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Fiscal Year 1977

94th CONGRESS, SECOND SESSION

H.R. 14231

PART 4—(Pages 1199–1763)

COMMISSION OF FINE ARTS
CONGRESSIONAL WITNESSES
DEPARTMENT OF THE INTERIOR
Bureau of Land Management
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
INDIAN CLAIMS COMMISSION
NATIONAL CAPITAL PLANNING COMMISSION
NATIONAL GALLERY OF ART
SMITHSONIAN INSTITUTION
WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS

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DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1977

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE

NINETY-FOURTH CONGRESS

SECOND SESSION

ON

H.R. 14231

AN ACT MAKING APPROPRIATIONS FOR THE DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1977, AND FOR OTHER PURPOSES

Printed for the use of the Committee on Appropriations

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U.S. GOVERNMENT PRINTING OFFICE

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DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1977

TUESDAY, MARCH 23, 1976

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 Stevens and Hatfield.

SMITHSONIAN INSTITUTION

STATEMENT OF S. DILLON RIPLEY, SECRETARY

ACCOMPANIED BY:

CHARLES BLITZER, ASSISTANT SECRETARY FOR HISTORY AND ART
DAVID CHALLINOR, ASSISTANT SECRETARY FOR SCIENCE
JULIAN T. EUELL, ASSISTANT SECRETARY FOR PUBLIC SERVICE
WILLIAM N. RICHARDS, EXECUTIVE ASSISTANT FOR MUSEUM PROGRAMS
RICHARD L. AULT, DIRECTOR OF SUPPORT ACTIVITIES
T. AMES WHEELER, TREASURER
MICHAEL COLLINS, DIRECTOR, NATIONAL AIR AND SPACE MUSEUM
THEODORE H. REED, DIRECTOR, NATIONAL ZOOLOGICAL PARK
SUSAN HAMILTON, BICENTENNIAL COORDINATOR
JOHN F. JAMESON, ASSISTANT TREASURER, PROGRAMMING AND BUDGET

BUDGET REQUEST

Senator STEVENS. This is the time set for hearing the budget estimates of the Smithsonian Institution for fiscal 1977. The requests total $102 million, an increase of $12.3 million over budget authority appropriated to date for this year. The justification has been included in part 2 of the hearing record.

PREPARED STATEMENT

Dr. Ripley, welcome again to our committee. We would be pleased if you would introduce your associates for the record and highlight

your statement. Your full prepared statement will be included in the record.

[The statement follows:]

Mr. Chairman and Members of the Subcommittee:

It is a great pleasure to appear once again before the Subcommittee on behalf of the Smithsonian Institution and to extend best wishes to its distinguished chairman, as well as to its other members.

Before discussing our budget for fiscal year 1977, you may be interested in learning briefly of some of the exciting Bicentennial events we have planned and of some important Smithsonian activities in the past year. Each museum and gallery will feature at least one special Bicentennial exhibit, offering visitors the opportunity to consider the founding and building of the Nation from many perspectives. A few of the Bicentennial exhibits which will be opening in the months ahead are: "Abroad in America" at the National Portrait Gallery on April 9; "America as Art" at the National Collection of Fine Arts on April 30; "1876: A Centennial Exhibit", featuring a recreation of the Philadelphia Centennial, at the Arts and Industries Building on May 10; and "The Anacostia Story" at the Anacostia Neighborhood Museum on July 5. Beginning on June 16 and continuing through September 6, the Bicentennial Festival of American Folklife will be presenting in the area between the Lincoln Memorial and the Washington Monument an exciting display of the traditions, skills, music, and lore that are the cultural roots of our pluralistic society.

To help visitors find their way to our exhibits as well as the many other attractions in the Mall area, the Smithsonian has joined forces with the National Gallery of Art, the Capitol, the National Archives, and the National Park Service to develop a Mall signage and directory system. The result will be a series of attractive kiosks and three-dimensional maps which will be installed in May of this year. Another cooperative endeavor with the National Capital Planning Commission and the Commission of Fine Arts produced "The Federal City: Plans and Realities", an exhibit which opened in the Great Hall of the Smithsonian Building on February 22, 1976. This exhibit shows graphically and through models how the Federal City was planned. For those unable to visit Washington, our Traveling Exhibition Service will circulate more than 200 exhibits developed for the Bicentennial to towns and cities throughout the country.

In addition to the many exhibit presentations to be offered on both the local and national level, we will be actively involved in several scholarly endeavors of major importance. These include the Inventory of American Paintings Before 1914, for which an annotated directory will be published in early July; the Bibliography of American Art, which will provide a complete and scholarly listing of all important published materials on American art; and the twenty-volume Encyclopedia of North American Indians, which will incorporate what is known to date of all Indian groups north of Mexico. In addition, we anticipate that more than 1,000 scholars will take part in various symposia, financed almost entirely by grants and gifts, relating to the United States in the world and to the contributions made by other nations in the shaping of America. These symposia will result in major publications which, along with the numerous other scholarly and exhibit-related works, will endure as permanent records of the Bicentennial Era.

The public opening of the new National Air and Space Museum on July 4 is certain to be one of the Bicentennial highlights in Washington. We are now in the process of installing exhibits and making various refinements to both public and work areas. It is with some pride that I again can say to you that construction of this building has remained well within budget and that sufficient reserves remain to handle any foreseeable construction needs. For the thousands of people who will be visiting the Smithsonian before the Air and Space building officially opens, we have opened its Independence Avenue Lobby where they can view the Spirit of St. Louis, the Kitty Hawk flyer, the moon rock, as well as other notable air and spacecraft. Response has been enthusiastic--with an average of more than 3,000 visitors each day.

NOTABLE EVENTS OF THE PAST YEAR

Visitor Attendance

Over the past year, the activities of the Smithsonian reached out to an unprecedentedly large and diverse audience. Visitor attendance in FY 1975 to our buildings on and near the Mall was approximately 17,500,000--an increase over the previous year of about 3,800,000, in part resulting from the opening of the highly successful and popular Hirshhorn Museum and Sculpture Garden. An additional 2 to 3,000,000 persons visited the Zoo; some 50,000 persons came to the Anacostia Neighborhood Museum; and approximately 6,400,000 persons viewed traveling exhibitions presented in over 800 installations throughout the United States. In addition, through various lecture and concert series, classes, workshops and tours, as well as such events as the Festival of American Folklife, we have extended our resources and facilities to an audience of additional thousands of individuals.

We continue to seek ways to expand our outreach and to meet various special public needs. For our foreign speaking visitors, we have installed informational tape systems at several museum entrances as well as a visitor orientation slide show with captions in English, German, French, and Spanish in the Great Hall of the Smithsonian Building. Moreover, the planetarium in the new National Air and Space Museum will feature earphones with multi-lingual tape systems; and multi-lingual signs will direct visitors throughout the Museum.

Special attention is also being directed toward the needs of our handicapped visitors. For instance, every exhibit at the National Zoological Park has been made accessible to visitors in wheelchairs. At the Museum of Natural History, large print maps are available to those with low vision, braille labels have been installed in the Museum's Discovery Room, and interpreters for the deaf are provided for many of the Museum's films and lectures. For each gallery of the new Air and Space Museum, taped gallery tours will be available for the blind as well as scripts of audio-visual presentations with photographic margin notes for the deaf. Moreover, as part of the Victorian garden being created behind the Smithsonian Institution Building, the Women's Committee of the Smithsonian Associates is financing, with benefit proceeds, a fragrance garden with braille labels to identify the plants. The problems of the handicapped visitor are not limited to any one building or exhibition, and we are working to identify and resolve the problems in a uniform manner throughout the Institution.

Research and Exhibition

To a large extent, Bicentennial activities have dominated Smithsonian efforts in the past year. I would like, however, to mention a few of the other areas and programs in which important progress and contributions have been made.

The conduct of basic research continues to be a high priority of the Institution. This research contributes to a better understanding of nature's basic laws, processes, and phenomena and provides new information necessary to the solution of such major problems as conservation, pollution, and food production. For example, development of land-use policy by state and local governments is being assisted by research in complex land-water relationships being conducted by the Chesapeake Bay Center. Studies at the Radiation Biology Laboratory on the reactions of organisms to light and the monitoring of ultraviolet rays on the earth are important in the development of more efficient plant growth and in assessing the potential bio-medical threats imposed by a change in the ozone layer of the atmosphere. The Director of the Laboratory, Dr. William Klein, has recently testified before the Senate Subcommittee on the Upper Atmosphere on this problem.

Astronomers at the Smithsonian Astrophysical Observatory in Cambridge working with colleagues at MIT and in Holland have recently identified a massive x-ray source at the center of a globular cluster of stars in the constellation Norma. The source could be

the largest "black hole" ever discovered. "Black holes" are compact stellar objects which have become so dense due to gravitational collapse that not even light can escape their gravitational fields. The object was found during an analysis of data returned by a Smithsonian experiment aboard the Astronomical Netherlands Satellite.

At the Zoo, we are experiencing considerable progress in the breeding of endangered or threatened species as a result of the additional space provided by the Front Royal, Virginia, Conservation and Research Center. Already nearly 100 animals representing 12 species have been assembled in successful breeding populations resulting in the birth of rare animals in larger numbers than ever before at our Zoo. Cooperative breeding programs are in effect at Front Royal with zoos in New York, Minnesota, California and Maryland. In addition, research into the behavior and physiology of the animal collections continues to develop findings important to the animals' well-being and survival. An example was the Zoo's determination of the particular social grouping necessary to achieve greater breeding and rearing success with the highly endangered Golden Marmoset. The Zoo is the world center for the population reproduction of this Brazilian creature, virtually extinct in the wild.

Innovative exhibit techniques are being introduced throughout the Institution to make our exhibits more interesting and of greater educational value. We are currently presenting more exhibits of an interdisciplinary character, drawing from diverse collections and the scholarly knowhow of many specialists and bureaux. Recent examples include "From Reliable Sources", a collaborative effort of the National Portrait Gallery and the Archives of American Art, featuring letters, photographs, and other documents selected from the Archives' holdings; and "A Continent and Its Culture", an exhibit dealing with the cultures and environment of the South American continent. In addition, within our museums a visitor may find living exhibits such as an expanded insect zoo, which displays a live colony of local insects, and a bee hive, which shows the internal working of a bee colony.

In the past, museums have discouraged visitors from touching anything on display, but now special exhibits and areas have been arranged to allow the visitor to pick up and examine objects. The Museum of History and Technology now offers the new Spirit of 1776 Discovery Corner. Within this area, docents offer short presentations while encouraging visitors to touch and handle artifacts relating to the soldier in the American Revolution. As a result of enthusiastic visitor response, additional "discovery corners" are planned for the future.

BUDGET REQUEST FOR FY 1977

Now I would like to summarize and highlight our budget request for FY 1977. In total, we are requesting appropriations of $102,081,000 compared with $95,899,000 now estimated for FY 1976. This represents a total increase of $6,182,000 distributed over six operating and construction appropriation accounts.

The resource requirements which we are presenting to you today have resulted from a thorough analysis and review of base resources and program priorities by senior management officials. Emphasis has been placed on communication between all our bureaux and museums so that we might ensure the fullest and most efficient utilization of our existing resources and identify the selective areas where resource growth could best serve the Institution. Moreover, we are continuing to examine ways to generate private support for needed improvements. Some recent projects which have been accomplished almost totally with private resources are the renovation of the Carnegie Mansion, which will house the Cooper-Hewitt Museum; the construction of public restaurant and classroom facilities in the West Courtyard of the Natural History Building; and the production and installation of a major exhibit on American banking and a new Maritime Hall in the Museum of History and Technology. In addition, substantial private contributions have been received by the Festival of American Folklife for its Bicentennial presentation, and the National Air and Space Museum has received from the Government of West Germany one of the world's finest planetarium instruments for its spacearium.

Looking at each account individually, I would like to review with you a few of the major needs which exist and the accomplishments which we hope to obtain.

SALARIES AND EXPENSES

As detailed in our budget submission, we are seeking an operating budget of $85,100,000 for 50 separate entities, including museums, art galleries, the Zoo and its animal conservation center, research laboratories, special programs, and supporting activities. This includes an increase of $7,804,000 on an estimated FY 1976 base of $77,296,000. This base reflects our actual FY 1976 appropriation of $77,832,000, adjusted to include supplemental requests totaling $3,541,000, primarily for utility and pay raise costs, and a reduction of $4,077,000, resulting principally from the successful completion and phase-out of a major portion of support for our Bicentennial programs.

There are four broad Institutional objectives which will be served by the $7,804,000 requested increase, in addition to the funding of uncontrollable expenses. I will speak briefly to each of these areas.

Research and Exhibition - We are seeking an increase of 15 positions and $771,000 to strengthen selective research and exhibit programs. Research is the keystone of Smithsonian efforts to increase knowledge. This research, which is characterized by long-term continuity, enables us to provide baseline data essential to a better understanding of urgent contemporary problems such as environmental and energy-related issues. The requested increase will be used to support ongoing and important new programs in such areas as tropical biology, solar and stellar physics, atomic and molecular physics, optical and infrared astronomy, radio astronomy, regulatory and environmental biology, ecosystem and land-use research, zoology, and anthropology. Moreover, the requested increase will be used to maintain the Inventory of American Paintings, accelerate development of an oral history of recent light music in America, assist in translation of Far Eastern materials relevant to our collections, and support additional valuable scientific inquiry by individual Smithsonian scientists.

Acquisition, Care, and Accessibility of the Collections - Eight positions and $477,000 are needed to support a minimum collections acquisition program and to improve our efforts to manage and preserve efficiently the millions of objects composing the National Collections. Throughout our history we have relied heavily on donated objects and specimens in forming the National Collections. It is necessary, however, that these gifts be supplemented with purchases if we are to maintain our traditional high quality for reference and exhibit.

An important responsiblity in caring for the collections is the provision of a framework for their effective utilization. Communication between bureaux and between museums concerning collections, understanding what it is that we possess, where it is, and how to retrieve the pertinent data, is an important objective toward which we are working. Major strides have been made in the overall management of collections, with the development of a generalized computer system for the collecting, indexing, and retrieving of data. Computer programs are being developed that can be utilized in many areas with only minor modifications. Benefits from this system will include continuously updated catalogues, cross-referencing indices by categories, and more adequate and timely inventory control. Additional funds are sought to allow expanded use of automatic data processing for collections management purposes, with special emphasis being directed toward development of a uniform, computerized inventory of collections in the Museum of History and Technology.

Preservation of the National Collections continues as a major concern and priority within the Institution. Resources sought this year will provide a textile conservator for the Cooper-Hewitt Museum and additional staff and supplies to ensure the well-being and health of the living collections of the National Zoological Park.

In addition, funds requested in FY 1977 will be used to conduct a Smithsonian-wide collections management study. The study will provide recommendations for the update, revision, and improvement of existing collections management systems. It will also accelerate present efforts to develop efficient methods for controlling the growth of collections including the disposal of unnecessary material.

Documentary and Education Services - An additional 9 positions and $473,000 are needed to increase our capabilities in providing library, printing, and archival services and to expand our training, seminar, and other education activities.

An important means of disseminating the results of our research to the public is through our publications. These range from brochures and exhibition catalogues to multi-volume monographs. Resources are requested to permit efficient organization of our publication activities, to fund the continuing inflationary increases in printing and distribution costs, and to assist in the preparation of education and visitor orientation materials.

A major Smithsonian objective is to make its resources for learning available to the general public and the formal academic community. Since 1965, the Smithsonian has offered support for individual research training to young predoctoral and postdoctoral scholars who require access to Smithsonian staff and collections. Expansion of this program in FY 1977 would allow support for additional highly qualified scholars.

Additional support also is requested for the National Museum Act and for a unique program at the Anacostia Neighborhood Museum designed to train minority citizens in the preparation and techniques of exhibit making.

Facilities Management, Protection, and Management Services - The second largest increase now requested, totaling 92 positions and $2,640,000, is required to provide adequate maintenance and protection for a large and varied physical plant and to ensure the safety and well-being of the large numbers of visitors to the collections. Included in these totals are 27 positions and $1,371,000 which will complete staffing and funding of custodial and protection positions for the new National Air and Space Museum. These additional resources will also provide assistance in accounting, personnel, supply, procurement, and property administration. In addition, five of these positions will be designated specifically for upward mobility programs throughout the Institution.

Uncontrollable Increases - In the final and largest category of needed increase under "Salaries and Expenses", we are requesting $3,443,000 for largely uncontrollable costs:

--the projected higher cost of current employees caused by legislated pay raises, within-grade step increases, special benefits for Canal Zone employees, higher costs of health benefits, and annualizing of costs of FY 1976 employees for whom Congress previously has provided only partial-year funding. ($2,408,000)

--large, unanticipated rate increases on heating steam, gas, oil, and electricity. ($864,000)

--recent postal rate increases. ($79,000)

--higher telephone service costs including those of the Federal Telecommunications System resulting from the proration of recent system improvements to all its customers. ($92,000)

We have just recently determined that these estimated utility and postage increases can be reduced by $223,000 and want to propose your consideration of transferring this amount to urgent building restoration and renovation needs. We would be pleased to provide details on the savings and proposed use at the proper points in the hearing.

SCIENCE INFORMATION EXCHANGE

The Science Information Exchange acquires, processes, stores, and provides information on research in progress as a service to the research community. The FY 1977 budget request for the Exchange is $1,900,000--a decrease of $44,000 from the estimated FY 1976 base of $1,944,000, which includes a pay raise supplemental request of $69,000.

Even with anticipated income from user fees, the requested $1,900,000 may not be sufficient to fund anticipated workload levels and inflationary increases in operating costs. Consequently, the Exchange is now studying the possibility of further increasing its user fees while continuing its efforts to reduce the costs of input processing and to avoid increases in processing backlog. While these actions, barring unanticipated increases in project registration, should ensure adequate funding in FY 1977, resulting budget stringencies will likely mean deferral of other efforts toward systems improvements to increase comprehensiveness of the data base.

SPECIAL FOREIGN CURRENCY PROGRAM

An appropriation of $4,481,000 in excess foreign currencies is requested for the Special Foreign Currency Program in FY 1977. This request, an increase of $3,981,000 above the final FY 1976 appropriation, will allow the Smithsonian to continue a program of grants to United States institutions for field research in those countries where excess local currencies are available. Research will be performed in areas of Smithsonian interest and competence, including archeology and related disciplines, systematic and environmental biology, astrophysics and earth sciences, and museum programs. In addition, funds are included for the third of four payments, each of $1,000,000 equivalent in excess Egyptian pounds, for the campaign to save the monuments of Nubia. These monuments, which were inundated by waters of the Nile River, will be re-erected on a nearby island in a setting like the original one. In past years, these payments were channeled through UNESCO to the Government of Egypt. In order to comply with the terms of P.L. 93-559, which prohibits payments to UNESCO, we are now planning an alternative method for transmittal of the FY 1977 payment.

The foreign currency grant programs make valuable contributions to the furthering of basic knowledge and understanding on both the scientific and cultural levels while creating no additional burden for the taxpayer. Moreover, an important contribution is made to strengthen U.S. cultural relations with host countries as a result of the year-round presence of the grant recipients and their active scholarly collaboration with host country institutions and scholars.

FACILITIES PLANNING, RENOVATION, RESTORATION, AND CONSTRUCTION

We are requesting a budget of $10,600,000 for facilities planning, renovation, restoration, and construction--a decrease of $1,482,000 from the FY 1976 level of funding. This request is distributed among three appropriation accounts:

Construction and Improvements, National Zoological Park	$6,800,000
Restoration and Renovation of Buildings	$3,300,000
Museum Support Facility Planning	$500,000

Construction and Improvements, National Zoological Park - The requested FY 1977 appropriation of $6,800,000 will sustain progress on the implementation of the approved Master Plan and will fund essential repairs and additions to existing facilities.

Of the total requested, an amount of $5,840,000 will permit us to complete construction of exhibits in the Beaver Valley area. This development includes a beaver exhibit; an exhibit of the North American otter with underwater viewing; a major exhibit for seals and sea lions, including a spectator seating area and an underwater exhibit room; some renovation of old facilities for bears; and an exhibit of timber wolves. All aquatic exhibits will have water filtration and circulation facilities to economize on the use of water as well as to protect the animals' health.

With the approval by the Commission of Fine Arts of a graphics master plan for the Zoo and the appropriation of $100,000 in FY 1976, work has begun on the installation of signage, street furniture, and exhibit graphics in and surrounding some of the new facilities. Funding of $100,000 requested in FY 1977 will allow the extension of this effort to other areas of the Zoo. We will request another appropriation of $100,000 in FY 1978 to permit full implementation of the new graphics plan.

An amount of $440,000 is required to continue the program of renovation, repairs, and preventive maintenance of existing facilities in Rock Creek. This funding is required to keep the heavily used Zoo in safe condition for the visiting public, to provide upkeep and improvement of animal enclosures and staff facilities, and to maintain new buildings in good condition. An additional amount of $420,000 is sought to make repairs, modifications, and improvements to the Front Royal animal conservation center. The site is used by the Zoo for breeding endangered wildlife species and for associated conservation and research efforts. Furthermore, it provides selenium-rich hay for Zoo animals and serves as a temporary home for those displaced as a result of Master Plan construction. The availability of this site for breeding purposes has permitted a comprehensive revision of the Master Plan, resulting in savings of over $36,000,000. In FY 1977 a new residence will be constructed; improvements will be made to the electrical, water, and sewer systems, and new bird facilities will be constructed.

Restoration and Renovation of Other Buildings - We are seeking and placing special emphasis on an appropriation of $3,300,000 for the restoration, repairs, and improvement of other Smithsonian buildings and facilities. Included in this request is an amount of $950,000 to repair and replace the badly deteriorated roof of the Arts and Industries Building constructed with Federal funds and opened in 1878; $200,000 to begin phased installation of building equipment monitoring systems in the buildings on the Mall; and $250,000 to continue a phased program for the installation of fire detection and control systems. In addition, $250,000 is requested for road and water system improvements at the Mt. Hopkins, Arizona, Observatory; $400,000 is required to initiate repairs to the Renwick Gallery exterior and the History and Technology Building terrace; and $175,000 will be used for building improvements designed to facilitate access by the handicapped.

Finally, an amount of $1,075,000 is sought for general building and facility repairs and improvements. Heavy public use of these facilities, general deterioration because of age and weathering, and visitor and staff safety requirements create a demand for regular annual attention beyond the capability of our own maintenance staffs. Prudence now demands strong attention to these concerns to prevent far greater trouble and expense in the future.

Museum Support Facility Planning - The final item under the general heading of construction and restoration is for $500,000 which will enable us to begin architectural and engineering planning for the first phase of construction of a Museum Support Facility. Long-range development of the museum support facilities will be undertaken in increments which, in total, will provide some 1.3 million net assignable square feet to meet remedial and projected space needs for the next 25 years. Ultimately these facilities will house, outside of our prime Mall visitor locations, our expanding collections of specimens and artifacts, making them more accessible for research purposes while at the same time freeing up space in the museums for exhibition and other public uses. In addition, they will provide additional space for support and maintenance services as well as the training of conservators. Phase I, a building complex of about 500,000 net assignable square feet scheduled for completion in 1980-1982, will be designed to accommodate the most urgent collections and program space needs as projected through 1986.

This concludes my summary presentation of the Institution's budget request for next year. We are pleased to answer any questions you may have.

INTRODUCTION OF ASSOCIATES

Dr. RIPLEY. Good morning, Mr. Chairman, and thank you.

I am happy to introduce members who are sitting here with me and others who will be testifying from time to time on these matters. On my left is Mr. Blitzer, the Assistant Secretary for History and Art, and Mr. Challinor, who is the Assistant Secretary for Science. On my right is Mr. Wheeler, the Treasurer, and Mr. Jameson, the Assistant Treasurer for Programming and Budget.

In the audience today with me is Mr. Euell, the Assistant Secretary for Public Service, Mr. Richards, who is the Executive Assistant for Museum Programs, Mr. Ault, Director of Support Activities, Mr. Collins, the Director of the National Air and Space Museum, Dr. Reed, the Director of the National Zoological Park, and Mrs. Hamilton, our Bicentennial Coordinator.

Mr. Chairman, I have submitted a statement for the record in connection with these hearings, and I would like very briefly to highlight points raised in that statement.

HIGHLIGHTS OF BICENTENNIAL ACTIVITIES

As you know, this is considered to be a very significant year in the progress of the Republic, and the Smithsonian has been deluged and overwhelmed with preparations for the Bicentennial celebration of 1976.

Among the exhibits we will be presenting in the months ahead is the Bicentennial exhibit of the National Portrait Gallery, "Abroad in America," which will be opening in April.

"1876: a Centennial Exhibit" will be opening in May and will feature a re-creation of the Philadelphia Centennial in the building which Congress in its wisdom created for the Smithsonian in the 1870's to house the exhibits from Fairmont Park. We have renovated the Arts and Industries Building to simulate the appearance it presented when it opened with the Centennial exhibit.

And finally, "The Anacostia Story" is opening in the Anacostia Museum on July 5.

The Bicentennial Festival of American Folklife will be in action from the middle of June through Labor Day, and the National Air and Space Museum will be opening on July 1. In fact it is already partly open to accommodate the swarms of visitors who are already there at this time.

In addition, we have recently opened in the Smithsonian's mother building, the old castle, so-called, an exhibit which is very interesting. I brought a catalog with me. It is called "The Federal City: Plans and Realities". It is the culmination of work done with the collaboration of the National Capital Planning Commission and the Commission of Fine Arts to show how the Federal City has evolved over the years, how it developed from the original plans of Pierre L'Enfant and his colleague, Benjamin Banneker, and how it has evolved. It is an extraordinarily telling exhibit displaying the large original plans for the city from the early twentieth century.

So I urge members of this committee to see this exhibit, if they possibly can, because it will renew one's sense of continuity in the planning for this Capital City itself.

