to go on a press trip. Could we have a list of the people wo have been invited?

Secretary ANDRUS. Yes, sir.

Senator STEVENS. Could we have a list of the people who have been denied the right to go?

Secretary ANDRUS. Mr. Chairman, I am not aware personally of anybody who had been denied the right. But, yes, all of those lists will be made available to you, not only the invitations, but those that accepted.

I just have to take issue with one statement that was made that the Department's air force would be at the disposal of the press. That is not a true statement, Senator. These people are going along on a trip that is already planned and going to be held anyway. The additional time and cost and effort is very, very small compared to the initial reason for the trip.

Senator STEVENS. There sits my staff member who was kicked off one of your planes last year. I am the Senator from Alaska. I could not go on the trip and Mr. Silver went at my request and at the request of the Member of the House. You refused him the right to fly even if I reimbursed the Department of the Interior for his transportation.

Now you are going out and inviting the press to come and ride on the same airplanes under the same kind of concept of cost reimbursement that I offered to make the Department last year.

This has been a totally one-sided thing as far as the use of taxpayers' funds. The point is you shouldn't be using them at all. Even if it was to go up there to support a bill that I introduced and wanted, you shouldn't be taking the press at the cost of the taxpayers. Even though they are paying their way, it is necessary for you to use taxpayers' money for your people to go along, fly on those airplanes, pay per diem for Departmental people. And that is in violation of this law.

If they want to go out, if the press wants to go to Alaska, come and be my guest. I will give them a list of the best charter pilots in the State. They can fly and take a look at these areas. They won't be spoon-fed as they go. That is the problem. You are going to spoon-feed the press.

Will there be any member of the group that opposes the administration's legislation? Have you invited the Congressmen? Have you invited my colleague, Senator Gravel? Have you invited any Member of the Congress that opposes this? Have you invited any Member to go along with the press that opposes this?

No. I can tell you that right now. I know you are going to take the Department employees who support this legislation. You are going to take the press to a nice trip through my State subsidized by the taxpayers. They will be spoon-fed as far as the administration's proposal on D–2 and we won't have any ability to compete with that. Not unless my colleagues suddenly turn around and give

me the kind of money that you have at your disposal to take people up and then take them on a second trip.

I wonder how many members of the press will take a second trip so they can get my point of view after they get your point of view. Or they can get the miners' point of view after they get your point of view. Or they can get the Natives' point of view after they get your point of view.

I think that is why Congress did this. It is a total unfairness of using taxpayers' money to subsidize the support for legislation.

Mr. Secretary, I can only tell you that my feeling is, and there are some other questions that the staff is prepared to give to your staff—they are technical. We would like those completed for the record.

It is my feeling that the Congress must find some way, if we really control the pursestrings—I was always under the impression that we did—we must find some way to close the purse to activities of this type. I think it is highly unfair.

You have a State with 400,000 people in it. They are being asked to put up the money to seek representation of their point of view here in Washington, 4,500 miles away. And yet, you can use the National Treasury to support the position of the administration, contrary to what I consider to be 85 to 90 percent of the views of the people in Alaska.

That is just total unfairness. It is going to lead to the death of your bill.

Secretary ANDRUS. Let me remind you that there are another 218 million people in America that also have a stake in Alaska. There is no way that they are going to have the opportunity to evaluate the questions that you and I have debated and will debate over the future use of Alaska, unless they have a knowledgeable press corps that is writing about it.

I don't know what that press corps will write, whether it will be pro or con, and I don't care, as long as they base their stories on fact and knowledge.

Senator STEVENS. How can they get facts if all they are surrounded by is people that agree with you?

Secretary ANDRUS. I would like to think——

U.S. LAND OWNERSHIP IN ALASKA

Senator STEVENS. I don't think you're right 100 percent of the time, with all due respect. But the real point is the fairness of the thing.

If Alaska was owned by Weyerhauser, one-fifth the size of the United States, and you had a proposal to condemn part of it to make it into a national forest, would it make any difference to you? Is it the mere fact that the U.S. Government still owns so much land in the West, that gives the Government the control over the lives of the West?

Just because the United States has a proprietary interest in my State, does that give it any greater standing than any other proprietor in terms of controlling our lives?

Mr. Secretary, I think that we are closer, in my opinion, to rebellion in the West than we have ever been. This D-2 issue, in

my opinion, is the symbol of doubt. We have tried to preserve a Western lifestyle. The Department and the administration is trying to change that lifestyle, justified on the basis that 218 million people own the land. I don't care if it's A.T. & T. or the Federal Government; they have no right to control my life just because they happen to own the land that surrounds my home.

Secretary ANDRUS. I don't disagree with the statement that you just made. But it is not designed to control your life. We were discussing the BLM Organic Act a moment ago, which was supported by the Senators from Alaska. That bill tells us directly how we are to manage federally owned land. And the Alaska Native Claims Settlement Act tells us that we are to make a D-2 selection.

Senator STEVENS. That will be the subject of another hearing. It's been 2 years and regulations have not been issued under that bill. The Department is issuing orders, but we have not had the regulations issued under that.

There have been no regulations issued under the section that allows you to continue to lease Federal land, or to lease Federal land under the old laws such as the Homestead law concept, trade manufacturing site, the small tract, the isolated tract, the wilderness area site. All of the laws that were previously in being which led to disposal of Federal plans were continued in philosophy under that bill with an amendment that the Congress took at my request, but subject to regulations of the Secretary of the Interior, just as at the time we created the Arctic Wildlife Range, and oil and gas activity was to be permitted under regulations issued by the Secretary of the Interior.

Under the Organic Act, no regulations have been issued. I think that is a subject we will get into. It seems to me that we have got to stop authorizing the issuance of regulations and start passing laws that are that thick [indicating]. We will propose the regulations ourselves. That is what you are coming to, Mr. Secretary, because you are not exercising the discretion Congress gave you to issue regulations under the BLM Organic Act.

That is another subject.

You are increasing the amount of money for administration under that act but you are not carrying out the intent of Congress under the act.

As far as this other thing is concerned, Mr. Secretary, I don't think that there is a Member of Congress that has been more supportive of the Department of the Interior than I have in the past. But the day is coming to an end, as far as I am concerned, because we are unable to achieve compliance with what I consider to be a reasonable restriction.

You are not restricted in terms of presentation of your views to Congress. There are a myriad of agencies out there—the Sierra Club, the Defenders of Wildlife, the Wilderness Society, the Alaskan Coalition, the United States Citizens to Save Alaska, or whatever they call themselves—thousands of organizations are spending money.

We say that you can't spend taxpayers' money to support the administration's proposals. Lots of people out there support the position you believe in. There are a few people out spending money

to support the position I believe in. That is a matter of fairness that has to be weighed in other bodies.

But you are spending taxpayers' money contrary to the intent of Congress to whip up public support through the Congress for your position. I think we have got to find a way to stop that.

Well, if you can do it on this, why can't you do it on the B–1? Why can't you do it on SALT? Why can't you do it on the Turkish arms issue?

I don't think that the President is doing that. As a matter of fact, he is doing what he should do. He is answering questions, appearing on news programs. I don't remember, on any of those other positions of the administration that they have done what you have done on this one. You have used taxpayers money, Mr. Secretary.

My last request to you is that I am going to suggest that language again. We're going to suggest tightened-up language for certain uses of your funds. We are going to take a long look at your public relations budget as a result of this.

I would urge that you give us some indication as to the need for that money, if it just costs $24 for a press release.

Secretary ANDRUS. Mr. Chairman, if I may respond in part to your comments?

Senator STEVENS. My tirade, yes.

Secretary ANDRUS. Basically, I have to disagree respectfully where you say that any of the funds that we have used have been used illegally.

With reference to any number of the other examples that you mentioned, the administration's position is made known in these other areas via press releases that have been issued by the executive branch, by speeches that are made by members of the Cabinet and other officials within the Department.

There has been taxpayers money used for the transportation of individuals in the Cabinet and at other levels to foreign nations of the world to discuss these matters. Press people do go along on those trips with him, so that the American people can know what the issues are, and what has been said.

I do not see ours as any different, in that regard.

Your final comment was with reference to the budget of public affairs. We have reduced that budget within the Secretary's office from what it was in the previous administration, both in numbers of bodies and in dollars that have been expended. To say that the 63,000 contacts per year of requests for information that they handle is not a heavy workload, I would have to disagree.

BUREAU PUBLIC AFFAIRS OFFICES

Senator STEVENS. I forgot to ask you that question—but we were told that, yes, you have reduced your budget, but the budgets of each one of the bureaus are there.

Do you control the bureaus' public relations budgets and congressional affairs budgets on a departmental level? Are those services available to the secretarial level?

Secretary ANDRUS. Through the budgetary process, we do. I think that is no different than it has ever been. They are not, in practice,

used by the Secretary's shop. Through the budgetary process, we control that money by requests of what Congress would give us, and what the President would sign into law. The amount that is used in the Secretary's Office of Public Affairs has been reduced.

Senator STEVENS. We are not quarreling with responses to the inquiries, except staff believed that we have not had the answers, yet, as to the amount of moneys that are spent by the Department and by each bureau on press releases, preparation of speeches, the dissemination of materials pertaining to legislation.

I don't know how you can separate it out, because we have a disagreement as to whether those press releases here pertain to "legislation," when they mention so much of an impact as far as the flyways are concerned on the migratory waterfowl. We still do not have the information on the amount of money that the Department is spending, and the amount of money that each bureau of spending on public relations' activities pertaining to preparation of speeches, preparation of press releases, the circulation of those, and the cost of presenting the speeches to the public.

We would like to have a response to that. I think we are entitled to that.

Secretary ANDRUS. You will have a response to that, Mr. Chairman.

[The information follows:]

PUBLIC AFFAIRS—INFORMATION FUNCTIONS, NUMBER OF EMPLOYEES, AND OBLIGATIONS, FISCAL YEAR 1977–79

[In thousands of dollars]

Bureau or office	Fiscal year 1977		Estimate fiscal year 1978		Estimate fiscal year 1979	
	Number	Obligation	Number	Obligation	Number	Obligation
Bureau of Land Management	83	2,500	83	2,500	83	2,500
Office of Water Research and Technology		3		3		3
Heritage Conservation and Recreation Service (BOR)	7	150	5	127	5	127
National Park Service	43	1,195	44	1,211	44	1,211
Fish and Wildlife Service	38	1,234	44	1,319	45	1,415
Geological Survey	6	171	6	198	6	202
Bureau of Mines	5	260	5	288	5	297
Office of Surface Mining			5	164	5	275
Bureau of Indian Affairs	5	232	6	264	6	264
Office of the Secretary	12	401	12	444	12	454
Bureau of Reclamation	28	597	28	629	28	660
Working Capital Fund	7	438	7	456	7	450
Total	234	7,181	245	7,603	246	7,858

COMPARISON WITH OTHER AGENCIES

Secretary ANDRUS. We suffer some of the same problems you do in differentiating. We will give you the total amount, the breakdown as to numbers.

I have the numbers of people in the—all of the public affairs offices in Interior, and I would point out: I would hope that you would also, when you evaluate this, would compare it to other agencies of Government. Because where we have 22 in the Secretary's office—the Secretary's Public Affairs Office. Agriculture has

205 and an appropriation of $6 million. The Department of Energy has 90, and their appropriation is $3½ million.

Ours is 22 people in the Secretary's Office, with a budget of about $839,000. Frankly, I will put up the workload, the output of my people against any of those others, and they will work them under the table.

Yes, they are involved in speech writing, press releases, responses to the media, telephone inquiries—the list goes on and on—but I will prepare as much of it for you as you would request, Senator, and make it available as timely as I possibly can.

Senator STEVENS. We have your Public Affairs as $454,000 not $800,000.

Secretary ANDRUS. If you look across, on the same sheet, you will see that you have the numbers of "12." There is an additional 10 from—that will not be in next year's budget. Before, it came out of the working capital fund. Wait till I find it here, myself. That brought that budget up to about the $800,000.

The appropriations process for the preparation of the budget this year has requested that the numbers of personnel and the dollars be transferred instead of being utilized in the working capital fund, to put it into the Secretary's budget. It will not be an increase; it will be what you would call a "lateral transfer." The numbers will stay the same.

Senator STEVENS. I thank you, Mr. Secretary, for your courtesy. I hope that we can get the information we need.

Secretary ANDRUS. Mr. Chairman, it would help—May I just make a request? If, instead of getting telephone calls, you know, can you send us written questions? For instance, in preparation for this meeting today, the questions came as late as midafternoon yesterday via the telephone.

If there is an area where there is a disagreement with what we are doing, you can tell me the figures, what areas you want, and I can supply that easier than I can a verbal request. That doesn't mean we won't respond to verbal requests; we always have; we always will. Our staff couldn't work without it.

Senator STEVENS. I would support any amount of money you would ask for to advertise and solicit support of the activities of the Department for encouragement for existing national parks, the wildlife refuges, to acquaint the people with the programs under existing law for the outer continental shelf and why it is necessary to proceed and to demonstrate what the Department has done and will do to assist the Native people, Indian people in the country, and the whole concept of public information as far as the ongoing activities under existing law are concerned. I think this Department has been shortchanged. There is no question about it.

But the reason it has been shortchanged—and I can remember once when I was down there, being called up to a Member of Congress about a press release that was issued concerning a bill to provide for stabilization of the price of lead and zinc. Mr. Secretary, my memory is that the press release was withdrawn because he was right. We should not have issued the press release urging people to get up and support the proposition we had made that the price of lead and zinc should be stabilized.

This is an ongoing problem. One of the reasons the Department has lost its support is that it uses its money for lobbying instead of for seeking support of the actions already authorized by the Congress. I think you should have more money. There should be more advertisement about what is available in the national parks and in the areas you already have, and what has been done, and what is new in some of them, to encourage people to come back and see them for the second time, or the third time.

We shouldn't have this kind of a fight. It is unfair what you are doing. I think that I would be remiss, as a Senator from Alaska, to allow you to continue without raising a flag about it. It wouldn't make any difference whether it is Alaska, Idaho, or Nevada. You can't use the national money to seek support for legislation that affects those small States when we don't have the ability to compete.

It has got to be a basic unfairness. That is what motivated Congress last year. I think that they are right.

SUBMITTED QUESTIONS

As I mentioned earlier, we will submit a series of questions to be answered for the record.

[The following questions were not asked at the hearing but were submitted to the Department for response subsequent to the hearing:]

SUBMITTED QUESTIONS

Question: Please provide for the record a detailed breakdown of the cost of implementation of H.R. 39. I know it has been stated that the costs will be minor but you must be aware that the Congressional Budget Office has estimated that H.R. 39 will cost at least $500 million not including Fish and Wildlife money.

Answer: The following information details the best estimates available on the costs of implementing H.R. 39.

Alaska National Interest Lands Act
Estimate of Incremental Costs
Comparison of H.R. 39 and Administration Positions
(Dollars in millions and tenths)

Background

The description below is a preliminary estimate of costs for H.R. 39. The following qualifications are appropriate:

1. Many provisions of H.R. 39 are of recent vintage. Cost estimates for such provisions are subject to variations in interpretation.

2. Many provisions of H.R. 39 can be implemented to some degree at various funding levels. An attempt has been made to provide "good" preliminary estimates of potential costs recognizing that ultimate costs will be based on continuing improvement of implementation plans, operating experience, and, ultimately, appropriation acts.

3. The estimates provided below have not been considered in priority terms with other Government programs which compete for Federal dollars. It is possible that appropriation requests could be smaller as a result of such consideration.

The cost estimates below are expressed in year -1, -2, etc., terms. The calculations assume passage of H.R. 39 by September 1978, availability of supplemental funds by, perhaps, December, and initial implementation steps primarily concentrated in the Spring and Summer of 1979. If appropriations were delayed beyond this time without adjustment in certain deadlines in the legislation, early year costs would probably be higher than shown. It should also be noted that the estimates reflect the higher costs associated with carrying out programs in Alaska.

Summary

The estimated costs of the Alaska National Interest Lands Act expressed in terms of appropriation requirements, are as follows:

H.R. 39 - Preliminary Cost Estimates
(millions of dollars)

	Year				
	1	2	3	4	5
Title II National Park System	5.9	17.2	29.7	22.4	18.0
Title III National Wildlife Refuge System	29.4	42.4	60.3	62.8	57.8

	Year				
	1	2	3	4	5
Title IV National Forest System	2.0	2.1	2.2	2.4	2.6
Title V National Wild and Scenic Rivers System	2.1	2.0	2.2	2.1	2.4
Title VI Wilderness and Wilderness Study Units	9.2	2.2	1.9	1.9	1.8
Title VII Subsistence	7.0	17.7	12.8	13.3	13.3
Title VIII Implementation of ANCSA and Alaska Statehood Act	10.5	25.0	35.0	--	--
Title IX - Transportation and Utility Systems	.5	1.5	1.9	1.9	2.1
Title X Coordination	.4	.4	.4	.4	.4
Title XI Administrative Provisions	.9	1.5	1.7	1.6	3.4
Title XII - Misc.	.2	.2	.2	--	--
Total	68.1	112.2	148.3	108.8	101.8

The above preliminary cost estimates include provisions which have not been endorsed by the Administration. The estimates for those provisions supported by the Administration are:

Administration Position - Preliminary Cost Estimates
(millions of dollars)

	Year				
	1	2	3	4	5
Title II National Park System	5.9	17.2	29.7	22.4	18.0
Title III National Wildlife Refuge System	14.4	21.6	39.6	50.1	45.1
Title IV National Forest System	2.0	2.1	2.2	2.4	2.6
Title V National Wild and Scenic Rivers System	2.1	2.0	2.2	2.1	2.4
Title VI Wilderness and Wilderness Study Units	8.0	1.0	.7	.7	.6

	Year				
	1	2	3	4	5
Title VII Subsistence	7.0	17.7	12.8	13.3	13.3
Title VIII Implementation of ANCSA and Alaska Statehood Act	.5	--	--	--	--
Title IX - Transportation and Utility Systems	--	--	--	--	--
Title X Coordination	.4	.4	.4	.4	.4
Title XI Administrative Provisions	.9	1.5	1.7	1.6	3.4
Title XII - Misc.	--	--	--	--	--
Total	41.2	63.5	89.3	93.0	85.8

Additionally, the bureaus have provided a preliminary estimate of five year land acquisition costs (including costs associated with boundary surveys, appraisals, exchanges, and other realty surveys) which total $25.8 million. These costs are not assumed to be incremental since they would be derived from the Land and Water Conservation Fund (LWCF) but are not expected to be of such a magnitude as to affect the total request for the LWCF. The distribution of these LWCF costs by year are uncertain and will depend on the rate of preliminary acquisition work and purchase opportunities as well as relative priorities within the LWCF for Federal acquisition dollars.

Title XIII provides for the conduct of minerals assessments and exploration. The Department already has vigorous programs in this area and, therefore, no incremental costs are attributed to it. The expensive provisions once in the House Bill regarding exploratory petroleum drilling in the Arctic Wilderness were dropped from H.R. 39.

Off-setting revenues coming from Federal lands made available for multiple-use management through the legislation are estimated to be negligible between FY 1979 and FY 1983. First, the Bureau of Land Management land use planning in Alaska is not at the stage where decisions on land use (such as offering lands for oil and gas or coal leases) can be made in the near future. Development of such plans for all lands remaining under the Bureau of Land Management will take up to 5 years. Second, lands with the highest potential for revenue-generating development will likely be selected by the Natives and the State. While the remaining lands could have high recreation or wildlife values, few are expected to produce significant revenues to the Federal Government in the near future.

The following sections discuss the major cost elements and differences between H.R. 39 and the Administration's proposals by title.

National Park System

Title II establishes 10 new units and expands other units in the National Park System covering approximately 41.7 million acres. The differences between the Administration proposal and H.R. 39 in terms of acres to manage and resultant cost differentials are trivial. Development costs shown

during the first few years are primarily for equipping, housing and transporting operating staffs at the Parks. Additional planning time will be necessary for actual Park development. The preliminary cost estimates for Title II are:

	Years				
	1	2	3	4	5
Plans and Studies	.2	1.8	2.5	1.5	1.5
Operations	4.3	8.8	8.8	10.9	11.5
Development	1.4	6.6	18.4	10.0	5.0
Total	5.9	17.2	29.7	22.4	18.0

National Wildlife Refuge System

Title III establishes 18 new units of the National Wildlife Refuge System covering 76 million acres. H.R. 39 would provide for approximately 67% more National Refuge acreage to manage than the Administration's proposal. It should be noted that H.R. 39 has tighter timetables and more extensive and expensive planning requirements for the National Wildlife Refuge System than the Administration's proposal. Substantial costs are also associated with the Seaward Management areas, the "Bristol Bay Cooperative Region" and "Barren Ground Caribou Study" (sections sec. 303, 306 and 307) not proposed by the Administration. Sections 306 and 307 are expected to cost approximately $4 million and $1 million per year, respectively. The preliminary cost estimates for H.R. 39 for the systems are:

National Wildlife Refuges - H.R. 39

	Years				
	1	2	3	4	5
Plans and Studies	9.3	11.1	11.7	10.2	10.2
Operations	10.1	19.9	22.5	21.5	22.1
Development	10.0	11.4	26.1	31.1	25.5
Total	29.4	42.4	60.3	62.8	57.8

By comparison, the preliminary cost estimates for the Administration's proposals are:

	Years				
	1	2	3	4	5
Plans and Studies	4.5	5.1	5.5	4.6	4.6
Operations	6.9	14.1	16.1	14.4	15.0
Development	3.0	2.4	18.0	31.1	25.5
Total	14.4	21.6	39.6	50.1	45.1

As for Title II, the development costs shown during the first few years are primarily for equipping, housing and transporting operations staffs.

National Forest System

H.R. 39 would add approximately 3.3 million acres to the existing units of the National Forest System. Preliminary costs as estimated by the Forest Service for management of these additional lands are:

	Years				
	1	2	3	4	5
Operations	2.0	2.1	2.2	2.4	2.6

National Wild and Scenic River System

The costs of administering the Rivers included in Title V are primarily covered in the previous titles since most of the designated rivers are within other systems. The primary cost elements remaining in the estimates shown in the summary tables are for BLM management of designated rivers and for studies required by Title V. There is no difference between the bills in cost estimates.

Wilderness and Wilderness Study Areas

Largely, wilderness costs are contained in those for previous titles. The principal additional cost elements are the section 606 provisions for securing timber rights of the Kootznoowoo Corporation and certain land exchanges. This estimate, provided by the Forest Service, is $8.4 million over 5 years with $7.6 million in the first year. The difference between H.R. 39 and the Administration position is $1.2 million per year for the aquaculture program in section 607 of H.R. 39 which the Administration opposes.

Subsistence and Research

Title VII contains certain provisions for subsistence use management and evaluation, subsistence related research and general research. The principal anticipated cost elements are for data acquisition and research and for the section 715 reimbursement provision.

Implementation of ANCSA

The principal cost element is for payment of attorney fees under section 809 which the Administration opposes. BLM has estimated a three-year cost of this section of $70 million.

No estimates have been provided for sections 802 and 803 on expedited conveyances and easements since BLM considers them to not be possible of accomplishment within the six-month time frame. The two-year conveyance schedule supported by the Administration is estimated to cost approximately $12 million over three years with the largest cost falling in year two.

Transportation and Utility Systems

The cost estimates assume additional involvement of the Fish and Wildlife Service in potential future rights-of-way development pursuant to section 904. The Administration believes these provisions are covered by existing law.

Editorial Column

Question. Concerning the "Editorial column" under Secretary Andrus' by-line, which the Department said was distributed to 2,400 newspapers, please provide a complete list, including addresses, of all recipients of this column.

Answer. The list has been provided and is available in the Committee files.

Question. How was the postage paid for the distribution of this column? Was it mailed out to anyone under the Penalty Mail Provisions of Title 39 of the U.S. Code?

Answer. Yes, all mailing was done under the permit.

HCRS Release (Letter and Enclosures)

Question. It has now come to our attention that a Heritage Conservation and Recreation Service letter dated May 31, 1978, over the signature of James R. Mills (for Frank E. Sylvester), with appended comments by Secretary Andrus and an article from the National Journal has been circulated by the Pacific Southwest Region. That material will be included in the record at this point.

May 31, 1978

Dear Friend:

The most important conservation issue of the decade will be resolved by the Congress this year. That issue is Alaska and the final disposition of lands withdrawn by the Secretary of the Interior under Section 17 (D)(2) of the Alaska Native Claims Settlement Act. You may already be familiar with the issues since there has been considerable press coverage of the debate surrounding House of Representatives Bill #39 which is currently making its way through various committees. The Alaska decision has implications for all Americans and we feel that the public should have every opportunity to acquire information concerning it and that public dialogue on the proposal be as widespread and lively as possible. In this spirit we are forwarding an information packet for your use consisting of a recent article in the National Journal and a speech by Secretary of the Interior Cecil D. Andrus. We hope that you will study the issues carefully and make your views known. Additional information can be obtained by contacting Mr. James R. Mills at the letterhead address or by phone at 415-556-0182.

James R. Mills

For Frank E. Sylvester
Regional Director

Saving Alaska for the Future, Not the Frontiersman

Congress is now wrestling with the problem of how to keep Alaska, in the words of its governor, as the "oil barrel for America and national park for the world."

BY DICK KIRSCHTEN

Before taking final action on the Alaska National Interest Lands Conservation Act (HR 39) by a convincing 32-13 margin on March 21, members of the House Interior and Insular Affairs Committee first had to dispose of one last small dispute.

Alaska's lone House Member, Republican Don Young, argued briefly and futilely with Rep. John F. Seiberling, D-Ohio, over a boundary line drawn on the map of Alaska by a somewhat ambiguously worded amendment accepted the previous week. Since the area in dispute was equal only to about one-seventh of 1 per cent of the nation's vast and wild 49th state, most of the other committee members sat by silently and with apparent indifference.

But even a minor debate involving Alaska is, by ordinary standards, a debate on a grand scale. What Young and Seiberling were quarreling over—an alleged 550,000-acre misunderstanding—is an area of 859 square miles, the equivalent of more than 70 per cent of the state of Rhode Island.

Alaska is grand. Twice the size of Texas, with room left over for New York State as well, Alaska is the nation's last frontier—a vast expanse of spectacular and unspoiled scenic beauty and mind-boggling mineral potential.

It is also different things to different people.

To the Alaska Coalition, the environmentalist-conservationist lobbying force behind the bill, Alaska "means wide valleys and endless unbroken distances, flocks of waterfowl and migrating cranes. It means the possibility of sitting quietly through a long summer's eve while gyrfalcons hunt the plains, and watching caribou chart a tenuous course across the open tundra or brown bears searching the river bars for salmon."

To a representative of the Alaska Mining Association who serves on a steering council established by the state's legislature, one cannot discuss Alaska without looking at "the potential for the hard minerals—such as, gold, copper, uranium, tin and silver." Currently, interest centers on prospects for finding copper, zinc, lead, silver, nickel and molybdenum. In the future, finds of tungsten, tin, fluorine, chromium and other elements seem likely.

To Alaska's Republican governor, Jay S. Hammond, it is a matter of being "called upon at once to be oil barrel for America and national park for the world." The great challenge, Hammond told the Interior Committee in April 1977, is to manage things so that Alaska can contribute her nonrenewable resources to meet national needs yet "survive the extractive process with her . . . perpetual renewable resources and luminescence as a guiding light for enduring values of the human spirit intact."

Although Alaska was granted statehood 20 years ago, the problem—at least as it is seen by Congress—is a peculiarly federal one. Under terms of statehood and subsequent legislation, the federal government is to turn over 40 per cent of Alaska's territory to state and native interests, with the rest of the land remaining under federal ownership.

The current legislative effort with HR 39 as the prime vehicle - is intended to place the most important of Alaska's scenic resources and fragile ecological systems under the protection of four federal systems: national parks and preserves, national wildlife refuges, national wild and scenic rivers and national forests. The bill makes liberal use of another management tool - the so-called wilderness override - that provides an added layer of protection from mineral exploitation and man-made improvements in designated wilderness areas.

As approved by the Interior Committee—after a year of intensive hearings involving 2,300 witnesses, more than 1,000 of them Alaskans—the bill proposes to add nearly 100 million acres—an area the size of California—to the 48.2 million acres of Alaska already included in the four federal land protection systems. What's more, half of the aggregate 147.2 million acres would be designated as wilderness areas. *(See chart, p. 551.)*

The bill also charts a bold and bitterly controversial path for management of the mineral resources that may be identified in protected areas not included in the wilderness designation. In Alaska, of all places, where the lore of the gold rush and the promise of the bonanza are cherished traditions, Congress is proposing a new minerals exploration process that would make finds on certain federal lands available *for* extraction only after competitive bidding and the payment of compensation to the federal land owners.

Thus, as Congress faces up to the care and management of the "last frontier," it is attempting to invoke a philosophy that is a vast departure from the winner-take-all approach that induced adventurers to brave the previous frontiers. This time, Congress is saying, the treasures—both visual and vendable -to be found on Alaska's federal lands are to be husbanded carefully for the benefit of the public at large.

OPPOSING SPOKESMEN

As chairman of the Interior Subcommittee on General Oversight and Alaska Lands, Seiberling—an Akron attorney and tire manufacturing heir—has become the leading proponent in the House for strong conservationist measures to

protect Alaska's scenery for posterity.

Young, a brash and irreverent former riverboat captain from Fort Yukon, has led the fight for keeping development options open and for increasing the state government's role in planning the future use of all of Alaska's lands. Seiberling has been strongly backed by Interior chairman Morris K. Udall, D-Ariz., while Young has received key support from an influential member of the committee, Lloyd Meeds, D-Wash.

The contrast in personalities between Seiberling and Young is almost as striking as the difference in their views. A visitor to the Ohioan's office is greeted by a display of nature photographs bearing Seiberling's signature. On stepping into Young's office, one is confronted by a section of the 48-inch diameter Alaska oil pipeline bearing a plaque thanking Young for his efforts on behalf of that monumental project.

In the past year, Seiberling has stalked Alaska with his camera, capturing breathtaking scenery on color film. Young, on the other hand, has spent 20 years in Alaska following a variety of pursuits from construction worker to school teacher. When not running provisions up the Yukon River and its far-flung tributaries, he has stalked Alaska with trap-lines, earning his living by capturing fur-bearing animals.

Seiberling traces his commitment back to 1975, when he spent three weeks in Alaska touring the "national interest" sites proposed by then Interior Secretary Rogers C. B. Morton. "I was so impressed by what I saw," he said in an interview, "that I thought we really must do something to make sure that these [lands] become permanently protected and preserved for the future enjoyment of the American people." *(For excerpts from the Seiberling interview, see p. 553.)*

Young, in an interview, charges that the conservationists deliberately have selected areas of high economic potential in order to thwart development. He contends that this strategy is "shortsighted" because it precludes orderly planning for what he considers the inevitable exploitation of those resources. "When the need for the energy and minerals becomes so pressured, they are going to be taken from Alaska," he said. "But they are going to be taken in such a manner, in such a quick method, that they will really cause great environmental damage." *(For excerpts from the Young interview, see p. 552.)*

ALASKA OFFICIALS

Alaska's elected officials, led by Gov. Hammond, had pressed for an entirely different approach to the designation of the national interest lands than the one in the pending bill. Arguing that the four federal land protection systems "were neither designed for Alaska's potentials and problems nor the world as it exists today," Hammond had proposed creation of a "fifth system"—involving state-federal cooperation in the management of the lands owned by each.

"Representatives of the national interest would achieve a significant say in how we Alaskans managed our magnificent millions of acres of state land, and Alaskans would achieve a significant say in how the nation managed a similarly dedicated number of national interest acres," Hammond explained.

Although Young and his allies fought for the cooperative management proposal, the Interior Committee flatly rejected the "fifth-system" approach, which was seen by environmentalists as a way to hold scenic lands open for multiple uses, as opposed to protecting them strictly from development.

Alaska officials, disappointed at the failure of their bid to gain a voice in the planning processes that will govern the fate of 60 per cent of their state's territory, also have expressed skepticism about the federal government's ability to quantify and manage the mineral resources that the bill would remove from the routine processes of commercial exploration.

On the positive side, from the state's viewpoint, the bill would expedite the final transfers of federal lands to the state and to its various native claimants. Bringing these transactions to a conclusion should remove a great deal of uncertainty that has held up progress on a number of fronts.

Alaska has experienced considerable frustration in the 20 years since statehood in obtaining the full 104-million acre allotment of federal lands that was granted it in 1958 to establish an economic and tax base. To date, the state has selected some 75 million acres—not all of which has been transferred yet—and now finds that Congress is staking claim to a number of areas that the state would like to select out of its remaining entitlement. In direct dispute are approximately 9.5 million acres that Alaska wants, but which the bill would place under federal protection.

How HR 39 Would Carve Up Alaska

(figures are in thousands of acres; parentheses indicate proposed wilderness area designations)

	Existing		Proposed additions		Total		Mineral development possible
National parks and preserves	7,536	(6,730)	43,170	(35,280)	50,706	(42,010)	6,610*
National wildlife refuges	19,970	(13,050)	50,760	(15,320)	70,730	(28,370)	43,716*
National wild & scenic rivers	—	—	1,687	—	1,687	—	—
National forests	20,724	(3,899)	3,344	—	24,068	(3,879)	17,849**
							2,340*
Total	48,230	(23,659)	98,961	(50,600)	147,191	(74,259)	72,515

*Under proposed "mineral process" restrictions
**Under existing law

William P. Horn, minority staff consultant to the House Interior Committee, has summarized the obstacles encountered by Alaska in selecting its lands. On the one hand, the Interior Department has rejected some state claims; on the other, it has imposed land freezes. Under the 1971 Alaska Native Claims Settlement Act (85 Stat 688), native groups are entitled to 44 million acres. However, more than twice as much land has been withdrawn through "overselections," and final disposition of the native claims has yet to be made. Similarly, major federal land holdings have been frozen pending final determination of the national interest reservations.

At the present time, according to a February briefing paper written by Horn, "the state is shut out from over 300 million acres, or 80 per cent of Alaska."

Seiberling thinks the final outcome should satisfactorily balance Alaska's economic and ecological needs. He notes that 40 per cent of Alaska would end up in state and native holdings with no inhibitions against economic development; just under 30 per cent would be in federal land holdings—either national forests or acreages administered by Interior's Bureau of Land Management where multiple use development, including mining, is permitted, and just over 30 per cent of the state would be in parks and preserves where scenic values have top priority.

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Young: 'The State Has a Basic Right'

Following are edited excerpts from a March 27 interview with Republican Rep. Don Young of Alaska.

Q: Alaska has not yet selected the more than 104 million acres it will get under the terms of the 1958 statehood act. Should that process have been completed prior to the designation of "national interest" lands?

A: The argument is made that the state shouldn't be allowed to. But back when the statehood agreement was ratified, there was no intent of [national interest] lands legislation. We took our time. We looked. Everybody says we took the best mineralized lands. But the only place where that is apparent is when we picked Prudhoe Bay. The majority of the areas were picked for people uses, because we weren't restricted in the use of other [federal] lands. . . . Under this bill, we have been assured we'll receive the 75 million acres [already selected by the state]. But there is a big conflict as to whether we will be able to receive the remaining 30 million acres if they are within these boundaries.

Q: I have heard that only 9-9.5 million acres are in dispute. Is that correct?

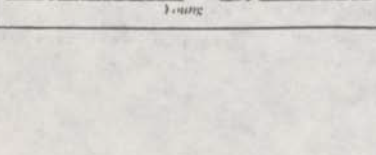
A: That's right, but it's a very serious dispute. That's the problem. These are areas the state has a basic right to. . . . [HR 39 proponents] say 90 per cent of Alaska's mineral belts or energy belts lie outside these lands they have picked. In volume, they are correct, but not in the sense of intensity. In vast acreages, they are correct, but not in the sense of best acreages.

Q: How do the people of Alaska feel about this bill?

A: The preservationists will say, "We took a poll and there are 60 per cent (of Alaskans) that support HR 39." That is just pure poppycock. Alaskans like parks and they like refuges and wilderness areas. . . . They like to go into them, they like to use them, to trap on them, to hunt on them, to camp on them. . . . They like to fly their airplanes and use their snowmobiles. But you don't do this under this bill, regardless of what [the bill's authors] say. It isn't really all that guaranteed that it's going to happen. So they do like all these nice areas, but there is no access to them. They also want an economic base. Politically, every elected official in the state, but one, came out totally opposed to HR 39. And the one was a state representative from Juneau who is also an officeholder in the Sierra Club, so he was torn by a conflict of interest.

Q: What about tourism? How many people can be expected to visit Alaska?

A: Not many. They say we are thinking of millions. I say we will probably have many tourists – but for about two months of the year maximum. . . . I never see any tourists when it is 79 below zero in Fort Yukon. . . . Don't take me wrong, tourism is a good industry for the summertime, to make revenue. I like it. By the way, I think it is probably the worst environmental industry in the world. Tourists are the grubbiest bunch in history, you know. They throw things out the window and everything else.



Young

Q: I gather that you question the goals of the conservationists?

A: I consider myself the environmentalist. I'm looking down the road 50 to 100 years. I'm trying to avoid the crunch that I am confident is going to happen, when Alaska's resources will be unlocked with a great crash and a bang, destroying everything these people supposedly are fighting for. . . . They will go home and sit around with their little backpacks and say, "Gee, we did something for ourselves." But they haven't really looked down the road. None of them, if they are not paid, are not of the wealthy society in this nation. . . . Either they are very young, or they have the money immediately, or they have the time. These are matters of wealth. We had four hearings in the "Lower 48" and I never saw one black until we got to Atlanta, and he was a land planner who agreed with me. I never saw one Chicano, one Jap or one red-necked Virginian. I saw a lot of school teachers, a lot of lawyers, a lot of very wealthy people. . . . This is a small, select group of elitists with a pressure point. They are well organized, but I don't think they represent the people.

Q: How should Alaska's federal land holdings be protected then?

A: Why not plan it together? Why not let the state and the federal government and private industry get involved in the idea of planning and looking, figuring it out and deciding when something is to be developed, giving incentives when it is proper so that [developments] will go in on a schedule planned ahead of time. . . . With EPA [Environmental Protection Agency] water control acts and everything we've got on the books today, there is nothing private industry can do to hurt the land if they are given a chance to plan it properly.

Q: What about the planning for the Alaska pipeline?

A: Now, they'll say, "Look, we built the oil pipeline environmentally sound, much better than it ever would have been built." They are right, physically. The mechanical part of the pipeline is fantastic. But the social impact on the state of Alaska was tremendous. . . . We put 25,000 people in there overnight because it was an emergency. We had to react to the OPEC [Organization of Petroleum Exporting Countries] nations.

Q: How about the prospects for an oil discovery beneath the Arctic Wildlife Range, to the east of Prudhoe Bay?

A: They think it is bigger than Prudhoe Bay. But even the President says, "Oh, we can't drill there." We have a pipeline that goes right through here [pointing to an adjacent area on a map of Alaska]. I just don't understand the philosophy. They have shut off the potential for sound, wise planning for the development of those resources.

Q: But the bill mandates a study of that area.

A: There is a provision there, but I am convinced that it is going to be an impossibility to have that thing work. . . . The government cannot do exploratory work. They will not find the oil they should. . . . [Interior Secretary Cecil D.] Andrus sat down in front of me and said that will be the last place we will ever drill. Even if we mandate him to drill, can you imagine the effort he is going to put in? Nothing. He'll say there is no oil there, it's a good place for caribou.

Seiberling: 'We Need to Preserve It'

Following is an edited transcript of an interview on March 24 with Rep. John F. Seiberling, D-Ohio, chairman of the House Interior and Insular Affairs Subcommittee on General Oversight and Alaska Lands.

Q: As one who volunteered to chair this subcommittee, and has supported environmental causes in the past, is it fair to say that you took on this job with a predisposition to favor the goals of the conservationists?

A: Well, perhaps so. I had been to Alaska in 1975 and spent three weeks there looking at the various areas covered by [former Interior] Secretary [Rogers C. B.] Morton's proposals. . . . So I was predisposed in the sense that I had been to Alaska and seen how magnificent it was."

Q: If neither the Alaska congressional delegation nor the state's governor and legislature are satisfied with HR 39, do the people of Alaska have a legitimate complaint that they are being denied self-determination?

A: "That is what they say and, of course, any Alaska politician is going to try to get as much as he can. But the fact is that the 104 million acres of land that the state has been authorized to select—and they've already selected about 70 million acres—plus the 44 million acres that the natives are being given is overwhelmingly the most generous federal land grant to any state in history. The state owns Prudhoe Bay, the most valuable single piece of land in Alaska at the present time. They have selected areas that they feel had the greatest economic value. The natives have done likewise. So we think it is only fair that a somewhat lesser amount be set aside for the American people to enjoy, and that is what we are doing. The state really has no cause for complaint because of the way we have structured this bill with protection for access across all of these areas, for providing for mining development if it is in the national interest, and so forth. I just feel that the state is being very, very self centered in some of the complaints that have been registered.

Q: Just how many Americans from the "lower 48" can be expected to actually benefit from Alaskan parks?

A: Today, not many. But how many could have gone to Yellowstone National Park 100 years ago when it was first created. Practically none. Yet last year there were 2.5 million visitors there. When the word gets out as to how magnificent Alaska is, and as the highways get improved and as transportation becomes more readily available, it is going to be the biggest single business in Alaska. The tourist industry undoubtedly will be a billion-dollar-a-year industry for Alaska, a bigger bonanza than the 1898 gold rush or anything else that has happened, with the possible exception of the Prudhoe Bay oil.

Q: What if future energy shortages restrict travel?

A: I just feel there is going to be continued travel by the American people in the future; whether it will be done with oil . . . is another question. But, in any event, a lot of the witnesses who testified before our committee said they might never get to Alaska, but they said they still wanted to see part of that majesty preserved. I may never get to Africa, but I don't want to see the elephants and all that wonderful wildlife there destroyed either. It is part of man's heritage on this earth, and we need to preserve it.

Q: Many feel there may be a major oil field beneath the Arctic Wildlife Range, yet this bill will preclude exploration in that area by the oil industry. Is the government capable of properly assessing that resource?

A: I think so. They will be able to hire oil companies to do the drilling. . . . In this bill, we are directing that the [Interior] Secretary conduct a careful and thorough survey. Assuming the money is appropriated, I presume he will. And, after the survey is completed, we have subjected the area to the minerals process in the bill, which means that anyone else can start the wheels rolling to have private industry authorized to go in and explore. So I think that we have done the prudent thing. At the same time, we haven't just left open the last great wilderness and the Arctic Slope to commercial interests to go in and run over it in any way they want. I think we provided the means for finding out whether there is oil there and, if there is, to make it possible for Congress to decide how they want to develop it.

Seiberling

Q: Can the nation be assured that the oil would be produced?

A: Well, if you have been observing Congress in the past few years, do you have any doubt as to what they would do if a major oil field is found there? I don't. It will go through Congress so fast you'll hardly see it.

Q: Is there sufficient flexibility built into HR 39 to assure that we are not foreclosing future options to deal with changing national needs?

A: We have gone beyond the Administration in that respect. They did not feel that any special process was needed to enable [protected] areas to be opened up, that Congress could always do that in the future. But we have decided in the bill that non-wilderness and non-park areas should be subjected to [a] process under which anybody who has an interest—if he can demonstrate that there is a particular mineral that is needed by the national economy—can [if the Interior Secretary and Congress concur] develop it under a mineral leasing program.

Q: What about the areas not covered by the "mineral process"?

A: Wilderness areas and national parks will not be covered by that process, but they will be covered by the [existing] mineral assessment activities of the Interior Department. So, if Congress ever wants to, they can, on their own initiative, open up some of those areas. The only real lock-up is when a private firm, as they have the authority to do now, goes into an area of the public lands and stakes out a claim and says, "We own it." The taxpayers [then] don't own it anymore. [The firm] can put a fence around it, dig up the mineral, sell it to Japan or anywhere else, and that's the end of it. And furthermore, in Alaska, because of the fragile character of the land, that's the end of the land, too, unless it is properly protected. We feel that our bill does provide for such protection as well as development where it is needed in the national interest, but not just in some private corporation's interest.

RESTRICTED EXPLORATION

As approved by the House Interior Committee, the bill includes provisions that would establish what have come to be known as "unlock mechanisms" to assure that resources absolutely vital to national needs can be discovered and recovered—even if located on some of the more restricted land designations.

One such situation involves the Arctic Wildlife Range, just east of the rich Prudhoe Bay oil field, where geologists think that yet another major North Slope oil find might be made. So far, with the support of President Carter himself, the wildlife range has been kept out of bounds for oil exploration. But an amendment to the bill would require the Interior Department to conduct a five-year study—which may include test drilling—to assess the area's oil potential.