We are additionally planning to circulate some 200 traveling exhibits developed for the Bicentennial to towns and cities throughout the country. In addition, we are working on major historical and documentary publications, such as the "Inventory of American Paintings Before 1914", a "Bibliography of American Art", and the all-important "Encyclopedia of North American Indians", two volumes of which will be coming out this year.

So it is to a large extent that we have been focusing in our buildup on the particular events of this year and the promises we have made to the Congress and to the committees over the years that we will, indeed, be prepared for this year.

I am glad that I can say that we appear to be on schedule with everything, and that we are prepared for the enormous increase in visitation, which already began to build up last year following the dropoff at the time of the gasoline crisis and the Israeli War in 1973.

PUBLIC VISITATION

Last year we had some 17.5 million people visiting the buildings on and near the Mall, a large increase over the previous year of about 3,800,000. In addition, somewhere between 2 and 3 million persons visited the zoo. Nearly 50,000 persons came to the Anacostia Neighborhood Museum last year, and approximately 6.4 million people visited our traveling exhibitions which were presented in over 800 installations around the United States.

So we feel that we are merely attempting to live up to the vast increase in interest demonstrated by the American people in visiting the installations here on the Mall, and the zoo, and the traveling exhibits.

SUMMARY OF BUDGET REQUEST

We are asking for funds this year for a modest increase in personnel, at the same time phasing out, as we promised we would do to the Congress, a major segment of our annual Bicentennial appropriations. We are also asking for an increase to complete staffing and funding for the Air and Space Museum to open it successfully, and to continue the renovation of the zoo and of our essential old buildings here on the Mall.

We are requesting, in addition, Mr. Chairman, planning funds for the authorized museum support facilities. We have discussed this need with you in past hearings. We feel over the next quarter of a century that we must prepare to take the load off the excessive crowding in the Mall buildings and to build a center for conservation and repair and documentation of our priceless collections.

In that connection, I brought along some items which I would like to show you at the conclusion of this hearing, if possible, which demonstrate both the quality of these collections, and also their need for reparation and conservation.

We have, as you see here, a large case containing George Washington's camp stool, newly acquired with private funds, and some other priceless objects which are appropriate mostly to the Bicentennial and to the history of our country.

We feel that we should also demonstrate to this committee that we are continuing self-help efforts and are trying to build up our private resources. We will attempt to work toward what I personally feel to be a more appropriate ratio of costs for this Institution as between the kinds of Federal appropriations we present to this committee each year and the kinds of private support which I feel this Institution merits and deserves.

So with those brief words, Mr. Chairman, I would like to close my summary statement.

DETAILS OF REQUESTED INCREASE

Senator STEVENS. Thank you.

I seem to have the fortune, or misfortune of being the one who is here as chairman each year when you come, Dr. Ripley. That may be good and that may be bad.

How much of this new increase of $12.7 million is actually attributable to new facilities such as Mike Collins' operation?

Dr. RIPLEY. The increase which we are requesting for the Air and Space Museum will complete staffing and funding of custodial and protection positions.

Senator STEVENS. But how much is overall? You are asking for 124 additional positions, a $12.7 million increase over 1976.

You are phasing out $4 million of Bicentennial program costs. Adjusting for that and for pending supplementals, you have an effective increase of $12.7 million over your program level for 1976. That is about a 12-percent increase in this budget.

Dr. RIPLEY. In regard to personnel, we are seeking an increase of $4,053,000 for personnel compensation and benefits. Now almost half of that $4,053,000; namely, $2,008,000, is for within-grade step increases, annualization of legislated pay raises, and benefits for current employees—all required by law and not within our control.

A further $1,380,000 is needed to annualize the funding for positions approved by the Congress but for which only partial-year funding was provided in fiscal year 1976. About two-thirds of that amount is associated with protection, custodial and maintenance staff for the Air and Space Museum.

Senator STEVENS. We note your presentation lists less than half of the increase in your operating account, some $7.8 million, as being uncontrollable. It does seem that there is some substantial increase. We thought when we funded these items for the Bicentennial that we would see a reduction this year. Instead it seems to have become an annual request for an increase in Federal funding for the Smithsonian.

Dr. RIPLEY. We believe that we have demonstrated in the budget this year, Mr. Chairman, a reduction of over $4 million for the Bicentennial expenses. We are anxious to demonstrate to you, and will do so, that there is, in impact, a real reduction, resulting principally from the completion and phaseout of the major portion of support for our Bicentennial.

Senator STEVENS. But even with that, you still have a net increase in budget authority of $8.7 million over the current appropriations. So if you add that $4 million, it is $12.7 million increase, and $102 million budget.

We have, for instance, $2.6 million for 92 new positions in maintenance, security, and management services. It was my understanding that we partially met that request last year. We had a long discussion last year about that too. It is apparent that the needs for maintenance and security are growing faster than anything else in the Smithsonian budget. Why is that?

Dr. RIPLEY. I would like to ask Mr. Jameson to explain these figures, if I could.

COMPUTATION OF TOTAL REQUESTED BUDGET INCREASE

Mr. JAMESON. Sir, if we proceed from the currently available appropriations to the Smithsonian there are some $3.6 million pending in requested pay and program supplementals for the current year. If we assume at this point that Congress will hear our plea for those supplemental appropriations, we then can build on that in terms of a larger 1976 base.

Senator STEVENS. How much is that?

Mr. JAMESON. About $3.6 million, sir, for pay, utilities, postage, other things we have identified to you as being uncontrollable. I think, in a sense, at least from our vantage point, that softens the increase in terms of the total dollar figure that you mentioned.

Senator STEVENS. How many new positions did you net out last year?

Mr. JAMESON. I believe there were about 43, sir. We have shown the reduced amount in our 1976 base before we have sought the additional 124 new positions in 1977.

Senator STEVENS. You have taken away the Bicentennial positions and yet have come back in for more. Is that what you are saying?

Mr. JAMESON. Sir, as the Secretary promised we would not do, we did not enter into long-term commitments for Bicentennial staff. With the exception of two persons, all of the people who were hired on the Bicentennial account were temporary and part-time people who would not remain on the roll.

SECURITY AND MAINTENANCE REQUIREMENTS

Senator STEVENS. We added 43 new people for security and maintenance last year?

Mr. JAMESON. The number added is closer to 198 if we include custodial and other new positions for the National Air and Space Museum and other new space.

Senator STEVENS. And the year before, when Senator Bible was here, we added some. What is your total maintenance and security staff going to be if we give you these new positions?

Mr. JAMESON. Sir, I will try to answer that. Could I ask Mr. Ault to speak to protection needs?

Senator STEVENS. Who has the total number of people that will be involved if we give you these 92 new positions?

Mr. JAMESON. We are requesting a total for 1977 in our Office of Protection Services of 559 people, not all of whom are guards. There are health unit staff and safety people and some administrative people.

Senator STEVENS. Does that include the administrative people too?

Mr. JAMESON. No, sir, that is protection.

Senator STEVENS. How many are maintenance?

Mr. JAMESON. We have our Office of Plant Services request of some 353 people for 1977. These are now primarily trade and craft people who are in support of our building systems.

I want to mention at this point that, unlike many of the other agencies that come before this committee, the Smithsonian is entirely responsible for servicing its buildings. We get no support at all from the General Services Administration in terms of protection, custodial, or mechanical work forces.

Senator STEVENS. That means you are fortunate. You are probably doing it for less than they are. But you still have a substantial request.

Can we get any projection of how many more this area is going to require as we go on? We have had a request for increase every year, I believe, that I have been on this committee.

Dr. RIPLEY. Of course, we will do so, Mr. Chairman, and I think we have the figures available and will supply them for the record.

[The information follows:]

STAFFING FOR PROTECTION AND MAINTENANCE OF BUILDINGS, MUSEUMS AND GALLERIES EXCLUDING THE NATIONAL ZOOLOGICAL PARK

The total needs for the protection, custodial and maintenance staffs for the Mall Museums is 1,481. Included in the fiscal year 1977 Estimates are 1,255 of these types of personnel, leaving 226 to be requested later. The total staffing is based on the current configuration of buildings, current visiting hours, and approximately the same number of visitors. Any drastic change in any of these factors would change the goal. For example, if the Institution is successful in receiving funds to install building equipment monitoring systems in all its Mall Museums, 29 positions could be saved, reducing the goal to 1,452.

The National Zoological Park is undergoing a major renovation and building program. Since many of these facilities are not yet on the drawing board, it is impossible to estimate the total employees needed for protection and maintenance needs.

STAFFING FOR THE AIR AND SPACE MUSEUM AND OTHER FACILITIES

Dr. RIPLEY. We have, of course, among this request for new positions, 27 for staffing of custodial and protection operations of the new National Air and Space Museum. As you know, we have been trying to phase into this each year once the museum got under construction. This will complete the staff positions for that museum.

Senator STEVENS. That will be a full staff for maintenance and security for the new building?

Dr. RIPLEY. As I understand it, that will.

Senator STEVENS. Mr. Collins, do you project any increase in out years for that, or is that a full staff as far as you are concerned?

Mr. COLLINS. No, sir. That is a full staff. I do not predict any additional personnel for the Air and Space Museum beyond fiscal 1977 in terms of the custodial or maintenance staff, our blue collar workers.

Dr. RIPLEY. We believe, Mr. Chairman, our 1977 budget if approved should provide for the commonly known needs of the Air and Space Museum. Regarding actual operating expenses, of course, it will be necessary to gauge how it really works because it has yet to open.

For future years, new personnel requirements have not been determined. But we can identify the following needs.

The zoo, for example, is developing under its construction program, and I feel very strongly that in this day and age considering the

extraordinary value of the animals that we exhibit, that we have to analyze very carefully the potential for vandalism, or even for overfeeding that occurs when hundreds, and hundreds of thousands of well-intentioned and innocent visitors insist on feeding lollipops and other things of this sort, probably highly indigestable, to very valuable animals. We would not be accepting our responsibility if we did not attempt to develop an understanding of the measure of use of the zoo by the public.

REQUESTED POSITIONS FOR FACILITIES MAINTENANCE AND PROTECTION

Senator STEVENS. All right. The 27 employees go to the new Air and Space Museum, where are the other 65 going to be allocated?

Dr. RIPLEY. Mr. Ault, would you be able to analyze that figure for the chairman?

Senator STEVENS. We are talking just about maintenance and security now.

Mr. AULT. We are requesting 33 additional positions, sir, in security, two of which are for the Air and Space Museum, a nurse and an electronics technician; one is a guard for the Chesapeake Bay Center; and 30 are additional guard positions for new exhibits and new halls that have opened. Of the remainder, sir, we are requesting 34 additional positions in our Office of Plant Services. These are basically custodial, mechanical and labor positions. Twenty-five are in the National Air and Space Museum; four are custodial laborers in our so-called metro group that covers the outlying museum and storage areas; one is an insect and rodent control man; and four are gardeners. Moreover, a total of 10 additional custodial and maintenance positions are requested under the justifications for the Museum of Natural History, the National Zoological Park, and the Cooper-Hewitt Museum.

Senator STEVENS. Am I mistaken? Do I gather there are more than the 27 for the new museum?

Mr. AULT. For the new Air and Space Museum, there are 25 in the plant services area, sir, and there are two positions under the Office of Protection Services for a total of 27.

POSITIONS FOR RESEARCH, EDUCATION, AND COLLECTIONS MANAGEMENT

Senator STEVENS. What about these 32 new positions for research, education and collections management, Doctor, where are they going?

Dr. RIPLEY. We can break these down for you, Mr. Chairman. Fourteen of them are requested for research programs, including four for the Museum of Natural History, three for the Astrophysical Observatory, two for the Smithsonian Tropical Research Institute, one for the Chesapeake Bay Center, two for the National Collection of Fine Arts, one for the National Zoological Park and one for the Freer Gallery. Two additional will assist in collections acquisition, including the development of photography collections at the National Portrait Gallery, and the establishment of a mid-Atlantic region for the Archives of American Art. Six will be designated to collections management and conservation, including three to aid in cataloging collections in the Museum of History and Technology, one to assist

in conservation of the textile collections at the Cooper-Hewitt Museum, one to assist in microfilming records of the Smithsonian Archives, and one to assist in the protection and care of the animals at the Front Royal Conservation and Research Center. Two will assist in the development of educational materials for programs of the Chesapeake Bay Center and the Office of Symposia and Seminars; eight will strengthen various support services, including five for the libraries, two for the Office of Computer Services, and one for the press.

Eleven are designated for facilities management, including five custodial and maintenance personnel for the Natural History Museum; three positions for general maintenance services in Anacostia and Silver Hill; one for rodent control mentioned by Mr. Ault, and two to assist in cost estimating and contracts preparation.

One will be used to strengthen security at the Chesapeake Bay Center, and 13 will provide administrative assistance, including two in personnel, one in supply, five in the upward mobility program of the OEO; and as authorized, five who are now private employees at the Astrophysical Observatory and are being converted to Federal employment by request.

EDUCATION AND TRAINING

Senator STEVENS. How much funding in total is the Smithsonian programing for education and training? Please give us the figures for 1974–76.

Dr. RIPLEY. In fiscal year 1974, $1,317,140; fiscal year 1975, $1,511,129; fiscal year 1976 estimate, $1,829,002.

BUDGET FOR RESEARCH

Senator STEVENS. How much do you have in the total research budget this year, and how many people are involved for this year we are in, 1976?

Dr. RIPLEY. The total research budget breaks down into science on the one hand, and history and art on the other, Mr. Chairman. Perhaps Dr. Challinor and Mr. Blitzer together could give those figures for you.

Dr. CHALLINOR. The total science budget, Mr. Chairman, is about $30 million, and covers salaries for all the technicians, curators, and scientists who are doing research at the Smithsonian, as well as all their support in terms of equipment, and the maintenance and the running of laboratories.

AVOIDING DUPLICATION IN RESEARCH

Senator STEVENS. Some of your research which you want to increase, particularly environmental and land-use, sounds much like the research we fund in other agencies. How is all this research coordinated to avoid duplication?

Dr. CHALLINOR. The request for increased research funds in environmental studies, including land and water relationships, is needed to help the Institution maintain its long tradition of basic research in these fields. Because the Institution does not have a mission in the sense that the Department of Interior or the Department of Commerce has, the research we do bears only incidental relation to the work

of these mission agencies. These departments in the accomplishment of their missions often call on the Institution for the basic scientific information we have been accumulating over the years as a result of our basic research.

Through such inter-Government committees as the Ad Hoc CEQ–FCST Committee on Ecological Research and its newly organized successor, the Federal Ecology Committee, the Institution can exchange information on what it is doing with the mission-oriented agencies.

Senator STEVENS. We are trying to see if the research, education and collections management base is increasing, in terms of the amount of money that is involved, as fast as the request for new positions. How can we do that? It does not seem that you have any more responsibilities in research or education, but you have 1.7 million new dollars in that area.

How, if you do not have any program growth in that area, and why should you need so many new people, 32 new people and $1.7 million?

Dr. CHALLINOR. I have the requested positions, Mr. Chairman, broken down by each office, or each research laboratory. I wo uld be happy to break these down and explain why we need them. They are needed not only in the science bureaus, however, but in the history and art bureaus as well.

Senator STEVENS. Is there a real program growth associated with this?

Dr. CHALLINOR. There is some program growth, Mr. Chairman. On the other hand, it is a matter of continuous effort to keep the programs constant because of the increases due to inflation.

Senator STEVENS. This is not inflation, this is 32 new bodies to handle the same amount of money. We would like to have you break that down for the record to see if we are right. While you are doing it, will you give us the breakdown between education and training, research and collection management.

Dr. RIPLEY. Yes, we can provide that.

[The information follows:]

NEW STAFF REQUESTED IN FISCAL YEAR 1977

The following new positions are requested in fiscal year 1977 related to Research and Exhibition; Acquisition, Care and Accessibility of Collections; and Documentary and Education Services.

	Research and education	Acquisition, care, and accessibility of collections	Documentary and education services
National Museum of Natural History	4		
Smithsonian Astrophysical Observatory	3		
Smithsonian Tropical Research Institute	2		
Chesapeake Bay Center	1		1
National Zoological Park	1	1	
National Museum of History & Technology		3	
National Collection of Fine Arts	2		
National Portrait Gallery		1	
Freer Gallery of Art	1		
Archives of American Art		1	
Cooper-Hewitt Museum		1	
Smithsonian Institution Press			1
Smithsonian Institution Libraries			5
Smithsonian Institution Archives			1
Academic and educational programs			1
Office of Computer Services	1	1	
Total	15	8	9

INCREASE FOR THE ACQUISITION AND MANAGEMENT OF COLLECTIONS

Senator STEVENS. We have some problem with regard to possible duplication here. For instance, you have eight of these positions and $477,000 for acquisition and management of collections. We are trying to be friendly. I have problems each year trying to say we are trying to be friendly, but how do you justify this amount of money and the request for those positions? Do you anticipate an increase in collections?

Dr. RIPLEY. Mr. Blitzer, would you like to answer that?

Mr. BLITZER. Mr. Chairman, I can say a word about the requested increases for acquisitions and collection management in the history and art area. I should preface it by saying these divisions are ones that I am not terribly comfortable with in the history and art area, between exhibitions and research, for example. Every exhibition that we do requires research. Often it requires acquisitions; often it requires conservation. But in particular, as far as positions are concerned, we are asking for one position in the National Portrait Gallery, for a curator of photography.

Congress recently amended the legislation of the Portrait Gallery, which previously had not allowed the Portrait Gallery to collect photographs, which we thought was an absurdity, and happily the Congress agreed. Now the Portrait Gallery is authorized to collect photographs, and we are requesting one position for a curator of photographs for the National Portrait Gallery.

In the case of the Archives of American Art, we are asking for one person who would be the manager of the mid-Atlantic regional office of the Archives of American Art. Part of his job would be to go out in the field and acquire archival collections for the Archives of American Art.

I would say on the whole in the history and art area, the answer is yes, we do contemplate further acquisitions. The numbers of things acquired, however, will be very small, but I think very important to the carrying out of the missions of these various bureaus.

Senator STEVENS. You mentioned two. What are the other six positions required for acquisition and management?

Mr. BLITZER. The Museum of History and Technology is requesting three people. This is one computer coder and two trainees in collections cataloguing who will be a part of the upward mobility program. This is simply an attempt to improve our control over this collection and therefore, improve the use of the 16 million objects in the Museum of History and Technology. That is not tied to any unusual increase in the collections, although the collections tend to increase. This is a matter of a sophisticated computer program so that people can find what is in the collection and use it in a variety of ways.

COLLECTIONS ACQUISITION

Senator STEVENS. What is the 1976 base for acquisition and management of collections?

Dr. RIPLEY. The base for the acquisition and management of collections is approximately 300 positions and $7 million. These amounts include jobs and funding distributed over eight museums and galleries and, for its living collections, the National Zoological Park. Included are curatorial, technician, and keeper personnel and funds for their salaries and benefits, travel for field work, storage cases, animal food, and the like. Only a very small amount of this funding, about $500,000, is for the actual purchase of objects or specimens for the collections.

Senator STEVENS. If we understand this, there is a 50-percent increase in the acquisition money for the Smithsonian in this budget. That seems to be a rather startling amount of money. What is it associated with?

Mr. BLITZER. We are asking for an increase of $200,000 on a base of $443,000. So it is indeed approximately a 50-percent increase. It is my feeling, as I look at the art museums and the Museum of History and Technology, that the area in which they suffer particularly is their inability to go out and acquire things that are needed for the collections. These are all needed in various ways.

The four museums for which we are requesting these funds must have growth in their collections. It is the responsibility of the Museum of History and Technology, for example, to keep abreast of technological developments. Often with a relatively small amount of money, it is possible to fulfill that responsibility. For example, a few years ago it came to our attention that the first geodesic dome that had ever been built for anyone to occupy was in southern California and was for sale. I think the man wanted $6,000 or $8,000. He was not a rich man. He felt it belonged in the Smithsonian as a monument of American technology, and we did too. We spent $6,000 or $8,000 for it.

If I might, just for comparative purposes recognizing the differences between the two systems, give you some figures about purchase funds provided by the British Government to their national museums, it will give you some notion of the size of this.

In 1975, the National Gallery in London received $1.7 million from the British Government for purchases, the Tate Gallery, $1.5 million, the British Museum, $719,000, Victoria Albert Museum, $610,000. If you go through the whole list of the British national museums that received Government funds for acquisitions, the total was $5,699,000.

What we are asking is an increase from $443,000 to $643,000, which would bring us up to roughly 11 percent of what the British museums as a whole get from their Government.

Senator STEVENS. Are you sure those are not apples and oranges? Is that acquisition money over there?

Mr. BLITZER. It is solely acquisition money. There are differences. I would be less than candid if I did not say so. Their tax laws are different.

Senator STEVENS. I was going to mention that. There are people who no longer get the charitable contributions, so maybe they are selling them to the Government.

Mr. BLITZER. They get it in estate taxes, but not in annual income taxes. And in fairness, too, their national museums play a larger role than ours, because there are few private museums. Nevertheless, a country that has considerable economic problems does find it possible to give more than 10 times what we are asking, with this increase included.

The other thing I would say, Mr. Chairman, is that in virtually every case the museums in question—our museums—get substantially more in private gifts, either money for purchases or gifts of actual objects for collections, than we are requesting.

I think there are two reasons why it is very important that the appropriated funds at their disposal should be increased. One is that there is a kind of a strategic question. You could need a particular work, or a work by a particular artist at one of these national museums and wait until doomsday for someone to give it to you. You may be getting lots of other wonderful things, but still have this great gap in your collection. In addition, as the Secretary has pointed, out there is a kind of psychological phenomenon that spending money in our own budget somehow seems to encourage private donors. It is seen to be a lively, growing institution, and I think there is a fairly direct relationship between the amount of money we can spend and the amount of private funds, or the number of objects, that are privately donated to our museums.

COLLECTIONS MANAGEMENT STUDY

Senator STEVENS. What is this collections management study?

Mr. BLITZER. In the Museum of History and Technology?

Senator STEVENS. We understand you are going to have a Smithsonian collections management study.

Mr. BLITZER. That is related to the museum support facility. I think someone else should probably speak to that.

Dr. RIPLEY. Mr. Chairman, the collections management study is something that is to be undertaken in connection with the authorized museum support facility for which we are asking some planning funds this year. The Institution's collections, as you know, grow rapidly,

whether or not we have any funds from the Federal side to acquire additional things. We do receive collections all of the time. We cannot properly manage them unless we are concerned with the storage, laboratory research, and collections processing areas.

Our study will present recommendations as needed for improvements in these areas consistent with sound museum practices. All of the Smithsonian collections except those in the National Zoological Park will be considered with due regard to different practices required by varying subject matters in the fields of art, history, and science collections.

It will also provide useful information for our proposed museum support facility, and will serve as a general guide for effective and economical management of collection resources.

Senator STEVENS. How much will it cost?

Dr. RIPLEY. We have justified a request for $125,000 to permit us to retain consultants to work with our staff to update, revise, and improve the existing collections management system.

This has been something which is of great interest to the Office of Management and Budget. They, in fact, have urged us to seek these moneys in order to obtain some understanding of what the processes are, whether they are efficient ones that we ourselves work with, and whether there is any way of improving and streamlining the methods which we use.

Senator STEVENS. Do you believe that kind of study will increase efficiency and lead to reductions of requests? Is that the point?

Dr. RIPLEY. We believe it would be very helpful to have such a study made. It is always an appropriate thing in trying to run a tight ship to get outside objective opinions and see whether indeed we are doing what we think we are doing.

Senator STEVENS. You had one like that on maintenance and security a couple of years ago, didn't you?

Dr. RIPLEY. Yes, I believe we did.

Senator STEVENS. And you have had an ever increasing request for people and money.

REDUCTION IN VANDALISM

Dr. RIPLEY. Well, security, I must say, as far as the institutions on the Mall are concerned, has greatly improved as a result. We have had a marked decline in vandalism and other things on the Mall.

Senator STEVENS. What is the record for this year as far as vandalism is concerned?

Dr. RIPLEY. The record for this year is very much better in the Mall buildings. I am not at all sure that the same could be said about the zoo where the difficulties of construction mean that access to the zoo during hours of the day is possibly less easy to check and control. I am very much concerned that we make sure that we are maintaining animals under conditions of maximum security for their own sake, let alone for the incidents that may happen with a kind of friendly innocence of our visitors.

As you know, the occasional thefts and vandalism go on. But in the Mall buildings I think the record has been very good this year.

I think it is directly the result of beefing up our security and maintenance of collections.

As you know, this has become a pandemic national problem. I should be knocking on wood at this point as I speak to the relative degree of security we have achieved at the Smithsonian.

SAVINGS

Senator STEVENS. Your statement reports a $223,000 savings in estimated cost increases. Why do you recommend shifting that increase to restoration and renovation of buildings?

Dr. RIPLEY. We are particularly enthusiastic about the benefits to be obtained from the installation of building equipment monitoring systems as described in our restoration and renovation of buildings account. By replacing manual and visual inspections of the operation of critical equipment, such as fans, pumps, chillers, and condensors, with electronic sensors and reporting devices, we can reapply some 29 man-years, now devoted to inspections, to the actual job of preventive maintenance to make sure that equipment stays in good working order. We are now very weak in such maintenance work. We are already asking for $200,000 under the restoration and renovation account to begin a phased program of installing this monitoring equipment in our major buildings. The total program is estimated to cost about $1 million of which $200,000 is associated with one building. Should we be allowed to apply the postage and utilities savings to this project, it is possible that we could include a second building at which point manpower savings would begin to be realized.

ATTENDANCE

Senator STEVENS. The attendance figures reported in your statement are impressive—up about 27 percent for the Mall area. How do you assemble your attendance figures?

Dr. RIPLEY. At the Mall museums, the Fine Arts and Portrait Galleries Building and the Renwick Gallery of Art visitors are counted upon entering each building. The National Zoological Park uses a sampling technique to count its visitors.

Senator STEVENS. How do you account for such a large jump in attendance?

Dr. RIPLEY. No doubt it is attributable in part to the apparent easing of the energy crisis. People are not concerned about the availability of gasoline. Fiscal year 1975 was up by 27 percent for those museums and galleries mentioned. The newly opened Hirshhorn Museum and Sculpture Garden accounted for almost half of the increase, 1.6 million visitors.

The Smithsonian has already opened many exhibits that are related to the Bicentennial celebration. The newly opened Hirshhorn Museum and Sculpture Garden has been very well received. The first spring and summer that the Hirshhorn was opened the crowds were so large that the doors had to be shut until the people in the museum left. The National Air and Space Museum even in its incomplete state is attracting large crowds daily to the one hall that is opened for visitors.

SECRETARY'S RESERVE

Senator STEVENS. In your annual justification you give us allocations for these various units of the Smithsonian. Are those the actual amounts that are provided to those units?

Dr. RIPLEY. Mr. Jameson, would you like to speak to that?

Mr. JAMESON. Actual amounts are shown for the year past. Estimated amounts are shown for the current and budget years which include the pending requirements for the pay and program supplementals.

Senator STEVENS. If you changed the allocation, would you seek approval of the committees under normal procedure?

Mr. JAMESON. We would come back to this committee and the House committee, sir, when we are proposing major differences or changes to purposes for which moneys were appropriated by the Congress.

Senator STEVENS. We have received a report indicating that a percentage of each unit's funding allocation, the statement mentions 7 percent, is placed in a reserve fund, the Secretary's reserve fund, and that those moneys are used—7 percent would be approximately $5.5 million—as the Secretary determines. Is that right?

Mr. JAMESON. Sir, we believe it prudent at the beginning of the year with the uncertainty of OMB and congressional action on pay cost and utility cost problems and other problems that may arise around the Institution to set aside for the Secretary's discretionary use approximately 2 percent on operating line items in our budget. But we do not take moneys away temporarily from the Bicentennial program or other programs which have been separately identified and presented to the Congress for programmatic purposes, and are not operating budgets. The amount is something less than 2 percent.

It frequently happens as the year wears on that these moneys are returned to parent organizations. As you remember last year when we came before you and spoke to our needs on the utility funding problem, in all candor at that time we had to admit to you that we were not allowed to come to you for the full amount of our unanticipated utility funding problem last year. We had a shortfall approximating half a million dollars against our needs as estimated.

I believe it was prudent that we had the capability at that point to bail ourselves out, if you will, and not run the risk of violating the law against having a deficiency.

Senator STEVENS. Is this Secretary's reserve fund separately accounted for?

Mr. JAMESON. By me, yes, sir.

SOURCES OF CONTINGENCY

Senator STEVENS. Would you give us a detailed accounting of it for 1974 and 1975 and what you have done this year in 1976?

Mr. JAMESON. We would be pleased to.

[The information follows:]

Sources of Contingency Funds

Science	FY 1974	FY 1975	FY 1976
Assistant Secretary for Science	$2,800	$3,000	$5,000
National Museum of Natural History	153,400	173,000	202,000
Smithsonian Astrophysical Observatory	66,100	67,000	72,000
Smithsonian Tropical Research Institute	20,200	22,000	26,000
Radiation Biology Laboratory	30,100	30,000	33,000
Office of International Programs	20,400	22,000	7,000
Chesapeake Bay Center	3,100	8,000	10,000
National Air and Space Museum	37,800	80,000	106,000
Center for the Study of Man	5,400	6,000	8,000
National Zoological Park	92,000	101,000	117,000
Subtotal	$431,300	$512,000	$586,000
History and Art			
Assistant Secretary for History & Art	$3,100	$5,000	$5,000
Museum of History and Technology	76,000	95,000	106,000
National Collection of Fine Arts	31,100	38,000	44,000
National Portrait Gallery	23,400	29,000	33,000
Hirshhorn Museum & Sculpture Garden	25,700	29,000	33,000
Freer Gallery of Art	4,200	7,000	9,000
Archives of American Art	4,200	6,000	6,000
Cooper-Hewitt Museum	0	3,000	5,000
Nat'l Armed Forces Museum Advisory Brd	3,000	2,000	0
Subtotal	$170,700	$214,000	$241,000
Public Service			
Assistant Secretary for Public Service	$2,400	$4,000	$4,000
Anacostia Neighborhood Museum	5,900	8,000	9,000
International Exchange Service	3,700	4,000	4,000
Division of Performing Arts	6,700	7,000	8,000
Office of Public Affairs	6,200	6,000	7,000
Smithsonian Institution Press	16,900	17,000	12,000
Subtotal	$41,800	$46,000	$44,000
Museum Programs			
Assistant Secretary for Museum Programs	$7,100	$16,000	$20,000
Office of the Registrar	7,800	5,000	4,000
Conservation-Analytical Laboratory	6,000	11,000	11,000
Smithsonian Institution Libraries	23,400	31,000	35,000
Office of Exhibits Central	19,400	19,000	20,000
Smithsonian Traveling Exhibition Service	0	1,000	2,000
Smithsonian Institution Archives	2,800	3,000	4,000
National Museum Act	0	0	0
Subtotal	$66,500	$86,000	$96,000

Special Programs	FY 1974	FY 1975	FY 1976
Bicentennial Of American Revolution	0	0	0
International Environmental Science Program	0	0	$3,000
Major Exhibition Program	0	0	0
Academic & Educational Programs	0	$3,000	3,000
Research Awards Program	0	0	0
Subtotal	0	$3,000	$6,000
Administrative & Support Activities			
Office of the Secretary	$10,200	$15,000	$16,000
Office of the General Counsel	4,300	6,000	6,000
Office of the Treasurer	17,100	14,000	15,000
Office of Personnel Administration	10,400	12,000	14,000
Office of Audits	2,400	3,000	4,000
Office of Equal Opportunity	1,400	2,000	3,000
Ofc of Printing & Photographic Services	14,900	16,000	17,000
Office of Computer Services	7,200	9,000	10,000
Office of Supply Services	9,000	10,000	9,000
Management Analysis Office	4,200	4,000	4,000
Office of Protection Services	83,900	108,000	129,000
Ofc of Facilities Planning & Engineering Svc	0	11,000	13,000
Office of Plant Services	187,700	164,000	196,000
Subtotal	$352,700	$374,000	$436,000
Total	$1,063,000	$1,235,000	$1,409,000

Uses of Contingency Funds
FY 1974-1976

FY 1974

Total Initial Appropriation	$55,438,000
Amount Made Available by Approximate 2% Assessment	$1,063,000
Uses of Funds:	
1. Assistance to bureaus in the completion of special exhibits	$118,000
2. Publication of research reports, exhibit catalogues, foreign language visitor guides, and other materials made more expensive by inflation in paper and printing costs	104,000
3. Help National Air and Space Museum speed-up exhibits production for new building by preparing and equipping a workshop	25,000
4. Emergency repairs to buildings and grounds for public and staff safety	81,000
5. Provide a public dining facility in the Fine Arts and Portrait Galleries Building where none existed	56,000
6. Help Anacostia Museum complete its exhibits production laboratory for minority trainees	56,000
7. Support American College Theater Festival	25,000*
8. Help meet postage costs resulting from study of actual volume and payment owed to U.S. Postal Service	70,000
9. Various protection and security costs associated with: (1) provision for summer evening visiting hours; (2) required protection for rental space; and (3) occupancy of the Hirshhorn Museum and arrival of its valuable collections	312,000
10. Participation in Second Federal Design Assembly	20,000
11. Emergency fumigation of Renwick Gallery resulting from termites in borrowed exhibit	5,000
12. Purchase of computer paper made more expensive by inflation	15,000
13. Small research projects in various units including study of endangered flora	73,000
14. Assist with library expenses, such as the rapid rise in the costs of journal subscriptions and the requirements of gift collections	22,000
15. Limited assistance to a number of small organization units resulting from rising prices, unanticipated staff needs, recruitments earlier than planned, less lapse savings, and other factors	81,000
	$1,063,000

FY 1975

Total Initial Appropriation	$69,789,000
Amount Made Available by Approximate 2% Assessment	$1,235,000
Uses of Funds:	
1. Fund endangered plants study and report required by unanticipated legislation	$44,200
2. Provide proper housing and make other arrangements to receive a gift of rare books and related materials valued at several million dollars	107,000
3. Centralize and improve mammal preparation facilities in the Natural History Building required, in part, by the removal of such activities from the South Yard and other areas undergoing construction	263,000

4. Support American College Theater Festival	$25,000*
5. Rent and relocation expenses associated with facilities consolidation designed to reduce number of rental properties, control long-range costs, and simplify logistics	200,000
6. Emergency bulkheading of Bay Center property to avoid further serious losses from storm damage	150,000
7. Funding rate increases on the costs of steam, electricity, and other utilities not covered by Supplemental Appropriation	445,800
	$1,235,000

FY 1976

Total Initial Appropriation	$77,832,000
Amount Made Available by Approximate 2% Assessment	$1,409,000
Uses of Funds:	
1. Fund continuing endangered plants study	$42,000
2. Additional cost for housing and for making other arrangements to receive a valuable collection of rare books	161,000
3. Continue rental space consolidation project	309,000
4. Improve electrical wiring and other utility systems in the Natural History Building for safety and functional reasons	130,000
5. Emergency repairs and improvements to communications capability and to visitor and staff access facilities on Barro Colorado Island resulting from safety audits	80,000
6. Updating of study to improve parking in the Mall area	15,000
7. Relocation expenses associated with making most effective space allocations in recently restored Arts and Industries Building	101,000
	$838,000

*The chairman of the Interior Subcommittee of the House Appropriations Subcommittee requested the Institution to support this Festival.

Senator STEVENS. I want to make sure we understand it. We do not have a judgment, really. A lot of us have just been told about this.

Does that mean if we have increased money, for instance, for maintenance—all right. I am informed we would not go that way. We allocate a certain amount for particular museums.

Let's take Mr. Collins' new building. A portion of the money that was allocated for that would be put in this reserve account. Could that be used at the zoo?

Mr. JAMESON. I would hesitate to take from Mr. Collins' account because that is so important to us. But, yes, watching over 50 organization units we occasionally do find, that there is a completely unanticipated—I do not like to use the word crisis, because in the framework of the Congress perhaps that is too strong a term, but certainly unanticipated strong problems or opportunities that we have to cope with. For instance, this past year, as you know, we were given a major gift collection of rare books completely unrelated to the timing of the budget cycle. We had, of course, two options. We could elect to receive this gift, or we could elect to turn it down. We thought it was so important that we accepted it.

It came into the Museum of History and Technology. There was absolutely no place in that museum that would house—what is it, Charles, how many objects?

Mr. BLITZER. The objects were in the thousands. The value is in the millions.

Mr. JAMESON. So we thought we should provide some one-time assistance to the Museum of History and Technology for temporary housing. That has been done. I do not believe at that point the museum would have had the capability to respond positively to that opportunity if we had not had this reserve.

Senator STEVENS. How do you determine which units are subject to the reserve assessment and which are not?

Mr. JAMESON. As I mentioned, we have two kinds of line items that we present to you. We have operating activity such as our museums, our galleries, our support activities, which will continue hopefully. The other kind of activity that we have is basically sums of money which the Congress is providing for broad institutional programmatic purposes such as the research awards program and the Bicentennial of the American Revolution account. Since those programs are far ranging across all of the Institution we have normally excepted those programmatic activities. In our operating budgets, however, I think it can be assumed at the beginning of the year that there is always some uncertainty as to when things will happen, when personnel will be hired, for instance.

There is normally some savings that can be anticipated at the beginning of the year. I think we have felt that it was prudent to set aside some moneys for things happening more quickly than we anticipated or things happening that we could not anticipate.

REQUEST FOR DISCRETIONARY FUND

Senator STEVENS. Why didn't you just ask for a discretionary fund? We give several agencies discretionary funds and they report to us on their use. They are for emergency purposes. Why didn't you do that? Why don't we have an item called Secretary's discretionary fund?

Mr. JAMESON. This is probably not a full answer to your question, but I remember once that we asked, and were allowed to seek from the Congress through the OMB $1,000 for a representational fund for the Secretary.

We were encouraged, at least on the House side, to withdraw that request simply because it was probably more trouble than it was worth in terms of the presentation to the committee.

Senator STEVENS. That was the entertainment expense, that brouhaha that we had. I was around then, too, I think.

AMOUNT AND APPLICATION OF THE RESERVE

But there is a problem here in that you apparently have shifted a sizable sum. How much are you shifting annually?

Mr. JAMESON. I do not believe we are shifting major sums of money, sir.

Senator STEVENS. We are told it could amount to $5.5 million this year.

Mr. JAMESON. No, sir. I think if you exclude the programs I mentioned, you are talking at the beginning of the year something more on the order of $1 million. And frequently, as I say, moneys go back to the units.

As an example, to follow through for continuity and consistency, we would have taken from the Museum of History and Technology a sum of money, their contribution, if you will, to establish this fund. My guess is, without having the numbers in front of me, that at some later time the Museum of History and Technology got that sum back.

I think the Smithsonian is required, at least it is expected, that we will cope to the maximum extent possible with our problems within the resources that the Congress provides.

I will say that we have very infrequently—the only time that I remember, with the exception of these last 2 years when we have had major problems with our utility funding, when we have come to the Congress to cope with a problem outside of legislated pay raises was the time we had a fire in the Museum of History and Technology. It has not been our practice or procedure to come back to OMB and to Congress every time things occurred that could not have been anticipated. I think our procedure allows the Secretary to cope with day-to-day operations of the Institution.

FEDERAL SUPPORT

Senator STEVENS. Unless I am misinformed, about 90 percent of your total funding for the Smithsonian is Federal support. Is that right?

Dr. RIPLEY. Do you have that proportion, Mr. Wheeler?

Mr. WHEELER. That is correct, if you include as Federal all of the monies received from Federal agencies for grants and contracts, and also include our construction funds. It comes to slightly over 90 percent of the total.

Senator STEVENS. Is that an increasing or decreasing trend?

Dr. RIPLEY. The percentage of Federal support appears to be decreasing slightly reflecting the success of our own efforts through the Smithsonian magazine, museum shops, product development program, and others.

Senator STEVENS. I think we are going to have to see what the situation is. I can hear the furor that would be taking place if it were determined that the Defense Department had an unreported 2 percent reserve fund that they were allocating to projects that they thought were emergencies.

There is some problem, I should think, about your budget. You automatically ascertain that of the $102 million we provide some 2 percent is not necessary at the beginning of the year. Does the supplemental process not work for these emergencies?

Dr. RIPLEY. Mr. Chairman, it would certainly in no case be even 2 percent of the total, as I think Mr. Jameson has pointed out. We would be very happy to supply for the record a list of what these contingency funds actually consist of, which I believe have been apparently exaggerated in the question of where they have gone and how they have ended up being reapplied to these kinds of situations Mr. Jameson is trying to describe. We could provide that for the record and I think give you an understanding of why it is that we are not constantly coming back and asking for supplemental or special emergency funds for the Institution.

FURTHER REVIEW BY THE COMMITTEE

Senator STEVENS. I am not passing judgment, Dr. Ripley. I think that we are going to have to discuss this with the other members of the subcommittee to determine whether we should have a subsequent hearing. I think we understand full well the type of operation that you have in that you cannot anticipate some things. But we try to analyze very closely the monies that we do give you.

For instance, this $200,000. It is not a great amount of money, but it is one-fifth of the amount that you shifted last year according to this statement. It does seem that we ought to have some procedure that we agree upon. If you need a contingency reserve fund, then we ought to give you one. We ought to give you one and ask what you have used and know your account balance.You should be able to tell us what you have used and ask for additions to it later on. I do think that you are in fact assessing these units which we supported to the maximum extent possible. You are taking money off the top before they get it.

Again, it is no allegation that there is anything wrong about it. Don't misunderstand, Mr. Jameson. We are not saying that you violated any law or anything else. It is just a surprise to us to have this allegation come in and discover that there is such a reserve account.

We think there ought to be a way to set this up so there would be no misunderstanding about this type of a fund.

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PRUDENT MANAGEMENT OF FUNDS

Mr. WHEELER. Mr. Chairman, could I just add, these budgets are, of course, made up about a year in advance of the time the events occur. With some 50 line items, there are bound to be things come up that will present contingencies.

It seems to us only prudent to provide for those within the funds provided to us. The utilities matter, for example, is a major case in point where we were not, through our supplemental, funded with sufficient monies to take care of the increase in utilities last year.

Senator STEVENS. Let me address that. Congress decided each agency had to absorb part of this cost.

Mr. WHEELER. Right, sir.

Senator STEVENS. We assume that you allocated part of those costs to each unit. In effect, you allocated them to a reserve fund which you created by taking part of the money from each unit in the beginning. We are not arguing with the concept that you had. It just seems to us that is not exactly the contingency that we are talking about right now, is it? You are talking about unforeseen circumstances.

Dr. RIPLEY. That was an unforeseen circumstance. We could not, in effect, anticipate after the Israeli war of 1973 that we were going to be in trouble on the whole energy question for maintaining these buildings. So it seems perfectly logical to us that within that framework and not having the money, we would have to allocate some funds. We were not allowed to obtain the necessary funds to be able to pay the bills.

Senator STEVENS. You did have the funds to pay the bills, really. But it meant program reductions. That is what we will have to see.

I don't want to belabor it. I think if you can give us an indication accounting for this reserve account, perhaps we can eliminate any future controversy.

I am sure, again, so that no one will misunderstand, there is no inference that we think you have done anything wrong with the use of this money. We just think that our procedures and yours would be better coordinated if we could understand how you are going to use this money in the first instance.

1976 ALLOCATIONS

Let's go to a related question. As you know, the Congress reduced your 1976 budget request somewhat, and this involved some changes in the allocation of funds among activities and subactivities. In some instances, however, the 1976 allocation in your current justification does not seem to reflect our adjustments. Funding for the Natural History Museum, the Radiation Biology Laboratory, and the international environmental science program seem to be at a higher level than provided. Please supply an explanation for the adjustments.

Dr. RIPLEY. Three actions cause the units you have named to appear to have received more funds than your committee believes they allowed. First, the committee markup sheets include pay costs on a single line. Second, on the same sheets, rent paid to the General Services Administration is also entered on a single line. In the budget justification books these two amounts are spread back to appropriate

units. You will notice that the fiscal year 1976 estimate for the Radiation Biology Laboratory in the justifications for fiscal year 1976 and fiscal year 1977 is $1,631,000 which reflects no change.

Internal reorganization is the third factor that has caused some units to appear to have additional funds. These reorganizations are designed to increase management effectiveness by aligning related or complementary functions or by strengthening the ability of certain major museums and galleries to administer directly key aspects of their programs. These funds continue to be used for the purposes that they were requested but in a different organization. The Oceanographic Sorting Center phase II and the Center for Short-Lived Phenomena were moved from the Office of International and Environmental Programs to the National Museum of Natural History. The international environmental program, formerly in the Office of the Assistant Secretary for Science, was combined with the environmental science program.

REQUESTED INCREASE IN THE FOREIGN CURRENCY APPROPRIATION

Senator STEVENS. Let me ask—I see Senator Hatfield is here.

But there is one special problem. There is an increase requested for the foreign currency account from $500,000 to $4.5 million. Congress reduced that program. As a matter of fact, we tried to meet your request in conference last year. If I remember, you lost part of that money.

What is the justification for that ninefold increase in the foreign currency account?

Dr. RIPLEY. I would be glad to have Dr. Challinor speak to this, if he may, Mr. Chairman.

Dr. CHALLINOR. The Office of Management and Budget feels it is important to get these excess monies spent while they are still available, before they virtually disappear through inflation.

Of that total amount requested, one million is being sought as the U.S. contribution to the salvage of the temples at Philae.

Senator STEVENS. Is that going to go through UNESCO?

Dr. CHALLINOR. No, Mr. Chairman, we are now proposing to make a grant to an American institution, probably the American Research Center in Egypt which is best qualified to report on the conduct of the salvage. The center would then make arrangements with the appropriate government entity in Egypt for the funds to be expended in furtherance of the actual work.

Senator STEVENS. With the use of foreign currency?

Dr. CHALLINOR. Through the use of U.S.-owned Egyptian currency.

GRANTS TO SMITHSONIAN EMPLOYEES

Senator STEVENS. I am told that your 1975 foreign research report indicates that 12 of the 18 museum program grants, and 22 grants overall, went to people who are actually employees of the Smithsonian. Is that right?

Dr. CHALLINOR. In many cases, Mr. Chairman, these grants did go to people who are employees of the Smithsonian who have to compete for their grants with members of American university faculties before an outside review committee. There was no special advantage to being

an employee of the Smithsonian in getting these grants. There is an outside review structure that is set up to review all proposals. Smithsonian scientists have to compete for those awards just as any other university scientist would.

Senator STEVENS. If they get grants, are they on leave without pay from the Smithsonian or what?

Dr. CHALLINOR. These are not salary grants, Mr. Chairman. They are excess foreign currency grants. They can only be used in those countries where the U.S. holds such excess accounts. In most cases the grants pay for travel and expenses to do the research in those countries that have these currencies available. The Smithsonian scientists continue to receive their dollar salaries just as a professor at a university continues to receive his or her dollar salary. The expenses are only for those costs incurred abroad in the host country.

Senator STEVENS. In your 1977 request then, there is about $4 million for research. Is that correct?

Dr. CHALLINOR. We are asking for about $4.5 million minus the $1 million that we are asking for the contribution to the Egyptian Government's conservation project. So, it would be about $3.5 million for American research abroad.

Senator STEVENS. It is a $3 million increase in the use of foreign currency for foreign research. Do you have any program for that?

Dr. CHALLINOR. We have half a million carryover, so we are asking then for another $3.0 million.

Senator STEVENS. You are carrying over half a million?

Dr. CHALLINOR. We had half a million last year, as you recall, in fiscal 1976. So, the total request is $4½ million. Of that we have $1 million to the Philae project. We have an appropriation in fiscal year 1976 of half a million dollars. So we are, in effect, asking for an increase of $3 million worth of foreign currencies for research in fiscal 1977.

Senator STEVENS. Are any of the—maybe I should ask Dr. Ripley this. Are any of the people who are supervisory personnel of the Smithsonian—do they obtain these research grants?

Dr. RIPLEY. Supervisory? Well, I, myself, for example, have received a research grant for work in India. But I did not receive that except by going through the procedures of this outside review committee.

I suppose I qualify as a supervisory person myself.

NUMBER OF GRANTS TO SMITHSONIAN EMPLOYEES

Senator STEVENS. How about the rest of these? As I understand it, 22 of the grants in 1975 were to Smithsonian people.

Dr. RIPLEY. Yes. These are, in effect, for work in archeology, museum programs, biology—I happen to be a biologist. And some—let's see. What else besides this?

Dr. CHALLINOR. Astronomy.

Dr. RIPLEY. Astronomy and astrophysics.

Senator STEVENS. I show 22 out of 40 grants that I know of that went to Smithsonian people. How many total grants did you make last year? I just have a record of 12 out of 18 museum grants and 22 grants overall.

Dr. CHALLINOR. There were 66 separate obligations incurred last year as you can see in this supplemental book. I have not counted out the precise number that went to Smithsonian employees as individuals.

I should point out, however, that under these grants that show Smithsonian scholars as principal investigators, many of the people who are doing the work are from other institutions.

An example of that is grant number 20 on page 23. A $22,929 foreign currency grant in Indian rupees went to Mr. Higgins to do research in India. He is the principal investigator. Nine of the collaborators on this grant since work started came from five different universities.

Senator STEVENS. Tell me why, Dr. Ripley, don't you just ask for the use of foreign currency for the Smithsonian and get away from this grant procedure if you are going to have more than half of your people using these grants?

Dr. RIPLEY. I don't believe we have more than half of our people using the grants Mr. Chairman.

Senator STEVENS. I mean half the people who get them.

Dr. RIPLEY. I would prefer not to have any such figure loosely bandied on the record because I don't think it is true.

Senator STEVENS. I don't mean half of your people. Pardon me. That was an error. But half of the people getting grants, as we understand it, are Smithsonian people. Is that correct?

Dr. RIPLEY. We would be very happy to supply for the record—we could present this thing in detail to show what proportion were people who are employed through the Smithsonian and what proportion were collaborating research people from other institutions.

SMITHSONIAN EMPLOYEES RECEIVING GRANTS IN 1975

Senator STEVENS. I think you are right. We certainly don't want to confuse the record or get something in the record that is incorrect. We will correct it and put in the record a request that you will tell us how many people got grants in 1975 who were employees of the Smithsonian.

Dr. RIPLEY. Yes.

[The information follows:]

Number of Smithsonian Employees Receiving Grants in FY 1975
and Number of Their Collaborators from Other Institutions

In FY 1975, 21 grants were awarded to Smithsonian employees. Under these grants, 243 scholars from more than 30 non-Smithsonian U. S. institutions and from more than 19 foreign institutions participated.

SFCP Supplement Item No.	Principal Investigator	Non-SI Participant
9.	Research on ethno-technology revealing a rich but rapidly disappearing craft tradition in Pakistan dating back as far as 4000 B.C. Efforts are being made not only to preserve artifacts of these crafts but to promote the continuance of small craft industries and the production of handmade objects.	
	C. Evans and G. Van Beek	Donald M. Godden Department of Industrial Arts, University of New South Wales Sydney, Australia
		Owen S. Rye Department of Industrial Arts, University of New South Wales Sydney, Australia
		Mr. Charles F. Walton University of New South Wales Sydney, Australia
20.	Study of the interdependence of living organisms in some tropical freshwater Indian lakes to develop principles of management of biological productivity in these lakes and to compare results with similar studies of temperate lakes in North American and thus contribute to understanding the processes of life in all bodies of freshwater.	
	R. Higgins	Dr. George W. Saunders, Jr. Atomic Energy Commission
		W. John O'Brien University of Kansas Lawrence, Kansas
		Gary L. Vinyard University of Kansas Lawrence, Kansas
		Dr. G. R. Marzolf Division of Biology Kansas State University Manhattan, Kansas
		Mr. Mitchell Taylor Division of Biology Kansas State University Manhattan, Kansas
		Mr. Ian E. Buchanan 415 Webster Traverse City, MI

Georgiana Herold
Department of Biology
University of Pittsburgh
Pittsburgh, Pennsylvania

Gregory Goetz
Department of Biology
University of Pittsburgh
Pittsburgh, Pennsylvania

Mr. William P. Coffman
Department of Biology
University of Pittsburgh
Pittsburgh, Pennsylvania

21. Research on the migratory birds of India, both from the point of view of development of international conservation efforts and from that of the long distance transmission by birds of viruses and parasites harmful to birds and in some cases to man.