If the Interior Secretary finds that there is oil or gas there, and that a national need exists that outweighs the expected adverse environmental consequences, the Secretary can recommend to Congress that the field be opened up for full-scale exploration and development. If such a recommendation is made, predicted Seiberling, "It will go through Congress so fast you'll hardly see it." Alaska officials, however, are skeptical that an Interior Secretary would make such recommendations freely.

The same procedure would apply to mineral exploration in national park preserves and game refuges that are not designated as wilderness areas, as well as to a special forest section in southeast Alaska known as the Misty Fiords area. All told, the minerals "unlock" process would be applicable to about 55 million acres of national interest lands.

The process would be triggered by an application from a prospective developer. However, the supporting information would become a matter of public record and could be expected to attract competitive bidding for the right to pursue the claim. Once again, however, the Interior Secretary must determine the likelihood of the mineral's availability and decide that the national need outweighs the potential harm to the environment. Congress must make the final decision to permit mining in these areas.

The introduction of the concept of competitive bidding for the right to mine hardrock minerals is something of a sleeper in the Alaska land bill. Under existing law, minerals – unlike coal and oil – are free for the taking from federal lands in any state. No permit or fee is required to go prospecting, and if a find is made, the developer need only stake a claim. He or she does not have to lease or otherwise pay the government for the right to extract the mineral wealth that is found.

But efforts are afoot to revise this situation, and the "unlock" provision in the Alaska lands bill could become the first step in that direction.

Critics of the bill say, however, that mining interests may be exceedingly reluctant to participate under the terms of the "unlock" mechanism. They point out that the party whose initial investment uncovered a mineral deposit might be bought out by wealthier interests in the competitive bidding process.

PROSPECTS

Although the Alaska lands bill, as reported by the Interior Committee, would more than double the national parks acreage in the United States, it has been trimmed down considerably from its original form. When introduced last year at the request of the environmentalist Alaska Coalition, the bill called for the addition of 115 million acres of new parks, refuges and wild rivers, all of it to be covered by the restrictive "wilderness area" designation. In addition, the original bill would have placed 32 million acres of existing federal park lands in the wilderness category, making a total of 147 million acres—40 per cent of Alaska's land—off limits to mineral exploration, road building and other development.

In its present form, the proposed wilderness acreage has been cut in half and new additions to the four federal systems have been reduced by 16 million acres. In addition, a number of exceptions to the wilderness area restrictions have been written into the bill so that the use of motorboats, snowmobiles and airplanes would be permitted in those areas where they are commonly used now.

The bill is now before the House Merchant Marine and Fisheries Committee, which has specific jurisdiction over wildlife refuges and their management. Proponents of a strong conservationist bill predict that there may be further whittling away of the protected acreages as the bill works its way to final passage.

In the Senate, the key figure is Henry M. Jackson, D-Wash., chairman of the Energy and Natural Resources Committee. Preoccupied with energy legislation throughout this Congress, Jackson has given few indications of his attitude toward the Alaska lands dispute. With two Senators, including Assistant Minority Leader Ted Stevens, Alaska's views may be given greater weight in the Senate than they received in the House, or so, at least, the development-oriented interests hope.

A key factor throughout the debate has been the strong pro-conservation role taken by President Carter and Interior Secretary Cecil D. Andrus. They have made the Alaska lands bill a top environmental priority, and it is considered significant that the Administration's official position took the form of proposed amendments to the bill drafted by the Alaska Coalition, rather than a separate Administration bill. That made the environmentalists' bill the official vehicle for designating national interest lands.

Among the nation's conservationist organizations, the issue is far and away the top priority. They view it as a singular opportunity—one that never will be present again—to prove that man can manage his affairs without squandering priceless and irreplaceable natural treasures. Andrus said the issue is "the most important land conservation program" in U.S. history. □

Rep. Don Young, the former riverboat captain and trapper from Alaska, with a map in his office showing proposed land designations for that state.

ALASKA....YEAR OF DECISION 23 MAY 1978
By Cecil D. Andrus
Secretary of the Interior

By December 18, Congress must deal with the biggest conservation proposal in this nation's history--to add millions of Federally-owned lands in Alaska to our systems of National Parks, Wildlife Refuges, Wild and Scenic Rivers and National Forests.

The requirement stems from section 17-D-2 of the 1971 Alaska Native Claims Settlement Act, giving rise to the designation of these lands as "D-2" lands.

The D-2 issue is a complicated one which goes back 20 years to Alaskan Statehood.

Before 1958, Alaska was a vast wilderness dotted with villages, a few small towns, and one small city. Its total population would have fit into the suburbs which surround some of our larger cities.

After 1958, the State government began choosing the 103 million acres of Federal land it is eligible to receive as an economic base under the Statehood Act.

When oil was discovered on the North slope in 1968, Alaska's Native people began to press their aboriginal claims before permitting construction of a trans-Alaska pipeline. Ultimately, these claims were settled by Congress with 44 million acres and nearly $1 billion in cash. The pipeline was completed last year.

These legal events were pivotal in Alaska's history. They set in motion a procedure--which continues today--for resolving the major claims on the vast state; an evolution that began with Statehood.

The D-2 process is aimed at setting aside adequate amounts of land, in the right places and of the right kinds, to protect some of the unique grandeur that is Alaska.

Debate now centers on the question of how much is enough. Some proposals called for up to 122 million acres. Our studies indicate this was too much. We want to set aside the amount necessary to protect entire ecosystems but still leave as much as possible to State, Native and private interests for needed development.

Others have proposed as little as 25 million acres. This is clearly too little if we are to protect selected portions of Alaska's treasure--indeed, America's "Crown Jewels"--of scenic beauty and wildlife for future generations.

The recommendations we made to Congress call for 92.5 million acres--a big figure, but not excessive considering how much land is needed to support life in the Arctic region. The plan envisions 29 additions and expansions of national parks, wildlife refuges and national forests; and 33 wild and scenic rivers.

The choices were difficult, and followed many years of intensive study as we attempted to balance the nation's need for oil, gas and other minerals with the needs of wildlife and other environmental considerations. We know that in the process, we had a shot at avoiding the many mistakes that characterized settlement of the lower 48 states.

A prime example is California's Redwood National Park, where we now are buying back, for hundreds of millions of dollars, land that once was in the public domain, and which could have been kept for all Americans at no cost.

Some have said that 92.5 million acres are too much, and offhand it does add up to a rather large estate. But keep in mind that it's America's estate. This is land the American people already own.

Remember too that bigness is a relative thing in a land where a single Arctic Grizzly needs about 100 square miles of territory to survive, and where 120,000 animals in the

Porcupine caribou herd migrate over millions of acres in their annual travels.

We know that once the caribou herd is broken up by exploration activity, it may never regroup again.

On the other side, geologists and mining engineers want much of this land open to exploitation because "minerals are where you find them."

In urging Congress to act favorably on our recommendations, President Carter and I are saying we have to balance development with protection. A caribou herd, a Mount McKinley, a glacier as big as Rhode Island--these, too, are "where you find them."

But, unlike oil or minerals, these are unique in North America--and we know exactly where they are.

Question. With respect to this packet please provide complete cost data for the preparation, printing and mailing of that item.

Answer. The letter and enclosures were mailed to 160 names on a regional mailing list. Estimated costs are as follows: Typing letter and assembling basic materials $10.00; copying of the letter and enclosures $33.60; franked mailing $20.80; for a total of $64.40.

Question. Also, provide a complete list, including addresses, of all recipients of the letter and appended materials.

Answer. The list is enclosed. We would appreciate it being noted that the National Journal reprint contains a full page expressing the views of Congressman Don Young of Alaska.

The list is composed of interest groups concerned with recreation, historic preservation and environmental quality. All of them specifically asked to be placed on HCRS' mailing list so they could be kept advised of activities that might be of interest to them.

Question. Has the Department of Interior reproduced and mailed out in this fashion any other newspaper stories or editorials or any other literature dealing with legislative proposals pending before Congress? Do you anticipate that you will be doing any more mailing of this kind in the future?

Answer. It has not been standard operating procedure to reproduce and send out in large quantities reprints of newspaper stories or editorials, although copies have been supplied upon requests for information and background material on newsworthy issues. However, the Department for many years has issued news releases containing its views on subject matter contained in legislative proposals pending before Congress. Since I became Secretary of the Interior, 35 news releases have been issued on 18 separate subjects distinct from the d-2 issue, but all concerned with legislative proposals or requests for appropriations pending before Congress. We have always understood it to be proper for the Secretary thus to make known his views on major legislative matters. We anticipate there will be many future occasions for such news releases and mailings in the future.

Question. As discussed earlier, comments on d-2 legislation under the by-line of Secretary Andrus was distributed to some 2,400 newspapers as an "editorial column." The Heritage Conservation and Recreation Service letter of May 31, however, calls the same material a "speech". Which is it?

Answer. An editorial column which contains many of the same words and phrases employed in previous speeches.

Question. Please tell the committee why the HCRS mailing, which included the request to "make your views known," is not "literature that in any way tends to promote public support or opposition to any legislative proposal."

Answer. The Solicitor is continuing to look at the language in question. The recommendation to "make your views known" is new to me; the language was not cleared with me or with anyone on my staff here in Washington and I cannot say whether we would have approved it had we seen it in advance. However, I recognize that such language may be over-interpreted by someone and could have an unintended effect; for that reason we probably would have suggested a change in the wording, and we intend to do so at every opportunity in the future. Again I would note that the material which was enclosed reflects a broad spectrum of views on H.R. 39. We are advising HCRS and the other Bureaus and Services of the Department to avoid any expressions which suggest or encourage overt action in any matter that is before the Congress.

Other Releases

Question. With respect to all releases and materials produced and distributed by the Department dealing with Alaskan lands issues, including pamphlets, editorials, brochures and any other literature or other materials, beginning September 15, 1977, please provide the following in all cases where not already supplied.

1. A detailed breakdown of all mailing lists, including the total number of individuals and organizations, areas of the country targeted for distribution and dates upon which releases were made.

2. How postage was paid in each mailing.

3. Complete cost data for preparation, printing, mailing and any other expense involved.

Answer.

1. The mailing lists are attached, with the information requested.

2. The material was all distributed under the mailing permit except as otherwise noted.

3. This information was supplied in our previous communications with the Subcommittee.

Question. Since the inception of the Carter Administration, has the Department (including agencies) conducted a propaganda effort of this scope in connection with any other legislative proposals?

Answer. I cannot agree with your use of the word "propaganda." As a Cabinet officer, I have a duty to inform the public as best I can about Administration initiatives, and I firmly believe that is all we have done to the best of my knowledge and intent. As to the larger question, the National Interest Lands in Alaska constitute the highest legislative priority of the Interior Department and the Administration because of the size and scope of the various proposals, and I consider it part of my duty to give the highest priority attention to making our actions and views known.

Question. Please supply for the record a listing of any speeches, press releases or any other "public information" distributed by the Department that dealt with specific legislative proposals pending before Congress.

Answer.

News Release, March 30, 1977 - Andrus Calls Redwood Park Expansion "Top Priority"; Asks Timber Cutting Ban

News Release, April 19, 1977 - Andrus Proposes Enlarged Redwood National Park

News Release, April 21, 1977 - Statement by Interior Secretary Cecil D. Andrus in Response to President Carter's Energy Message, April 20, 1977

News Release, May 13, 1977 - Andrus Announces Leaders of Redwood Economic Task Force

News Release, May 17, 1977 - Secretary Andrus Says Tax Provisions Essential to Administration Energy Plan

News Release, June 2, 1977 - Interior Secretary Asks Studies of 20 Potential Wild and Scenic Rivers

News Release, June 3, 1977 - Andrus Moves to Condemn Redwood Tract

News Release, June 8, 1977 - Interior Secretary Andrus Calls for New Trails System Designation -- National Historic Trails

News Release, June 10, 1977 - Interior Department Seeks Additional Funds for Wild and Scenic River Studies and Land Acquisition

News Release and Speech, June 11, 1977 - Conflicts Between Endangered Species and Federal Projects have been Over-Emphasized, Secretary Andrus Says

News Release, June 21, 1977 - Redwood Economic Task Force Assesses Impacts on Park Area Unemployment

News Release, July 6, 1977 - Andrus Sees People-Involvement Key to National Heritage Trust

News Release, July 12, 1977 - Redwood Region Gets New $200,000 Economic Planning Grant

News Release, September 14, 1977 - Interior Secretary Proposes Hardrock Mining Law Reform

News Release, October 13, 1977 - Secretary Andrus Backs Legislation to Update Hardrock Mining Law

News Release, October 28, 1977 - Under Secretary Sees Administration Energy Plan as Guarantee of Equity in Time of Increasing Scarcity

News Release and Statement, November 10, 1977 - Andrus Opposes Excess Lands Moratorium, Promises Delay until March 1

News Release, November 18, 1977 - Interior Secretary Releases Report on Upper Delaware River

News Release, January 23, 1978 - Statement by Secretary Andrus on Rules Committee Action on OCS Legislation

News Release, January 25, 1978 - Secretary Andrus Requests Extension of 1977 Emergency Drought Act

News Release, January 26, 1978 - Administration Recommends Incorporation of Mineral King into Sequoia National Park

News Release, January 27, 1978 - Encouraged by Action in Congress, Secretary Andrus Predicts OCS Amendments will Foster Rather than Hinder U.S. Oil and Gas Development

News Release, February 17, 1978 - Andrus Sends National Urban Recreation Study to Congress

News Release, March 10, 1978 - Andrus Announces Support for Dramatic Increase in Range Improvement Programs

News Release, March 16, 1978 - Solicitor Determines Oil Spill and Fishermen's Gear Compensation Provisions of Pending Legislation will Apply to Existing OCS Leases

News Release, March 27, 1978 - Andrus Salutes Signing of Bill Enlarging Redwood National Park

News Release, March 30, 1978 - Modernization of 1902 Reclamation Law is Essential, Secretary Andrus Tells California Farm Symposium

News Release, April 10, 1978 - Interior Proposes New River Gorge, W. Va. as New National Park System Unit

News Release, April 13, 1978 - Andrus Says Reclamation Act Served Nation With Distinction But Now Needs Significant Reform

News Release, April 17, 1978 - Task Force Formed to Develop Legislative Settlement for Catawba Indian Land Claims

News Release, May 5, 1978 - Andrus Recommends Santa Monica Mountains be Eligible for Special Aid if Strong State-Local Land Use Planning Steps are Taken

News Release, May 17, 1978 - Andrus Asks Congress for Park and Recreation Aid for Urban Centers

Fact Sheet, May 19, 1978 - Middle Delaware River

News Release, June 6, 1978 - President's Water Policy Message Sent to Congress

News Release, June 8, 1978 - Interior Opposes Bill to Exempt Landowners from Excess Land Regulations

Embargoed: Hold for Release to AM's March 30, 1977

ANDRUS CALLS REDWOOD PARK EXPANSION "TOP PRIORITY";
ASKS TIMBER CUTTING BAN

Secretary of the Interior Cecil D. Andrus announced that the Carter Administration puts "highest priority" on expanding Redwood National Park, and asked timber companies for a six-month moratorium on cutting in sensitive areas near the park boundaries until agreement between the Administration and Congress can be reached.

In telegrams to Arcata Redwood Corporation, Louisiana Pacific Corporation, and Simpson Timber Company, the Interior Secretary said the Carter Administration "is giving highest priority to developing a comprehensive proposal that will delineate the specific areas which should be added to the park, consider rehabilitation of eroded areas, and also address the potential impact on the local economy." He added, "This proposal will be made no later than April 15."

Timber cutting on several key tracts in northern California's redwood country is due to begin within a few days. Andrus' telegram asked for a moratorium on redwood harvesting within 19 specified areas, all in the vicinity of the Redwood Creek unit of the park. Virtually all the land is privately owned.

"Such a moratorium request would not apply to presently downed timber in these areas which could be yarded (hauled away)," Andrus' telegram said.

"During this period, I would hope that your crews could work on other harvesting plans which have already been approved by the State (of California) outside the possible additions to the park in order to keep employment levels and production as high as possible in this already high unemployment area."

Redwood National Park contains approximately 58,000 acres close to northern California's coastline. In its effort to protect some of the world's tallest and oldest living creatures, Congress was--and still is--faced with extremely high land acquisition costs due to the value of old-growth redwoods as commercial timber.

The compromise boundaries adopted by Congress when it created the park in 1968 left the Redwood Creek portion at the southern tip of the Park especially vulnerable to damage from logging of trees on steep slopes above the creek--and outside the park limits. National Park Service reports made at the request of Congress and with the help of hydrologists from Interior's U. S. Geological Survey have documented some of the results: heavy siltation of Redwood Creek and its tributaries, accelerated runoff of water during rainy seasons, swollen streams and the undermining of some of the finest trees, which tend to grow beside the creeks. In addition, there is visual and audible impact to visitors within the park who can see and hear redwoods outside the boundary being felled and hauled away.

The Redwood Creek portion of the park includes a strip of land only one-half mile wide and seven miles long, bounded by private holdings which are subject to clearcut logging. This part of the park, sometimes called "the Worm" because of its shape on the map, contains a grove which includes several of the world's tallest remaining specimens of the California Coast Redwood (a species related to, but taller and slimmer than, the giant sequoia trees found farther inland on the Sierra Nevada slopes).

Money to acquire land for the park has reached the limit authorized by law. Bills have been introduced by individual Congressmen to expand the park boundaries, but without tangible result, largely because of high costs of acquisition.

Andrus' requested moratorium would apply to cutting plans approved by the State, but not yet executed by the companies, within these drainages, most of which are tributary to Redwood Creek: Lost Man, May and Boyes Creek, Skunk Cabbage, Bond, McArthur, Elam, Forty-four, Tom McDonald, Bridge, Devil's, Oscar Larson, Cloquet, Miller, Cole, Harry Wier, Dolason, "G" and Slide Creeks, Redwood Creek between the South boundary of the Park and Coyote Creek, and the Orick Face.

For Release April 19, 1977

ANDRUS PROPOSES ENLARGED REDWOOD NATIONAL PARK

Secretary of the Interior Cecil D. Andrus proposed today that Congress expand Redwood National Park in northern California by 48,000 acres at a cost of $359 million--all of it from existing budgetary authority and virtually none of it from tax revenues.

"As Secretary of the Interior I believe the Nation as a whole cannot afford not to enlarge the existing park very substantially. The public has purchased a national park whose prime assets are being destroyed by logging on privately owned land just outside its borders. Accelerated erosion is killing a unique and vulnerable environment within the park," Andrus stated.

"However, as one who literally grew up in the timber industry," Andrus said, "I recognize how many people feel in Humboldt and Del Norte Counties in California. I am much concerned for them and their families and I will do all I can to help," he added.

The Interior Secretary's proposal does include special efforts to mitigate loss of jobs and incomes by loggers and others in the region's redwood timber industry. A task force of economists, foresters, and other specialists from the Commerce, Labor and Interior Departments is being assembled for on-scene studies during the next 60 to 90 days to determine precise needs and recommend specific actions under economic development and job retraining programs already in existence and funded.

Financing for the park would be supplied by the 12-year-old Land and Water Conservation Fund, which is supported principally by revenues from oil and gas leasing on the Federally-owned Outer Continental Shelf (OCS). A fraction of the Fund also is derived from admission fees to national parks and recreation areas, sales of Federal surplus property, and a long-standing tax on motorboat fuels. Under legislation enacted last autumn, authorized budgeting for the Fund will rise in phases from $300 million this fiscal year to $900 million annually by fiscal year 1980.

Redwood National Park was created by Congress in 1968. Its most distinctive feature is a strip of land some seven and one-half miles long but only one-half mile wide along the banks of Redwood Creek, south of the town of Orick in Humboldt County. Included within this strip (called "the worm" because of its meandering shape on the map) is the Tall Trees Grove containing several of the world's tallest and oldest living creatures including the world's tallest redwood tree at 367 feet.

Erosion within "the worm," together with the impending start of new logging on slopes near its edges, prompted Andrus on March 29 to ask timber companies for a moratorium on timber cutting within certain specified areas for six months to allow Congress and the Administration time to reach agreement on a new park plan. The three companies refused.

The existing boundary line resulted from a compromise agreement within Congress, conditioned by the high cost of acquiring lands that contain old-growth redwood timber. Since 1971, National Park Service and U. S. Geological Survey studies have documented severe erosion-caused damage to Redwood Creek, far beyond normal in previous years, and attributed it to "large scale, tractor-yarded, clearcut timber harvesting and associated road construction" within the watershed.

Heavy silt deposits in recent years have raised streambed levels at a rapid rate, and altered the course of these waterways so that root systems of streamside trees within the park are being undercut. Further logging of the trees that remain on the slopes outside the park would cause abnormally heavy impacts within the park,

experts say. The remaining trees outside the park are on the steepest, wettest and most unstable slopes in the watershed, and many are within 1,000 feet of tributary streams.

Andrus' package proposal contains provision for rehabilitation of the watershed both within and outside the present park limits, at a cost estimated at $12 million.

The erosion problem is underscored by the fact that only about 10,000 of the 48,000 acres sought to be acquired contain old-growth redwood trees; the remainder is natural prairie plus cutover land holding scrub and new growth timber.

The Secretary cited a U. S. District Court decision in June 1976 as further evidence of the need. The court, sitting in San Francisco, found, in part, that "in order adequately to exercise its powers and perform its duties in a manner adequately to protect the park, Interior now stands in need of new Congressional legislation and/or new Congressional appropriations."

The Andrus proposal would resemble the 1968 park law in that it would provide for a declaration of "immediate taking" of the designated lands upon its signature by the President, with tract-by-tract costs to be negotiated with the three timber companies owning the land. Unlike the 1968 law it would contain features to restrain cost escalations if negotiations were unusually prolonged.

Under the Andrus proposal, lands on either side of "the worm" would be acquired to protect the watershed, together with other vulnerable parcels in the vicinity. Much of the Redwood Creek drainage to the south of the newly acquired tracts would remain outside the park. Park planners have assured the Secretary that continued State regulation of private-land forestry practices, together with clarification of Interior authority under the new park purchase law, would be adequate to protect the public's investment in the park.

The Secretary acknowledged that unemployment is an issue in the region, and pledged every available existing law would be put to use by the Carter Administration to ease the impact of further job losses.

"We have already begun determining who would be laid off, and how soon, as the first step in keeping people at work in productive, predominantly private-enterprise employment," Andrus said.

As much as 70 percent of the jobs likely to be impacted are in the mills that process redwood timber into commercial lumber, with loggers and truckers making up the remainder, according to current Interior estimates. The mills have an estimated six-months supply of uncut timber in nearby areas outside the proposed park expansion, in addition to a two-to-three month supply of cut logs already on hand. This could keep the mills busy from the time Congress passes a law until the supplies are exhausted. These facts, together with the time required to obtain Congressional passage of a law and signature by the President, will give the Government time to put a re-employment plan into action, planners believe.

The Government's best current working estimate is that between 1,000 and 1,100 jobs would be eliminated during the first year after adoption of legislation. Employment in the redwood timber industry has been declining for years, because the supply of old-growth redwoods is running out, and because of increased mechanization of the industry.

"I think it is significant that the existing supply of old growth is expected to be exhausted in 10 to 15 years if present logging rates continue," Andrus said.

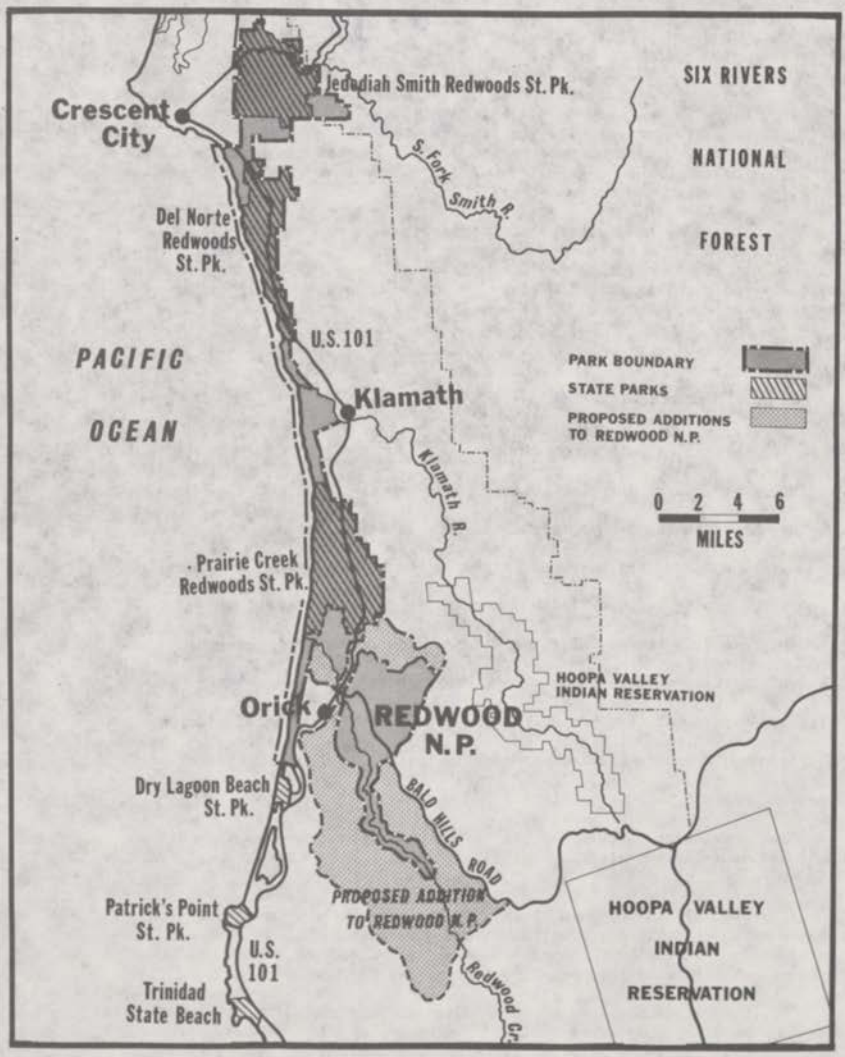
"Most of the people who stand to lose their jobs because of park expansion would lose their jobs during that period regardless of whether or not new lands were acquired for the park. And the country and world would be poorer for having lost a magnificent, self-sustaining stand of these great trees."

The coast redwood (sequoia sempervirens) is related to the more massive but less tall redwood of the Sierra Nevada. It thrives in the cool, foggy coastal portions of northern California, but is found nowhere else in a state of nature. Once, eons ago, redwoods covered much of North America and Europe, but they retreated to one fairly small region under the pressure of climatic

change. Coast redwoods are extraordinarily long-lived if left alone--perhaps 2,000 years or more.

Redwoods are one of the world's most ancient life forms, having evolved in the age of the dinosaurs. Some fossilized redwoods are believed to be 130 million years old, many millions of years before nature laid down the vegetation that was compressed by geologic forces into OCS oil and gas.

Andrus said he thought it "remarkably appropriate" that royalties and bonuses from the sale of some of that oil and gas would principally underwrite the purchase of redwood forests. "A non-renewable natural resource will be converted into a resource that will sustain itself, with minimal human interference, for thousands of years to come for mankind's inspiration and enjoyment," he said.



For Immediate Release April 21, 1977

STATEMENT BY INTERIOR SECRETARY CECIL D. ANDRUS IN RESPONSE TO PRESIDENT CARTER'S ENERGY MESSAGE, APRIL 20, 1977

President Carter's energy program offers workable solutions to assure that the Nation will have adequate supplies of energy into the distant future.

I am especially impressed that there will be no relaxation of standards for protecting the environment. The message envisions that more coal and other energy minerals can be produced despite more stringent laws to safeguard our land and water resources.

In a sense, the President has declared war on energy waste. He has asked us to reduce energy growth from the present 3½ percent to less than 2 percent a year. I am convinced we can achieve that reduction without personal or economic hardships. Our standard of living will not suffer, but we may have to adjust our style of living. Conservation of energy will be the mainstay of this program over the next decade.

No large bureaucratic structure will be needed to operate the program. By moving toward a wellhead equalization price for oil, and by eliminating the cumbersome program for oil entitlements, we will be eliminating what have been administrative nightmares. No increase in Federal employment will be needed to implement the program. The President is thus keeping his promise to hold down the growth of the Federal government.

His program is progressive and impressive. It represents a solid investment in America's future by conserving our resources until we develop natural replacements for fossil fuels -- including solar power. It is a practical program -- no gimmicks or quick fixes -- and I am sure the Congress and the American people will recognize the necessity of supporting it.

For Release May 13, 1977

ANDRUS ANNOUNCES LEADERS OF REDWOOD ECONOMIC TASK FORCE

Secretary of the Interior Cecil D. Andrus today announced the co-chairmen of an inter-departmental task force to assess and mitigate the economic impact upon the surrounding region of the Carter Administration's proposal to expand Redwood National Park in Northern California.

They are John Rutter, of Boise, Idaho, retired Pacific Northwest Regional Director of the National Park Service, who also will be the Secretary's personal representative, and John H. Davidson, chief of economic planning, Economic Development Administration, U. S. Department of Commerce, Seattle, Wash.

"The assignment of this task force is the first major step in meeting our commitment to mitigate the impacts of the park expansion proposal," Andrus said.

"The specialists assigned to this task will examine three types of program -- those designed to be implemented immediately; those that will have a medium-range impact over the next several years, and those that will continue to provide benefits to the community for decades to come.

"The purpose of the task force is not to debate the merits of the Administration's position on park expansion," Andrus explained. "It has, instead, the technical mission of establishing a problem-solving process, with the assistance of the people of the North Coast communities.

"In this regard, we deeply appreciate the statement of cooperation adopted by the Humboldt County Board of Supervisors."

"The existence of an active Overall Economic Development Plan Committee and the proposed formation of a Redwood Economic Development Commission in Humboldt County will insure that we will have local participation."

The task force consists of a pool of about 20 specialists from a broad variety of disciplines in the fields of economic development, manpower and product utilization and marketing, who have been made available by the Secretaries of Agriculture, Commerce, Interior and Labor. The task force will be aided by a representative of the State of California.

On Monday, May 9, the technical experts met in San Francisco with Rutter and Davidson to determine what information was already available and what additional data would be needed. Davidson expressed pleasure with the work that already had been done by the local OEDP Committee.

"This has really given us a head start in the process because our general economic information is current and accurate and reflects local involvement," he said.

Rutter plans to spend the week of May 16 in Eureka meeting with local leaders and individual citizens on the work of the task force.

For Release May 17, 1977

SECRETARY ANDRUS SAYS TAX PROVISIONS
ESSENTIAL TO ADMINISTRATION ENERGY PLAN

Secretary of the Interior Cecil D. Andrus said today that the President's tax program is an integral part of the Administration's energy plan, and that conservation goals could not be achieved without such provisions.

"Quite frankly, I don't know how we can make the rest of the plan work if we don't achieve our conservation goals -- and for this we need the proper tax program," Andrus said in testimony before the House Ways and Means Committee.

The Secretary said that increasing domestic energy production to meet unrestrained energy demand would cause excessive environmental and social costs, destroying the quality of life.

"It could also mean that we would sentence future generations -- quite literally -- to a living hell," Andrus said. "We might well leave them a world not worth living in."

Andrus pledged that he would work with the proposed Department of Energy to provide maximum energy production from Federal lands and Outer Continental Shelf areas consistent with environmentally sound practices.

"But neither the Federal lands, nor the OCS, nor the private lands -- not all of them together -- can provide enough energy to meet recent rates of growth in energy demand," Andrus said.

"I believe that most members of this committee will agree that we must have integrated programs -- in other words, a total policy -- if we are to resolve both our short and long term energy problems," Andrus said. "The piecemeal approach of coping with the energy crisis will not work."

For Release June 2, 1977

INTERIOR SECRETARY ASKS STUDIES OF 20
POTENTIAL WILD AND SCENIC RIVERS

Interior Secretary Cecil D. Andrus, responding to President Carter's environmental message, has sent to Congress a legislative proposal asking that 20 river segments be authorized for study as possible additions to the National Wild and Scenic Rivers System.

The rivers are protected from Federally licensed or financed water resource developments while they are being studied to determine their suitability for inclusion in the National System. Congress would evaluate the findings of each study, conducted under the direction of the Interior or Agriculture Departments, and determine whether to enact legislation placing the waterways in the National System as Wild, Scenic or Recreational Rivers or a combination of those categories.

The 20 rivers in the proposal represent a cross section of some of our Nation's remaining outstanding free-flowing river resources. The proposal includes rivers or river segments in 18 States and covers practically all types of streams in the Nation including wild, mountain streams in Alaska, high plains rivers in Wyoming and Montana, "canyon country" segments in Utah, placid, meandering streams in Virginia and West Virginia, and tidal rivers in Georgia and Florida, Secretary Andrus said.

Study designation is sought for these rivers:

(1) Gila, New Mexico: the main stem from the Arizona-New Mexico border but excluding the authorized Hooker Reservoir site or alternative section, the West Fork to its headwaters; the East Fork to the junction of Taylor and Beaver Creeks; and the Middle Fork from the junction of Galita and Willow Creeks to its confluence with the West Fork.

(2) Green, Utah: the main stem below Flaming Gorge Reservoir; except for the reach from the town of Jensen, Utah, to the boundary of the Dinosaur National Monument.

(3) Illinois, Arkansas: the entire river from its source to Arkansas-Oklahoma border.

(4) Kern (North Fork), California: the main stem from its source to Isabella Reservoir.

(5) Shenandoah, Virginia and West Virginia: the main stem, the North Fork from Front Royal to Brocks Gap, and the South Fork from Front Royal to Waynesboro.

(6) Sweetwater, Wyoming: the main stem from its source downstream to Wilson Bar.

(7) Cacapon, West Virginia: the entire river.

(8) Columbia, Washington: the main stem from Priest Rapids Dam to McNary Reservoir.

(9) Guadalup, Texas: the entire river from its source to New Braunfels but excluding Canyon Reservoir.

(10) John Day, Oregon: the main stem from Service Creek upstream to its confluence with North Fork; the North Fork upstream to Baldy Creek and Granite Creek upstream to Clear Creek.

(11) Loxahatchee, Florida: the entire river including its tributary, North Fork.

(12) Niobrara, Nebraska: the main stem from Antelope Creek to Sparks Gauging Station.

(13) Tangipahoa, Louisiana and Mississippi: the entire river.

(14) Yellowstone, Wyoming and Montana: the main stem from Yellowstone Lake to Pompey's Pillar.

(15) Delta, Alaska: the main stem from its source to Black Rappids.

(16) Gulkana, Alaska: the entire river including it tributaries, West and Middle Forks.

(17) Madison, Montana: the main stem from Earthquake Lake to Ennis Lake.

(18) Ogeechee, Georgia: the entire river.

(19) Salt, Arizona: the main stem upstream from the Salt River bridge on Arizona Highway 288; and its major tributaries (including the White and Black Rivers).

(20) Wenatchee, Washington: the main stem including Lake Wenatchee and its tributaries, the Little Wenatchee, White and Chiwawa Rivers.

For Release June 3, 1977

ANDRUS MOVES TO CONDEMN REDWOOD TRACT

Secretary of the Interior Cecil D. Andrus said today he has asked the Department of Justice to file a "Declaration of Taking" in order to purchase a 35-acre tract of dense old-growth redwoods where timber cutting began this week, close to Highway 101 and Redwood National Park in northern California.

"I regret this condemnation action is made necessary by the refusal of the company to defer its logging plans. We asked for such a delay on March 29 and again by telephone yesterday, but were turned down both times," Andrus said.

The Department on June 2 asked the owner, Arcata Redwood Company, for permission to enter the tract to appraise it preparatory to an offer to buy it. Company officials refused to stop cutting or to allow federal appraisers on the land.

Under the "Declaration of Taking" and an order of immediate possession, which will also be requested, the owner would be directed to cease all action to cut the timber.

The tract is in the Skunk Cabbage Creek drainage between the highway and the Pacific Ocean and is also visible from the overlook platform in the Lady Bird Johnson Grove, a popular area within the National Park. Some of the trees are believed to be as much as 1,000 years old and more than 300 feet tall.

Andrus' March 29 request for a moratorium on cutting was made to allow Congress and the Administration to reach agreement on expansion of the present national park. After the three companies logging adjacent to the Park refused the request, Andrus on April 18 proposed to Congress a 48,000 acre expansion of the park, which would include the 35-acre tract now being condemned.

Funds for the purchase were made available by a donation of $1 million from the Save-the-Redwoods League. No Federal funds have been available to purchase the tract. The precise value is expected to be fixed by the court.

Although the tract is outside the present national park boundary, under the 1968 law which established the park the Department has authority to acquire

lands through condemnation in the scenic corridor adjacent to Highway 101. This authority is not applicable to other areas being considered as additions to the park.

"I am grateful to the Save-the-Redwoods League for their generous gift which will enable us to protect a magnificent grove of virgin redwoods which would otherwise be cut before Congress can act," Andrus said.

The League, a privately funded organization based in San Francisco, has raised $23 million since its establishment in 1918 to preserve redwoods in California's state parks. In the past three years the League made two donations for additions to the National Park. Funds are contributed by the League's 55,000 members throughout the country.

For Release June 8, 1977

INTERIOR SECRETARY ANDRUS CALLS FOR NEW TRAILS SYSTEM DESIGNATION -- NATIONAL HISTORIC TRAILS

In response to President Carter's environmental message, Interior Secretary Cecil D. Andrus has sent to Congress a legislative proposal to establish a new category of trails in the National Trails System -- National Historic Trails.

Currently, the National Trails System Act identifies three types of trails for inclusion in the system: National Recreation Trails; National Scenic Trails; and connecting or side trails.

The proposal by Secretary Andrus notes that while no specific provision for historic trails exists in the National Trails System Act, "historic qualities" are mentioned as a desirable characteristic "to provide for maximum outdoor recreation...".

Trail studies by Interior's Bureau of Outdoor Recreation (BOR) have been made of routes listed in the National Trails System Act for possible designation as National Scenic Trails. BOR findings indicated that several such routes are historically notable, though often lacking substantial scenic characteristics over much of their length and are not particularly suitable for long-distance travel by foot, horseback, or bike.

A number of trails figured prominently in the history of America. BOR reports that some offer nationally significant interpretive/recreation values combined with high potential for public awareness of the Nation's trails heritage. The Lewis and Clark Trail and the Oregon Trail are illustrative of those which would be considered for designation as National Historic trails.

Establishment of a National Historic Trail category would add an important dimension to the National Trails System by providing recreational opportunities that relate to the places and events that have helped shape the history of the United States.

For Release June 10, 1977

INTERIOR DEPARTMENT SEEKS ADDITIONAL FUNDS FOR WILD AND SCENIC RIVER STUDIES AND LAND ACQUISITION

At the direction of the President, Secretary of the Interior Cecil D. Andrus has asked Congress for additional funding to acquire land along five wild and scenic river corridors. A draft bill he submitted would also increase the authority for wild and scenic river

study funds available. The legislative proposal was developed in cooperation with the Department of Agriculture which manages three of the rivers and has responsibility for several of the studies.

Proposed is an increase from $2,175,000 to 4,060,000 for the continuing studies of 29 rivers that Congress identified in amendments to the original 1968 Wild and Scenic Rivers Act.

Increases proposed for land acquisition along rivers already incorporated into the Wild and Scenic Rivers System are:

River	Present Authorization	Proposed New Authorization
Chattooga, N.C., S.C., GA.	$ 2.0 million	$ 5.2 million
Eleven Point, Mo.	4.9 million	10.4 million
Salmon, Middle Fork, Idaho	1.2 million	1.8 million
Rogue, Ore.	12.4 million	15.1 million
Upper St. Croix, Minn., Wisc.	11.8 million	21.8 million

"Inflation has hit the land acquisition and river study program," Secretary Andrus said. "If these programs are to continue, as Congress and the American people have clearly indicated that they should, they must be properly funded so that the studies can be completed on a reasonable schedule and the corridors of existing wild and scenic rivers can be protected through acquisition."

The proposal sent to Congress would increase fund authorizations for the river studies and land acquisition programs; the actual appropriation of funds would be a separate action.

For Release 9:00 a.m. (MDT) June 11, 1977

CONFLICTS BETWEEN ENDANGERED SPECIES AND FEDERAL PROJECTS HAVE BEEN OVER-EMPHASIZED, SECRETARY ANDRUS SAYS

Estes Park, Colorado--Secretary of the Interior Cecil D. Andrus said today that conflicts between endangered species and federal projects have been over-emphasized and most problems have been resolved through negotiations between agencies.

The Secretary told the National Audubon Society that in three years since passage of the Endangered Species Act, the Fish and Wildlife Service has had 124 documented consultations and another estimated 4,500 informal consultations with other federal agencies to iron out problems. He said these efforts have resolved the problems at the regional level in all but three cases.

"Most conflicts between endangered species and federal projects can be resolved and have been," the Secretary said.

"Under that Act, my role as Secretary of the Interior is to assure the protection and enhancement of endangered species, and I intend to fulfill that responsibility," Andrus said.

"If an irresolvable conflict arises -- and judging by the record so far there are few -- then and only then Congress should evaluate all aspects of the project -- its economic and social impacts, its environmental effects over and above any effects on endangered species, who will benefit, and so forth. After this evaluation the Congress could decide whether that project is more important than the loss of the species forever."

Andrus pointed out that the President in his Environmental Message had ordered identification of all critical habitat under federal jurisdiction or control, and this would help avoid conflicts such as the current situation involving the endangered snail darter and Tellico Dam in Tennessee.

The Secretary outlined for the Audubon Society some of the many assignments given to the Department of the Interior in President Carter's Environmental Message last month. The Secretary said the President's message "amounts to a major reassessment of the nation's environmental policy -- to strengthen it, to improve the quality of life, to preserve the best of America for ourselves and for the future."

Remarks of The Honorable Cecil D. Andrus
Secretary of the Interior
National Audubon Society
Estes Park, Colorado
June 11, 1977

In the May issue of Audubon magazine, George Reiger wrote that "a refreshing breeze blows through corridors of the Department of the Interior these days..."

Ego being what it is I like to assume that when George wrote these poetic words he was being complimentary, and not hinting that the new Secretary of the Interior is something of a wind-bag.

Today, meeting with my fellow conservationists in this majestic Rocky Mountain setting, I want to reconfirm that the wind of change in the Department of the Interior is more than mear rhetoric. There most definitely is a new spirit in the Department, and throughout the Administration

Environmental concern is in the forefront--it is not an afterthought.

Conservationists and environmentalists now hold important posts throughout our Department and in other parts of the Administration.

It has been suggested by the press that we have taken so many environmental leaders into the government that the various private conservation organizations are having trouble staffing their administrative positions. I hope that is an over-statement.

My objective at the Department of the Interior has been to achieve a true balance, to have able people with all shades of opinions regarding resource development. In the past people concerned about our environment have been largely on the outside, beating on the door for attention to their concerns--and seldom being let in. Now, a good many of the leading activists are working on the inside.

I consider myself an activist, a conservationist, an environmentalist. And we environmentalists find our roles very difficult. Those of us who love nature, the wilderness, hiking, camping, fishing, birdwatching, or hunting, or simple contemplation in natural settings--we react with our hearts as well as our heads.

And I firmly believe that one of the needs of government has been to have more heart. But the business of running government involves hard decisions which have consequences for every American--and often for the world. We who make those decisions must realize that what the heart wants is not always possible, and we must temper our hearts with our heads.

But I am not going to try to tell you that the "new" Interior Department is going to satisfy the leaders or the majority of the membership of the Audubon Society on all occasions. We already have had disagreements on an issue or two--not on what is desirable, but on what is feasible. And we may have disagreements in the future.

When I took over the Interior Department, I described it as a centipede with each pair of legs scurrying off in different directions. I am attempting to get these legs to march in unison, but I know that occasionally there will be conflicting signals coming out of the Department.

I would point out that government is not alone in its centipede like characteristic. The environmental movement itself marches to different drummers, and there is a wide spectrum of opinion within the environmental community on some issues. I hope that now that we have a number of environmentalists working within the Department, we will have a better understanding of the environmental community's views--a better understanding of what America wants and needs.

I want to get our signals straight because we have a great deal to accomplish.

When President-elect Carter asked me to come to Washington it was with the understanding that we would pursue an active and determined policy of environmental concern.

I have not been disappointed.

The President has responded favorably and forcefully to many environmental proposals that I presented in my role as Secretary. He not only has accepted suggestions--he has created policies and has challenged my Department to handle them with urgency.

The President's Environmental Message of May 23rd places some massive demands upon the Department.

Dozens of direct and implied orders for me as Secretary and for the Department are included in the environmental message. In total it amounts to a major reassessment of the nation's environmental policy, to strengthen it, to improve the quality of life, to preserve the best of America for ourselves and for the future.