S. D. Ripley

Mr. Salim Ali
Bombay Natural History
Society, India

22. Participation in the 26th International Congress of Physiologists in New Delhi, India to report on research on air-breathing fishes and their ability to survive under adverse conditions, which is part of the larger study of the evolution of the earliest animals from aquatic to terrestrial forms.

J. B. Graham

None

29. Comparison of American and Polish corals of the Devonian period (more than 345,000,000 years old) to identify types of coral and thus gather evidence related to the movement of the Earth's continents.

W. A. Oliver

Dr. J. Fedorowski
Polska Akademia Nauk
Zaklad Paleozoologii
Pracownia
ul. Mielzynskiego,
Poznan, Poland

30. Research collaboration between scientists of the Smithsonian Tropical Research Institute (Panama) and of Poland on the biological productivity of tropical freshwater lakes contributing to understanding the processes of life in all bodies of freshwater.

M. Moynihan

Dr. Zbignie Maciej Gliwicz
Department of Hydrobiology
Zoological Institute
University of Warsaw
Warsaw, Poland

39. Support for the Mediterranean Marine Sorting Center, a joint U. S.-Tunisian facility for sorting, classifying and distributing marine biological specimens from the Mediterranean sea for study by marine biologists around the world, thus facilitating the long-term process of comprehending the biology of this sea and how man's activities are degrading it.

R. P. Higgins

117 recipients of specimens' throughout the world.

34 Tunisian technicians and scientists

41. Operation of the Smithsonian Astrophysical Observing Station at the Uttar Pradesh State Observatory, Naini Tal, India, the only satellite tracking station in the Smithsonian Astrophysical Observatory network located on the Asian land mass. This station makes possible observation of man-made satellites passing over South Asia. It employs tracking cameras and contributes to studies devoted to an understanding of the movement of the continents, the shape of the Earth, the nature of its upper atmosphere, and how these are influenced by the Sun and the other planets.

G. F. Weiffenbach

Dr. S. D. Sinvhal
Director
Uttar Pradesh State
Observatory
Manora Peak
Naini Tal, India

44. Forces affecting the movement of continents and associated volcanic and earthquake activity can be studied by monitoring the continental movements and the wobble of the Earth at the poles from observatories precisely located, not simply by latitude and longitude, which is a system tied to shifting continents, but by establishing its location in relation to the Earth's more stable center of mass. This collaborative study will establish this kind of location for a Polish observatory at Borowiec and permit substantial additions of data to studies of the Earth's dynamics.

E. M. Gaposchkin

W. Dobaczewska
Polish Academy of Sciences
Poland

10 Polish scientists and
technicians

45. Support of a colloquium to devise and adopt common and precisely-defined reference coordinate systems to use in the place of latitude and longitude, which is a system tied to shifting continents, for the study of the Earth's dynamics, like the movement of the continents themselves, and to help standardize worldwide the study of astronomy and geodesy.

G. C. Weiffenbach

Dr. Barbara Kolaczek
Institute of Higher
Geodesy and Geodetical
Astronomy, Warsaw
Technical University
Poland

Dr. Charles Lundquist
Director
Space Sciences Laboratory
Marshall Space Flight Center
Princeville, Alabama

Dr. Jamusz Sledzinski
Warsaw Technical University
Institute of Higher
Geodesy and Geodetical
Astronomy, Warsaw Tech. U.

25 international participants

46. Research on fossil Paleozoic graptolites, small, floating marine animals widely distributed around the Earth from about 350,000 to 600,000,000 years ago, whose evolution is important to dating rocks which are in source of oil and gas.

K. M. Towe

Dr. Adam Urbanek
Institute of Paleontology
University of Warsaw
Poland

49. Research for a descriptive article on the traditional dance rituals of Burma for publication in the Smithsonian magazine.

E. K. Thompson

Carl Mydans
c/o Times, Inc.
Wisma House
Singapore

Shelly Mydans
c/o Time, Inc.
Wisma House
Singapore

50. Study of medieval arabic manuscripts in Egypt to obtain material for inclusion in a history of Islamic contributions to the development of medical science.

S. K. Hamarneh

Mr. Muhammed Shalabi
National Library
and Archives
Cairo, Egypt

51, 64 & 66.
Folklore research to identify and select folk artists and craftsmen from Egypt, Poland and Tunisia to participate in special American Bicentennial programs in the United States illustrating the cultural traditions of immigrants to the United States.

R. Rinzler

Carole B. Cornell
Boston, Massachusetts

Dr. Sami Hanna
University of Utah
Utah

Dr. Martin Koenig
New York City

Ethel Raim-Zinser
Philadelphia

52. Research for an article for the Smithsonian magazine describing the work in Egypt being undertaken with international support to save the ancient Temples of Philae from destruction by the waters of the Nile River.

E. K. Thompson

Mr. Dmitri Kessel
46 Avenue Gabriel
Paris, 8, France

Mr. Alfred Friendly
47 Cheyne Place
London, S. W. 3, England

54. Research in India for a publication on the accomplishments of private American universities and similar institutions working in association with the Smithsonian.

J. Cornell

None

60. Support for the travel of a Polish entomologist to Washington to take up a postdoctoral fellowship at the Smithsonian Institution to do research on the North American Tachysphex, a variety of wasp.

E. Davidson

Dr. Wojciech Pulawski
Zoological Institute
Sienkiewicz 21, 50-335
Wroclaw, Poland

61. Preparation by the National Portrait Gallery of an American Bicentennial book of essays which will provide a perspective on the United States as viewed from abroad in the period from The American Revolution to the First World War.

M. Pachter

Professor Longin Pastusiak
Polish Institute of International Affairs
Warsaw Poland

62. Support for a Polish - American seminar on the organization of programs to preserve cultural monuments, buildings and other properties, and the technology required for such work.

P. Perrot

Kent Barwick, Director
Municipal Art Society
41 East 65 Street
New York City, New York

Mr. James Biddle, President
National Trust for Historic Preservation
740 Jackson Place, N. W.
Washington, D. C. 20006

Mr. William Bodley Lane
Architect
101 South Harrison Avenue
St. Louis, Missouri 63122

Mr. Grady E. Clay, Editor,
Landscape Architecture Magazine

Dr. Sidney Cohn, University of
North Carolina, Chapel Hill,
North Carolina
Mr. John P. Conron, New Mexico

Professor John J. Costonia,
University of Hawaii, Manoa

Mr. John L. Frisbee
National Trust for Historic Preservation

Hanka Gorska
Los Angeles, California

Truett Latimer, Executive Director
Texas Historical Commission

Philip H. Lewis, Jr.
Director
Environmental Awareness Center
University of WI

Mr. John D. McDermott
Executive Director
Advisory Council on Historic
Preservation

Lawrence J. Majewski, Chairman
Conservation Center
Institute of Fine Arts,
New York

Robert H. McNulty,
National Endowment for the Arts

Professor W. Brown Morton
International Centre for Conservation
Rome, Italy

Mr. Norman Pfeiffer, Hardy
Holeman Pfeffer Association
New York City

Dr. Edward V. Sayre
Bellport, New York

Arthur M. Skolnik
Pioneer Square District Manager
Seattle

Benjamin H. Weese
Chicago, Illinois

Carl B. Westmoreland
Madisonville Housing Service
Cincinnati

George L. Wrenn, Society for
the Preservation of New England
Antiquities, Boston, Mass.

Mr. David G. Wright
National Park Service
Denver, Colorado

63. Preparation of animated films in Poland that will provide visitors to the National Zoo in Washington with information on the evolutionary origins, the behavior and other aspects of lions, tigers, and other large cats.

T. Reed &
K. Loveland

Jadwiga Ciszewski
Film Polski
6/8 Mazowiecka Street
Warsaw, Poland

Witold Giersz
Film Polski
6/8 Mazowiecka Street
Warsaw, Poland

65. Support for the travel of a Polish professor of international law to Washington to take up a year's fellowship at the Woodrow Wilson International Center for Scholars to do research on environmental protection and international law.

J. Billington

Dr. Karol Wolfke
Professor of International
Law, University of Wroclaw,
Poland

UNIQUENESS OF SMITHSONIAN FOREIGN CURRENCY REQUEST

Senator STEVENS. My second question, though, is why don't you just ask for a foreign currency authorization? We have others. We have the Bureau of Mines which uses the foreign currency authorization. There are others where employees traveling abroad will use the money. They don't go through this procedure. They just use them.

As a matter of fact, we use them ourselves. I used some to go to a satellite conference. So there is nothing wrong with using them. Why don't you do that instead of having this competition with other people for the Smithsonian?

Dr. RIPLEY. I would be happy to answer that question, if I may, Mr. Chairman.

Senator STEVENS. Yes.

Dr. RIPLEY. I am well aware of the fact that our program of requesting foreign currency is unique. It is not paralleled by Government agencies. This is partly because of the nature of the Institution and partly because I assumed the responsibility for our special approach in 1965 when I first asked for such funds from the U.S. Treasury. The tradition of the Smithsonian is for the increase and diffusion of knowledge. In our first request for excess foreign currencies, we sought research funds to collaborate with scientists both in the United States and abroad on the basis of our being a scientific and research institution. This followed my discovery in 1964 that it might be possible to seek foreign funds in the field of archeology, which in the United States was started by the Smithsonian. Since that time, we have requested funds for astrophysics and astronomy for which we are, in fact, the American parent institution going back to the 1870's; for museum programs for which, I think, we are acknowledged to be the parent organization also; and in aspects of biology, particularly field biology, in which we are paramount going back to development of exploring expeditions in the United States like the Wilkes expedition, which we did not finance but which was financed by the Navy, and like all the subsequent surveying expeditions of the 1960's and 1970's of the last century. It seemed to me highly appropriate, and I so testified before the Congress in the formative years of our foreign currency program, that we develop such a unique approach to it. That is, that we seek funds explicitly for research to be performed in this kind of marriage between a scientist in the United States and a scientist abroad. This has absolutely nothing to do with the quotas of foreign currency available to members of the Congress or available on request to agencies of the U.S. Government for travel, surveys, studies, conferences and the like abroad.

This is a serious attempt to develop a capacity for research abroad in which we live up to the tradition of the Smithsonian for the increase and diffusion of knowledge. That is, for the performance of original research abroad using American scientists and foreign scientists in those few countries where the funds are available as excess. These are very few as you know. There are only seven, I think, today. And, also, for the dissemination of knowledge which would mean eventual publication. Wherever possible we also publish research results abroad using foreign currencies.

Senator STEVENS. Well, Senator Hatfield wants to ask some questions.

Again, you recall, I believe when Senator Bible was here we had lengthy problems concerning publicity of the Smithsonian about prior trips in which you were involved. I think perhaps we are hypersensitive to some of these problems.

ROYALTIES FROM RESEARCH PUBLICATIONS

I foresee a problem. Let me ask a question so I don't state it wrong. If a member of the Smithsonian uses one of these foreign currency grants to go overseas for research and publishes as a result of this research, who obtains the royalties from the publication?

Dr. RIPLEY. The royalties from the publication? It depends in each case on the situation. We would be glad to give you a demonstration of this. I think you are referring to publicity last year in connection with a nonforeign currency publication.

Senator STEVENS. I am not referring to that. I am referring to that long series of articles that Senator Bible read to you about the trip to—where was it? To Nepal or India or somewhere. A trip that you took that was highly criticized—to Senator Bible's credit, he was trying to find a way to defend you, but the problem that I am raising is what happens to this research when someone publishes a book? Does that become the Smithsonian's property?

Dr. RIPLEY. I don't know what happens.

Senator STEVENS. We are talking about a Smithsonian employee who goes overseas on a foreign currency grant for research and publishes a book.

Dr. RIPLEY. I don't know that there have been books published in this connection. There are scientific papers published, if that is what you mean. But these are generally not royalty-producing publications.

Senator STEVENS. I see.

Dr. RIPLEY. If you published in a serial such as the Journal of Biological Society of Washington—to take just an example—it would produce no royalties. It is hard enough for the Biological Society of Washington to publish at all. And they do that through the procedure of raising dues from members.

Senator STEVENS. Sensitive to the future, we want to make certain that there are no grounds for criticism.

Dr. RIPLEY. Yes. I think we can demonstrate in every case that these have been valid scientific projects and that few if any could turn out to be money making projects. This is not the obective of our program.

[The following statement was subsequently submitted by the Smithsonian:]

FOREIGN RESEARCH REVENUE POLICY

On the few occasions when the work product of a grant has produced some revenue, that revenue generally has been applied to further the purposes of the grant. When the work product is further developed for commercial sales and it appears that royalties might result, we examine each case to determine whether the royalties might exceed a fair return to the scholar for his additional effort and expenses attendant upon rewriting, editing, and otherwise turning the work product of the grant into a publication that might appeal to a broader audience. We believe this policy furthers the increase

and diffusion of knowledge. Also, we insist upon receiving copies of the new commercial product as well as a license to use that product for all Smithsonian programs.

Senator STEVENS. There is no allegation in this questioning. We want to make sure of that. We are just saying that there appear to be some difficulties downstream as far as the use of these funds is concerned. We would like to help you get them.

SMITHSONIAN SUPPORT FACILITY

Under construction you are asking for $500,000 to begin designing a museum support facility. You speak of phases and building complexes. Just what is involved in total in this project?

Dr. RIPLEY. The need to improve the Institution's storage practices was pointedly referred to in the general hearings on the Smithsonian Institution held before the Subcommittee on Library and Memorials of the Committee on House Administration in July of 1970. At that time the Institution already had under development plans for a major facility to house properly those collections which, although indispensable for research or historical purposes, could not be displayed on the Mall, either due to a lack of space or because their character would not have sufficient interest for the general public.

For a variety of administrative and budgetary reasons, and because the plans then developed were not fully responsive to the long-range needs of the Institution, they were not carried out, even though the needs were then pressing.

In the interim, these needs have increased. In spite of the new museums that have joined the Smithsonian family, notably the Hirshhorn and the Air and Space Museums, there are still vast problems in finding the square footage necessary to house reserve collections, and, more importantly, the spaces that are available for the most part do not provide relative humidity and temperature controls which are mandatory for conservation purposes.

The situation is drastic at the Museum of Natural History where the two wings that were completed in 1965, primarily for office, laboratory, and storage purposes, have not only been filled but are overflowing. Hallways, corridors, and attic areas are totally unsuitable for housing ordinary collections, let alone some that are irreplaceable. The situation has deteriorated to the point that approximately 30 percent of the exhibit spaces originally constructed for the delectation and information of the general public have been decked over to provide office, laboratory, work and storage spaces. Yet the collections must continue to grow if that museum is to remain responsive to the needs of scholarship and continue to be a major national and international resource for the study of systematic collections in biology, anthropology, archeology, botany, mineralogy and other fields.

The first phase of development calls for construction of a building designed to accommodate and overcome the pressing and critical storage and research space needs now confronting the Museum of Natural History, and will also provide laboratory and work space for the Institution's Conservation-Analytical Laboratory.

SCOPE OF PROJECT

Senator STEVENS. Tell us a bit more about this project. What is the total design cost? Where will these facilities be located? How many structures are envisioned? What is the estimated total cost and what construction period is projected?

Dr. RIPLEY. The results of our study suggest that the first phase of the museum support facility plan requires a building of 546,900 gross square feet, or 453,800 net square feet. It is estimated that it will take three to four years to construct the building which, when completed, will allow for the removal of a substantial portion of the following collections and staff activities from the Museum of Natural History: Anthropology, Botany, Entomology, Invertebrate Zoology, Mineral Sciences, Paleobiology, Vertebrate Zoology, the X-ray Laboratory, Aquatic Laboratory, and related functions. It would provide for the Institution's central Conservation-Analytical Laboratory and for the unique conservation laboratory of the Department of Anthropology, the only one in the nation that provides training in the field in which there is a desperate shortage of competent personnel.

The facility would also provide temporary space for some of the most pressing needs of the Museum of History and Technology, particularly for its unrivaled collection of musical instruments.

In addition, the Oceanographic Sorting Center which is now housed in costy rented spaces, which are inefficient and removed from the main center of Smithsonian research, would now be able to integrate its collecting and research functions within the mainstream of the research carried out by the Museum of Natural History.

It is the Institution's intention that an ancillary, but important component of the support facility should be a small visitor center where exhibitions, seminars, and other cultural activities specifically designed for the use of local schools and area residents could be presented. The wooded ravines which border the proposed construction site to the north provide an excellent opportunity for ecological demonstrations, the development of nature trails, and interpretive programs that should be of great benefit to area schools.

FACILITY LOCATION

After an exhaustive analysis of real estate in and around the Washington area, we have come to the conclusion that the very best possible site for a museum support facility is the land adjacent to the property now owned by the Institution in Suitland, Md., and where, at present, major portions of the reserve collections of the National Air and Space Museum and of the National Museum of History and Technology are stored in generally unsuitable Butler-type buildings. Thirty-five acres of land adjacent to the Institution's original 21 acres have recently been transferred by GSA to the Institution, and an additional 47 acres adjacent thereto are expected to be excessed by the Department of the Army in the near future and would also be available for the museum support facility site.

COST ESTIMATES AND CONSTRUCTION PHASING

While it would be premature at this time to provide a firm estimate, the current study suggests that the first phase of the museum support facility would cost approximately $39,856,000. Included in this total is an amount of about $2,200,000 for architectural and engineering fees. We are seeking $500,000 with which to start detailed planning. Legislation is currently pending in Congress to authorize construction of the museum support facility. If approved, the Institution would hope, in future years, to follow the fast track method, allowing construction to begin while the design process is proceeding. It is anticipated that this method would result in substantial economies in view of the rapid pace of inflation which shows no sign of abating in the next few years.

Development of the support facility is proposed to occur in a series of carefully planned and logical stages extending over the next 25 years. When completed, the support facility would for all practical purposes satisfy the storage, research, and conservation needs of the Institution well into the next century.

Subsequent phases of the long-term museum support facility plan will be directed toward relieving storage and research facility problems now faced by the other museum bureaus, other research components, and central services such as libraries, archives, exhibit preparation, and maintenance. It is projected that each phase may take generally a period of five years to complete, but this is subject to adjustment as planning proceeds. A total estimated construction cost for the entire program cannot be given now. We would hope to proceed a phase at a time, reassessing our requirements, and seeking planning and construction funds on the basis of these assessments.

RESTORATION AND RENOVATION OF BUILDINGS

Senator STEVENS. You say in your statement that you are placing special emphasis on the $3.3 million for restoration and renovation of facilities. Why?

Dr. RIPLEY. In my annual report for 1975 sent to Congress I stressed the need to renovate, repair, and refurbish our old buildings and their surroundings. The task of keeping level with decay and heavy use is an awesome one which never ceases. Lack of regular annual attention to these needs can only result in more expense and trouble in the future.

Reasons behind our request include the facts that we have a large and aging physical plant encompassing several million square feet of space with several buildings 100 years old and older. For instance, almost one-third of our request is for funds to replace the Arts and Industries Building roof. Public visitation, now over 17 million persons a year and growing, inevitably causes heavy wear and tear on doors, walls, floors, and plumbing. We must be mindful of safety improvements including fire detection and control systems, repairs to roads, and the like. Furthermore, we must improve on our record of being accessible to handicapped persons. We should look also for ways that one-time investments in building systems can reduce requirements for manpower to serve current systems. And, finally, we should make improvements from time to time to meet program needs.

MOUNT HOPKINS OBSERVATORY

Senator STEVENS. You are asking again for road money for the Mount Hopkins observatory. Why is this road such an expensive and continuing project?

Dr. RIPLEY. Mr. Chairman, this project is expensive because the road is long, some 17 miles, was originally designed, prior to our usage, as only a fair weather road for occasional traffic, safety considerations were not prominent, and road work, as all other types of construction these days is expensive. The project is continuing because we realized that this work had to be phased consistent with other Smithsonian needs and with the observatory's ability to manage the project. As you know, we now have an active observatory program on the mountain with year-round traffic including trucks and passenger vehicles. Operational needs, as well as public safety, demand that we improve this access to the observatory.

Senator STEVENS. Will your $250,000 request complete this road project and the proposed new water system?

Dr. RIPLEY. The funds requested for fiscal year 1977 are sufficient to complete the proposed new water system and to continue work on the most hazardous sections of the road. We will have to come back in future year budgets to continue road work.

FRONT ROYAL CENTER

Senator STEVENS. On your 10-year, $91 million master plan for the zoo you show some $10 million for the Front Royal Center. Over what period is this to be expended and generally for what?

Mr. REED. Over the next 10 years, we will need $10,000,000 in total to accomplish the goals established for the Front Royal Center. It is to be a model and productive site for breeding endangered exotic species and for gaining understanding of the behavioral requisites of survival of such species. Often these activities are undertaken in cooperation with other zoos.

The money needed will vary from one year to the next depending on the nature of the work to be done. For example, by 1980, we will request approximately $2,000,000 in order to construct and equip a visitor center. We want the public to gain understanding of the need for the center's conservation efforts, without hampering those efforts through introduction of the public. The bulk of the $10,000,000 will go toward preparing the site for animals—rhinocerous, pheasants, ponds for ducks, golden lion marmosets, giraffes and other important species. Shelters must be constructed, and areas will need to be fenced.

This work is being planned carefully so as to make for corresponding savings in our Rock Creek master plan. Buildings housing breeding research projects and maintenance activities must be renovated. In order to catch up with years of insufficient maintenance and repair, large scale painting, roof maintenance, road repairs, electric system care and work to assure an adequate sewage/water system will consume the remainder of these funds.

I hope you will come to Front Royal soon to see the many improvements made there in the 2 years we have had the property.

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Senator STEVENS. Why do you need to build a new residence at the Front Royal Center? Aren't there enough existing structures to utilize?

Mr. REED. The property at Front Royal consists of 3,150 acres. There are approximately 90 miles of perimeter fencing. We now have 75–100 animals there scattered across the site. For security and care, we need a dwelling located in an area of the center not often visited and well away from the location of existing dwellings. Present dwellings are clumped together in a central area well away from remote areas of the property and out of sight of the animals. A dwelling properly located would permit a center employee to live there and insure protection and care to the animals.

MASTER PLAN COSTS

Senator STEVENS. How much has the estimated cost of your master plan changed since it was adopted?

Mr. REED. At today's construction costs, the original master plan would amount to $128,000,000. However, with the acquisition of Front Royal, substantial reductions to the master plan have been made possible. The cost of the master plan including the Front Royal Center now will be $92,000,000. That is a savings of $36,000,000. We can pursue the conservation breeding efforts and scientific studies at Front Royal which were originally built into the master plan. We can have less construction at Rock Creek. For example, we will use our existing giraffe exhibit with its expanded yards for exhibition while maintaining the planned breeding herd at Front Royal. That saves space, habitat arrangement, and building for privacy that would have been needed in Rock Creek. These other works have also been eliminated because Front Royal permits us to rethink our needs at the zoo—new great apes house, North American animals and plains animals. We are delighted at the opportunity to save precious funds without sacrificing the aims of the master plan, while at the same time achieving the Front Royal program with its extraordinary importance.

ZOO BICENTENNIAL PLANS

Senator STEVENS. How are things looking for the Bicentennial summer?

Mr. REED. We are pleased that Bicentennial visitors will be able to enjoy our new lion-tiger facility, which will be a zoo pacesetter. Also, the newly enlarged elephant and giraffe yards will please the visitors, and the renovated monkey house with its innovative furniture for the monkeys will be a joyful visit. We have lengthened our hours to accommodate visitors.

Our only problem is that parking will be very scarce. We are arranging for parking elsewhere in town with bus shuttle service to the zoo to offset the problem. We will be as ready as we can be. It will be an interesting year.

WEST COURT FACILITY

Senator STEVENS. Please tell us more about the financing of the west court facility construction in the Natural History Museum.

Mr. WHEELER. This new structure, to house dining, education, and museum shop facilities for the visiting public, Smithsonian associates and staff, will cost about $3.1 million of which approximately $2.0 million is being financed from our unrestricted general funds and the balance by a $1.1 million loan.

Senator STEVENS. How will the $1.1 million loan be secured?

Mr. WHEELER. The loan will be repaid over a 10-year period from the commissions earned by the restaurants, according to our agreement with the concessionaire.

Senator STEVENS. By using the unrestricted general fund for the balance of project costs you will apparently be taking these private funds from other activities. Please supply details on how this money will be made available.

Mr. WHEELER. There is no taking of private funds from other activities. As you will note in the financial report in our budget submission, beginning on page E–13, the unrestricted private funds come from several sources. These include investment, gift, and concession income; revenue-producing activities; and earned overhead expense recovery.

Prior to about fiscal year 1974, after meeting expenses associated with this activity, the net gain, or bottom line, if you will, was such a small amount that there was little or no opportunity for creative and productive applications of funds to serve Smithsonian operations and the visiting public. Through the success of the Smithsonian magazine, our museum shops, the product development program, and other self-help efforts, we can now serve some of these needs and make some provision for the future. Over the past 2 years, for the first time, we have been able to make funds available to the museums for their uses. Second, we have been able to make some contributions to physical plant needs, most notably, the west court project already discussed. And third, we have been able to make major steps towards our goal of building our endowment.

All in all, I would say we are giving rather than taking.

Senator STEVENS. Senator Hatfield?

FOLKLIFE ACTIVITIES

Senator HATFIELD (presiding). Thank you, Mr. Chairman. I do have a few questions I would like to ask about the folklife activities.