Some demands the President put upon us involve projects already underway.

We already were at working on a revamped schedule and more effective and realistic program for outer continental shelf oil and gas leasing.

We already were at work trying to get the strongest possible strip mining bill from the Congress, and the Department has a task force preparing to implement that law as soon as it is passed.

We are re-assessing the coal leasing policy for federal lands, and the President gave us a strong additional mandate to clear up the troublesome issue of outstanding coal leases totaling some 16 billion tons.

The President ordered the Water Resources Council, of which I am chairman, to work with the Office of Management and Budget, the Council on Environmental Quality, the Congress, and the public to recommend a national water policy within six months.

In a sense, we began this work with our review of the water projects which resulted in the President's recommendation to eliminate 18 projects and cut back five others. Too often those projects benefit only a few people at the expense of the taxpayer and the environment.

You are familiar with this dramatic reversal in previous policy. The President will not routinely rubberstamp pork barrel projects. He has raised questions, and is fighting to stop projects which do not meet criteria for safety, for environmental protection, for economic feasibility, for broad benefits.

But I think all of us realize that it is not terribly effective or efficient to take on projects one-by-one. What is needed is a reform in the method in which those projects are planned, evaluated and authorized.

A new national water policy must stress conservation--this is one of the keys to environmental protection. We must begin to make wiser use of water rather than attempting to resolve every potential shortage by the construction of additional dams which too often cause adverse impacts. We must use federal programs--such as FHA and VA loans--to encourage construction of residences which are water efficient and which are located outside of flood plains. We must require greater cost sharing by states and non-Federal entities so that greater consideration is given to whether new water projects really are needed.

All projects that have been authorized more than eight years and not yet funded or under construction should be deauthorized.

The President also committed the government to a much more active program of preserving the wetlands. He declared that "the Federal government will no longer subsidize the destruction of wetlands." One step in this direction is an Executive Order directing Federal agencies to stop giving financial support to proposed developments in wetlands unless no practicable alternative sites exist. The President promised legislative proposals to improve wetlands protection and to authorize the states to enforce programs.

President Carter directed that the Department draft legislation to replace the antiquated Mining Law of 1872 with a statue which gives much greater protection to the environment and to the public interest. I know that this has long been a goal of the National Audubon Society. We already were at work on this, and the President's endorsement of this goal greatly enhances the chances for congressional action in the near future.

Likewise, the President gave a boost to our work on the establishment of parks and wildlife refuges in Alaska. Alaska is the last crown jewel in our custody, and we have an opportunity to preserve those jewels of wilderness and wildlife for the benefit of all Americans.

I know that the Audubon Society has given top priority to Alaska, and so has our Department. I want to encourage you to continue to be involved in the decision-making process on Alaska and other important issues. The public's viewpoint is important and must be considered, but the public must speak up in order to be heard.

Another important land resource issue is the designation of wilderness areas on public lands administered by the Bureau of Land Management. The President has directed my Department to move vigorously to implement this provision of the 1976 BLM Organic Act. An inventory of areas which are roadless and have wilderness characteristics is now underway. It should be completed by the end of next year so that we can begin studies on which areas should be designated as wilderness.

The President's Message addressed another subject which I know is close to the heart of Audubon members--predator control. He said, "My Administration will continue to support the existing Executive Order which prohibits the routine use of poisons for killing predators on the public lands. If control is necessary, it should focus on individual predators causing the problems--not the species as a whole."

I endorse that concept, and I want to make it clear that I continue to oppose the use of compound 1080 for predator control, because I know how it can devastate our wildlife resources.

Recently I received a letter from your Society opposing the granting of permits to allow the killing of golden eagles. Don't worry--I listen to Governors, but I don't give permits to kill eagles.

In his message, the President also directed the Secretary of Commerce and me to coordinate a government-wide effort to identify all critical habitat under federal jurisdiction or control. This program will help us avoid conflicts in the future, such as the one which has arisen over the Tellico Dam and the snail darter.

Unfortunately, this controversy has been blown out of proportion. In fact, most conflicts between endangered species and federal projects can be resolved and have been. In the three years since passage of the Act, the Fish and Wildlife Service estimates there have been some 4,500 consultations with other federal agencies. The important thing is, nearly all of the problems have been resolved.

There is no need to make changes in the Endangered Species Act. Under that Act, my role as Secretary of the Interior is to assure the protection and enhancement of endangered species, and I intend to fulfill that responsibility.

If an irresolvable conflict arises--and judging by the record so far there are few--then and only then Congress should evaluate all aspects of the project--it's economic and social impact, its environmental effects over and above any effects on endangered species, who will benefit, and so forth. After this evaluation, the Congress could decide whether that project is more important then the loss of the species forever. But it would be folly for Congress to over-react now to a few sensational conflicts and make substantial changes in this legislation.

Being strongly committed to the Endangered Species Act and what it stands for, let me issue a word of caution. I believe those who may misuse this law will endanger it and our cause.

The Endangered Species Act should be used to protect endangered species, and should not be viewed as a last gasp means of blocking projects which possibly should be challenged on other grounds.

If Congress comes to view the Act as a ploy, if the Congress comes to believe the law is being used not primarily to protect life forms but primarily to stop projects for other reasons, then we will see attempts to change the law in ways which will not make me or you very happy.

While it wasn't part of the President's environmental message. I do have some news concerning an endangered species--the whooping crane--which I know will interest you.

Several days ago I reiterated in the strongest possible terms our request that Matagorda Island be turned over to the Fish and Wildlife Service as an addition to the Aransas Refuge. As you may know, the GSA has been indicating that it would give some 12,000 acres of this excess federal property to the State of Texas for recreational purposes. We feel strongly that this island must remain in federal ownership as a refuge to insure the survival of the whoopers and the many other types of wildlife found there.

This morning I have only touched on some of my interests and on some of the points in the President's message.

The final point in the message is a commitment by the President to assure full citizen participation in the formulation of policy and in the decisions that affect the quality of the environment. We stress that at Interior, and I know that members of the Audubon Society will be giving us a great deal of constructive advice in the coming weeks, months and years as we confront the challenges laid down for us by the President.

The environmental message, and the earlier energy message, are designed to chart a sound course for America as we enter a new era.

Both the energy and environmental policy statements place heavy reliance on conservation and on faith in the American people to rise to meet challenges.

There are not a great many new programs proposed because we do not believe that more is necessarily better. Just as more material goods is not the answer to our most pressing national problems, neither is more government the answer to our most pressing environmental problems.

What we must do is make the government that we have more effective and better than ever before. During the coming months we are going to work at redirecting the tools of government which have been mis-used or under-utilize We will be reforming some programs, fine tuning others, and attempting to better coordinate the entire effort.

I believe that what is being proposed in the energy and environmental messages is enrichment of our lives. But if the new policies are to achieve full form, survive and succeed, the American people will have to be convinced that they are right.

We need the Audubon Society and the other highly dedicated conservation and environmental organizations working with us both to perfect our policies and to win public approval and public cooperation.

We must understand and appreciate this earth.

We must learn to live with the earth and with nature, resisting efforts to change the world in ways which destroy it.

We must re-establish the rapport with our surroundings which the American Indians had.

That rapport is summarized for me in a quotation from the Nez Perce tribe's Chief Joseph who said:

"Do not misunderstand me, but understand me fully with reference to my affection for the land. I never said the land was mine to do with as I chose. The one who has the right to dispose of it is the one who had created it..."

For Release June 21, 1977

REDWOOD ECONOMIC TASK FORCE ASSESSES IMPACTS ON PARK AREA UNEMPLOYMENT

Secretary of the Interior Cecil D. Andrus reported today that the Administration's proposal to expand Redwood National Park would likely result in direct loss of about 611 jobs in the area's forest products industry after the first year unless the Government moves to soften the impact.

The estimate comes from a consultant's report to a special Inter-Agency Task Force set up at the Interior Secretary's request. Indirect or induced unemployment of an additional 757 persons would occur if the direct loss of jobs is not mitigated, the report said. The two categories would total about 3 per cent of people employed in Humboldt County, California.

"Working with State and county officials and with the private sector, we must do all we can to cushion the blow if the park is expanded by 48,000 acres as we have recommended," Andrus said. "In my visit to the redwood country last week, I listened closely to people of many shades of opinion, and I understand and share their concerns.

"As soon as possible I will discuss these findings with the other concerned Cabinet members to develop plans on where we go from here," he said.

The Task Force was made up of elements of the Interior, Commerce, Labor and Agriculture Departments, together with State agencies, in late April to gather accurate information about expected economic impact of park expansion and recommend ways that impact could be mitigated.

Task Force members told the Secretary that if Congress acts to expand the present park this year, unemployment is not expected to strike hard for some months.

There is believed to be a considerable volume of downed timber on hand to keep mill hands and truckers busy for some time. Loggers generally are laid off during the wet winter season in any event.

After the first year, however, the local economy would suffer unless plans could be set in motion earlier to pick up the slack, the Task Force said.

The timing of the impact, as well as its severity, would depend largely on management decisions by the timber companies whose lands would be acquired by the Government, according to the Task Force.

"The timber industry of the region is a declining industry and current projections all indicate continuing decline, even without the removal of an additional area from timber production," the report said. "Addition of 48,000 acres of land, principally timberland, to the Redwood National Park will hasten the decline of the region's timber industry."

The report by Greenacres Consulting Corporation of Seattle, made an independent review for the Task Force, examining three subjects: the region's present economic base, the impact of park expansion on that base, and programs which potentially could mitigate the impact. Greenacres' report was assembled with a grant from the Department of Commerce's Economic Development Administration.

"A program of land rehabilitation is needed throughout Humboldt County to reforest potential forest lands, control further soil erosion, reduce fire hazard and improve damaged streams. Such a rehabilitation program would provide a real opportunity to employ many of the unemployed, raise the value of the land, insure future timber crops, restore the productivity of the land and improve the living environment," the Task Force said.

Such work, the consultant's report estimated, could provide from 390 to 485 direct new jobs for the region. A number of programs administered by the Department of Agriculture, if modified and funded adequately, could be used for this purpose in the county, the report said.

In addition, the Administration's park expansion proposal would provide $12 million for rehabilitation of cutover lands through cooperative agreements with Federal agencies and the State and through direct hiring of personnel to work on rehabilitation programs inside the Park.

Additional studies are needed to trace actual economic impact and identify needed mitigation once expansion of the park takes place; to develop up to date forest resource inventory and productivity data; and to determine the effect of highway relocation--chiefly, the possible re-routing of portions of U.S. 101, the principal highway through the redwood country--the Task Force said.

The highway cuts through the existing National Park and the three State parks which adjoin it. During spring and summer months, heavy logging trucks, other commercial traffic and tourists' vehicles frequently slow traffic on the narrow roadway to a crawl and create formidable noise levels.

The consultant's report identified other existing programs which could mitigate unemployment, among them those of the Economic Development Administration, the California Employment Development Department, and the U. S. Department of Labor. EDA has authority to provide grants for planning, technical assistance, public works projects, mortgage payment assistance, rent supplements, and relocation of businesses and individuals. Labor Department programs can provide job placement services and job training, and public service employment. The State agency administers unemployment insurance.

"The Task Force has examined the mitigating programs and believes it is now necessary for Congress and the responsible federal agencies and the State and local government to evaluate them and develop an action program including specific implementing projects," the Task Force said.

Throughout the study, the Task Force worked with the local Redwood Region Economic Development Commission, which was formed by the public agencies of Humboldt County to work with the Task Force.

The Commission has applied for a Title IX planning grant from the Economic Development Administration. The Task Force noted that prompt and adequate funding is necessary to implement local planning efforts.

The consultant's report lists a number of concerns expressed by the local Commission. A number of those concerns are addressed in legislation, now before Congress, notably in a proposal to authorize acquisition of the right-of-way to reroute U.S. Highway 101 around Prairie Creek Redwood State Park. An amendment to the Payments in Lieu of Taxes Act (P.L. 94-565) is also being proposed to alleviate the effect of park expansion on the local tax base.

The consultant reported that some of the timber harvest lost to the park could be compensated for by increased harvests in nearby Six Rivers National Forest after pending wilderness legislation is acted upon by Congress. However, the U.S. Forest Service in commenting on the report noted that a large part of the potential increase is in marginal timber lands which are presently uneconomic and require special techology to protect other resource values.

The Task Force was co-chaired by John Davidson, of the Economic Development Administration and John Rutter, retired Regional Director of the Northwest Region of the National Park Service.

For Release July 6, 1977

ANDRUS SEES PEOPLE-INVOLVEMENT
KEY TO NATIONAL HERITAGE TRUST

Interior Secretary Cecil D. Andrus today called for the close cooperation of conservation leaders, concerned citizens and government at all levels so that President Carter's National Heritage Trust program may identify and protect America's natural, cultural and historical resources.

A task force meeting of 200 civic leaders in the Interior autitorium today was told that President Carter envisions the National Heritage Trust to be the most important conservation thrust of the next quarter-century.

The President's May 23 Environmental Message directed Secretary Andrus to formulate within 120 days a National Heritage Trust proposal for consideration by Congress.

A Heritage Trust task force assembled by Robert L. Herbst, Assistant Secretary for Fish and Wildlife and Parks, already has outlined approaches to the Trust program. It will rely heavily upon full participation and support of citizen leaders and Federal, State and local community government.

"It is our desire to make the final proposal representative of all interests and concerns," Assistant Secretary Herbst said. "The best decision process occurs when choices are made at the point closest to those affected."

When the National Heritage Trust Proposal goes to the President in September, he will be assured that the public has been fully involved in its development, an essential to its implementation, Herbst said.

Objectives of the Heritage Trust Program include:

Preserving viable and adequate examples of the full array of America's natural and cultural heritage; insuring that significant scientific and cultural information is not lost; and providing for consistent and compatible scientific, educational, and other public uses of the national inheritance which belongs to all Americans.

Those attending today's meetings were asked to nominate individuals to assist the task force in defining elements of the National Heritage Trust, and ways of conserving and managing elements worthy of protection. The Trust Proposal is due for completion September 20, 1977.

For Release July 12, 1977

REDWOOD REGION GETS NEW $200,000 ECONOMIC PLANNING GRANT

"This Administration takes seriously its pledges to mitigate the impact of Redwood National Park expansion on the people involved," Secretary of the Interior Cecil D. Andrus said today, as he reported a grant of $200,000 for local economic planning in Humboldt County, California.

The grant by the Economic Development Administration, U.S. Department of Commerce is to the Redwood Region Economic Development Commission, made up of representatives of local public agencies. The commission is to develop an "Economic Adjustment Strategy," outlining what its membership believes should be done to offset economic dislocation when the national park is expanded by 48,000 acres in Humboldt County, as Andrus has recommended.

A consultant reported on June 20 that the expansion plan could be expected to result in direct loss of some 611 jobs in the area's forest products industry after the first year, unless the Government moves to soften the impact. Indirect or induced unemployment could add some 757 to that figure if direct job loss is not mitigated, the consultant reported. Together, this would add up to about 3 percent of the number of persons employed in the county.

Receiving that report was a special Federal Inter-Agency Task Force set up at Andrus' request in April, when he made his expansion proposal. The Inter-Agency Task Force, studying economic impacts of park expansion, include officials of the Departments of Interior, Commerce, Labor, and Agriculture plus several State of California agencies. Funded by another EDA grant, the Federal Task Force obtained information including the consultant's report, and submitted its findings to Andrus.

In addition to expected unemployment, the Task Force found that management of the national park as it now exists is difficult because of its layout and boundaries; there is a long term need to rehabilitate and improve productivity of timberlands within the county; and "there is a need to diversify the local economy and improve local transportation both to and within Humboldt County."

The Federal Task Force met again in Washington today to consider what Federal actions should be taken as a follow-up to its June 20 report. Because transportation has been identified as a key issue, the Department of Transportation participated in this session and will take part in future Task Force actions, at Andrus' request.

For Release to PM's September 14, 1977

INTERIOR SECRETARY PROPOSES HARDROCK MINING LAW REFORM

Interior Secretary Cecil D. Andrus today called for reform of the Nation's 105-year-old hardrock mining law.

In a bill submitted to Congress, Andrus proposed to replace the present outdated Mining Law of 1872 with a law establishing leasing and royalty systems for publicly owned hardrock minerals. These minerals are principally copper, lead, uranium, gold, silver, nickel, iron and zinc.

Andrus' bill, submitted on behalf of the Administration in response to Congressional requests advocating mining law revisions, calls for strict standards for protecting and reclaiming land worked by hardrock miners.

"This measure would fit contemporary needs," Andrus said. "Its passage would be a positive step for correcting the deficiencies and lessening social and economic costs of the outdated 1872 law.

"And it would provide a fair return to the American people for the leasing of their public lands and the sale of minerals in those lands."

Andrus added that the proposed law emphasizes "reasonable but necessary incentives to induce people to continue to take the risks inherent in the search for those minerals which our Nation so urgently needs. It aims to protect the small miner, as well as to promote competition and discourage monopolies."

Andrus charged that the Mining Law of 1872 is deficient for many reasons, including its requirement that the Government surrender valuable public land entirely when the existence of a valuable mineral deposit can be proved.

"It is incompatible with Congressional policy with respect to the multiple use of land and other well established land management concepts," he said. "It contains increasing legal uncertainties resulting from the specific lack of guidance, and significant social and economic change in the last 105 years."

He noted that nondiscretionary provisions of the 1872 law have been used to acquire title to agricultural lands, timber lands, water services, and prime recreation areas for such non-mining purposes as social clubs, vacation homes, residential subdivisions and for real estate speculation.

"Although this law once served an important purpose by encouraging the settlement and rapid development of mineral wealth in the West, it is now inadequate and should be replaced," Andrus added.

The bill proposed by Andrus includes provisions for:

-- Noncompetitive as well as competitive procedures for acquiring mining rights.

-- Access to all lands subject to the bill's application.

-- The preferred right of holders of exploration licenses to develop and produce from leases, and a right of first refusal to such a lease for 10 years after exploration.

-- A right to produce on a lease as long as there is continuous operation.

-- Statutory recognition of the role and contribution of the small miner along with a positive obligation of the Federal Government to provide direct technical assistance to the small miner and to minimize regulation of his activities.

-- Assurance through acreage limitations and diligence requirements that larger companies with greater assets will not be able to monopolize the exploration of Federal lands.

-- Sufficient time to explore for and develop mineral deposits through guaranteed tenure and provisions that recognize the special circumstances of hardrock mining.

-- Procedures for acquiring the necessary land, both on and off lease for processing facilities, without need to resort to complicated land exchange and acquisition procedures.

The Mining Law of 1872 is one of two basic mining laws governing mineral extraction activities on Federal lands. The other law, the Mineral Leasing Act of 1920 covering such minerals as coal, gas, oil, oil shale, phosphate, sodium, potash and asphalt, would not be affected directly by the proposed new law.

Under the 1872 law, a prospector can explore any Federal lands open to development without a government permit. If he discovers minerals, he may file a mining claim at a county recorder's office. The claim is legal if it is considered worth the time and investment of a "prudent man" to market the mineral profitably. The miner then is given title to the land. The Bureau of Land Management estimates that six million claims have been filed since 1872.

Prospecting could be allowed under a permit and with certain other restrictions in national park, refuge, wilderness, and wild and scenic river systems which are open upon the date of passage of the act, and on lands which were withdrawn from the original Mining Law of 1872.

The proposed new law would repeal the 1872 act and allow the Secretary to issue an exclusive license to any qualified person to explore for one or more hardrock minerals in the Federal leasable lands. Where leasable lands are classified as suitable for competitive bidding, the Secretary could issue exploration licenses only after competitive bidding.

A license holder would have a preferred right to a lease if the Secretary decided to issue one, as long as the holder met requirements provided by the bill. No person would be allowed to control exploration licenses for more than 5,120 acres in any one state.

A license would run for five years and could be extended for another five. It could not apply to more than 1,280 acres, and would cost $5 an acre a year.

Under the bill, the Secretary could issue a lease to a licensee for the development and production of one or more hardrock minerals in a mining area. A lease application would have to include enough information to enable the Secretary to estimate the probable extent of the mineral deposit, the mining, milling and transportation methods, and the expected environmental and social impacts of development. No person would control leases on more than 51,200 acres in the United States, and no lease could be issued without the public having an opportunity for a hearing.

No licenses or leases would be issued unless the leasable lands have been included in a Federal land-use plan, except under certain conditions.

A lease would require diligent development and continued operations by the operator. A lease would be for 20 years and as long thereafter as the lessee conducted operations on the lease itself or on a logical mining unit approved by the Secretary. Annual rental for a lease would be not less than $25 an acre.

Royalty could not be less than 2 percent of the gross value of the output of a mine or a comparable sum under other systems of payment.

A licensee or lessee would have to submit exploration or mining plans describing possible surface disturbance. The Secretary would issue regulations to insure that prospecting, exploration, development and production are conducted "in a manner that minimizes to the maximum extent feasible environmental damage."

These regulations would have to assure compliance with air and water quality laws, and minimize or prevent erosion, flooding, release of toxic substances rock slides, fires, damage to fish and wildlife habitats, and not threaten public health and safety.

The Secretary would require that a reclamation plan be approved and enforced. The Secretary could adopt State environmental regulations and standards which are as strict or stricter than Federal ones, and could sign agreements with states to enforce environmental regulations and standards.

Current holders of mining claims could file applications for an exploration license, or in the case of a millsite, for a surface lease, or a patent within two years after the proposed act became effective.

Any mining claim for which an application is not timely filed would become void.

For Release after 10 a.m. October 13, 1977

SECRETARY ANDRUS BACKS LEGISLATION TO UPDATE HARDROCK MINING LAW

Interior Secretary Cecil D. Andrus today urged passage of legislation to create "a compromise between simply closing Federal lands to mineral development and leaving them completely open to uncontrolled mineral development."

The proposed Mining Act of 1977, supported by the Carter Administration and repealing the outmoded Mining Law of 1872, would bring about such a compromise, Andrus told the House Interior and Insular Affairs Subcommittee of Mines and Mining.

"I am hopeful that if this bill is enacted into law, it may permit mining on some lands presently withdrawn from mineral entry or in the very least will halt the practice of withdrawing public lands from entry simply to protect it from mining," Andrus told the committee.

The proposed new law (H.R. 9292) should be acceptable to the mining industry, he said, because it would provide incentives and the ability to prospect, and would provide security of tenure once a production lease is granted.

Andrus said the proposed law "follows guidelines laid down by President Carter in his Environmental Message of May 23, 1977." The bill includes, he said, a leasing system for hardrock minerals, explicit Federal discretionary authority over mineral exploration and development, approval of operation and reclamation plans prior to mining, royalties for use of public lands and mineral resources, and integration of mining into land use plans being developed for the public lands.

"All lands now open to mineral entry would remain open to prospectors under the Administration bill," Andrus said. The Interior Secretary could issue exclusive licenses to explore for hardrock minerals in designated areas that have not been withdrawn from mineral entry. And leases could be granted to holders of exploration licenses upon presentation of evidence of mineral deposits.

Andrus said a special section is provided in H.R. 9292 to protect "small miners."

The bill also provides for reclamation of mined land, he said, "including open pit areas after taking into consideration the unique nature of such operations."

The Secretary said he is "fully aware of the deep emotion that is aroused in the West when any suggestion is made that the Mining Law of 1872 be repealed.

"But," he added, "I am hopeful that emotion can be forgiven and that the need for a new mining law can be discussed dispassionately, and in the context of 1977, and not in the context of 1872."

For Release 8:00 P.M., EDT, October 28, 1977

UNDER SECRETARY SEES ADMINISTRATION ENERGY PLAN
AS GUARANTEE OF EQUITY IN TIME OF INCREASING SCARCITY

New challenges confront elected leaders in times of scarcity, and President Carter has responded to the challenge with an energy program that will protect the poor and less privileged from unfair burden, Under Secretary of the Interior James A. Joseph said today.

Addressing the Third Annual Convention of the National Conference of Black Mayors in Washington, D.C., Joseph said the President's energy program is an important part of the Administration's overall commitment to help protect the rural and urban poor.

"The President's plan recognizes the need to protect consumers and our whole economic fabric from drastic, unwarranted price increases," Joseph said. "While energy prices will increase--with or without a sound energy program--the most important question is, 'Who pays?' Will the oil and gas companies walk away with all of the increase necessary to bring about replacement cost pricing or can we devise a program which recoups the portion that is in excess of energy production needs for working Americans?"

Joseph added: "The President's plan wholeheartedly supports an all-out effort to find new sources of oil and gas. It does not permit those who would seize upon a crisis to profiteer."

The Under Secretary also pointed out that programs administered by the Department of the Interior can have tremendous impact on urban dwellers because these programs determine how natural resources will be used and who benefits.

Turning specifically to problems facing Black officials today, Joseph said: "You and I are not only public officials in time of scarcity, but we are Black public officials in a time of increasing vulnerability."

Joseph said that today Black officials find their opposition often led by former allies.

Pointing out that what the Black community wants is what all America wants, Joseph said that all Americans are in the same "lifeboat," and that if one end of the boat springs a leak it must be of concern to everyone aboard.

For Release November 10, 1977

ANDRUS OPPOSES EXCESS LANDS MORATORIUM,
PROMISES DELAY UNTIL MARCH 1

Secretary of the Interior Cecil D. Andrus today told Congress he opposes proposed legislation that would place a moratorium on implementation of new Interior Department regulations to limit the size of farms receiving subsidized irrigation water in the West.

"I believe that such a moratorium would not enable us to carry out the intent of the law by establishing fair enforcement standards, and for that reason I oppose the moratorium," he said.

He immediately added that in recognition of concern about Interior's proposed "excess lands" rules, he will take no action to promulgate final regulations prior to March 1, 1978.

In testimony before a Senate Energy and Natural Resources Subcommittee, Andrus also said he would "carefully review comments on the regulations to ensure that we develop a system which will provide those in violation of the regulations a fair period in which to dispose of excess lands, should they be required to do so. Where changes are necessary in the proposed regulations, I will not hesitate to make them."

Citing widespread misunderstanding about the draft regulations, which are now the subject of 10 public hearings in the West and in Washington, D. C., Andrus noted that the proposed rules are intended to enforce development of residential family farms as required by the Reclamation Act of 1902.

"The Federal subsidies involved in providing irrigation water to Reclamation projects are substantial," he said. "For example, the Bureau of Reclamation has estimated the present value of the subsidy in the Westlands Water District (in California) at $800 million or more than $1,500 per acre.

"One corporate landowner today holds more than 100,000 acres in that District. Without limitations on land ownership, the subsidy accruing to the land owned by this corporation over the life of the project exceeds $150 million. This statistic graphically illustrates why acreage limitations are necessary."

Nevertheless, Andrus said, he will:

-- Use the period between the closing date for comments on the proposed new rules (Nov. 23) and March 1 to assess public comment on "the broader issue of amendments to the present Reclamation law, and consult with member of Congress on these matters."

-- Ask the Secretary of Agriculture for his opinion and recommendations on the regulations, and on the role of acreage limitations and Reclamation law in the context of modern agriculture.

-- Keep an open mind on the residency requirements, especially regarding elderly retired farmers, and recommend changes in the law if needed.

The Secretary also said that the case of California's Imperial Valley is unique because of legal actions still pending. Even if the courts finally hold the regulations do apply there, he said, the Imperial District will be given an extra year to sign contracts for excess land disposal and five years for actual disposal.

"I also intend to explore whether there are additional areas where reliance on nonapplicability is at issue," he said.

November 10, 1977

STATEMENT OF SECRETARY OF THE INTERIOR CECIL D. ANDRUS

The publication of proposed new regulations to enforce the excess lands and other provisions of the Reclamation Act of 1902 has brought forth a great deal of comment, controversy, and confusion. I believe it time for a statement clarifying the Administration's position on this issue.

The Department's basic responsibility and objective is to enforce the law as written. No one in this Administration is closed to consideration of changes in the 1902 law, but it is clear, and made even clearer by recent judicial decisions, that the law as written must be enforced. We believe the proposed regulations now before the public will afford us the opportunity for proper enforcement following public comment, and will also indicate the basic statutory changes which may be necessary in the basic law.

The regulations have prompted questions about the basic validity in 1977, of the original Reclamation concept which was clearly aimed at development of residential family farms in the West. The Federal subsidies involved in providing irrigation water to Reclamation projects are substantial. For example, the Bureau of Reclamation has estimated the present value of the subsidy in the Westlands Water District at $800,000,000 or more than $1,500 per acre. One corporate landowner today holds more than 100,000 acres in that District. Without limitations on land ownership, the subsidy accruing to the land owned by this corporation over the life of the project exceeds $150

million. This statistic graphically illustrates why acreage limitations are necessary.

I continue to believe that family farms are essential to the strength of our nation. This Administration strongly believes that the Federal subsidies now provided through the Reclamation programs should be available to legitimate family farmers but not to large corporations. While conditions of family farming may have changed in some areas since the Reclamation law was passed in 1902, Congress has not seen fit to change the law. Various actions and inquiries are now underway to assess the changes in the law that may be necessary for the future. These include the President's water policy review, the work of the Task Force established by Congress to investigate the Westlands Irrigation District, and 13 hearings throughout the West on the proposed excess lands regulations.

I am deeply concerned about inadequate public understanding of the draft excess lands regulations now out for comment, and I am aware of legislation proposed to place a moratorium on implementation of the regulations. I believe that such a moratorium would not enable us to carry out the intent of the law by establishing fair enforcement standards, and for that reason oppose the moratorium. Nevertheless, I recognize the concern and want to announce today I will take no action to promulgate final excess lands regulation prior to March 1, 1978. In addition, I will carefully review comments on the regulations to ensure that we develop a system which will provide those in violation of the regulations a fair period in which to dispose of excess lands, should they be required

to do so. Where changes are necessary in the proposed regulations, I will not hesitate to make them.

I will also utilize the period between the closing date of comment on the proposed regulations (November 23) and the first of March to assess public comment on the broader issue of amendments to the present Reclamation law, and consult with members of Congress on these matters. Action on the regulations and decisions on amendment should be made together.

I also intend to ask the Secretary of Agriculture for his opinion and recommendations regarding not only the regulations, but the role of acreage limitations and other facets of Reclamation law in the context of modern agriculture.

On the closely-related matter of residency, I understand that certain hardships might exist under the proposed regulations even though the law was enacted to foster family farming. I remain open on this issue during the review period, particularly in the case of retired elderly farmers. I have already asked the Solicitor to advise me whether flexibility exists in the law to deal with hardship cases. If the law needs to be changed to correct this problem, I will not hesitate to propose legislation.

The Imperial Valley situation, which is to some extent being perceived as representative of all areas subject to excess land requirements, is, in fact, quite unique. The issue of whether the District is or is not subject to acreage limitation is still before the courts and until the matter is settled, I will not apply the new regulations to the District. Even if the regulations are found to apply by the courts, the District

will be provided an additional year to sign excess lands disposal contracts, and five years to actually dispose of land before water will be withheld.

There should be, in summary, no doubt that this Administration believes the law should be enforced as written, and believes family farms remain a viable objective of federally-funded water programs. I remain open to changes in the regulations and the Reclamation Act and will propose those changes only after basic fairness is considered.

I also intend to explore whether there are additional areas where reliance on nonapplicability is at issue.

For Release November 18, 1977

INTERIOR SECRETARY RELEASES REPORT
ON UPPER DELAWARE RIVER

Interior Secretary Cecil D. Andrus recently released the final report recommending that a 75-mile segment of the Upper Delaware River, between Hancock, New York, and Matamoras, Pennsylvania, become a component of the National Wild and Scenic Rivers System and be managed as a Scenic and Recreational River. The initial report and legislative proposal had been furnished to the Congress subsequent to the President's environmental message last May.

The recommendation is based on an interagency task force evaluation led by the Bureau of Outdoor Recreation to determine if the river qualifies for national designation under the National Wild and Scenic Rivers Act (P.L. 90-542).

Land protection would be accomplished through cooperative efforts of the governors of the State of New York and the Commonwealth of Pennsylvania, local governments, and the Delaware River Basin Commission. Recreation management would be the responsibility of the National Park Service, and would be initiated when the Secretary of the Interior determines that adequate land protection measures have been undertaken within the river corridor.

If the proposal is approved by the Congress, the National Park Service would have one year to develop a recreational plan for the river which the public would have an opportunity to review. During the same period, the Secretary of the Interior would issue guidelines specifying standards for land use control measures to be developed and implemented for the area jointly by the appropriate officials of the State and political subdivisions or through the Delaware River Basin Commission. After the Secretary determines that proper land use control measures have been developed and implemented, he would be authorized to designate the Upper Delaware as component of the National Rivers System by publication of notice in the Federal Register.

For Release January 23, 1978

STATEMENT BY SECRETARY ANDRUS ON
RULES COMMITTEE ACTION ON OCS LEGISLATION

Secretary of the Interior Cecil D. Andrus issued the following statement today following action January 23 by the House Rules Committee approving floor consideration of H.R. 1614, legislation to amend the Outer Continental Shelf Lands Act.

"I am pleased that the Rules Committee has responded favorably to the need for a vote by the entire House of Representatives on this crucial measure. By giving H.R. 1614 a rule, the committee has broken a critical log jam. I expect the bill to pass and be signed into law soon, eliminating much of the uncertainty that has developed over Outer Continental [illegible] nt years.

"Now I can definitely state my intent to conduct the Georges Bank OCS lease sale (#42) as scheduled on January 31. I hope and believe that the Commonwealth of Massachusetts and others who recently filed lawsuits to block that sale will recognize that the chief issue can be considered moot, and that they will allow the legislative and leasing processes to work unhampered by court action. Should their application for a court-ordered halt to the Georges Bank sale be pressed nevertheless, the Interior Department will defend the integrity of the sale and of the procedures leading up to it."

For Release January 25, 1978

SECRETARY ANDRUS REQUESTS EXTENSION OF
1977 EMERGENCY DROUGHT ACT

Secretary of the Interior Cecil D. Andrus has asked the Congress to extend the January 31 deadline for completion of projects authorized under the 1977 Emergency Drought Act to keep them eligible for Federal funding.

The Act gave the Secretary temporary emergency authority to make grants and interest free loans to fund water construction, management and conservation projects to ease the impact of the severe drought which hit most of the West in 1976 and 1977. To ensure that Federal funds under the Act went only to emergency drought measures Congress imposed a November 30, 1977, deadline for project completions.

When it later became apparent that some otherwise eligible projects would fall short of completion by that date, Congress extended the deadline to January 31.

Andrus said 66 projects in the West for which the Interior Department has authorized grants and loans will not be completed by January 31.

"The states, local governments, irrigation districts, Indian Tribes and other Federal agencies have begun construction and pushed hard to complete these projects," Andrus said.

"But through no fault of their own--because of delays in supply deliveries, bad weather or other problems--they will not meet the deadline. The cut-off date in the amended Emergency Drought Act is absolutely clear; Congress made no exceptions and gave me no authority to grant any. I am very much in sympathy with those who have diligently pursued construction work but the only way we can get them past the January 31 deadline is for the Congress to amend the Act once more."

The Secretary said the bill he is proposing to Congress authorizes no new projects or additional funds. It would simply give him discretion to allow a reasonable time for completion of work already underway.

"All 66 projects are in various stages of completion and some of the loan and grant money has been spent on work done to date," Andrus said. "The sponsors are trying to complete as much work as they can by January 31. We won't know until then exactly how much money these entities stand to lose if the deadline isn't extended."

Except for grants to the States of California, New Mexico, Illinois, and Wisconsin, the Colorado Water Conservancy Board and eight Indian Tribes for fishery projects, the remaining unfinished projects received interest-free loans with repayment periods ranging from 5 to 30 years. The Secretary said California probably has the most at stake in the extension. Fourteen projects there, at a total completed cost of $9.7 million, will miss the cut-off date.

In addition, the State of California will be unable to finish weather modification work for which it received a $3.6 million grant.

Andrus also said 29 of the unfinished projects--eight for fisheries and 21 for irrigation--are on Indian lands. Total cost of the 29 on completion will be $10.7 million. While the Indian projects suffered the same delays from weather and contracting backlogs as others, funding delays compounded the problem. Most of the funds available under the Emergency Drought Act had been obligated by August. But the legislation extending the original deadline also freed an additional $75 million for construction under the Act. As a result, some of the Indian projects were not funded until September.

The U.S. Fish and Wildlife Service received $3.3 million to mitigate drought damage to habitat on lands managed by that agency. Some of these projects suffered similar delays.

According to the Bureau of Reclamation, already completed under the Emergency Drought Act are 52 projects funded by $18.1 million in interest-free loans and 68 under grants totalling $13.0 million. The Bureau of Indian Affairs lists 35 Indian irrigation projects completed with $11.6 million in loans and five Indian fishery projects with $440,000 in Federal grants. The U.S. Fish and Wildlife Service has also completed fishery and wildlife projects costing $2.2 million, with $1.1 million in projects still uncompleted.

Following is a list of the uncompleted projects, their sponsors, a brief description of the work and the total completed cost:

BUREAU OF RECLAMATION PROJECTS

Washington

Okanogan Irrigation District. Replace pumping plant. $1.75 million.

Oregon

Warm Springs Irrigation District. New pump. $50,000.

Idaho

B and P Irrigation District. Drill new well. $30,000.

California

Santa Ynez Water Conservancy District. Drill two wells and install pumps. $340,000.

Chowchilla Water District. Wells and tailwater return system pipelines. $4.5 million.

Georgetown Divide Public Utility District. Four diversion structures and pipelines. $184,750.

Merquin County Water District. Twenty wells and pumps. $440,000.

Madera Irrigation District. Pipelines, pumps and meters. $1,193,273.

Placer County Water Association. Pipeline. $201,000.

West Side Irrigation District. Replace 10 miles of open ditch with pipelines. $569,000.

Natomas Central Mutual Water Conservancy. Modify pump station, install pumps, dredging and pilings. $250,000.

Jacob Rancho Water Conservancy. Five deep wells. $500,000.

El Nido Irrigation District. New wells and pumps. $1 million.

State of California. Weather modification program. $3.6 million grant.

Nevada

Truckee Carson Irrigation District. Pumps, meters, line ditches. $268,400.

Utah

Muddy Creek Irrigation Company. Repairs to Emery Reservoir. $600,000.

Newton Water Users' Association. Line 13,000 feet of ditch. $65,000.

New Mexico

State Department of Game and Fish. Various water-saving features at hatcheries and wildlife areas. $223,000 grant.

Nebraska

Gering Irrigation District. Line canals. $247,300.

Pathfinder Irrigation District. Line laterals. $534,400.

Central Nebraska Powerplant and Irrigation District. Install 13.2 miles of pipeline. $346,400.

Farwell Irrigation District. Install 15 miles of pipeline. $215,000.

Kansas

Kirwin Irrigation District. Pipelines. $155,000.

Colorado

Amity Mutual Irrigation Conservancy. Repair and line canals. $194,000.

Colorado Water Conservancy Board. Weather modification program. $600,000.

Illinois

Illinois Department of Conservation. Construct various pumping facilities. $500,000.

Wisconsin

Wisconsin Department of Natural Resources. Construct pumping facility. $53,000.

INDIAN PROJECTS

Idaho

Fort Hall Tribes. Twelve irrigation wells drilled, cased and equipped. $628,500.

New Mexico

Isleta Pueblo. Twenty irrigation wells. $530,000.

Jemez Pueblo. Four irrigation wells. $60,000.

Picuris Pueblo. 4,000-foot concrete canal lining. $48,300.

Pojoaque Pueblo. Rehabilitate diversion dam. $23,600.

San Juan Pueblo. 8,800-foot concrete canal lining. $94,500.

Santa Ana Pueblo. Four irrigation wells. $60,000.

Santo Domingo Pueblo. Five irrigation wells. $114,000.

Taos Pueblo. Concrete lining, rehabilitation of 12,500-foot canal and one irrigation well. $402,200.

Zia Pueblo. Enlargement of storage reservoir. $139,200.

Mescalero Apache. 7,000-foot concrete pipeline. $137,000.

Navajo. Lining looking siphon. $200,000.

Washington

Colville. Two irrigation wells and equipment. $55,000.

Yakima. Develop and equip irrigation wells. $5 million.

Hoh Fishery. One well. $7,500.

Lower Elwa Fishery. New diversion structure and lining of rearing ponds. $243,000.

Lummi Fishery. Well drilling and stream diversion. $103,000.

Muckleshoot Fishery. To acquire water source. $36,000.

Nisqually Fishery. Acquisition of water source and develop wells. $230,000.

Skokomish Fishery. Install well and rearing ponds. $155,600.

Arizona

Gila River (Pima). Drill and equip 15 wells. $1,500,000.

Kaibab. Spring development and pipeline. $71,000.

San Carlos Apache. Wells and river pumps. $128,100.

Nevada

Campbell Ranch. Drill and equip four wells. $148,000.

Ft. McDermitt. Drill and equip four wells. $226,000.

Pyramid Lake Fishery. Rehabilitate one well. $8,400.

Summit Lake Fishery. Drill and equip one well. $44,000.

Walker River. Drill and equip four wells. $186,000.

Yomba. Drill and equip three wells. $145,000.

FISH AND WILDLIFE SERVICE PROJECTS

Minnesota

Watonwan. Water control structures. $10,000.

Michigan

Shiawassee. Pumping station. $90,000.

South Dakota

Lake Andes. New ponds. $60,000.

Nebraska

Hastings. Wells and pump stations. $50,000.

Washington

Entiat. Wells and pump system. $124,000.

California

Sacramento. Wells. $220,000.

Tehama-Colusa. Wells and water chillers. $100,000.

Coleman. Water delivery system. $200,000

Marble Bluff. Silt removal. $30,000.

OREGON

Eagle Creek. Water reuse system. $185,000.

For Release January 26, 1978

ADMINISTRATION RECOMMENDS INCORPORATION OF MINERAL KING INTO SEQUOIA NATIONAL PARK

The Carter Administration today formally endorsed legislation which would transfer the scenic, 16,200-acre Mineral King Valley in California's High Sierra from the Sequoia National Forest to the adjoining Sequoia National Park.

Passage of such legislation could end a decade of nationally publicized controversy centering on a proposal by the Walt Disney organization to develop the valley as a high-density, year-around resort featuring multiple ski lifts, overnight accommodations for many hundreds of persons, and auxiliary facilities. The Forest Service, part of the Department of Agriculture, has been studying this proposal.

The Interior Department's National Park Service, in contrast, is committed to manage Mineral King as an integral part of Sequoia National Park, where management objectives are primarily to preserve the natural environment as much as possible. The Valley, at the southern end of the present boundary of the national park, is bordered by the park on the east, north and west, about 80 percent of its perimeter.

Of Mineral King's total area, some 742 acres is privately owned. The Interior Department, as spokesman for the Administration, is recommending that this land be acquired and managed as part of the park. It estimates the cost of acquiring the privately owned acreage at $5,350,000. In addition, 67 summer homes in the Valley are under Forest Service permit; the Park Service would phase these permits out. Minor rehabilitation of the existing campground and parking areas also would be undertaken at a cost of about $20,000.

Mineral King Valley, described as a prototype of the Sierra Nevada region surrounding it, is heavily timbered and bounded by rugged peaks. Alpine lakes and streams are among its attractive features, which also include excellent air and water quality. Valley soils are subject to erosion, and the slopes are vulnerable to avalanche. Wildlife includes a stable herd of mule deer, black bear, small mammals and a variety of birds notably including raptors. Lakes are stocked with trout. The Valley is currently used mainly for such recreation as camping, hiking, horseback riding, fishing and some hunting.

For Release 8 a.m., CST, January 27, 1978

ENCOURAGED BY ACTION IN CONGRESS, SECRETARY ANDRUS PREDICTS OCS AMENDMENTS WILL FOSTER RATHER THAN HINDER U.S. OIL AND GAS DEVELOPMENT

Interior Secretary Cecil D. Andrus said today that updating of the Federal offshore oil and gas leasing law will help smooth the way for development of these essential energy resources.

Addressing a breakfast meeting of petroleum engineers in New Orleans, Andrus said he was encouraged by this week's action in Congress on proposals to revise the 1953 OCS (Outer Continental Shelf) Lands Act.

Answering allegations that the legislation could delay OCS development, Andrus said:

"I am confident that there will not be the delays and counter-productive activities that have been forecast by opponents when the law is changed. On the contrary, we will see a more predictable, safer and productive program as a result of the amendments."

Andrus said the amendments are needed to provide assurances to the States and citizen groups that they will continue to have a voice in decisions made on OCS development. The amendments supported by the Administration include provisions for more flexibility in the lease bidding system to encourage competition and assure a fair return to the public. Andrus also noted the need for a provision for the department to cancel a lease, with compensation in extraordinary cases when there might be a major environmental danger.