As you know, I have been interested for quite some time in getting the Folklife Center established in the Library of Congress and making sure that the National Endowment of the Arts lives up to its mandate to fully fund the folk art programs with the Smithsonian, this should be a tripartite approach to the whole matter of folklife culture in this country in sustaining meaningful programs in this field.

Therefore, Dr. Ripley, I was particularly interested in your indication in your budget justification, that the annual Washington Folklife Festival that has been, I believe, performed now for about 10 years, would be abandoned after this particular year. According to my understanding, you had intended to substitute, therefore, a group of what might be called minifestivals.

I believe this sounds totally acceptable as far as my own view about folklife activities is concerned. But I wonder if you can tell me, one, how much of the budget is set aside for this new format

that you visualize? And what kind of personnel are you retaining to continue this work? And will it be experimental or do you anticipate that this would become a permanent part of the program?

ORIGINATION OF THE SMITHSONIAN FOLKLIFE FESTIVAL

Dr. RIPLEY. Thank you, Senator Hatfield.

I would like to say, first of all, how delighted I am to have found over the years a very genuine recognition and interest by Members of the Congress in the fact that the Smithsonian has pioneered in trying to have a folk festival in Washington each year. Perhaps folk festivals are more needed in particular States and perhaps we can serve a need in collaborating with particular States in producing minifestivals in specific phases of folk culture.

But the mere fact that we have been able to start with Congress' help and encouragement a folk festival here in Washington has, I think, helped to underscore the importance that we all feel in the preservation and survival of ethnic traditions and folk cultures in this country.

The legend of the melting pot has been, I think, surely dealt with. And we have been able in this particular part of this generation to show quite conclusively that ethnic groups and traditions are alive and well. This was one of the concepts which moved me to begin the folk festival in the first place. The other was to attempt to provide a sense of vitality and liveliness to the existence of museums. I thought that museums were not model palaces removed from people, but rather, vital institutions, demonstrating to young people especially that the very tools, the very instruments and objects exhibited so exceptionally in the glass cases, had indeed been made by the hands of man and were capable still of being made in the tradition of the craftsmen in the preservation of their crafts.

So, to the extent that I was interested in starting a folk festival on the Mall under the auspices of the Smithsonian, I had this dual concept. One was the craft concept, a continuation of crafts. And the other was the presentation of ethnic groups and traditions that were associated with those crafts.

Now, as far as this year is concerned, Senator Hatfield, it is important to note that in connection with the Bicentennial year, we have made a supreme drive and effort to raise funds to make this a summer-long folk festival. I am well aware of the fact that there will be a special strain on the city because of extra visitors from all over the United States, as well as abroad. And I am very conscious that this influx of visitors could be one of the key features of the presentation of the Bicentennial Folklife Festival in Washington, emphasizing in its very existence not merely the historic traditions, the three-cornered hats, muskets, the 1776 revolutionary tradition, but rather all the other things that happened in connection with immigration and the arrival of so many kinds of peoples during the ensuing 200 years.

I have with me today Mr. Euell who is the Assistant Secretary for Public Service and who has under his guidance the folk festival program. I think that he can speak not only to the arrangements for this maximum festival for this year and our real burst of activity,

but also to our hopes of continuing the folk festivals in the future and for collaborating with the Endowments and the Library of Congress on the Folklife Center.

If I may, Mr. Euell.

Mr. EUELL. Thank you very much.

Senator HATFIELD. My questions were, how much of the budget is set aside for these purposes that we have outlined? What kind of personnel do you plan to retain within your agency to continue the work? And what will be the status of this new format down the road? Is it going to be a permanent part or is it only a temporary experiment?

MINI-FESTIVALS

Mr. EUELL. I will answer the first question in terms of the budget. We traditionally keep within our base some money for folklife festivals. We will continue that in the base.

Generally, over the last ten years, we have had to rely very heavily on support from other agencies, from unions, the AFL–CIO. So we do a lot of fund raising on our own.

We have begun to do some initial planning in terms of the minifestivals which was a new concept. We felt that we needed to do something with a little more focus after this very large presentation that we planned this year. This is why the notion of the minifestival was presented.

It essentially will be a series of small 3- or 4-day festivals really focusing on one area. It might focus on labor or Native Americans. It will possibly focus on old ways in the New World. We will use essentially the same kind of format, but more concentrated and more focused, and, hopefully, will have publications coming out of that experience.

ESTIMATED COSTS

Dr. RIPLEY. May I interject here, Senator Hatfield, the base that Mr. Euell is speaking of is $167,000.

Senator HATFIELD. That is what I am trying to get out of the testimony.

Dr. RIPLEY. I'm sorry.

Senator HATFIELD. How much of the budget?

Mr. EUELL. It is not clearly identified. It is approximately $165,000.

Senator HATFIELD. Does that represent the federal funding of this program?

Dr. RIPLEY. Yes.

Mr. EUELL. The appropriated base.

Senator HATFIELD. Not the money that you raise on the side in some other solicitations?

What do you anticipate as any major change in the personnel that you have now when you move to the minifestival format?

Mr. EUELL. There will be a reduction in personnel, certainly, because we have added a very large staff, all term or temporary appointments, for the Bicentennial year. We also have a core staff of Federal employees.

Senator HATFIELD. Could you supply for the record what you estimate or will be projecting as a reduction of staff in the folklife area?

Mr. EUELL. Yes, we could, sir.

[The information follows:]

POST-BICENTENNIAL FOLKLIFE STAFF

The Division of Performing Arts, the Smithsonian bureau with primary responsibility for the Bicentennial Festival of American Folklife, has a full-time permanent staff of 11 employees who will remain on board following the Bicentennial Festival. To supplement this staff, an additional 220 temporary or term employees are being hired, the majority of whom will be on duty during the peak period from April through September. Following the Festival, these term and temporary appointments will be terminated. With the initiation of minifestivals in fiscal year 1977, it is estimated that 50 temporary employees will be hired to staff each minifestival with the majority on duty for a six-week period.

ONGOING FOLKLIFE PROGRAMS

Senator HATFIELD. The present Festival of American Folklife is in the Division of Performing Arts. I trust that the Smithsonian's commitment to American folk culture goes beyond the festival and that Division. Would you elaborate on other folklife programs, both within and without the Division of Performing Arts, giving details of present funding, staff, research, publication, and presentation? I assume these programs will continue in the future, supplementing and complementing the minifestivals. Would you provide a breakdown of what portion of the fiscal year 1977 budget will be devoted to staff, research, publication, and presentation of folklife programs, within and without the Division of Performing Arts, other than the proposed minifestivals?

Dr. RIPLEY. As to permanent programs at the Smithsonian Institution devoted to American folk cultures, the Department of Anthropology, National Museum of Natural History, conducts research, maintains collections of objects and records, publishes reports and has educational programs which relate to folk culture of many peoples of the world including especially Africa, Asia, Oceania, and North and South Americas. Among these programs is the American Indian archive training program designed to interest American Indians in becoming archivists and historians and to instill in them a desire to learn more about their heritage and to share this knowledge with all Amercans by publishing and preserving the surviving records of their past. Trainees receive copies of materials relevant to their tribes to take back to their home communities for placing in cultural centers, tribal offices, or museums. These materials have also been used in local Indian schools as curricular enrichments. In addition, there is continuing research in ethnology by the curatorial research staff.

Please let me detail the funding for the record.

[The information follows:]

FY 1976/1

Program		Staff/Research	Publication	Presentation
A.	American Indian Archive Training Program	2/$22,000	yes/2	no
	Curatorial Research	6/250,000	yes/2	exhibitions
B.	Pre-Industrial Cultural History	3/49,000	$2,500	exhibitions
	Ethnic and Western Cultural History	2/39,000	2,500	exhibitions
C.	Urgent Anthropology Program	0.5/17,000	no	no
	National Anthropological Film Center	0.5/11,000	no	film presentation
D.	Concert Series (supported through private funds)/3		no	concerts
	Smithsonian Collection (supported through private funds)		yes	no
	Jazz Heritage	0.4/12,000	no	no

/1 Estimated Fiscal Year 1977 costs will be comparable to FY 1976 costs with the exception of the Anthropological Film Center the salary of whose director will be annualized for a total cost of approximately $30,000. Since exhibitions cover a range of disciplines to develop a theme, it is impractical to attempt to break-out costs of the folk culture segments.

/2 Publication costs for the Department of Anthropology are $20,000 annually but are not broken down by program; rather funds are allotted on priority bases.

/3 These programs are traditionally funded from sources other than Federal appropriations, with a relatively small amount of administrative staff time of Federal employees required.

In addition to the above identifiable expenditures, funding is required for maintenance of collections, conservation, data control, support.

FUTURE PLANS FOR MINI-FESTIVALS

Senator HATFIELD. Do you anticipate that this will be something you will pursue on an annual basis or on an ongoing basis? Or is this just a short-term experiment? How do you look at it?

Mr. EUELL. I would have to react to this personally, because it is somewhat unpredictable. I think after we do the very large 12-week presentation this summer, we are going to attempt to do the minifestivals and make adjustments as we see how they go and how they work. I would not want to call it a temporary or short-term experiment. I think that we should try this system or this new approach for at least 4 or 5 years to see how it works and whether it is really effective.

Another point is that we want to see just how much of an effect we have across the country as the result of our pioneer work in this area in terms of what we call applied folklore which means, largely, presentation. We would want to see if we could continue to have an impact and continue to lead and make a contribution in this field. I would suggest that if we found, after a few years, we were not making a contribution and continuing in a leadership role here that we might not continue to do it. But that is a personal viewpoint.

LOCATION OF COLLECTIONS RELATING TO INDIAN CULTURE

Senator HATFIELD. Dr. Ripley, as it now stands, if one comes to the Smithsonian to study Indian culture in the United States, one, I believe, goes to a building that is primarily devoted to animal and fish exhibits and insect forms. Would it not make sense, perhaps, to have all materials relating to Indians and other folk cultures as a part of your Center for the Study of Man?

In connection with this I would like to submit for the record an article by an anthropologist in "American Folk Life." This anthropologist is Ward H. Goodenough. He makes the thesis here relating the desirability of including Indian and other folklore studies with an anthropology program. That triggered my question to you today as to the location and the interrelatedness of this discipline.

Dr. RIPLEY. If Ward Goodenough, whom I know, referred specifically to the Smithsonian, he might have noticed that the building in which these collections reside and in which the people work happens to be the Department of Anthropology and the Center for the Study of Man which are conjunct or called the National Museum of Natural History and the National Museum of Man.

Senator HATFIELD. Then you reject this particular identification or description of where people would go to study?

Dr. RIPLEY. If Mr. Goodenough had bothered to read my earlier annual reports which led to the designation of the museum in these dual categories, he would have noticed that I, myself, railed against the idea that a Museum of Natural History should contain anthropological collections and research dealing with so-called native peoples around the world. Whereas, next to it is a museum of history and technology which without further ado might be thought to be a repository of the culture of the white folks.

In fact, I said this and have said it several times that it is an anomalous thing. Traditionally, historical society in this country and museums of art tend to have concentrated essentially on Western European cultures, their traditions and inheritance in this country. Whereas, museums of natural history tend to include anthropology which, in general, has to do with minority evolution, minority culture in other parts of the world, as well as the earlier cultures in this country prior to the coming of the Western Europeans. This anomaly I hoped we could dispel by creating recognition of the National Museum of Man which happens to be included in this entity, the National Museum of Natural History.

PERFORMING ARTS RESEARCH ACTIVITIES

Senator HATFIELD. Also, for the record, Dr. Ripley, would you extrapolate from your Division of Performing Arts that amount of the budget that was earmarked and identified for staff of research publications and presentations?

Dr. RIPLEY. We will supply for the record. Would you like it for this year, Mr. Hatfield?

Senator HATFIELD. Yes. For the projected 1977 fiscal year.

Dr. RIPLEY. We have those figures and we will supply them for the record.

[The information follows:]

PARTICIPATION OF PERFORMING ARTS STAFF ON RESEARCH PUBLICATIONS

Specific staff of the Division of Performing Arts has not been identified for research publications during fiscal year 1977. It is anticipated the publications will be developed through cooperative efforts of existing staff members using source materials and documentation obtained from research for the Folklife Festivals and materials generated during the Festivals themselves. Most writing will be accomplished by the Public Information/Education Officer.

OTHER SMITHSONIAN FOLK CULTURE PROGRAMS

Senator HATFIELD. Awhile ago you mentioned your folklore program that goes beyond the Division for Performing Arts and gets into other areas. I wonder if you would also provide for the record a survey of the permanent programs of the Smithsonian devoted to folk culture that are outside the Division of Performing Arts.

Dr. RIPLEY. Yes, we would be happy to.

[The information follows:]

PERMANENT SMITHSONIAN PROGRAMS DEVOTED TO FOLK CULTURE

Permanent programs of the Institution devoted to folk culture include:

(1) The programs of the Department of Anthropology, National Museum of Natural History such as the research in ethnology conducted by the curatorial and research staff and the American Indian Archive Training Program designed to train American Indians to become archivists, conservationists, and historians and to encourage them in sharing knowledge of their heritage by publishing and preserving surviving records of their past;

(2) The programs of the Department of Cultural History, National Museum of History and Technology, covering pre-industrial cultural history, ethnic and western cultural history, as well as continuing collection, archival research, and exhibition programs of the curatorial staff;

(3) The programs of the Center for the Study of Man including the urgent Anthropology program, the objective of which is to preserve information in selected rapidly-changing areas before time and events eliminate opportunities to understand

the cultures which existed there, and the National Anthropological Film Center which collects, records and preserves film footage of the vanishing and changing cultures of the world, in addition to filming those vanishing cultures that have not been previously filmed; and

(4) The programs of the Division of Performing Arts including the concert series (American Banjo series, Jazz Heritage series), recordings from the Smithsonian Collection (including the Smithsonian Collection of Classic Jazz and Classic Rags and Ragtime Songs), and the Jazz Heritage Program to document and preserve the history.

NATIVE AMERICAN PARTICIPATION IN FOLKLIFE FESTIVAL

Senator HATFIELD. Now I would like to take up the fiscal 1976 budget, the current budget and this relates to the projected festival, the Native American participation.

How many contracts have been signed by Native American groups in preparation for this summer's Festival of American Folklife?

Dr. RIPLEY. At the present time Mrs. Dawson and Mr. Bruce, who are working for the Festival of American Folklife this year in connection with the Native American program, have received proposals from 21 organizations representing approximately 200 Native American tribes.

We have, at the same time, due to their efforts, garnered a list of Indian desk officers and program directors of Federal agencies with known Indian programs. These represent some 16 agencies and organizations and we are currently planning to send these proposals to these agencies. We must have them into these agencies before April 1.

We are, therefore, in process, as it were, of preparing to solicit funds from these 16 agencies.

Senator HATFIELD. Do I understand then that you would add the 21 and the 16 to get to the figure of how many contracts have been proposed and signed by the Native American groups? Or is it just the 21?

Dr. RIPLEY. As far as I know, the proposals to this date have been received, but no contracts have been awarded.

Senator HATFIELD. No, I understand that. I am just trying to get this a step at a time. I would like to know how many contracts have been presented by Native American groups. Then I want to know how many of these contracts have been signed by the Smithsonian.

Let's take those two points first.

Mr. EUELL. If I may, the Smithsonian currently has available approximately $500,000 for the Native American program. Concerning the additional money that we are talking about, there was a February 5 meeting of all of the representatives of the 16 Federal agencies who are concerned about Native American programs. It was agreed that the Indian tribes would submit proposals to these agencies.

We have received a great many of the proposals. We have not received them all as yet. But April 1 is our deadline at which time the tribe is to make the contract with the Smithsonian—once they receive a grant from the agency. It is a complicated kind of an operation.

Senator HATFIELD. That is why I would like to take it a step at a time.

Mr. EUELL. One of the things from my understanding that was very attractive to the Native American peoples, to the various tribes that were contacted, was that it presented to them an opportunity to identify and actually contact agencies for funding that they had not previously known about—through a proposal mechanism that they had not traditionally used.

At the same time, they will receive the money. We would not get the money from the agency. It would go to the tribe as a group or to the confederation which consists of several tribes and then a contract would be drawn up with us.

Senator HATFIELD. Are you saying to me then that you have no contracts on hand signed by Native American groups or do you have 16, do you have 21—if you don't have the figure, just tell me, and then submit it for the record, would you please.

Mr. EUELL. I will have to supply that for the record.

Senator HATFIELD. All right. That is quite satisfactory. If you would just give me a simple answer to these questions, please.

Do I understand that the Smithsonian has not signed any contracts with these Native American groups?

Mr. EUELL. With the Native American groups? I would have to supply that for the record.

Senator HATFIELD. All right. Would you supply that.

Would you also supply for the record how long you have had such contracts in your jurisdiction.

Mr. EUELL. Yes.

[The information follows:]

NATIVE AMERICAN CONTRACTS

The Smithsonian has received 8 grant proposals from Native American groups; another 9 proposals are being developed by the Native Americans for forwarding to the Institution. The Institution's role is to advise the Groups in preparation of the proposals and to assist them in submitting their proposals to agencies which have funds to support Native American programs. No contracts have yet been signed. Detail concerning the proposals follows.

Contractor	Date received	Amount
Native Americans for the Living Arts	Feb. 17, 1976	$19,800
Five Civilized Tribes—Oklahoma	Mar. 8, 1976	27,300
Art and Craft Guild—Oklahoma	Mar. 5, 1976	33,900
Sac and Fox	Dec. 22, 1975	27,300
Alaska Federation	Jan. 13, 1976	90,000
Comanche	Jan. 14, 1976	27,300
San Juan	Feb. 3, 1976	31,140
Umatilla	Dec. 23, 1975	44,040
College of Great Falls	(1)	23,370
Northern Cheyenne	(1)	31,320
White Mountain Apache	(1)	23,260
Warm Springs	(1)	23,840
Northern California Indian Education	(1)	55,900
Nevada Inter-tribal Council	(1)	55,900
Menominee	(1)	33,100
CENA	(1)	17,300
Apache Tribe of Oklahoma	(1)	20,700
Total		585,470

[1] Proposals still in preparation.

FUNDING OF NATIVE AMERICANS PROGRAM

Senator HATFIELD. What I am trying to get at on this rather complicated and complex funding and negotiation of contracts system is that I am very concerned that we not end up inviting the excuse that we have a lack of funds to carry out attractive and good contract proposals. If we did, I believe that the reaction of these Native American groups who are preparing to participate in the festival, which to them is one of the most meaningful parts of participation in the Bicentennial celebration, would be one of terrible disappointment and I think it would be terribly disappointing for the country. I just don't want to let this thing slip between the cracks because of the complexities of contracts. Do you have—and if not here, do you have for the record, please—a figure on how much has been raised up to this point from private sources for the Native American participation in the festival?

Mr. EUELL. There has been no money raised.

Senator HATFIELD. Do you plan on raising some money?

Mr. EUELL. We have attempted to raise private funding and we have been very unsuccessful. In the 10 years that we have done the festival—and I don't want to belabor this—we have had very little success raising private money for Native American programs.

FUNDING FROM OTHER AGENCIES

Senator HATFIELD. Do you have a total of, or can you provide for the record what the other agencies have allocated for funding of any of these programs?

Mr. EUELL. Yes, I have that. I have a list of all of those and I can supply that for the record.

Senator HATFIELD. Very good.

Mr. EUELL. What we have in hand and what we anticipate. In several instances some of the agencies have not come through with all of the money promised.

[The information follows:]

GOVERNMENT SUPPORT OF FESTIVAL

Following is a listing of the funds allocated by other agencies for the Bicentennial Festival of American Folklife:

National Park Service	$165,000
Department of Labor	220,000
Department of Transportation	249,000
National Endowment for the Arts	100,000
American Revolution Bicentennial Administration	500,000
Total	1,234,000

LEVEL OF FUNDING REQUESTED IN PROPOSALS FROM NATIVE AMERICANS

Senator HATFIELD. Do you have any estimate or can you provide for the record the amount requested in these proposed contracts that you have in your possession that you are going to identify? Or, at least, can you give us a synopsis of the level of funding required to fund these particular ones in hand?

Mr. EUELL. Yes. It is estimated that the contracts or the sum of money would run between $20,000 and $25,000 per contract.

Senator HATFIELD. Per contract.

Mr. EUELL. That would represent the required funding for the format of the presentation for the Native American group. That would be for 12 weeks. We will present a very large group or confederation together with a smaller group which will change every week. So there will be a total of maybe 24 groups appearing—very large groups together with alternating smaller groups.

Senator HATFIELD. Where are we in the supplemental schedule? The supplemental will be coming in around April which will be a little difficult time frame within which to work with OMB and so forth if you find yourselves to the point where you were insufficiently funded to do what you expected or wanted to do.

Well, I think when you give us the figures on the number of contracts plus the range of costs—$25,000 or whatever it is, you can give us a total figure there.

FUNDING ALTERNATIVES

Mr. EUELL. What the entire program will cost and what we have in hand and, also, we will probably have what fall back positions we have. We do have a possible contingency in the event that the agencies that are contracting with the Native American tribes through proposals do not come through by April 1, then we would have to reprogram the money into the Native American program.

Senator HATFIELD. Would you have——

Dr. RIPLEY. Which we don't have.

Mr. EUELL. It would mean then moving money from one program—moving it from the regional America program, for example, to the Native American program. We would have to, then, restructure our whole presentation.

Dr. RIPLEY. We may be under contract, Senator, so that we cannot reprogram such funds. We would have to determine if we could shift folk festival money from one project to another.

Mr. EUELL. We would have to reduce regional America, for example,——

Dr. RIPLEY. We would be robbing Peter to pay Paul.

Senator HATFIELD. You would reduce the level rather than eliminate the program. You would reduce the level.

ETHNIC TOURS PROGRAM

Dr. RIPLEY. Yes, sir. We would have to see if this could be done.

We have another issue that we may have to reduce which is the ethnic tours program. We have in hand none of the expected funds that we have asked for, at present, for the major part of our ethnic tours program.

Senator HATFIELD. That was another question I wanted to get to. I believe they are expecting the invitations. All of these foreign countries are expecting an invitation from the Smithsonian; aren't they?

Dr. RIPLEY. We are acting, in effect, as the host. But we are doing it with funds that we expected in some cases and have had at least verbal indication that we will be receiving.

Senator HATFIELD. Have you not requested funds?

Dr. RIPLEY. Within the appropriated procedure, we have not. The total for the budget for the folk festival for this year is $6,790,000.

Our appropriated base, as we have already testified, is $167,000. We have funds in hand of a total of $4,900,000. These have been raised or committed or promised us from a variety of sources including public and private sources. We still anticipate, in order to make the folk festival go at full level, another $1.6 million, which we do not now have.

Senator HATFIELD. But you did not request money for the foreign participation?

Dr. RIPLEY. No.

Senator HATFIELD. You were relying on private raising of such funds?

Dr. RIPLEY. We were relying on private fund raising or support funds from other agencies or organizations.

Senator HATFIELD. And that has not been forthcoming?

Dr. RIPLEY. Well, to the extent that we need another $800,000 for these foreign tours, this has not been forthcoming.

EFFORTS TO SOLVE FUNDING SHORTFALL

Senator HATFIELD. It seems to me we have a very serious matter here involving international goodwill and understanding. I think things of this kind could create more ill-will than if we never even offered or suggested the participation.

I have a feeling that somehow this has slipped a cog somewhere. I am not interested in trying to identify who or what but where do we pick it up? Where can we pick it up at this point?

I just feel from the standpoint of the Native Americans that we encourage—as I say, when we look at this Bicentennial through their eyes, there just isn't much excitement except for their particular program, and when we go out with a general invitation to foreign countries to participate and possibly fail to keep our commitments, we are risking a difficult and embarrassing situation. Not all of them can send a queen and cut a ribbon. There are these other things, these ethnic presentations, that can give us a very marvelous experience both for us here and for them. I just hate to see these things falter.

Dr. RIPLEY. We do, too.

Senator HATFIELD. I would like to ask you and perhaps the staff here to see what we could do in terms of picking up this fumbled ball. I think it is of such significance that we could ask our colleagues to undertake certain additional funding if we have the vehicle with which we can do this. This is the detail that I am not familiar with at this moment.

Dr. RIPLEY. I find your words very heartening, Senator. We need support and we need help. This slippage is almost inevitable. Our intentions, I think, have been demonstrated over these 10 years to be very good. We received along the way promises of assistance and anticipated that somehow or other we were going to get the support; and then the expectations that are created in the process are very difficult to deal with.

Sometimes the convictions, which are self-induced at all levels that somehow there is a golden pot that can be rubbed and the dollars will come pouring out of it are very difficult to dissipate.

We have constantly had to insist to our friends and colleagues and participants that we cannot go down into the cellar of the Smithsonian and start turning a press and making money. We have to get the money from friends and you have to help us get it.

SUPPLEMENTAL FUNDING

Senator HATFIELD. I would like to have seen some of this. In the first supplemental, did you have requests on that at all?

Dr. RIPLEY. No, Senator, the supplemental is entirely concerned with utilities and extra salary and benefits costs.

Senator HATFIELD. Whenever this became apparent, I wish we had had some kind of notice. Maybe we had notification I am unaware of, but whatever the time—we are fourteen weeks away and, very frankly, I have not seen much that will focus on the Bicentennial, in Washington, D.C.

I think more of the Bicentennial will be seen out in the small towns and villages of our country than right here in the Nation's Capital and this is one program, it seemed to me, that the Nation's Capital could really perform and present in a very significant way. I hate to see us with our one opportunity for a meaningful Bicentennial focus in Washington—see us fumble that. I don't know what we can retrieve at this point, but I certainly would be willing to lend my support to any effort that we can make here on the Hill to undergird you with some funds that will provide not only for the participation of the American Native, but also for the foreign participation as well.

BACKGROUND ON ETHNIC TOURS PROGRAM

Mr. EUELL. May I clarify something, Mr. Senator, in terms of the foreign participation. It was always in the planning that the foreign groups would appear in Washington—these foreign tours that we are talking about constitute the ethnic tours program. That meant we would be touring these groups across the country. We had great interest expressed by 104 ethnic communities for the groups that we are presenting in Washington.

As you might well imagine, it was very attractive for some of the smaller nations to have that dimension added to their participation and they accepted our invitation based on that. So, it is like an added dimension. It gives us and the foreign nations the kind of outreach nationwide that is very important.

Senator HATFIELD. I conclude that certainly is a fundamental part of my concern for proper funding of this total effort.

As I indicated, I think that would be even complimentary to what is going on out around the countryside, in local communities of this country. It would be a very significant addition to their present programs and plans.

I am deeply concerned about this. I would put very great priority on this particular thing.

Dr. RIPLEY. May I go off the record, Senator?

Senator HATFIELD. Yes.

[Discussion off the record.]

ASSISTANCE FROM THE COMMITTEE

Senator HATFIELD. Let's go back on the record.

Dr. Ripley, the comments you have made about the interagency cooperation that has failed to materialize may be something that we can help from this committee's standpoint—help to correct by making special inquiries as to what funds might be made available or broken loose from some kind of a hang-up and assist you in realizing the objectives as set forth in these programs.

Let's pursue every and any possible avenue to solve this. Cooperating with this committee, we may be able to fill in a few of the blank places or we may be able to spring forth some cooperation that has not been forthcoming in collaboration that was anticipated. We have no inhibitions along these lines whatsoever. I invite you to make available to us those needs in terms of time, dollars and magnitude.

With our staff working, I think we ought to be able to help solve this problem.

Dr. RIPLEY. Thank you, Senator.

Senator HATFIELD. Thank you.

SUBMITTED QUESTIONS

We will have further questions to submit to you for the record which we will submit in writing and ask for your response.

Dr. RIPLEY. Yes, sir.

[The questions and answers follow:]

National Museum of Natural History

Question. Under the Museum of Natural History you are requesting four research positions. Three positions and $42,000 are for updating the Endangered Plant Species data. To what specific activities in your listing will these new positions be directed?

Answer. The three positions requested for this project are needed to complete the intent of the Congress as stated in Section 12 of Public Law 93-205, The Endangered Species Act of 1973, which directed the Smithsonian to survey the threatened and endangered plants of the United States and its Trust Territories. The time limitation imposed by the law coupled with the resources available at the time necessitated reducing the scope of the initial report to include only the continental United States and Hawaii. The survey of Alaska and the various Trust Territories remains to be done. Additionally, this staff is needed to complete the remaining work on the detailed data sheets of the 3,000 species already identified in the report to Congress. These personnel will also prepare the valuable habitat data needed to aid in the conservation of those earlier identified species.

The National Herbarium located in the Department of Botany of the Smithsonian's Museum of Natural History is the major center for collections of United States and New World flora in the Western World. With over 5 million higher plants specimens and a large competent staff, the Botany Department is uniquely qualified to undertake work on endangered flora.

The Smithsonian fully intends to identify endangered and threatened non-vascular plants when the work on the higher plants has advanced far enough. The initial request was too broad to accomplish in one year despite the assistance obtained from botanists throughout the country and abroad. The magnitude and scope of the problem should not be underestimated.

We intend to cooperate fully with the Department of Interior in order to develop a comprehensive list and assist them in implementing a sound conservation policy for threatened and endangered flora of the United States. The Smithsonian cannot utilize its resources fully if the needed funds are not made available.

Question. What has been the cost of Endangered Species work to date?

Answer. The Endangered Species project was begun during FY 1974 and it has received financial support from three separate sources to date. The Secretary of the Smithsonian provided $7,800 in FY 1974 to initiate this program, $44,200 in FY 1975 and $42,000 in FY 1976 to continue this project. The Museum's Department of Botany also expended $67,600 in personnel and related support costs in connection with the program. Additionally, a grant to the Smithsonian from the Department of Interior provided $18,700 for support of an Endangered Species Workshop and the production of the first issue of the final report. These amounts together represent a total expenditure of $180,300 between FY 1974 and the end of FY 1976.

Question. Please detail the grade level and salaries of the new positions.

Answer. Museum Specialist, GS-12, $19,386; Research Assistant, GS-7, $11,046; and Museum Technician, GS-5, $8,925.

Question. The other research position is a marine zoologist for coral research studies. Have you considered asking any of the other participating institutions to provide this position?

Answer. The nature of the research to be undertaken on endangered coral reefs, whether in the Museum or the Caribbean, requires a specialist with access to a major research collection and library facilities. None of the other participating institutions (no others in this country, as a matter of fact) have significant coral collections and, therefore, can neither justify a position for a coral researcher nor provide the collections necessary for his work. Furthermore, none have the space or facilities to house and maintain a large collection, so the Smithsonian coral collections could not be transported to another institution which might then justify hiring such a person. Also, the collections are far too valuable to be transported back and forth between institutions, as many of the specimens could never be replaced if lost or damaged.

Question. You are also requesting five positions and $75,000 to increase the custodial staff to 63 positions which you say is still below the level recommended by a study. Who conducted this study?

Answer. In 1971 an internal study of then existing staffing levels and custodial maintenance was commissioned by the Director of the Buildings Management Department for all Smithsonian buildings. The study used established General Services Administration standards in effect at that time and adjusted to the museum attendance and seven-day week openings to determine optimum maintenance needs. The report, which was completed in October, 1971, recommended the staffing level identified in our request for increase.

Smithsonian Astrophysical Observatory

Question. For the Astrophysical Observatory you are asking for 8 positions and $150,000 for general administration and support services. Where will these positions be used, at Cambridge or Mt. Hopkins? What are their pay grades?

Answer. The personnel will be located in Cambridge. The positions and their grades are: Mathematician, GS-13; Mechanical Engineer, GS-13; Mathematician, GS-12; Property Clerk, GS-12; Procurement Agent, GS-11; Payroll Clerk, GS-7; Secretary, GS-7; and Personnel Assistant, GS-6.

Question. You request $100,000 for the purchase of equipment to be used in solar, optical, and radio astronomy research. How vital is this equipment?

Answer. We should first clarify that $50,000 of the $100,000 requested is for the Langley-Abbot solar research program.

Of this $50,000 intended for the Langley-Abbot program, some $40,000 is needed to cover the salary and benefits costs of a senior theoretical astrophysicist and the remaining $10,000 is for his research related expenses such as computing, supplies, etc. We have now accumulated a wealth of data about the Sun, both as a star and as a physical laboratory, and about the interaction of the Sun with our environment here on Earth. Now is the time to consolidate these observational advances through a thorough analysis of the data and a program of deeper theoretical inquiry into the nature of solar processes generally. To accomplish this goal we must look to an outstanding research scientist with a broad understanding of problems of plasma physics both on the Sun and in the laboratory.

The remaining $50,000 of our request is for the purchase of specialized equipment used in three areas of research: Atomic and Molecular Physics, Optical Astronomy, and Radio Astronomy. We consider these investments as essential to the continued progress of the SAO research program.

SAO has at present an Atomic and Molecular Physics research group of international stature which is directing its efforts particularly to the study of molecules in space. A new spectroscopic light source, at a cost of $15,000, is badly needed to promote the work of this group and keep them on the forefront of this and other related rapidly expanding fields of atomic and molecular study. The theoretical and experimental work of this group is also highly relevant to the observations of molecular spectral lines in the 300 to 3000 GHz region of the radio spectrum.

In the fields of Optical Astronomy and Radio Astronomy, the development of a new generation of radiation detectors is a necessity that cannot be postponed any longer. Such development is expected to be particularly cost effective, as a great part of detector development costs are already being borne by the telecommunications industry; thus, the further development of such detectors, and their adaptation to scientific needs, will bring large benefits to science at a relatively small cost. As a minimum requirement, SAO needs $15,000 for the development of high-resolution, high-sensitivity, two-dimensional detectors to be used in the SAO optical and infrared programs, together with $20,000 for detectors suitable for the 300-3000 GHz, that is millimeter and submillimeter, region of the radio spectrum. On the optical side, such development will enable SAO to capitalize upon investments already made in the Multiple Mirror Telescope; upon completion, it will be the world's third largest telescope, and without modern detectors a large fraction of its research potential would go unutilized. An up-to-date optical program is further necessary to provide ground-based support for high-energy observations made from observatories in space; optical astronomers also work closely with radio astronomers on a variety of problems. On the radio side, the 300-3000 GHz region of the spectrum is known to contain a rich variety of molecular spectral lines; however, the sensors and techniques needed for exploring this exciting and promising region--and for establishing a more fruitful collaboration with those in molecular physics--have not been developed through a lack of funds. Finally, all of these programs--atomic and molecular, optical and radio--will benefit from the investment made in the Langley-Abbot research program through interaction with the results of plasma-physics studies, which may be applied to numerous problems in astrophysics.

Question. Is this type of research ongoing at other institutions?

Answer. You ask whether any of this research is going on at other institutions. Of course, some of it is, and we consider this fact in part a confirmation of our scientific judgment in that it shows we are in the mainstream of current scientific progress and opinion. Furthermore, we do encourage collaboration with other institutions, in order to avoid duplication of research efforts and to ensure optimal use of our limited research funds. However, we believe that there are few other institutions in this nation that can bring to bear such a diverse but integrated and cooperative array of research strengths upon the solution of a given astrophysical problem. It is this combination of diversity of talent and background, together with the integration of our research groups and the cooperative nature of our efforts, that has made SAO one of the internationally recognized leaders in astrophysical research, and which justifies our continued efforts to maintain this position. We believe that a wise allocation of our resources has been a major factor in determining our present leadership in astrophysics, and we can assure you that our commitment to productivity through responsibility will be continued into the future.

Tropical Research Institute

Question. Under the Tropical Research Institute you ask for one position and $30,000 for a freshwater biological study of lakes to be formed by new dams to be built in this decade. Why then do you need the position this year?

Answer. It is particularly important for the Tropical Research Institute located in Panama to have a freshwater biologist. Panama is now building two dams, one the Bayano in Eastern Panama and the other the Fortuna Dam in Western Panama. No freshwater lakes have been created in Panama since 1914 when the two lakes were created in the middle of the Isthmus that control the water for the Panama Canal.

Since 1914 we have learned an enormous amount about the consequences of creating new freshwater lakes in the tropics. The purpose of this appointment is to take advantage of the creation of these two new lakes to help our colleagues in Panama, especially at the Gorgas Memorial Laboratory, to avoid some of the disease problems present in other tropical countries where freshwater lakes have been created.

Question. Why is the other new position--a biochemical geneticist--needed at this time?

Answer. The Smithsonian Tropical Research Institute needs to add a biochemical geneticist to its permanent staff for two principal reasons. First, we are receiving an increasing number of students who are using the techniques of electrophoresis in a variety of studies such as the analysis of the sociality of wasps and the examination of the relationships of a variety of marine organisms from the Atlantic and Pacific Coasts of the Isthmus. Secondly, there is a staggering amount of tropical diversity. On Barro Colorado Island alone, we have almost 2,000 species of plants, 200 species of breeding birds, and in one insect order which is under current study over 600 species have been reported. One current scientific dogma is that the tropics are environmentally stable and consequently many species can evolve specialized niches and these populations should be genetically homogeneous. Research at STRI indicates that the tropics are not stable, except for temperature, and others have shown in preliminary studies that such tropical populations are indeed genetically quite variable or heterogeneous This subject of tropical environmental stability and predictability and its relationship to the genetics of tropical organisms must be studied further because our current "textbook" ideas are not standing up to scrutiny.

Question. Why is it necessary to increase permanent staff for individual research projects?

Answer. We need to increase our permanent staff because it takes several years for a biologist trained in the temperate zones to familiarize himself with the enormous diversity of the tropics so that he can effectively and intelligently develop research plans. The kinds of research work done at STRI can only be performed in the tropics and not by the scientists working only during their summer vacations from universities or on an occasional sabbatical year. As the only United States basic tropical research laboratory, we wish to develop our resident staff to about 25 scientists, which approximates the number of faculty in a medium-size university biology department. We need those for resident expertise in a variety of contemporary scientific disciplines.

Chesapeake Bay Center for Environmental Studies

Question. For the research program at the Chesapeake Bay Center for Environmental Studies, you are asking for an estuarine ecologist and a temporary

research technician for a pollution study. Why can't these positions come from other agencies or universities that participate in the program?

Answer. Currently, most of the support for research at the Chesapeake Bay Center on estuarine pollution is derived from other agencies, such as the National Science Foundation -- Research Applied to National Needs and the Environmental Protection Agency, and contributed time from cooperating universities. However, this support is generally for short-term research projects with specific, limited objectives. The goal of the CBCES estuarine program is to provide a long-term understanding of baseline conditions and changes in estuaries, and this continuity can only be achieved through a permanent staff position. The availability of such a position, and the studies thereby made possible, will also enhance continued support from other agencies.

Question. Why is an information specialist required as an additional position to answer public inquiries and to respond to requests for research results? Can't existing staff handle this?

Answer. Three years of privately funded research at the Bay Center on the use of scientific information by the general public and local, state, and federal agencies has indicated a need for translation of scientific research results into a format suitable for decision-making purposes. In many instances, utility of environmental research findings has been diminished because results were not specifically related to regulatory or management purposes. Currently no staff position exists for this purpose which will involve a substantial amount of time devoted to the production and dissemination of reports, and the conduct of workshop and public presentations. In addition, the position requires a detailed knowledge of federal and state statutes and procedures related to environmental management and these special skills are also not available.

Question. You are also asking for an assistant security officer. What is the present security staff at the Center?

Answer. The security staff at the CBCES consists of one full-time security officer who is required to patrol the Center's 2,600 acres of land and 13 miles of shoreline. Backup is urgently needed for the security officer to allow for a 7-day week security capability which currently does not exist. The Center is also without trained security services during those periods when the present security officer is on leave or in training. Backup security would also permit greater public educational use of the Center on weekends and holidays.

Position Increases

Question. Your position requests are small numbers spread throughout your programs. Please provide for the Committee a summary table showing the numbers and types of new positions and where they will be used. Group the new positions by categories such as custodial, research, administrative and so forth.

Unit	Professional/ Research	Technical Support	Clerical	Security	Custodial & Laborer	Mechanical	Administrative	Total
Museum of Natural History	1	3	-	-	4	1	-	9
Smithsonian Astrophysical Observatory	3	3	1	-	-	-	1	8
Smithsonian Tropical Research Institute	2	-	-	-	-	-	-	2
Chesapeake Bay Center for Environmental Studies	1	1	-	1	-	-	-	3
National Zoological Park	1	1	-	-	-	2	-	4
Museum of History & Technology	-	3	-	-	-	-	-	3
National Collection of Fine Arts	-	1	1	-	-	-	-	2
National Portrait Gallery	1	-	-	-	-	-	-	1
Freer Gallery of Art	-	1	-	-	-	-	-	1
Archives of American Art	-	-	-	-	-	-	1	1
Cooper-Hewitt Museum	-	1	-	-	2	1	-	4
SI Press	-	-	-	-	-	-	1	1
SI Libraries	-	5	-	-	-	-	-	5
SI Archives	-	1	-	-	-	-	-	1
Academic & Educational Programs	-	-	-	-	-	-	1	1
Personnel Administration	1	-	1	-	-	-	-	2
Office of Equal Opportunity	-	5	-	-	-	-	-	5
Office of Computer Services	1	1	-	-	-	-	-	2
Office of Supply Services	-	1	-	-	-	-	-	1
Office of Protection Services	-	2	-	30	-	-	-	32
Office of Facilities Planning & Engineering Services	-	1	1	-	-	-	-	2
Office of Plant Services	-	5	-	-	7	22	-	34
Total	11	35	4	31	13	26	4	124

National Air and Space Museum

Question. The new Air and Space Museum appears to be coming along well. Are you having any problems with opening as scheduled?

Answer. The construction of the museum is complete and the exhibits are now being installed. The museum will open to the public on July 1, 1976.

Question. Are you now at full staffing for the museum under your 1977 request?

Answer. Yes, in FY 1976 we received 57 custodial positions for one-quarter of the year. Therefore, although we are at full staffing level, there is a request in the FY 1977 Estimates to annualize these positions at a cost of $424,000.

Question. The museum's printing and reproduction request increases drastically--from $5,000 to $158,000. What accounts for this?

Answer. After the Museum opens to the public, the professional staff will be able to devote more time to research and education. Scholarly publications will deal with many subjects including planetary topography and scientific earth observations from the space shuttle, history of air accident investigations, history of air racing, and others. There will also be many popular publications, such as museum brochures in several languages, teacher guides, materials for use in schools, and artifact monographs. Printing costs are very expensive. It should be noted that the amount shown for printing is a redirection of base resources, not an increase in total funds.

Center for the Study of Man

Question. Last year you received $20,000 to start a program for study of anthropological films. Now you are asking for an additional $20,000 to upgrade the program. Could you explain the need for this amount?

Answer. The Anthropological Film Center has developed collaborative projects with scholars in various parts of the world and in a few crucial areas provided raw film stock, film processing, equipment, and guidelines to anthropologist-filmmakers interested in preparing scholarly visual documents as a permanent research resource. Some experimental field studies are also underway in an effort to develop and improve visual sampling methods and equipment. The Center has also begun its search for existing anthropological film footage of research value which may be in danger of deterioration and loss. An additional $20,000 are sought to strengthen efforts by providing secretarial help, travel and fieldwork, contracts for the assembly and preservation of film, and supplies and materials associated with film storage and safekeeping.

Question. What is the estimate of continuing cost of this program?

Answer. We estimate that in order for this program to fulfill its intended purposes, an annual budget of $250,000 and seven people will be needed. We hope to obtain this growth over the next five to ten years.

Question. You also ask for $6,000 for a companion effort in Immigration and Ethnic Studies. This is to develop a new program, is it not?

Answer. No. The Research Institute on Immigration and Ethnic Studies was initially funded through temporary grant funds. In FY 1974 the Institute received appropriated funds. The Institute's studies program is concerned with the peopling of America as an ongoing process. It has carried out basic research in Panama, the Caribbean area, Canada, and the United States. Small seminars on adjustment of new migrants, i.e., Vietnamese; comparative studies, i.e., with Canada; and internal migration, i.e., from Puerto Rico have been held. A major conference on new immigrants will take place during the Bicentennial year. This program is also exploring the problem of studying illegal immigrants and evaluating data from agencies with information about Pacific Islander immigration. These additional $6,000 are needed for consultants, seminars, and field research on new migrants. The Institute will produce valuable bibliographies, research notes, and articles on this subject matter.

National Zoological Park

Question. Your justification lists 4 permanent positions and two part-time positions required for new facility operations. What future staffing increases do you project as new facilities are completed?

Answer. We have been giving a lot of thought to this question, especially in view of the greatly expanded space with the addition of the Education Building, the General Services Building, and the Bear Lines. The Lion-Tiger Building is three times the size of the building it replaces. These add much to the cleaning and maintenance burden. Additionally the new facilities are much more complex. The new facilities are largely airconditioned, zone-heated, and better protected against fire. More exhibits will have circulating water in ponds and moats. These factors will add to our need for specially trained utility system repairers, electricians, and pipefitters. Altogether we will be operating 425,000 square feet of enclosed and high maintenance space in FY 1978, in comparison with 175,000 square feet now. We estimate now that with our excellent facilities management operation and trained foremen we can catch up with the new needs by investing only the equivalent of an additional three cents for each construction dollar to do long-term maintenance and operation.

Front Royal has jumped from no animals in 1974 to more than 100 today. In 1978, Front Royal will be home for 200 animals, and 20 separate breeding programs will be underway. We will need animal keepers and supporting maintenance employees. And the new facilities in Rock Creek have been accompanied by more labor-intensive tasks for keepers and animal management personnel. The premium is on preserving long life, reproductibility, and health. All require greater observation, more study, and more alertness to family structure and habitat. More keepers will be needed.

By the mid-1980's, upon completion of the construction and renovation program, we see the requirement to add approximately 100 employees, primarily in the keeper and maintenance categories, to serve the Rock Creek and Front Royal facilities.

Question. You call for the addition of one animal keeper at your Front Royal facility; what is the total staffing?

Answer. The present staff at Front Royal numbers 17 permanent employees. There are 3 animal keepers, 4 farmers, 5 maintenance employees, and an administrative clerk, and a conservation officer. The operation is managed by a mammalogist.

Question.. Would you describe the accomplishment of work done at the Facility?

Answer. It is remarkable what so few have done there. They care for 17 species, tend 3,150 acres, conduct research, maintain 52 buildings, host conferences, and plan for the future of the Center. They produce 300 tons of hay supplying all the Zoo's needs. They have planted 20,000 pine trees to serve as a buffer between a public highway and animal enclosures. They operate water and sewage systems. The staff has entered into cooperative breeding projects with other Zoos using the Front Royal site and its skilled people. They have accommodated much of our bird collection while the Bird House in Rock Creek is being renovated.

Joseph Henry Papers

Question. You are requesting a $17,000 increase for work on volume three of the Henry Papers. Portions of this effort are funded through grants. Is this increase an indication of reduction in grants?

Answer. No. Our grant support, in fact, should go up slightly from FY 1976 to FY 1977. The project's workload, however, is rising much faster.

Question. How much grant money is estimated in your fiscal 1976 and 1977 budgets for the Henry Papers?

Answer. For FY 1976 we have been awarded grants totalling some $49,200. For FY 1977, the comparable figure will be approximately $54,700.

National Collection of Fine Arts

Question. You state a cabtruck is necessary for delivery of loan items and for the "Discover Graphics" Program. How do you currently handle delivery?

Answer. In the past we have tried to rely upon the three trucks already owned by the Smithsonian which are suitable for transporting objects from the collections. But when these trucks are already scheduled, we have had to pay commerical moving firms for their services. More often than not we have had to resort to this. In fact, the need for a cabtruck dedicated to the transportation requirements of the National Collection of Fine Arts and the National Portrait Gallery has grown so great that we have recently proceeded to purchase a truck using the Smithsonian's private funds. Consequently, we would be happy to forego this requested federal fund increase of $5,000.

Question. Do other buildings of the Smithsonian have trash compactors? We see you are asking for $6,000 to purchase one for the Renwick.

Answer. Yes, indeed. Nearly all our buildings have trash compactors. They reduce the volume of trash to about one-fourth its normal size, permitting less frequent trash pick-up. The compactors also help prevent rodent infestation by chemically treating the trash and sealing it in airtight plastic. So it's economically sound to invest in them, I believe.

Hirshhorn Museum and Sculpture Garden

Question. How many positions will the $20,000 get you for temporary custodial help at the Hirshhorn?

Answer. The $20,000 will bring us four new custodial positions for the summer evening hour workload plus the necessary supplies.

Question. Since you state this will be to make evening hours permanent, can we expect a request for additional permanent positions next year?

Answer. No. Next year we would simply use the $20,000 then in our base, as the result of favorable action on this FY 1977 request, to hire new temporary custodians to meet the evening hour needs.

Question. What was the summer evening attendance last year?

Answer. Last summer, the Hirshhorn's first summer, the Museum was not open to the public in the evening. The public response to the Museum has been so positive, however --1.5 million visits this year--that we decided to seek this small amount of extra money to establish a summer evening hour schedule on a permanent basis.

Freer Gallery of Art

Question. The translator position for the Freer--the workload could not be handled by part-time service? Is this a continuing program need?

Answer. A full-time translator is indeed needed. The Freer staff is encountering an increasingly heavy volume of technical material, inscriptions and publications which require translation--more than enough to keep a full-time translator occupied. Currently, translations are performed by whoever on the staff is proficient in the language involved. This means that the curators are spending their time translating for their colleagues rather than performing their own work. This is not the best use of the professional staff. A translator hired to take over these language duties would solve that problem.

Question. You show the need for temporary maintenance help. Do you anticipate requesting new full-time positions in the near future?

Answer. No, we don't. This temporary maintenance help, if approved, should permit us to add a custodian or two on a short-term basis to meet fluctuating workload increases, as when a new exhibit opens. This kind of need does not call for new full-time staff.

Cooper-Hewitt Museum

Question. Last year we discussed the Cooper-Hewitt Museum in some detail. Your request for this year adds 4 positions and brings the budget for the facility to $360,000. In terms of personnel, will this bring you to full operational status?

Answer. Yes, the additional four positions should give us an adequate staff with which to begin the Museum's operation in the renovated Carnegie mansion.

Question. What other support is available to the Cooper-Hewitt from the Smithsonian? Please supply total federal cost.

Answer. Other support available to the Cooper-Hewitt totals about 16 positions and $211,000 for FY 1977. This includes 14 guard positions and $176,000 provided by the Office of Protection Services and 2 positions and $38,000 provided by the Smithsonian Libraries.

Question. Can we expect requests for additional positions in the budget for next year?

Answer. I hope it will not be necessary to request further positions next year. But if our experience upon opening the Museum to the public this fall should indicate that we have underestimated the need for staff to maintain the building and grounds or to protect and take proper care of the collections, then we would feel duty bound to request further Federal support.

Question. Please provide us with a listing of the salary and job titles of the 19 positions.

Cooper-Hewitt Museum of Decorative Arts and Design

No. of Positions	Position Title	Grade	Salary
1	Program Officer	GS-13	25,962
1	Buildings Manager	GS-12	21,970
1	Textile Conservator	GS-11	16,255
1	Exhibits Specialist	GS-9	15,727
1	Registrar	GS-9	13,931
1	Assistant Registrar	GS-5	9,521
1	Clerk	GS-3	8,287
8	Maintenance Worker	WG-7	97,677
1	Carpenter	WG-5	10,358
1	Grounds Worker	WG-3	9,464
1	Laborer	WG-1	8,590
1	Laborer	WG-1	8,944
19			

Question. What amount of private support is estimated for this Museum in 1976 and 1977?

Answer. In FY 1976, about $850,000 will be spent on the renovation of the Carnegie Mansion and $500,000 will be spent on operations and special projects including the preparation of the opening exhibitions. By FY 1977, the renovation of the museum building will be substantially complete with remaining work accomplished as additional private funds can be raised. An operating budget for that year has not been developed, but it can be assumed that, while the sources and uses of funds will be different as the Museum experiences a full year of public use, the total will approximate the FY 1976 level.