Emphasizing the importance of OCS development, Andrus called for closer cooperation among the Federal government, State governments, citizen groups and industry.

He pointed out that the task of developing the OCS becomes tougher as exploration begins in the "frontier areas"--those regions yet to be leased and explored.

"You and your colleagues are the wagon masters who will have to see that we safely negotiate our way into these new frontiers in the Atlantic, the Pacific and off Alaska," Andrus told the engineers.

For Release February 17, 1978

ANDRUS SENDS NATIONAL URBAN RECREATION STUDY TO CONGRESS

Meeting the park, recreation, and open space needs of 150 million U.S. urban area residents is the subject of a nationwide study report submitted to Congress today by Secretary of the Interior Cecil D. Andrus.

Secretary Andrus stated: "This report makes no recommendations. It documents the situations now existing in the park and recreation systems of our major cities and notes some potential approaches. It places heavy reliance on the State and local governments for long-term solutions, and examines the complementary role the Federal Government could play. We expect the study to stimulate public discussion, particularly by concerned citizen groups and by government and industry officials at all levels. No doubt the responsible Congressional leaders and committee staffs will consider the study's objectives, options, and alternatives."

The Secretary said, "The Department of the Interior in the near future will weigh all the possibilities laid out by the study and submit recommendations to the President for possible Administration program formulation and transmittal to Congress."

The study found that urban dwellers want close-to-home recreation, are concerned about loss of nearby open space areas, and feel the lack of usable parks and recreation in the central cities. Further, open space acquired on the urban fringe does not meet the highest priority recreation needs; many existing parks and recreation facilities are underutilized and

are deteriorating; utility corridors, rights-of-way, and decaying waterfronts have potential for reuse; and schools, community centers, churches and public buildings are underutilized for public recreation. The study found that many park systems are dependent on Comprehensive Employment and Training Act (CETA) funds provided by the U.S. Department of Labor.

Good management, trained recreation staffs, multiple use, coordination of related programs, and financing are major keys to providing good recreation services, the study notes.

Congress requested the 1-year, $1 million study in September 1976. Field teams headed by Interior Department's Heritage Conservation and Recreation Service (formerly the Bureau of Outdoor Recreation) and the National Park Service studied 17 major metropolitan areas selected as representative U.S. urban areas.

As specified by Public Law 94-422, the resulting report presents objectives, options, and alternatives which Congress and the Carter Administration can consider as part of their overall urban strategy to assist State and local governments in meeting urban leisure needs.

The study lists a dozen objectives which might be pursued in providing adequate urban recreation. It also sets forth a wide range of options for possible use by Federal, State, and local governments. Objectives are:

1. Reclamation and rehabilitation of community open space as an integral part of urban area redevelopment;

2. Preservation of open space as part of a comprehensive urban strategy which could include: use of easements, regulations, and other tools short of outright purchase; assistance to State and local governments in acquiring needed areas, or Federal acquisition with transfer of ownership to the appropriate local government; a comprehensive national reserve program to protect areas in locales with greatest needs; more efficient use of existing public lands and waters; maximization of recreation on water supply and other watershed lands; minimization of development on flood plains, usually most suitable for recreation use; improved access to cleaned-up rivers and water bodies; and protection of existing parks from other developments;

3. Provision of better financial assistance, either by amending programs such as the Land and Water Conservation Fund and Community Development Block Grants, and better management of the General Revenue Sharing Program, and/or by undertaking major new Federal funding initiatives. The latter could include direct financial assistance encouraging wider participation; matching grants for operations and maintenance; facility rehabilitation grants; assistance for employing needed staff and providing transportation, equipment, and supplies; 80 percent training grants; local planning assistance; a variety of local agency credit options; revolving loan funds; and added tax incentives to private enterprises providing public recreation;

4. Full utilization of Comprehensive Employment and Training Act (CETA) programs to meet local park and recreation staffing needs;

5. Joint use of schools, community centers, and private facilities;

6. Development of a national recreation policy with full consideration of recreation needs, problems, and opportunities, to guide programs affecting urban recreation;

7. Use of National Recreation Areas in New York City and San Francisco areas and along Ohio's Cuyahoga River as national urban recreation demonstration and training centers or as model urban parks to show potentials of good urban park techniques;

8. Improvement of accessibility;

9. Support for effective recreation planning and research;

10. Assistance in making environmental education and management integral to urban park and recreation programs; and

11. Strengthening the role of the arts in urban recreation.

Options for meeting these objectives vary from funding a major assistance program to rehabilitating deteriorated parks to establishing a Recreation Advisory Council chaired by Vice President Mondale to encourage cooperative efforts by governments with private landholders, industry, and commercial recreation firms.

Legal options include new legislation, improved uses of State and local regulatory powers, modification of tax incentives, and exchange of unused local park lands for choice sites.

States are urged to consider programs of financial assistance to local governments, relaxed requirements for local bond issues, user fees, and to earmark portions of property taxes for park and recreation programs.

All of the metropolitan areas and smaller jurisdictions need better coordination of their public service programs. Thus, parks and recreation could be dovetailed with school systems, transportation--particularly street use, mass transit service, and pedestrian access--new utility developments, water supply and pollution control projects, police, and community relations programs.

Federal, State, and local programs could consider methods to ensure the fullest possible public participation in planning, development, and management. Safety, vandalism control, broad public information, and education in park and recreation matters require citizen concern and contribution.

Alternative Federal action strategies posed by the National Urban Recreation Study include:

--Continuing support and assistance at the present level;
--Establishing a comprehensive national open space program;
--Coordinating and improving existing programs;
--Initiating new recreation efforts to solve the most critical urban recreation problems; and/or
--Developing a comprehensive national approach to providing close-to-home recreation opportunities.

For Release March 10, 1978

ANDRUS ANNOUNCES SUPPORT FOR DRAMATIC INCREASE
IN RANGE IMPROVEMENT PROGRAMS

Secretary of the Interior Cecil D. Andrus announced Administration support today for a dramatic increase in authorizations for range, soil and moisture, and wildlife programs on public lands administered by the Department's Bureau of Land Management.

The Administration proposes authorizations for these programs over the next 20 years of $1.914 billion, an increase of $912 million above projections based on continuing authorizations at the fiscal year 1979 President's budget level of $53.2 million, Andrus said.

"We want to work with Congress to develop a far-reaching program that will restore and upgrade one of our most precious natural resources -- our public lands," Andrus said. "This has been one of my prime goals.

"I believe through the legislation we are working with Congress to perfect, we can assure a program that restores the rangelands to productive conditions in a cost-effective manner and at the same time will be equitable for the general public and all users of the public lands."

Andrus said that additional resources would be provided through range betterment funds received from earmarked grazing fee receipts that are not subject to authorization. He endorsed the concept of a return of fair market value for livestock grazing on the public lands.

Details of the Administration's range improvement program were spelled out today in testimony by Frank Gregg, Director of the Bureau of Land Management, before the House Subcommittee on Indian Affairs and Public Lands. The Subcommittee is holding hearings on H.R. 10587 and H.R. 10589.

"The western ranges are far below their productive potential," Gregg told the Subcommittee. "We believe it is time to mount a sustained, determined and cost-effective program to improve the productivity of the western rangelands.

"We support a deliberate and adequately funded program for reversing rangeland deterioration, improving forage production and protecting basic soil and water resources as essential to the western public land livestock industry and to the communities whose economics depend upon that industry.

"We see this program as essential to wildlife habitats and populations, and to long-term success in protecting and sustaining wild horse and burro populations in a healthly condition."

Gregg urged the Subcommittee to retain the principle of fair market value as the basis for determining grazing fees.

"H.R. 10587 would legislate the grazing fee formula recommended by a 1976 technical committee to review public land grazing fees. This formula does not provide for fair market value as the explicit basis for fee determination.

"The Federal Land Policy and Management Act makes it the policy of Congress that the United States receive fair market value for the use of the public lands unless otherwise provided for by statute.

"I believe we can get and deserve public support to improve the public rangelands from all interests if we can reach an agreement on fee basis that honestly represents fair market value," he said.

The Federal Land Policy and Management Act lists principle or major uses of the public lands as domestic livestock grazing, fish and wildlife development and utilization, mineral exploration and production, rights-of-way, outdoor recreation and timber production.

"Thus, Congress made it clear that livestock grazing is to continue on the public lands within the context of multiple use, with the best "mix" of uses worked out in specific situations with the participation of all concerned," Gregg noted.

Over the next 20 years, H.R. 10587 would increase authorizations for range, soil and moisture and wildlife programs by approximately $937 million -- a total program increase of 73 percent over the entire period. This expenditure would be in addition to funds requested under the Federal Land Policy and Management Act and those funds from the collection of grazing fees that are specifically earmarked for range improvements.

The Bill also would amend the Wild Free-Roaming Horse and Burro Act to allow granting full title to persons adopting horses and burros removed from the public lands after one year.

The second Bill covered by Gregg's testimony, H.R. 10589, would require BLM to consult with District Grazing Boards and certain adjoining landowners in developing plans for the management of individual grazing allotments (the so-called Allotment Management Plans.)

Gregg said that present law already provides for such consultations and recommended that this particular Bill not be enacted.

For Release March 16, 1978

SOLICITOR DETERMINES OIL SPILL AND FISHERMEN'S GEAR COMPENSATION PROVISIONS OF PENDING LEGISLATION WILL APPLY TO EXISTING OCS LEASES

Interior Department Solicitor Leo M. Krulitz has determined that oil spill and fishermen's gear compensation provisions of the Outer Continental Shelf Act amendments now pending in Congress will apply to all existing leases and to any issued before the measure becomes law, as well as to leases after the amendments are enacted.

In a Solicitor's Opinion and "Notice of Intent" to be published next week in the Federal Register, Krulitz said that if Congress passes the amendments the two provisions will apply to OCS Sale 43, the Georgia Embayment, scheduled for March 28, and OCS Sale 45, the Gulf of Mexico, set for April 25.

The OCS amendments have passed both Houses of Congress and await action by House-Senate conferees to work out differences in the two versions. Both bills call for revolving funds to compensate fishermen whose gear or fishing vessels are damaged due to OCS oil and gas activities and to provide for prompt removal of oil spilled or discharged and compensation for damage from spills.

Both bills would levy fee of up to 3-cents per barrel on OCS oil to support an oil spill fund of up to $200 million.

The Senate bill would impose a fee of 1-cent per barrel of oil or 5,600 cubic feet of natural gas to maintain a fishermen's gear compensation fund of from $2 million to $5 million. The House bill calls for direct payments by lessees, not to exceed $5,000 per year, to support a fund of no more than $600,000.

"The questions of whether the Congress means for these two provisions to apply retroactively--and whether it was constitutional to do so--were raised in the suit against the Georges Bank OCS Sale 42 in January," Krulitz said. The federal district court ruling which enjoined the sale is now on appeal before the U.S. Court of Appeals.

The State of Massachusetts and others argued that the constitutionality of applying the two compensation provisions retroactively was unclear and asked that the sale be delayed until passage of the OCS amendments.

"Interestingly, a large segment of the oil and gas industry--against whom fees would be levied to support the compensation funds--supported Interior's view that both provisions would be constitutional as applied to existing leases," Krulitz said. "Nonetheless, the same questions are being raised in advance of Sale 43 off the Southeast Atlantic Coast. The intent of the Solicitor's Opinion and the Federal Register notice is to clearly set out the Department's position in fairness to those who expect to bid on Sale 43 or later sales."

Krulitz said there is ample evidence that both House and Senate intended the oil spill and fishermen's gear compensation funds to apply to existing leases and no evidence that existing leases would be exempt.

"The similarities between the compensation provisions of the two bills are more compelling than the differences," Krulitz said. "Neither version makes a distinction as to the date leases were issued in specifying the damages recoverable, who may claim them and the liability of operators. The same applies to collecting fees which will support the compensation funds--no distinction is made as to lease date."

Krulitz said there is no question about the constitutionality of applying the fees to existing leases. On the OCS in particular, the federal government

has a continuing regulatory authority which has been repeatedly recognized by the courts. He said the issuance of a lease by the Secretary of the Interior does not give lessees immunity from later legislative regulation.

For Release March 27, 1978

ANDRUS SALUTES SIGNING OF BILL ENLARGING REDWOOD NATIONAL PARK

Secretary of the Interior Cecil D. Andrus today hailed the addition of 48,000 acres to California's Redwood National Park as "a major step toward protecting our natural heritage in the continental United States."

President Carter today signed into law a bill increasing the size of the park and providing for rehabilation of the watershed as well as protecting workers in the lumber industry who might be displaced by the additions to the park.

Andrus noted that protection for the country's largest remaining redwood trees and redwood forests is a process begun decades ago with creation of Redwood State Parks through donations by private individuals. The first stage was completed in 1968 when Congress passed the original Redwood National Park legislation.

Since then, concerned members of citizen organizations have worked tirelessly to encourage Congress to round out the park's boundaries in order to give the kind of protection to these primeval giants that was originally envisioned. The second stage was completed today.

The expansions to the park were necessary because the 1968 boundaries could not protect the world's tallest trees along the banks of Redwood Creek from erosion damage as other trees higher up nearby hillsides, outside the park, were cut down, Andrus said. Ultimately, the Secretary said, the situation became so bad that trees which the park was created to protect were actually threatened by logging activities outside the park boundaries. Stream flows, unchecked by normal forest vegetation, were altering their course and undermining some of the world's tallest and oldest trees.

The Sequoia Sempervirens--the California coastal redwood tree--is among the most ancient species still alive on earth, with evidence linking them to ancestors that lived more than 150 million years ago.

The additions to Redwood National Park, Andrus said, call to mind current Administration proposals before Congress to designate 92.5 million acres of federal land in Alaska as units of the national park, wildlife refuge, wild river and national forest systems.

"In Alaska," Secretary Andrus said, "we were guided by the principle of protecting entire ecosystems and watersheds, so we know that if our proposals are adopted by Congress there is little chance that the boundaries will ever have to be enlarged to protect vital resources. And there is little chance that we will have to buy back for the public any land that was once owned by the public, because we can do the job right the first time."

Andrus noted that the expanded Redwood National Park salvages only a small part of the redwoods that once covered more than two million acres of California coastal areas.

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For further background on Redwood National Park see reverse side of release.

The Redwood National Park Expansion Act, passed by Congress on March 21, adds 48,000 acres to the existing park and provides a park protection zone of an additional 30,000 acres. This legislation, supported by the Administration, will protect the virgin groves of old-growth redwood forests within the park from the ecological threat presented by logging activity on adjacent lands.

In the southern portion of the existing park around Redwood Creek, the Tall Trees Grove, containing the world's tallest tree at 367 feet, has been particularly threatened by erosion and siltation from logging.

The 48,000-acre addition becomes Federal property immediately upon President Carter's signing the legislation. This legislative taking provision will permit the United States District Court to determine the value of the lands and the schedule of payment to the former owners.

The Administration has estimated the cost of this acquisition at about $359 million. Within the park protection zone established under this law, the Secretary of the Interior may acquire lands from a willing seller or upon a finding that physical damage to park resources would occur if the lands were not purchased.

Much of the land added to the park has already been logged and is subject to erosion. This legislation authorizes appropriation of $33 million for rehabilitation of the expanded park area.

The legislation also authorizes the Secretaries of Interior, Commerce and Labor to take such measures as necessary to ease the burden of those people whose jobs may be affected by enactment of this law. The Secretary of Labor has the responsibility to implement employee protection benefits.

Redwood National Park, established on October 2, 1968, had been limited to an area of 58,000 acres in Del Norte and Humboldt Counties, California. Within the boundaries of the National Park are three State Parks -- Del Norte Coast, Jedediah Smith, and Prairie Creek Redwoods -- totalling 27,564 acres. The state park lands may be acquired by the Federal government only by donation. In 1977, more than one-half million visits were recorded in the Federal portion of the present park.

Following enactment of this legislation, the National Park Service will undertake a detailed survey of the newly acquired property, appraising its value, and developing a land rehabilitation program. The new law authorizes the Secretary of the Interior to hire seven full-time and 31 temporary employees to assist in carrying out these programs.

The legislation also requires that a general management plan for the park be submitted to Congress by January 1, 1980. This plan is to include further recommendations on protection of the redwood forest ecosystem, visitor use capacities, and necessary developments, including trails into the Tall Trees Grove.

Further information about Redwood National Park and the new legislation may be obtained from the Regional Director, Western Regional Office, National Park Service, Federal Office Building, 450 Golden Gate Avenue, San Francisco, California 94102, telephone (415) 556-5186.

For Release 8 p.m. (PST) March 30, 1978

MODERNIZATION OF 1902 RECLAMATION LAW IS ESSENTIAL,
SECRETARY ANDRUS TELLS CALIFORNIA FARM SYMPOSIUM

Secretary of the Interior Cecil D. Andrus said tonight that he is hopeful Congress will update the 1902 reclamation law so that the Federal program can achieve its original goals without unfair consequences for family farmers.

"It has become clear that new regulations alone are not enough to modernize the Reclamation Act," Andrus told the Third Annual Agricultural Issues and Outlook Symposium in Visalia, Calif. "The Reclamation Act itself must be reviewed and changed where necessary."

Andrus said he will make recommendations to congressional committees which are to begin hearings in April to consider amending the Reclamation Act of 1902. This law established the Federal program for the building of dams and irrigation systems in the 17 western states.

Andrus said the 1902 law clearly intended the encouragement of family farming on Federal project land, and was designed to keep large corporate operations from monopolizing the benefits. The Secretary said these should remain key objectives of the program.

He rejected the idea that in the formulation of reclamation program regulations the Secretary of the Interior should ignore portions of the 1902 law, such as the 160-acre per person limitation on acreage eligible for Federal project water.

"If the law is defective, it should be amended not by a Cabinet officer or by bureaucratic fiat -- it should be amended by Congress," Andrus said. "As a Nation, we follow the rule of law, not the rule of men. When the Secretary of anything can begin picking and choosing between the laws he will enforce and those he will ignore, we are in deep trouble."

Andrus noted that problems in the reclamation program had been brought to light by three actions during the past year: 1, proposed acreage limitation regulations; 2, the San Luis Unit Task Force report which documented serious problems in that portion of the Central Valley Project in California; and 3, the Central Valley Project Audit which projected a multi-billion dollar deficit in 30 years for the huge project unless certain actions are taken.

Commenting on the Central Valley project, which dates back to 1939 and is the largest Federal reclamation project, Andrus said: "We have paid a great deal of attention to this project because we have a huge investment here in terms of money and in effort and in pride."

The Secretary pledged that he would work with the people in the district to resolve problems and to see that any new regulations do not have unfair impacts.

For Release April 10, 1978

INTERIOR PROPOSES NEW RIVER GORGE, W. VA.
AS NEW NATIONAL PARK SYSTEM UNIT

Secretary of the Interior Cecil D. Andrus has asked Congress for legislation to protect some 60 miles of the scenic New River Gorge in West Virginia by designating it a National River under management of the National Park Service.

"This fine area has been under study for several years, and it is time we move to include it into the National Park System where it belongs," Andrus said.

A National River is a relatively new category within the National Park System. It differs from a Wild or Scenic River in that the latter may be managed by a State or other Federal agency through whose lands it flows. Criteria for a National River are also generally more restrictive.

The New River rises in western North Carolina and flows northwestward through Virginia and West Virginia into the Ohio River system. A small segment of the New River in North Carolina figured in the news two years ago when Congress made it a unit of the National Wild and Scenic Rivers System under State administration -- thereby blocking plans for a utility company dam which would have flooded lowlands considered scenically and historically significant.

But the West Virginia leg of the New River is something else again.

Despite its name, this is one of the oldest rivers in the world, having been formed before the Appalachian Mountains thrust upward. Its banks have risen while the stream continued to dig through the terrain until now they stand as high as 1,300 feet above valley floors, in spectacular patterns, within the Gorge in West Virginia. There the river runs a wild, winding course, foaming over its often rocky bed at high velocities and volumes. It is highly prized by whitewater boaters and fishermen.

Interior Department biologists say there are at least 23 species of plants and animals in the New River ecosystem that are found nowhere else on earth. Evidence of ancient cultures may require much archeological research; some anthropologists believe the river valley was the pathway used by early man on his long trek from the prehistoric Bering land bridge that once linked Siberia with Alaska, across North America to the Atlantic.

More than 90 percent of the New River Gorge is privately owned, and contains some coal deposits which were worked heavily in the 19th Century. Another 6,500 acres are in public ownership as State park and game lands.

Secretary Andrus is proposing only limited authority to acquire privately owned lands, relying heavily on easements by which owners would agree not to change their present land uses in major ways.

Within the nine small Gorge communities, Interior could acquire lands only if they have undergone, or are about to undergo, changes in land use that are incompatible with the purposes of the National River. Some lands would be purchased "in fee" elsewhere within the boundaries of the 62,064-acre proposal if definitely needed for visitor use facilities and accommodations, river access, historic interpretation, and preservation of the Gorge's natural integrity. A corridor has been drawn through the proposed National River map to provide for construction of Interstate 64.

The bill provides $20 million for land acquisition. The 60 linear river miles within the proposal run from U. S. Route 19 to the northern limits of Hinton, West Virginia.

For Release on Delivery --
(Expected at 9 a.m. April 13, 1978

ANDRUS SAYS RECLAMATION ACT SERVED NATION
WITH DISTINCTION BUT NOW NEEDS SIGNIFICANT REFORM

Secretary of the Interior Cecil D. Andrus today said the 1902 Reclamation Act "launched a much-needed social and economic program" 75 years ago and served the Nation with "distinction," but now requires significant reform.

Appearing before the Senate Committee on Energy and Natural Resources, Andrus said changes are needed in the Act to "restore its purposes and clarify administrative practice to keep pace with changing economic and social conditions."

"Over the past three quarters of a century, administrative practices have distorted some of the Act's original objectives and expectations," Andrus declared. "The Department supports the original purposes of the Act of 1902, which provided the framework around which our proposed excess lands regulations were developed.

"Few programs in government have such a rich literature and such a common thread of purpose. National leaders for seven decades have recognized principles which are amazingly similar."

The Secretary reaffirmed his strong support of the objectives and expectations of the 1902 Act and recommended changes in the law to promote the intent of the law in 1978. "We should discourage speculation and profiteering and sponsor the broadest and most equitable distribution of the subsidies associated with the reclamation program," he stated.

Subject to amendments he will propose, the Secretary pledged the Administration's support for passage of reforms and concepts embodied in S. 2606, S. 242, S. 1812, and S. 2310.

At the heart of the Reclamation law is the acreage limitation provision of the 1902 law, Andrus said.