Anacostia Neighborhood Museum

Question. You request $35,000 to supplement the exhibit training program at the Anacostia Museum. Last year your justification indicated that this program was supported through "foundation funds." Are you now shifting this to Federal funding?

Answer. There are no plans to shift the training program to Federal funding.

Question. How much in Federal funding went into this program last year? How much in foundation funds?"

Answer. The primary objectives of the Exhibits Laboratory are to develop, design, and produce exhibitions and concurrently to train minorities in those skills required to design and produce exhibits. Although no federal funds are specifically allotted for the training program, it is carried out in a building maintained by federal funds. The exhibits production program is supported by federal funds, estimated to be $94,000 in Fiscal Year 1976 (including 3 employees, building maintenance, and utilities).

The training program, formal aspects of which begin on September 1, 1976, is supported by foundation funds, estimated to be $78,000 in Fiscal Year 1976.

Division of Performing Arts

Question. The justification under Division of Performing Arts states that you require additional funding for the program to preserve the history of jazz. Since it began, how much has the National Endowment for the Arts provided and how much has the Smithsonian provided?

Answer.

	FY 1975	FY 1976
National Endowment for the Arts	$40,000	$47,000
Smithsonian Institution	6,000	12,000

Question. What is the amount of the Arts grant for the program in 1977? Also what is the amount of total Smithsonian funding?

Answer. The anticipated amount of the grant from the National Endowment for the Arts in FY 1977 is $45,000 to $50,000. The total amount of Smithsonian funding is estimated to be $33,500.

Smithsonian Press

Question. You say you need a staff member at the deputy level for the Smithsonian Press. What grade level will this position be?

Answer. The Deputy Director, Smithsonian Institution Press, will be at the GS-14 level.

Question. You also say that half of this salary will be funded by savings generated from hiring at lower grade levels. Please supply the detail of permanent positions for this unit for 1976-77.

Answer. Detail of permanent positions for the Smithsonian Institution Press for 1976-77 follows:

Title, Grade	FY 1976 est.	FY 1977 est.
Deputy Director, GS-14	--	$26,861
Supervisory Printing Specialist, GS-14	$29,846	32,231
Managing Editor, GS-14	28,140	30,292
Editor, GS-13	26,905	--
Editor, GS-13	23,391	25,198
Editor, GS-13	27,989	29,782
Editor, GS-13	26,178	27,490
Editor, GS-13	22,543	24,434
Printing Specialist, GS-13	23,997	25,198
Publications Distribution Officer, GS-13	22,543	24,434
Editor, GS-12	19,591	21,324
Editor, GS-12	22,153	23,908
Promotion Manager, GS-12	22,969	25,070
Visual Information Specialist, GS-12	20,308	21,970
Visual Information Specialist, GS-12	19,283	21,055

Title, Grade/Step	FY 1976 est.	FY 1977 est.
Administrative Assistant, GS-9	$16,407	$17,253
Printing Specialist, GS-9	14,125	15,128
Publications Assistant, GS-9	14,125	15,128
Publications Assistant, GS-9	13,697	14,829
Editor, GS-9	--	13,482
Visual Information Specialist, GS-7	10,871	11,782
Publications Clerk, GS-6	11,053	11,938
Publications Clerk, GS-6	12,001	12,602
Supply Clerk, GS-6	12,106	12,934
Publications Clerk, GS-5 (annuitant)	5,293	5,293
Clerk-typist, GS-5	9,066	9,819
Supply Clerk, GS-4	8,861	9,306
Clerk-typist, GS-4	7,619	8,508
	$488,089	$533,774*

* The difference between 1976 and 1977 salaries of $45,685 includes the Deputy Director's salary of $26,861 and necessary pay of $18,824.

Collections Management Study

Question. Your proposed collections management study for $125,000--has a study of this type ever been made before?

Answer. Such a task has never been undertaken for a complex of museums as large and diverse as the Institution's. It will require some of our very best talent not only to assemble but to digest and evaluate this data.

The study requested from the Institution by the Office of Management and Budget is intended to provide indepth information on all of the Institution's practices as they relate to the acquisition and de-acquistion of objects. The study, however, is to be more than a mere codification of record-keeping practices. It is intended to analyze, in considerable detail, the nature of the collections and collecting processes of the Institution: the manner in which the Institution determines its needs and the reviews to which practices and policies are subjected. While this task could be very easy in a museum having a narrow spectrun of interests, the collections of the Institution cover practically every field of man's activities and include definitive and systematic collections ranging over virtually every aspect of the natural world including meteorites.

The study should reveal those areas where there may be redundancies, duplications, and overlaps between the museums which are part of the Smithsonian family. Perhaps more important, it should reveal major gaps and suggest strategies to fill them.

It should be noted that a study of this kind will have profound implications for the future growth of the Institution, and strongly influence the development of cooperative programs with other museums. The days of intense competition in the acquisition of collections are gone. New ways must be found to avoid unnecessary duplication, encourage joint research, and developing, wherever appropriate, centers of scholarship, that can serve a wider constituency. In many fields comprehensiveness is a vital requirement. Ways must be found so that everyone does not continue to attempt comprehensiveness in everything. This is not only wasteful, but it is impossible. This study should help the Institution to reach a correct equilibrium.

Question. Doesn't each museum currently have this information as it relates to individual collections? Why is this study so expensive?

Answer. Each collecting discipline has its own requirements, its own recording processes, and its own manner of operation. One cannot compare, for example,

the methods or approaches in the collecting of rocks and the collecting of insects, or in the collecting of birds and in the collecting of flora. What we want to determine is exactly what governs the collecting process within all of our collections, what are the reviews and assignments of responsibility and how these mesh into Institution-wide policies and practices.

Decisions on redundancies or duplications cannot be reached hastily and it is easy to introduce subjective judgments. For this reason, and to obtain impartial and valid results, the Institution feels that it should call upon outside expertise as required. The study should withstand detailed and critical review of the Nation's most competent specialists. No doubt it would be considered self-serving, and probably counter-productive, if the Institution took the position that its professional staff had no peers and that our procedures and recommendations could not be improved by a review from colleagues elsewhere.

The compilation of data, and its codification into a usable form, will consume considerable administrative time and secretarial services in addition to the staff time of our curatorial departments. A portion of the sum requested will be used to defray these costs and to hire temporary personnel so that the ongoing programs of the Institution can be maintained at a rate responsive to the Institution's own needs and to the demands of an increasingly large number of visitors and specialists who use the Smithsonian's resources.

Registrar

Question. With decentralization of the Office of the Registrar, why can't you reduce the office operating budget?

Answer. The Office of the Registrar has been undergoing decentralization since Fiscal Year 1974. This process has been slower than anticipated since certain duties were kept centralized until a new Registrar was found. This has now been accomplished and he is now completing the decentralization by moving personnel to the National Museum of Natural History, the National Museum of History and Technology, and the Smithsonian Archives. A central office of the Registrar will be left with 3 or 4 positions and an annual budget of slightly more than $100,000 per year.

Question. Last year you supplied a statement showing 7 positions and $134,000 being transferred from the Registrar's office to individual museums or units. Where do these positions and dollars appear in this year's budget?

Answer. The following positions and dollars, mostly related to transportation costs were moved in FY 1975 and are now shown in these units.

Unit	Position	Dollars
Cooper-Hewitt Museum	2	$28,000
Office of Plant Services	2	17,000
National Museum of Natural History	1	36,000
National Air and Space Museum		8,000
National Portrait Gallery	1	11,000
National Collection of Fine Arts		12,000
Archives of American Art		1,000
National Museum of History and Technology		9,000
Office of International Programs (this was moved to the Museum of Natural History with the Sorting Center)		2,000
Assistant Secretary for Public Service	1	10,000
	7	$134,000

Question. Last year your budget justification said decentralization of the Registrar's activities should be accomplished by FY 1975. This year the accomplishment date is FY 1977. What happened?

Answer. As was stated earlier, the position of Registrar was more difficult to fill than had been anticipated. The position is now filled and the final phase of the decentralization is being worked out with the two major museums.

Libraries

Question. You request a substantial increase in library programs--5 positions and $150,000. This seems to be a never-ending cycle--increased acquisition and then increased positions to manage acquisitions. Please give us an idea of where this program will stand with the requested increases, and what the future plans are.

Answer. The increase of $150,000 and 5 positions will continue the Libraries slow but steady progress toward providing basic library services to the programs of the Smithsonian Institution in a timely and efficient manner.

The requested increase in acquisition funds will build the book and journal base to $255,000--55 percent of the estimated target required to adequately meet the book and journal needs of all Smithsonian Institution programs, including programs, such as Horticultural Services and the Office of Museum Programs, not now supported by the Libraries.

The $25,000 increase for cataloguing systems will bring the Libraries to within 50 percent of the amount estimated for full implementation of the computerized cataloguing system and the development of an automated serial record system.

A $30,000 increase in funds for conservation will enable the Libraries to reach 60 percent of its goal of filling all current and backlogged binding needs. Some additional funds will be required for equipment to build a conservation facility, now in the planning stage.

In FY 1975, the Libraries received 21 new positions. This enabled the Libraries to make considerable gains in bringing staff up to the level required to support increased Institution size and programs. We estimated that 75 to 80 percent of the Libraries present staffing requirements are now met. Some increases in staff will be required to process newly acquired materials as the book and journal budget is brought up to a level commensurate with users' needs. The Libraries anticipate slowing the rate of growth of staff by improving the productivity of existing staff through the utilization of advanced technology and improved management techniques. New staff are needed primarily to serve library locations which are unstaffed or still understaffed.

Research Awards Program

Question. You've been operating the Research Awards Program for several years at a stable level. What prompts this one-third, $150,000 increase at this time?

Answer. The program is highly competitive in that only 37 of 64 proposals were funded in FY 1976 before the limit of $450,000 was reached. The 64 proposals submitted represented a total of $1,790,000. Many excellent projects, therefore,

had to be turned down. In addition, members of the Smithsonian staff have been allowed to submit proposals for funding up to three years in order to provide for better stability, continuity, and planning of research. In FY 1977, there is committed $125,000 to second year funding. There has been no funding increase in this program since FY 1973. The Institution has put a very high priority on requesting additional funds of $150,000 to offset what has been lost by inflation and more positively to encourage and sustain the quality of research for which the Smithsonian is justly known.

Question. To whom do these research grants go? Please provide a listing and a brief description of 1975 grants.

Answer. The following list contains a brief description of FY 1975 grants.

Principal Investigator	Brief Description of Grant
Dr. J. Laurens Barnard	An ecological investigation of freshwater shrimp and their relationship to pollution of aquatic environments.
Dr. Richard S. Cowan	Botanical Study of Tropical Trees
Dr. Bert G. Drake	Net CO_2 Exchange and Primary Productivity in Three Chesapeake Bay Salt Marsh Communities
Dr. W. Donald Duckworth	Studies of New World Moths
Dr. Clifford Evans	A study of Prehistoric Human Ecology in the Amazon
Mr. John Fesperman	Spanish and American organ building in Mexico 1600-1800
Dr. William Fitzhugh	Archeological Investigations of Central Labrador Coast
Dr. F. Raymond Fosberg	Ecological and Botanical Studies of the South Pacific
Dr. Kurt Fredriksson	A Mineralogical Study of Meteorite-like Objects
Dr. Robert F. Fudali	A study of the structure and origin of a selected crater in Australia
Dr. Robert Gibbs	A Biological Investigation of Selected Deep Sea Fishes of the "Ocean Acre" off Bermuda
Dr. Paul Gorenstein	The development of scientific instrumentation to measure high energy sources in space
Dr. Jeffrey B. Graham	An investigation relating to the origins of air breathing fishes and their relationship to the evolutionary process
Dr. Clinton W. Gray	Veterinary Research on the Anesthetizing of Animals
Dr. W. Ronald Heyer	Zoological Studies of New World Amphibians
Dr. Leo J. Hickey	An Evolutionary Investigation of Leaf Development
Dr. Luigi G. Jacchia	A Global Study of the Variations in Upper-Atmosphere Composition that Accompany Transient Changes in the Earth's Magnetic Field
Dr. Erle G. Kauffman	Geological Research on the Evolution of Atlantic Marine Fossils
Dr. D. E. Kleinmann	The Fabrication Instrumentation to Determine the Source of Certain Galatic Energy
Dr. Olga F. Linares	Study of Social and Political Organization of African Wet-Rice Cultivators
Dr. Maurice M. Margulies	A Study of the Development and Movement of Cell Proteins in the Photosynthesis Process
Dr. Lawrence Mertz	The Fabrication of New Telescopic Lenses to Study Faint Astronomical Objects

Principal Investigator	Brief Description of Grant
Dr. Arthur P. Molella	The Physics and Natural Philosophy of Gustav T. Fechner (1801-1887): A Study in the Development of German Atomic Tradition
Dr. David L. Pawson	Study of Marine Invertebrates in the Southern Oceans
Dr. J. W. Pierce	Marine Sediment Study
Dr. Clayton E. Ray	Studies of the Evolution of Marine Mammals
Dr. Nathan Reingold	The Magnetic Crusade, 1830-1850: A Study of Science and Public Policy in Great Britain
Dr. R. Schild	The Development of Instrumentation to Increase Visibility of Light Emissions from the Sky
Dr. Beryl B. Simpson	A Selected Study of Plant-Insect Coevolution and biogeography
Dr. Thomas R. Soderstrom	A Taxonomic And Ecological Investigation of Bamboos and Their Role in the Development of the Amazon
Dr. Daniel J. Stanley	Mediterranean Basin (MEDIBA) Project: Oceanography and Sedimentology of Deep Basins, and Application to the Geological Record
Dr. William Trousdale	Archeological Studies of Southwestern Afghanistan
Dr. Dieter C. Wasshausen	Botanical Survey of the Peruvian Andes
Dr. Trevor C. Weekes	An Investigation Into the Origins of Cosmic Radiation at High Energy Sources in Space
Dr. John Wurdack	The Taxonomy of Selected Flora in Ecuador
Dr. Richard L. Zusi	A Comparative Study of the Systematics and Adaptation of Hummingbirds and Their Role in Evolution
Dr. Devra G. Kleiman	Research in Animal Behavior in the Wolf Family

Office of Equal Opportunity

Question. You are requesting $50,000 for a replacement pool of five positions in your Upward Mobility Program. Would you please explain this concept to the Committee?

Answer. The concept of a replacement pool has been adopted by many federal agencies to encourage and expand their upward mobility programs. These replacement pools provide a central source of funding for employees who are subsequently given the opportunity to participate in extensive training programs designed for career advancement. Organizational units whose employees are selected for training programs are permitted to retain those positions and funds so that they may hire needed replacements. When an employee has completed the training which has been funded from the pool, he is placed in an existing vacancy suited to his newly acquired skills; and, at that time, the trainee's position and funds revert to the replacement pool and are available for another upward mobility candidate. Thus, the replacement pool concept enhances the potential of the Upward Mobility Program by benefitting both the individual and the organization.

Question. This request nearly doubles the staff. Aren't there other ways to make the program work without hiring 5 new positions?

Answer. The Upward Mobility Program is administered by the Office of Equal Opportunity within its current ceiling of six employees. The five new positions requested are not permanent staff positions, and OEO does not plan new staff increases in the foreseeable future. Currently, six organization units are training 18 upward mobility employees in the program, with positions and salaries provided by the participating unit. The five requested pool positions would strengthen EEO's affirmative action goals as well as improve the Institution's

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Upward Mobility Program through establishment of a viable training program that would mutually benefit the needs of the particular office and the lower-level employee.

Protection

Question. Aside from the annualization of last year's positions, you are asking for 30 positions to provide protection to exhibits that will remain open after the Bicentennial. How are these exhibits being protected this year? Please provide us with the details of exactly where these new positions will be used.

Answer. The exhibits are being protected by 30 temporary guard positions funded by special Bicentennial Program funds which are not available in FY 1977. In order to provide adequate protection for the exhibits beyond the Bicentennial observance, 30 permanent positions are required as follows:

1. Natural History Building - 12 positions
   "Our Changing Land", "Living Arthopods", West Court, and Checkroom

2. History and Technology Building - 8 positions
   "Nation of Nations", West Entrance, and Terrace

3. Arts and Industries Building - 8 positions
   "1876" exhibition

4. Fine Arts and Portrait Galleries - 2 positions
   Third floor gallery, National Portrait Gallery

Special Foreign Currency Program

Question. On page C-1, you show a dramatic decrease in the costs under the Special Foreign Currency Program. It drops from $100,000 in 1975 to $10,000 for Fiscal 1977. How was this accomplished?

Answer. The FY 1977 Grant Administration estimate you refer to is dramatically lower than the actual amount of funds employed in Fiscal Year 1975 for two reasons:

(1) The Institution closed its liaison office in India in FY 1976 because the Government of India has slowed approvals of new research substantially. We retain only one Indian clerk who works under the supervision of the Science Attache in the American Embassy there. As a consequence the Institution will not be committing new funds to that operation in FY 1977, and

(2) The Department of State has requested and the Smithsonian agreed to a $19,000 permanent transfer to the Department of State from our Special Foreign Currency Program appropriation to reimburse them for the work they do for the Institution. This item covers Shared Administrative Expenses reported in the Institution's FY 1977 Foreign Currency Program Budget Supplement, "Program Purposes and List of Grants" on page 34. The Smithsonian reimbursed the State Department $41,496 in FY 1975, a figure more than double the amount we must pay them under the new arrangement in FY 1977.

Zoo Construction

Question. Your justification for Zoo construction states that when it appears to be more cost effective, inhouse labor will be used for construction. How much of this has gone on in the past?

Answer. With Congressional approval received in 1976, temporary Zoo employees have worked on a few renovation projects, primarily at Front Royal. Such employees have erected fences at Front Royal at a significant cost savings, $5.50 per running foot for labor and materials contrasted with $20.00 per foot charged by outside contractors. These employees also have renovated two large buildings at Front Royal for housing animals, renovated barns to accept animals and made dwellings liveable for conference participants, visiting scientists and staff.

This has been a very important authority for us in a developmental stage at Front Royal.

Mt. Hopkins Observatory

Question. $250,000 is requested for road work and water system improvements at Mt. Hopkins Observatory. How much of this request is for water system? Is that project cost effective?

Answer. Of the $250,000 requested, about $100,000 is for water system improvement which consists of brining water to Mt. Hopkins from the closest permanent spring located 1.5 miles away on the saddle of Mt. Wrightson. This spring has been monitored for two years and is found to have a constant flow in excess of 6 gallons per minute, or an annual capacity of over 3,000,000 gallons.

The proposed system will pump water from the spring via underground pipes to five existing storage tanks located at Mt. Hopkins which have a total capacity of 90,000 gallons. From these tanks, water will be distributed to various buildings and sites via an existing underground system.

Current water consumption at Mt. Hopkins is at 40,000 gallons per year, and is estimated to increase to 90,000 gallons per year upon completion of the Multiple Mirror Telescope and related support facilities.

At the present time, water is hauled for a distance of 17 miles by means of 2,500 gallon capacity water truck at a cost of $0.07 per gallon. At the current rate of consumption this represents a cost of $28,000 per year. At the projected rate of consumption, the cost will increase to $63,000 per year.

Consequently, the proposed $100,000 water system will pay for itself in less than four years at the present rate of water consumption, and in less than two years at the projected rate. Furthermore, it is economically advantageous to install the system in fiscal year 1977 before the increased water usage and related cost of hauling take place.

Renovation

Question. Your justification states that $200,000 requested for monitoring equipment would provide for only one building. Which one? When do you plan to do the others?

Answer. The first installation would be in the History and Technology Building. Future installations in our major public buildings, such as the Natural History Museum Building, would be phased over the next three to five years depending on the availability of funds.

Question. You are requesting more than $1 million for general repairs and improvements, more than double your 1976 program. Why is this large increase needed at this time?

Answer. You are correct, an increase from $467,000 to $1,075,000 is large. In our minds, however, the $467,000 was very inadequate for the reasons I gave in response to this question on the total request for $3.3 million in this account. We have a very large physical plant and it is aging. As you are aware, four of our major buildings, the Smithsonian Institution Building, Fine Arts and Portrait Galleries, the Renwick, and the Arts and Industries Building, are over 100 years old or more. A large visitation unavoidably results in wear and tear. Elevators, escalators, plumbing, roofs, and many other components of our buildings need to be repaired and replaced. Public safety is a factor. This request amounts to something like $0.30 a square foot which seems to us to be a prudent investment to try and ward off future year major expenditures resulting from neglect.

Question. Your justification speaks of annual funding for general repairs and improvements. At what level?

Answer. At present, the amount of about $1 million a year appears to be a realistic figure. We may need to increase this to accomplish the same level of work each year as inflation rises.

Grants from Other Agencies

Question. Page E-11 of your justification breaks down the grants you received from other Federal agencies. What is the anticipated level for FY 1976? We note it has been increasing over the years.

Answer. Grant proposals are submitted and approved all during a fiscal year. It would be difficult to predict exactly what requests for grants will be submitted in FY 1977. It would be even more difficult to predict which grants will be approved. Grants for FY 1977 will probably be received in the amount of $528,000, which is the same as FY 1976.

Question. The Committee understands the Smithsonian recently ordered a large number of chairs for the new Air and Space Museum and that a decision was made subsequent to acceptance and purchase that the chairs were not acceptable.

Please supply full details about the purchase, including total cost, type of chair, size and nature of order (standard stock or custom specification) and current status of the furniture.

What are current plans for using or disposing of the chairs? What portion, if any, of the cost could be recovered?

How will replacement chairs be obtained? What would be the source of funding for any additional purchase?

Who made the decision to accept the original purchase and on what basis?

Who made the decision to reject the chairs and on what basis?

Answer. The architectural firm of Hellmuth, Obata, Kassabaum, who designed the building, was awarded the contract for the graphics and interior decoration of the building. This contract included furniture selection. Final approvals for all HOK recommendations were made by the Director with the advice of his staff.

For the 3 major open galleries, 217 Stendig "Digit" (630-Series) seats were purchased at a cost of $33,500.00 in a negotiated contract. When the order for these custom chairs was placed in July 1974, the design of exhibit units for these galleries was still in progress. The order for these chairs had to be placed while the galleries were undergoing design and fabrication to ensure delivery in time for the public opening. Subsequent design decisions resulted in increased floor space devoted to artifacts and other exhibit units. When the furniture was placed in the building, it was decided that the number of Stendig pieces was excessive for the area in which they were to be placed, and that only 72 seats would be required.

The surplus pieces of Stendig will be made available by GSA to other government agencies in accordance with standard procedures.

HOK also recommended the purchase of 132 Vecta units from the General Services Administration at a cost of $23,190.20. These chairs were standard stock, ordered with various hued upholstery for use on the balconies on the second floor. As was the case with the Stendig order, this order had to be placed while the balconies were still under design and fabrication to ensure delivery prior to public opening of the Museum. Upon delivery and installation in the Museum, it was ascertained that some of the chairs' upholstery clashed with the surrounding decor. It was therefore decided to recover 90 of these chairs at a cost of $8,500. All Vecta chairs will be used in the building.

Construction funds were used for the purchase of both sets of chairs and for the reupholstering of the 90 Vecta chairs.

The decision to accept the chairs was made by the Director of the Air and Space Museum since they met the specifications of the contract.

The decision to use only limited numbers of the Stendig chairs was made by the Director of the National Air and Space Museum with the advice of his staff. This same group also made the decision with regard to the reupholstering of the Vecta chairs.

SUBCOMMITTEE RECESS

Senator HATFIELD. Thank you, gentlemen.

The subcommittee will be in recess pending the call of the Chair.

[Whereupon, at 12:50 p.m., Tuesday, March 23, the subcommittee was recessed to reconvene at the call of the Chair.]

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1977

THURSDAY, MARCH 25, 1976

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

The subcommittee met at 10 a.m., in room 1114, Everett McKinley Dirksen Office Building, Hon. Mark O. Hatfield presiding.

Present: Senator Hatfield.

INDIAN CLAIMS COMMISSION

STATEMENT OF JEROME K. KUYKENDALL, CHAIRMAN

ACCOMPANIED BY:

JOHN T. VANCE, COMMISSIONER
RICHARD W. YARBOROUGH, COMMISSIONER
MARGARET H. PIERCE, COMMISSIONER
HARRY E. WEBB, JR., CHIEF COUNSEL
DAVID H. BIGELOW, EXECUTIVE DIRECTOR

OPENING REMARKS OF SENATOR HATFIELD

Senator HATFIELD. The hearing will come to order. This morning we will hear the budget estimates of several agencies, commissions and organizations. I believe we can move through these budget hearings rather quickly, and to expedite the hearing process I would like to have each of you to keep your opening summations brief and to the point. The full prepared statement will be placed in the record, once you have presented it to the committee.

NAVAJO-HOPI AND FDR COMMISSIONS

In the case of the Franklin Delano Roosevelt Memorial Commission and the Navajo-Hopi Relocation Commission where witnesses would have to incur substantial travel, we have decided to submit written questions to be answered for the record. These will be included at the close of today's record.

We will begin this morning with the Indian Claims Commission, and then take up the National Capital Planning Commission, the Woodrow Wilson Center, the Commission of Fine Arts and the National Gallery of Art, in that order.

So at this point, if the representatives of the Indian Claims Commission will come forward, we would be very happy to receive your testimony.

[The statement follows:]

The Commission is requesting an appropriation of $1,530,000 for fiscal year 1977. Our operating plan for the current fiscal year totals $1,411,000. The $119,000 increase will permit continuation of operations at the fiscal year 1976 level. We expect personnel costs to increase by $97,000, rent by $15,000, and all other costs by $7,000.

NATURE AND DURATION OF THE COMMISSION

The Indian Claims Commission is a temporary independent agency engaged in the adjudication of Indian claims filed under the Indian Claims Commission Act, as amended. Under existing law the Commission's existence will terminate on April 10, 1977, and any work not finished by that date will automatically be transferred to the Court of Claims.