"The proper acreage limitation is unquestionably elusive," Andrus said. "Considerable discussion has taken place regarding the proper number of acres. Any formula has its benefits and detriments, and in the final analysis, it is truly a judgment call. We made a judgment considering all the information made available to the Department over the past 6 months. We have chosen to support a limitation which is on balance consistent with much of the evidence available."

He advocated that the limitation be set for each adult individual, 18 years or older. For each resident adult, he proposed a limit of 320 acres which may be owned and benefited by Reclamation water. If 320 acres is owned, an additional 160 acres may be leased, he proposed.

Under his proposal, up to 480 acres may be owned and leased but no more than 320 acres could be owned by one resident adult and still receive project water. The proposal would allow two adults to receive water for up to 640 acres of owned land and up to a maximum of 960 acres of owned and/or leased lands.

Where non-family corporations or other multiple ownership arrangements now own land and receive project water, Andrus proposed a five year transition period be allowed during which those lands would have to be transferred to an eligible individual or family entity. However, he said, recordable contracts covering excess lands as of the date of the legislation should be honored.

He recommended a phased approach for those who would initially be in violation of the leasing limits. The grace period for meeting the leasing limit would be either five years from date of enactment of new legislation or the duration of a valid written lease in existence on January 1, 1978.

Existing law requires landowners who receive Federally-subsidized water to live on the land, or in the "neighborhood" of the land, which Interior has defined as a maximum distance of 50 miles from the farm.

"I believe this requirement is not only sound but essential to the operation and control of the program," Andrus said. "When land is leased the residency requirement should be met by both lessor and lessee."

Pointing out that residency previously has been determined to not be required and therefore not enforced for 50 years, Andrus said that hardship will be created if the requirement is reimposed abruptly. He recommended transition rules, as follows:

1. New purchasers of reclamation project lands should have to declare their intent to become a resident within three years and must become residents within that time in order for the land to continue to receive Reclamation water. The water entitlement for any land involved in a false or fraudulent declaration should be cancelled.

2. When individuals own land today and do not now meet the residency requirement, residency would be required only after the first transfer of title, and after such transfers, the receiving individuals would have three years to establish residency.

3. Land owned by family corporations or other form of eligible multiple ownership (such as joint tenancies, partnerships, or trusts) whose beneficial owners meet the family relationship test should be treated the same as land owned directly by individuals, so that residency would be applied upon the first transfer or upon addition of family shareholders or other beneficial owners.

4. Lands now receiving project water owned by corporations or other entities whose beneficial owners do not satisfy the family relationship test would continue to receive project water for up to five years, at the end of which time such owners, in order to continue receipt of project water, must have become qualified resident individuals or family entities or transferred their interests to persons or entities so qualified.

5. Finally, an exemption should be provided from the residency requirements for reasons of retirement or health.

These same basic principles would also apply to the phasing in of new acreage limits. However, existing recordable contracts, covering excess land as of the date of legislation, should be honored, Andrus said.

Andrus again endorsed the concept of a lottery or other impartial means to determine, in some cases, persons who may purchase land with Reclamation water benefits.

"Time and again, the point has been raised that any process which dictates when and to whom an owner must sell his land violates property rights and our free enterprise system, and I would agree," Andrus said.

"But," he added, "we are not talking about just any land being sold. We are only talking about the transfer of a very valuable subsidy in terms of water entitlement which goes with land paid for by the general taxpayers.

"No land has to be transferred if the owner chooses not to partake of the Federal subsidy. Access to that subsidy should, with some exceptions, be open to all and not controlled by whoever was fortunate enough to enjoy it before. Only a lottery or some other impartial system can guarantee the openness of opportunity which must characterize the Reclamation program in the future."

The Secretary proposed that the lottery procedure apply after a fair opportunity to purchase land has been extended to eligible persons from three classes of individuals: 1, Immediate family relations (direct lineal relations, brothers and sisters, spouses); 2, Persons who have been tenant farmers and employees on the farm for 10 years or more; 3, Adjoining neighbors within the District.

Andrus also expressed support for legislation to authorize the Interior Secretary to develop an equivalency formula for land within each project that has a frost-free growing season of 180 days or less.

For Release April 17, 1978

TASK FORCE FORMED TO DEVELOP LEGISLATIVE SETTLEMENT FOR CATAWBA INDIAN LAND CLAIMS

Interior Secretary Cecil D. Andrus announced today that a task force has been formed to develop a proposed legislative settlement for the Catawba Indian Tribe's South Carolina land claim.

The three-member task force will include Interior Solicitor Leo M. Krulitz; James Moorman, Assistant Attorney General; and Eliot R. Cutler, Associate Director, Office of Management and Budget. Krulitz and Cutler were also members of the Maine Indian Claims task force which developed the proposed settlement of the Passamaquoddy-Penobscot land claims announced in February.

"The Catawba task force will work closely with the tribe, state officials, the South Carolina congressional delegation and others to work out the fairest possible settlement plan consistent with the Catawbas' rights to the land," said Andrus.

The Interior Department recommended last August that the Justice Department begin legal action on behalf of the tribe to recover its 140,000-acre reservation. The 15-mile square area surrounds the town of Rock Hill in the state's north-central section.

In announcing the legal recommendation last summer, Krulitz noted that the tribe has sought federal help in asserting its claim since 1904. He said the U.S. has a long-neglected duty under the Non-Intercourse Act to nullify the 1840 Treaty with South Carolina.

The tribe occupied a much larger area before 1763 when it relinquished claim to Great Britian on the assurance that possession of the 15 mile square would be secure. After the Revolutionary War, the new U.S. government did not break the 1763 Catawba Treaty, the Solicitor said. The tribe thus claims a vested right in its reservation.

In 1840, after non-Indians had overrun the reservation despite Catawba protests, the tribe finally purported to convey by treaty its remaining title and interest in the 140,000 acres to the State of South Carolina. But the federal government was not involved in negotiations and never consented to the treaty. Under the Non-Intercourse Act, such treaties are void without federal consent.

"We would much prefer a negotiated settlement to lengthy and disruptive litigation," said Andrus. "We hope the task force can accomplish that."

For Release May 5, 1978

ANDRUS RECOMMENDS SANTA MONICA MOUNTAINS BE ELIGIBLE FOR SPECIAL AID IF STRONG STATE-LOCAL LAND USE PLANNING STEPS ARE TAKEN

Secretary of the Interior Cecil D. Andrus today recommended that the Santa Monica Mountains of metropolitan Los Angeles be designated an "Area of National Concern"--eligible for special Federal assistance on condition that a State-local commission come up with an acceptable comprehensive land use plan.

Through a spokesman, Assistant Secretary Robert L. Herbst, the Secretary--currently traveling in the Pacific Northwest with President Carter--said a new approach is needed, in this area and perhaps in certain others across the Nation.

The statement expressed the Secretary's "very strong" feelings that such a special partnership requires that no Federal dollars be spent "unless the State and local governments are committed by being willing to put up their end of the match and to implement appropriate zoning and land use regulation measures."

"We believe the major question in these cases is how the Federal Government should react to large-scale resource threats when local and State governments are unwilling or unable to protect the resource. The question is one of land-use planning--by whom, for what, and at whose expense," the statement said.

"We must separate the unwilling from the unable. We must establish resource standards which allow us to set priorities. We must develop sufficient incentives to encourage aggressive State and local land use planning and regulation to insure that the Federal investment is protected."

A national park unit in this area would be "excessively costly," but the resource merits more Federal participation than the usual 50-50 matching grants available under the Land and Water Conservation Fund, the statement said.

Congress therefore should designate this as an "Area of National Concern," for which a State and local commission would develop a plan which would include preservation and public access to beaches, uplands, streams, park roads and scenic corridors; land acquisition, regulations, and tax incentives; and designation of State or local governmental units responsible for implementing the land use program, Interior's statement said.

Upon approval and implementation of such a comprehensive plan, Federal matching funds would be available up to a $125 million ceiling, on the basis of 75 percent Federal money and 25 percent State funds.

For Release May 17, 1978

ANDRUS ASKS CONGRESS FOR PARK AND RECREATION AID FOR URBAN CENTERS

A $150 million per year Federal proposal to share with the States the costs of upgrading close-to-home recreation needs of city neighborhoods was submitted to Congress today by Interior Secretary Cecil D. Andrus.

Acting on the recommendation of President Carter's April 3 Urban Policy Message, Andrus advised Vice President Mondale that his proposed legislation to rejuvenate deteriorating indoor and outdoor city recreation facilities is based on findings of a year-long National Urban Recreation Study mandated by Congress in 1976.

The National Urban Recreation Study led by Interior's Heritage Conservation and Recreation Service (HCRS) found that many existing neighborhood and community recreation areas fail to serve the needs of urban dwellers because of advanced age, poor design or declining condition of existing facilities.

"We view our initiative as a five-year program which would not extend beyond 1983," Andrus said. "A major objective is to encourage long-term local commitment to continued maintenance of inner city recreation facilities.

"The Carter Administration believes that the proposed Urban Park and Recreation Program will address a recognized need for rehabilitation of urban parks and recreation centers and provide a balanced response to critical recreation concerns of State and local interests," Andrus said.

James A. Joseph, Under Secretary of the Interior, said key elements of the proposed legislation include:

--Authorization of an Urban Park and Recreation Recovery Program to be administered within the Department of the Interior.

--Challenging States, local governments and the private sector to commit their own resources to urban revitalization.

--Targeting the program to fiscally hard-pressed cities.

--Encouraging local commitments to development of overall recovery programs and to ongoing system maintenance.

--Coordination with existing urban development and recreation programs, such as the Land and Water Conservation Fund administered by Interior's Heritage Conservation and Recreation Service; the Comprehensive Employment and Training Act (CETA) of the Department of Labor; and the Community Development Block Grant Program (CDBG) of the Department of Housing and Urban Development.

"The Interior bill places financial assistance emphasis on public facilities readily accessible to residential neighborhoods, including multiple-use community centers having recreation as one of their primary purposes. Excluded are major sports arenas, exhibition areas and conference halls used for commercial sports, spectator or display activities," Joseph pointed out.

The draft bill submitted requires that the Secretary of the Interior use criteria of the Department of Housing and Urban Development to target assistance to local governments meeting standards for physical and economic distress, including such factors as age of housing, per capita income, population decline, unemployment rates and percent of residents below the poverty level.

The State grant formula in the draft bill provides that the Federal share of a project could be as much as 75 percent of cost, with 25 percent borne by the State. This would encourage States to help their hard-pressed cities while allowing flexibility for local park district or municipal taxing authorities as to the share of project costs each would bear.

May 19, 1978

FACT SHEET: MIDDLE DELAWARE RIVER

Several inquiries have been made to this Department concerning the Administration's position on the designation of the Middle Delaware River as a wild and scenic river, the effects of such a designation on the Tocks Island Dam Project, and whether this Department supports deauthorization of the dam project.

This Fact Sheet has been prepared to address those issues.

Question 1. What is the Administration's position concerning the designation of the Middle Delaware River as a wild and scenic river?

Answer: This Administration has proposed designation of the Delaware River as a component of the Wild and Scenic River System within the boundaries of the Delaware Water Gap National Recreation Area (NRA) as depicted on the attached boundary map entitled, "Boundary Map, Delaware Gap National Recreation Area, New Jersey and Pennsylvania" numbered 620-40,000C and dated May 1978. This is the area commonly referred to as the Middle Delaware. This designation would be from bank to bank and is in conjunction with the reauthorization of the NRA.

We have proposed that the existing Delaware Water Gap National Recreation Area legislation be repealed and that the NRA be reestablished in a manner to protect and preserve the unique natural and historical resources of this area keyed to a scenic and recreational, free-flowing Delaware River. Our proposal, in effect, would permit the Secretary, through the National Park Service to (1) hold title to those lands already acquired by the Corps; (2) acquire the lands within the exterior boundaries of the Delaware Water Gap NRA which heretofore could only be acquired by the Corps; and (3) administer the area as one unit, rather than having the area under the jurisdiction of the two Federal agencies. Our proposed reauthorization would not require the acquisition of any land not already authorized to be acquired by the Federal government for either the NRA or Tocks Island Project.

The new boundary for the recreation area would also include an additional 793 acres in three separate locations which lie between the existing boundary and the route proposed by the Corps of Engineers for relocated U.S. Highway 209.

Question 2. What does designation of a wild and scenic river mean?

Answer: The Wild and Scenic Rivers Act, 16 U.S.C. §1271-1287, establishes the standards under which a river may be designated as wild, scenic and/or recreational. It requires that rivers, along with their immediate environment "possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values ..." Further, it sets up requirements for each category of river. A wild river must be free of impoundment and generally inaccessible except by trail; a scenic river must be free of impoundments with largely primitive shorelines, but accessible in places by roads; and a recreational river must be readily accessible

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by road or by railroad, and may have undergone some impoundment or diversion. Designation means that the river will be administered for these purposes.

Question 3. Does designation of the Middle Delaware as a wild and scenic river directly or indirectly deauthorize the Tocks Island Dam Project?

Answer: Our proposal does not repeal Title II of the Act of October 23, 1962, 75 Stat. 1173, commonly known as the Flood Control Act of 1962, which authorizes the Army Corps of Engineers to construct the dam.

Question 4. Does designation of the Middle Delaware as a component of the Wild and Scenic River System preclude the construction of the dam at sometime in the future?

Answer: Our proposed designation and transfer of land and acquisition authority from the Corps to the Secretary of the Interior is solely for the purposes of (1) preserving the natural resources of the area, (2) giving the Secretary sole, rather than divided responsibility for the area's administration, and (3) facilitating the acquisition of land at present, rather than future prices, to be managed as part of the NRA, but which would be available for use in the Tocks Island project, should it ultimately be built. It does not preclude the Congress from transferring land needed for the project back to the Corps should a subsequent reevaluation of the water resource needs of the country demonstrate the need for the dam. In this regard, the current studies being done by the Delaware River Basin Commission concerning water and flood control in the area, should be instructive as to the ultimate future of the project.

While the Wild and Scenic Rivers Act sets as a national policy, that wild and scenic rivers are to be preserved in a free-flowing condition and they and their immediate environments be protected for the benefit and enjoyment of present and future generations, it does not preclude construction projects on designated rivers. Rather, it requires that prior to (1) recommending construction of any water project, or (2) requesting authorization or appropropriations for any project that would have a direct and adverse effect on the values for which such a river was established, a Federal agency must (1) notify the Secretary of the Interior or the Secretary of Agriculture, as appropriate, in writing of its intention to so request, at least 60 days in advance of the request; and (2) report to the Congress in writing at the time it makes its request, the manner in which such construction would be in conflict with the Wild and Scenic Rivers Act.

Notwithstanding the provisions of the Wild and Scenic Rivers Act, Congress may, on its own initiative, pass legislation appropriating funds for the construction of the Project, and transferring the necessary land from the Park Service to the Corps of Engineers.

Question 5. Would this Department support deauthorization of the Tocks Island Dam Project?

Answer: We would not oppose deauthorization of the Project.

LEGEND
BOUNDARY LINE -
DELAWARE WATER GAP
NATIONAL RECREATION AREA
NEW
YORK
PENNSYLVANIA
NEW JERSEY
BOUNDARY MAP
DELAWARE WATER GAP
NATIONAL RECREATION AREA
NEW JERSEY AND PENNSYLVANIA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
N

For Release at 11 a.m., June 6, 1978

PRESIDENT'S WATER POLICY MESSAGE
SENT TO CONGRESS

The Administration's Water Policy Message sent to Congress today by President Carter recommended that States put up a front-end share of the cost of all Federal water projects.

The President said that State governments should assume a share of the cost over and above existing cost-sharing of Federal water projects. The proposal was among several initiatives the President announced to achieve a new national emphasis on water conservation, enhance Federal-State cooperation, increase attention to environmental quality, and improve Federal water resource programs.

Secretary of the Interior Cecil D. Andrus, in a follow-up comment, strongly endorsed the President's recommendation that States share up-front costs of water projects.

"By contributing to the initial costs of water projects, States will exercise great influence over the location of Federal dams as well as play a leading part in deciding the priority rights of projects," Andrus said.

For project purposes with vendible outputs, such as water supply or hydroelectric power, States would contribute 10 percent of the costs, proportionate to and phased with Federal appropriations.

For project purposes without vendible outputs, such as flood control, States' financing share would be 5 percent.

There would be a limit on State participation of 1/4 of 1 percent of the State's general fund revenue per project per year, so that a small State would not be precluded from having a very large project located in it.

"Cost-sharing will occupy a critical role in the President's new water policy," Andrus said. "It is a genuine reform that will assure more even-handed cooperation between States and the Federal Government."

The State cost-sharing proposal would apply on a mandatory basis to projects not yet authorized. However, for projects in the authorized backlog, States which voluntarily enter into cost-sharing arrangements would achieve expedited consideration and priority for project funding, as long as other project planning requirements were met.

Soil Conservation Service projects will be completely exempt from the State cost-sharing proposal, the President said.

Specific initiatives spelled out for Federal agencies include:

— Adding water conservation as consideration in the Principles and Standards which govern the planning of water resource projects.

— Making water conservation a condition of the municipal water supply and sewage treatment programs of the Environmental Protection Agency and the Departments of Agriculture and Commerce.

— Integrating water conservation into the housing programs of the Departments of Housing and Urban Development, Veterans Administration, and Department of Agriculture.

— Using existing programs of the Departments of the Interior, Agriculture, and Housing and Urban Development to provide technical assistance to farmers and urban dwellers on how to conserve water.

— Requiring water conservation in Federal buildings and facilities.

-- Asking all Federal agencies to examine and implement appropriate opportunities for water conservation.

The President also called for improving existing irrigation repayment and water service contract procedures in the Bureau of Reclamation's program and for allowing States the option of requiring market value pricing of municipal and industrial water supplies from Federal projects. In the latter, revenues in excess of Federal costs would be returned to public water supply entities for use in water conservation or rehabilitation of water supply systems.

Until new benefit-cost analysis procedures are prepared by the Water Resources Council, general criteria will form the basis of the President's decisions on water projects. Under those, projects should have net national economic benefits (direct B/C ratio greater than 1 to 1) unless environmental benefits clearly more than compensate for any economic deficit.

The President also detailed other criteria that will form the basis for his decisions on water projects, including the stressing of water conservation and non-structural measures, safety, public support, State financial support, up-to-date planning, and compliance with relevant environmental statutes.

Several initiatives for strengthening Federal-State relations were outlined, including a proposal to increase to $25 million in matching grants the amount available to States for water planning under the Water Resources Council's Title III program, and instructing Federal agencies to work promptly to begin to quantify and resolve Federal and Indian Reserved water rights.

The President also recommended that Congress provide $25 million annually in matching grants for technical assistance to States for water conservation purposes.

Environmental protection initiatives in the message included a directive to the Secretary of the Interior and other Federal agencies to vigorously implement the Fish and Wildlife Coordination Act and other environmental statutes; implementation of Executive Order 11988 on flood plain management; cooperation with States to protect instream flows and groundwater through provision of data and where possible, operation of Federal projects.

For Release June 8, 1978

INTERIOR OPPOSES BILL TO EXEMPT LANDOWNERS
FROM EXCESS LAND REGULATIONS

Interior Solicitor Leo M. Krulitz today told a House subcommittee the Department is strongly opposed to a bill to exempt landowners in California's Kings River and Tulare Lake Basin Project from Federal reclamation law's excess land regulations.

The bill, H.R. 12059, would lift the acreage limitations, residency requirement and excess land provisions for the million-plus acres served by the project.

"Because of the long history of negotiation, litigation and delay, we can only view this bill as a last ditch effort by the large landowners in the Kings River Service area to exempt them from the excess land law," Krulitz said in testimony before the House Water and Power Subcommittee.

"These excess landowners are not, in the main, small family farmers who happened to grow a little too big. There are three holdings over 26,000 acres --one of them 68,000 acres. The 10 largest landowners--including such names as Getty Oil and Chevron USA--hold 200,000 acres, nearly half the excess acreage in the service area."

Krulitz said the excess landowners in the Kings River and Tulare Lake Basin have been enjoying the benefits of the Federal water subsidy since 1954 when water storage in and delivery from the Pine Flat Reservoir began and have been escaping the application of the excess land law through "protracted negotiations and litigation."

"Now that their indefatigable efforts to obtain an administrative and then a judicial exemption have failed at every turn, they once again return to Congress seeking the exemption they sought and failed to receive in 1944," he said.

Tracing the history of the project, Krulitz said Congress hotly debated, then rejected exemptions from reclamation law limitations in authorizing the project as part of the Flood Control Act of 1944.

The contracting entities within the service area have alternately argued over the years that:

--Because the Corps of Engineers, not the Bureau of Reclamation, built the project, it should be exempt from reclamation law;

--Because the project was primarily intended for flood control, not irrigation, reclamation law should not apply;

--If either individual landowners or irrigation districts served by the project repaid to the United States all project costs allocated to irrigation, they should be relieved of excess land provisions.

Krulitz told the subcommittee that these arguments have been refuted repeatedly over the years, first by the Congress, later by Attorneys General and Interior Solicitors in several administrations, and most recently by the Federal courts.

In 1963, the United States and the water users agreed to submit the issue to a court test, to abide by the final court decision, and meanwhile to allow users the benefit of water stored behind Pine Flat Dam.

In 1972, a Federal district court held that reclamation law did not apply to the Kings River Project and, that if it did, its requirements were satisfied as soon as excess landowners had paid their share of construction costs attributable to irrigation.

The U.S. appealed and in 1976 the Ninth Circuit Court unanimously reversed the decision of the district court on both points. The circuit court denied the Tulare Lake Canal Company's petition for a rehearing and early last year the Supreme Court refused without comment to review the appellate court's decision.

"The Congress itself refused to excempt the large landowners from the provisions of reclamation law in 1944," Krulitz said. "That refusal was based on the longstanding policy of the reclamation program that the Federal subsidy be spread widely to small farmers--not to large, corporate agri-business interests."

Krulitz said the policy is as valid as ever and urged the Congress to "once again say 'no' to the large corporate interests and 'yes' to the long-held purpose of the reclamation program--to tell the large landowners either to comply with the law or forego the use and benefits of the taxpayer-constructed facilities."

SUBCOMMITTEE RECESS

Senator STEVENS. Well, I appreciate your courtesy, Mr. Secretary. Thank you very much.

We will recess subject to the call of the Chair.

[Whereupon, at 11:55 a.m., Thursday, June 8, the subcommittee was recessed, subject to the call of the Chair.]

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