STATUS OF WORK

The summary that accompanies this statement shows the status of all Indian claims cases on March 25, 1976. Additional information on the work of the Commission may be found in our report of December 31, 1975, and in our 1975 Annual Report. Copies of both reports have been furnished to the Committee and additional copies are available if needed.

AUTHORIZATION

The amendment to the Indian Claims Commission Act of March 30, 1972, which extended the life of the Commission to April 10, 1977, provides that appropriations for fiscal years subsequent to fiscal year 1973 shall be made only to the extent thereafter authorized by Congress. On Thursday, March 18, 1976, we appeared before the Subcommittee on Indian Affairs of the House Committee on Interior and Insular Affairs to testify on H. R. 11909, a bill "To authorize appropriations for the Indian Claims Commission for fiscal year 1977." At that time we suggested that an authorization of $1,650,000 be enacted. A hearing before the Senate Subcommittee on Indian Affairs on S. 2981, the Senate version of our FY 1977 authorization bill, has not been scheduled.

SUMMARY

We greatly appreciate this Subcommittee's continued interest in our work. Please be assured that we will continue to exert every possible effort toward disposing of the remaining claims as rapidly as possible.

INDIAN CLAIMS COMMISSION

SUMMARY OF INDIAN CLAIMS CASES ON MARCH 25, 1976

CLAIMS FILED	Number of Dockets
Received through August 13, 1951	370
Causes severed from original claims and redocketed as separate claims	245
Total docketed	615
CLAIMS DISPOSED OF	
By awards certified to the Treasury Department totaling $576,300,372.50	265
By orders of dismissal	195
Total disposed of	460
CLAIMS PENDING	155

SUMMARY OF THE STATUS OF PENDING INDIAN CLAIMS

Pending before the Court of Claims on appeal from Commission decisions:	
Cases with final awards totaling $96,821.21 (Dockets 197, 206, and 208)	3
Cases with interlocutory decisions (Dockets 182-A, 196, 226, 229, and 326-K)	5
Total before the Court of Claims	8
Pending before the Supreme Court on petitions for writs of certiorari to the Court of Claims or involved in such petitions:	
Cases with interlocutory decisions (Dockets 13-E, 13-F, 15-I, 22-G, 27, 27-E, 29-D, 29-G, 64-A, 133-A, 133-C 139, 141, 202, 302, 308, 326-A, and 326-C)	18
Cases with orders dismissing the plaintiffs' claims (Dockets 18-K, 18-L, 89, 341-C and 341-D)	5
Total before the Supreme Court	23
Pending under the Commission's jurisdiction:	
Consolidated cases with final award in the sum of $12,262,780.63 remanded by the Court of Claims (Dockets 73 and 151)	2
Case with final award of $10,000,000.00 not as yet reportable because of outstanding appeal rights of dismissed intervenors (Docket 22-C)	1
Other cases in various stages of litigation	121
Total under the Commission's jurisdiction	124

BUDGET ESTIMATE

Senator HATFIELD. Your budget request is $1.5 million?

Mr. KUYKENDALL. That is correct.

Senator HATFIELD. Please have a chair. This is an increase of some $120,000 over appropriations to date. The justification has been included in part 2 of the record.

Mr. Kuykendall, will you please introduce those with you and go ahead with your summary statement? As I say, your full prepared statement will be put in the record.

Mr. KUYKENDALL. I thought my colleagues were coming forward, too. They are sitting back here. To the left in the front row is Mr. Yarborough of Texas. On your extreme left, Commissioner Pierce and Commissioner Vance.

Senator HATFIELD. We welcome all of you here this morning. Feel free to come up and participate, as you wish.

Mr. KUYKENDALL. Mr. Harry Webb, our Chief Counsel, is on my right, and Mr. Bigelow, my Executive Director, is on my left. We have a rather brief statement. I thought I understood you to say previously you would probably just put the statement in the record.

Senator HATFIELD. We will.

Mr. KUYKENDALL. Do you want me to read it?

Senator HATFIELD. No, it will not be necessary to read it. If you would care to just highlight it, or make some general summation, that would be fine.

AUTHORIZATION STATUS

Mr. KUYKENDALL. I might add something to the paragraph entitled, "Authorization", in view of events subsequent to the preparation of my written statement. The President has proposed that the Commission's life be extended to September 30, 1978. Currently the Commission's life would expire on April 10 of 1977.

Senator HATFIELD. How many times has this been extended, the life of this Commission?

Mr. KUYKENDALL. Four times.

Senator HATFIELD. So you have five times to go; is that right?

Mr. KUYKENDALL. Right. The Administration bill, is H.R. 12645, which was introduced in the House on March 18, 1975. H.R. 11909, the authorization bill currently being considered by the House Committee on Interior and Insular Affairs, contains no provision for extension; but the committee is aware of the Administration's proposal.

Furthermore, on March 23rd the Senate Committee on Interior and Insular Affairs reported S. 2981 with an amendment that would extend the Commission's life to September 30, 1980. S. 2981 contains an authorization for $1,650,000 for fiscal 1977, which is more than the appropriation requested, but that is to allow for anticipated salary increases and any other contingencies that come about.

DOCKETS

Senator HATFIELD. Thank you very much, Mr. Kuykendall. According to your information you have 615 dockets filed with the Commission, and your justification indicates that 168 are pending. How many are involved in appeal?

Mr. KUYKENDALL. That is indicated below there. There are 155 claims pending, I believe, and 8 are pending in the Court of Claims, and 23 are pending before the Supreme Court. There are a total right now of 124 that are under the Commission's jurisdiction.

TRAVEL

Senator HATFIELD. Turning to your travel request, it is the same as last year. What has been your experience as far as this point in fiscal 1976? Exactly how much of the current travel amount has been spent?

Mr. KUYKENDALL. We do not have a great deal of travel. There are occasions where trials are held near the tribes, somewhere in the West. But most of our cases now are tried here.

There are other occasions when a Commissioner will go to some Indian meeting, where it appears appropriate that he should attend. But by and large——

Senator HATFIELD. You have $14,000, I believe, listed as your current request.

Mr. KUYKENDALL. Through February of this year we have spent $4,475 on travel.

Senator HATFIELD. Of the $14,000 that was authorized?

Mr. KUYKENDALL. Yes.

Senator HATFIELD. You are projecting, then, that you will spend from this point on through fiscal 1976 $10,000?

Mr. KUYKENDALL. I would not anticipate it would be that much.

Senator HATFIELD. In other words—well, based upon your current fiscal 1976 experience it seems to me your request for fiscal 1977, if there is going to be any similarity between the two fiscal years, is overestimated.

Mr. KUYKENDALL. Travel in recent years has not exceeded $7,000.

Senator HATFIELD. $7,000?

Mr. KUYKENDALL. $7,000.

Senator HATFIELD. The request is for $14,000, which is the same as current year's request authorization.

Mr. KUYKENDALL. Yes. I anticipate that is more than we will spend.

SPACE AND EQUIPMENT COSTS

Senator HATFIELD. Now, turning to your rental and space costs, I note that you have said that your increased requirement will be $15,000 over the current level of space. How much will that bring to the total cost—$15,000 is an increase—but what is the total figure for your space and rental allocation?

Mr. KUYKENDALL. I might say that we pay the rent to GSA, and this is largely a bookkeeping transaction. But Mr. Bigelow will speak to that.

Senator HATFIELD. Well, you can supply that for the record.

Mr. KUYKENDALL. He will find it in a second.

Senator HATFIELD. While you are looking for that you might also check for the equipment increase of some $4,000, I believe, to replace the obsolete office equipment.

Give me a few examples of the obsolete equipment that you are replacing.

Mr. BIGELOW. This would depend on various contingencies but it seems that quite a bit of the equipment currently in use is obsolescent, and in the event the life of the Commission is extended beyond what is currently projected, then it would make sense to replace some of the equipment.

Senator HATFIELD. You are projecting this increase on, then, the presumption of the extension of the Commission?

Mr. BIGELOW. The appropriation figure is contingent upon a full year's operation, and should the full year's operation turn out to be the case, then it would become necessary to replace some equipment.

Senator HATFIELD. So the $4,000 is not particularly for the fiscal 1977 period only?

Mr. BIGELOW. That is correct.

The rent figure that you requested is $101,000.

Senator HATFIELD. That is the total figure of your space and rental costs?

Mr. BIGELOW. Yes.

Senator HATFIELD. All right, thank you very much, gentlemen. We appreciate your coming this morning.

NATIONAL CAPITAL PLANNING COMMISSION

STATEMENT OF DAVID M. CHILDS, CHAIRMAN

ACCOMPANIED BY:

CHARLES H. CONRAD, EXECUTIVE DIRECTOR

DONALD F. BOZARTH, DIRECTOR, FEDERAL PLANNING DIVISION

GEORGE H. F. OBERLANDER, DIRECTOR, FEDERAL REVIEW DIVISION

DANIEL H. SHEAR, GENERAL COUNSEL AND SECRETARY

MALCOLM L. TREVOR, ASSISTANT EXECUTIVE DIRECTOR FOR ADMINISTRATION

PREPARED STATEMENT

Senator HATFIELD. May I invite the National Capital Planning Commission, please?

Mr. Childs, we have received your prepared statement and it will be inserted at this point in the record.

[The statement follows:]

Mr. Chairman and members of the Committee, I am pleased to present the Commission's appropriations estimates for Fiscal Year 1977. I would like to introduce accompanying members of the Commission staff:

Charles H. Conrad, Executive Director
Donald F. Bozarth, Director, Federal Planning Division
George H. F. Oberlander, Director, Federal Review Division
Daniel H. Shear, General Counsel and Secretary
Malcolm L. Trevor, Assistant Executive Director for Administration

The President's budget request for the Commission for Fiscal Year 1977 is $1,904,000. This figure represents only a difference of $33,000 over our Fiscal Year 1976 appropriation. That difference is the additional rent GSA plans to charge us for our existing office space. Other than for that overall increase, we are not asking for any additional monies above the $1,871,000 received for Fiscal Year 1976. We are attempting to cut certain administrative costs in order to cover the increased cost of others. The 5% pay raise of last October is an example of such increased cost we will attempt to absorb.

Your favorable consideration of our Fiscal Year 1977 budget will enable the Commission to continue to accomplish its statutory mission.

Mr. Childs is the Director of the Washington office of Skidmore, Owings and Merrill, an urban design, architectural and engineering consulting firm, where he has been responsible for many significant architectural, landscape and master planning projects. He has recently completed plans for two major Bicentennial projects now under construction in Washington - the redesign of the Mall between the Capitol and the Washington Monument and the development of Constitution Gardens adjacent to the Lincoln Memorial. In addition, he is currently working on designs for a laboratory at the U.S. Army Environmental Hygiene Agency, Aberdeen, Maryland; a private commercial office building in downtown Washington; a hospital and clinic in Wausau, Wisconsin; and various terminal facilities at New Jeddah Airport in Saudi Arabia.

Prior to joining SOM Mr. Childs served for three years as Executive Director of the President's Commission on Pennsylvania Avenue. In this position he was responsible for planning, design development and implementation of the Pennsylvania Avenue Plan, and also directed preparation of legislation, later enacted by Congress, to create a publicly funded development corporation to implement the program. During this period he co-authored the publication, Pennsylvania Avenue: A Report to the President, with Frederick Gutheim and Louise Campbell; later at request of the President he assisted in the preparation of a report, Recommendations for a National Land Use Policy, a reference document for use in formulation of Administration policy.

Mr. Childs has Bachelor of Arts and Master of Architecture Degrees from Yale University and is a registered architect in the District of Columbia, Commonwealth of Virginia, and the States of Maryland, South Carolina and New York. A member of the American Institute of Architects, he is an appointed member of the Advisory Task Force to the Architect of the Capitol.

BUDGET ESTIMATE

Senator HATFIELD. I understand that we have a request of $1.9 million, which represents a $33,000 increase; is that correct?

Mr. CHILDS. That is correct.

Senator HATFIELD. And the justification has been included in part 2 of the record. If you will introduce your associates, then, and merely comment or highlight your written statement I would appreciate it.

Mr. CHILDS. Thank you, Senator. My name is David M. Childs, and I am Chairman of the Commission. To my right is Mr. Conrad, who has appeared several times before you in the past, and this is my first opportunity to be here myself.

On my far right is Mr. Trevor, who will be able to address some of the details of the specifics of the appropriation request before you, and on my left Mr. Shear, who is the General Counsel of the Commission.

Senator HATFIELD. We are happy to welcome the Chairman here this morning to make the presentation.

Mr. CHILDS. I would like to say that it is a great opportunity for me to be here. My opening statement, as you say, has been included in the record, and I would be happy to answer any questions that you might have.

NCPC PROGRAMS AND RESPONSIBILITIES

Senator HATFIELD. All right. Some of the questions which intrigue me are not only the monetary increase represented in your budget over last year—over the current fiscal year, but where we have the advent of city planning and an agency now dedicated to that.

Do you anticipate, and if not, why, that the Capital Planning Commission's programs and responsibilities will decrease?

Mr. CHILDS. No. On the contrary, they will probably increase. In this first year of a trial period, it is splitting the planning functions between two different agencies. It is a period of testing, of reorganization, of determining which role will be played by which different agency, and, in fact, to me it is a great opportunity for the National Capital Planning Commission to direct its attentions now to doing many of the things that it has been legislated to do, but has not had the opportunity to do—to create a full comprehensive plan for the Capital, for instance, or to direct its attention to the overriding issues of total land use, and other factors in the District of Columbia. We have had a complete reorganization of the staff.

We, of course, must review all projects that come before us, to judge for the federal interest, as requested in the Home Rule Act.

So that, in fact, staff activity has got to continue on every proposal, to determine whether or not there will be a federal interest.

Senator HATFIELD. You are telling me it is increasing now, with the advent of the planning districts, planning agencies? You are saying that your job, the Commission's job, is increasing, not decreasing?

Mr. CHILDS. I would say that we have increased many areas of the Commission's activities, particularly those in terms of the comprehensive plan for the District of Columbia. As I said, the——

Senator HATFIELD. These areas, are these areas that you were not able to undertake before?

Mr. CHILDS. That is correct.

Senator HATFIELD. In other words, the District's agency on planning, then, has relieved you of a certain area of responsibility that you carried in the past, but this frees you to then undertake other areas that you feel are important, but for which you had no time or personnel to undertake it in the past?

Mr. CHILDS. In the past there has necessarily been a great deal of individual project review. Many of those projects are smaller projects that the District is now undertaking, has built up its staff to do.

In the beginning, of course, the District government continued to rely on the Planning Commission to undertake many of these individual projects in-house. We would assist them as they developed their own capabilities.

RELATIONSHIP WITH FINE ARTS COMMISSION

Senator HATFIELD. Are you satisfied that there is no overlapping now between the Fine Arts Commission and the National Capital Planning Commission and the District's planning agency?

Mr. CHILDS. I think there is a very necessary overlap. They are very discreet responsibilities that we have, yet in many areas land-use planning and the architectural designs are naturally aesthetic questions that the Planning Commission gets into. And, conversely, some planning is used that the Fine Arts gets into.

Senator HATFIELD. Why?

Mr. CHILDS. Well, to clarify that, there are many, many issues with the Fine Arts Commission, on which we rely 100 percent for their recommendation, but because a determination—and, for example, land use, and where a type of industrial building would go, it will definitely have an aesthetic impact if we located it right on the shorefront.

Senator HATFIELD. Aesthetic impact?

Mr. CHILDS. Yes.

Senator HATFIELD. You are concerned about aesthetics?

Mr. CHILDS. We are concerned about the aesthetics of the built environment. The Planning Commission, which is responsible for comprehensive planning in the District, has a clear split. There are necessarily grey areas, as there would be in most fields.

We have been able to work very closely with them, in resolving these different questions, and I would say in 99 percent of the cases, it is a matter of taking their recommendation, and they ours.

Senator HATFIELD. Did you approve of the FBI Building?

Mr. CHILDS. The Planning Commission did—before my time—approve it.

Senator HATFIELD. Did they approve of this addition to the National Gallery of Art?

Mr. CHILDS. The Planning Commission did—again, in the past—approve of that addition.

Senator HATFIELD. Did you approve the new Labor Building?

Mr. CHILDS. Yes, sir.

Senator HATFIELD. Do you have any other recommendations that you could offer, any credentials besides those that I have enumerated?

Mr. CHILDS. Excuse me?

Senator HATFIELD. Could you tell me of some of the other things that you have approved of that might impress me more than those three items?

Mr. CHILDS. Yes, we approved the plans for the Mall, which are now being implemented. Now, as you look down, you no longer see a sea of cars. You see a pedestrian walkway, and green grass and trees being replanted. It is one of the central planning areas that we have been involved with.

Senator HATFIELD. That helps.

Mr. CHILDS. Good.

Senator HATFIELD. I would say that my own observation is that aesthetic taste is lacking in the city, particularly as I look at those three structures, especially that National Gallery of Art. That is the worst abortion I have seen in quite awhile.

I will have an opportunity to hear from the National Gallery of Art people later, I suppose. I used to see the Capitol, driving up Constitution Avenue. Now I see a jagged, harsh line, that I think, perhaps, is disastrous.

I know it is like anything else. Aesthetics depends on individual tastes. However, I have not heard any of my colleagues who have disagreed with me on these particular monstrosities that appear in the Capital.

REIMBURSEMENT FOR MEETING ATTENDANCE

Last year the committee expressed some concern over your request for $40,000 to cover $100-a-day reimbursements for meeting attendance.

Would you provide a breakdown of how much of that amount has been used to date, how much for Commission meetings and how much for committee meetings?

Mr. CHILDS. I would be happy to provide that for the record.

[The information follows:]

EXPENSES TO COVER COMMISSION AND COMMITTEE MEETINGS

Thus far this fiscal year we have only spent about $10,000 of the $40,000 we asked for. The reason no more of this money has been spent is that our Chairman, Mr. Childs, has declined to accept any remuneration for his many hours of labor with the Commission. In the original formulation Mr. Child's per diem figured extensively into our calculations. We continue to ask for the total $40,000 allowance since we feel we should not always have to depend on the generosity of our Chairman, or for that matter, any Commission members, in helping cut cost in these matters. By law, they are entitled to $100 per day. Any excess funds in this object class will be returned to the United States Treasury at the end of each fiscal year.

PER DIEM EXPENSES

Senator HATFIELD. And how much is the budget request before us for per diem expenses?

Mr. CHILDS. I believe it is the same amount.

Senator HATFIELD. The same as the current fiscal year?

Mr. CHILDS. That is correct.

Senator HATFIELD. You had some self-imposed travel restrictions, cuts, I think of $4,000. Is this due to the proximity to the meeting place for the members that you have reduced this level?

Mr. TREVOR. Our travel figure, Mr. Chairman, is comprised of staff travel and Commission member travel and our present list of appointed members on our Commission are people who all live in the local area.

In the past we have had people from the western part of the United States who had to commute to the meetings. So now we have them all in the local area, so that necessarily reduces our travel need.

CONSULTANT SERVICES FOR FY 1977

Senator HATFIELD. Also, could you provide for the record your continued request of $50,000 for consultant services, as to what you are projecting as far as those services that would be rendered the projects?

Mr. CHILDS. Yes, sir.

[The information follows:]

PROJECTED CONSULTANT SERVICES FOR FISCAL YEAR 1977

Normally our practice has been to request a base of $50,000 for consulting needs each fiscal year. At the point of formulating our budget some 1½ years ahead of the actual beginning of the fiscal year, it is difficult to identify specifically a breakdown of needs.

This year, however, our demand for services has been so great that the money we are asking for Fiscal Year 1977 has already been totally earmarked. The breakdown is as follows:

1. Federal Transportation Study (Phase III). Money was appropriated for Phases I and II in fiscal year 1975 and fiscal year 1976	$20,000
2. Environment Impact Studies (This is a recurring item)	15,000
3. Federal Research Studies (Federal Model, Federal Data System and Annual Survey of Federal Employment, Space and Land Use)	10,000
4. Comprehensive Planning Studies to Supplement Staff Activities	5,000
Total	50,000

INCREASED COSTS FOR HEALTH UNIT

Senator HATFIELD. I am now talking about future projections. Under "Miscellaneous cost increases" you list "Commission training costs". What type of training are you talking about? And how much of the budget is dedicated to that, please?

Mr. TREVOR. Basically, our increased costs are not that of training. We do have $5,500 in our budget for training. Basically, the additional $6,000 is for health unit increased costs, which Treasury charges us for the use of their health unit, also increased costs for GSA payrolling, which they do since we only have 64 employees. They do our payroll and services, and they charge more each year for that.

NAMES AND TITLES OF STAFF MEMBERS

Senator HATFIELD. I believe, unlike the previous budget request, that you, this year, do not chart your job titles or names for each——

Mr. TREVOR. We will provide that for the record.

[The information follows:]

NATIONAL CAPITAL PLANNING COMMISSION

STAFF

Office of the Executive Director	
1. Executive Director, GS-18	Charles H. Conrad
2. Secretary (Stenography), GS-8	Agnes R. Shanley
Office of the General Counsel and Secretary	
3. General Counsel and Secretary, GS-15	Daniel H. Shear
4. Associate Secretary, GS-13	Edward H. Rickels
5. Assistant General Counsel, GS-13	Terrence M. O'Connor
6. Administrative Assistant, GS-7	Rae R. Nero
7. Clerk-Typist, GS-5	Jacqueline C. Overton
Office of Administration	
8. Assistant Executive Director (Administration), GS-15	Malcolm L. Trevor
9. Administrative Officer, GS-13	Lawrence E. Christmas
10. Fiscal Accounting Assistant, GS-9	Dorothy E. Hayter
11. Administrative Assistant, GS-7	Dennis E. Saub
12. Secretary (Stenography), GS-5	Carolyn M. Stough
13. Clerk, GS-4	Frank V. Shelton
Office of Public Affairs	
14. Chief, GS-14	Samuel K. Frazier, Jr.
15. Visual Information Specialist, GS-12	Leo J. Schmittel
16. Community Planner (Publications), GS-9	Carol A. Hodges
17. Librarian, GS-6	Laure H. Brown
18. Secretary (Typing), GS-6	Ella M. Walker
19. Receptionist, GS-3	Linda M. Orsborn
Federal Review Division	
20. Director, GS-16	George H. F. Oberlander
21. Secretary (Stenography), GS-7	Elora S. Henderson
Transportation Planning Office	
22. Chief, GS-14	Robert W. Harris
23. Highway Engineer, GS-9	Henry W. Lilly
Cartographic Services Office	
24. Chief, GS-11	Francis H. Deter, Jr.
25. Cartographic Technician, GS-7	Thomas H. Meredith
26. Engr. Draftsman (Architectural), GS-7	Richard M. Kelsey
27. Cartographic Technician, GS-7	Andrea J. Zenthe
28. Cartographic Technician, GS-6	Judith W. Gajary
29. Architect, GS-5	Iza I. Putnins
Master & Project Plans Branch	
30. Assistant Director, GS-15	Robert N. Gresham
31. Community Planner (Architect), GS-13	David M. Richards
32. Community Planner, GS-11	Ellen N. Gilreath
33. Urban Designer, GS-11	Francis J. DeSerio
34. Community Planner, GS-9	Robert H. Cosby
35. Community Planner (Architect), GS-9	Robert J. Hefferon
36. Secretary (Typing), GS-6	Janet L. Abate
Zoning Branch	
37. Assistant Director, GS-15	William F. McIntosh
Special Projects Branch	
38. Assistant Director, GS-15	Martin J. Rody
39. Community Planner, GS-9	Fred H. Greenberg
40. Secretary (Typing), GS-6 1/	Carolyn Harrison

1/ Also serves Transportation Planning Office and Historic Preservation Office

Historic Preservation Office	
41. Chief, GS-13	Nancy C. Taylor
Federal Planning Division	
42. Director, GS-16	Donald F. Bozarth
43. Secretary (Stenography), GS-7	Gloria L. Williams
Urban Design Office	
44. Chief, GS-15	Stephen Kloss
45. Architect, GS-13	Donald E. Jackson
46. Architect, GS-7	(Actively recruiting)
Environmental Affairs Office	
47. Chief, GS-13	Patricia Spillenkothen
48. Community Planner, GS-11	Patricia J. Crawford
Capital Improvements Program Branch	
49. Assistant Director, GS-15	C. Gregory Bassett
50. Community Planner, GS-13	James E. Steele
51. Secretary (Stenography), GS-6 1/	Marilyn E. Jones
Federal Policies Branch	
52. Assistant Director, GS-15	Sydnor R. Hodges
53. Deputy Assistant Director, GS-14	Robert H. Cousins
54. Community Planner, GS-11	Granville W. Hurley, Jr.
Comprehensive Planning Branch	
55. Assistant Director, GS-15	Edward C. Hromanik
56. Deputy Assistant Director, GS-14	Richard B. Westbrook
57. Community Planner, GS-11	Jerry H. Gilreath
58. Community Planner, GS-11	Pamela B. Johnson
59. Community Planner, GS-9	Clifford W. Hoy
60. Secretary (Typing), GS-6 2/	Dorothy T. Allen
Research Branch	
61. Assistant Director, GS-15	Robert N. Gold
62. Senior Research Assistant, GS-11	Patrick R. Tribe
63. Research Assistant, GS-11	Stephen A. Meleski
64. Secretary (Stenography), GS-5	Barbara M. Justice

1/ Also serves Environmental Affairs Office

2/ Also serves Federal Policies Branch and Urban Design Office

CLERK-DRIVER POSITION

Senator HATFIELD. Do you still employ a clerk-driver on the Executive Director's staff?

Mr. CHILDS. We do have an assistant, an administrative assistant. He spends some 20 percent of his time in messenger services or whatever, and that has been about constant over the last couple of years.

Senator HATFIELD. Well, I appreciate very much your presence here, Chairman Childs, and Mr. Conrad.

Mr. CHILDS. Thank you very much.

WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS

STATEMENT OF DR. JAMES H. BILLINGTON, DIRECTOR

ACCOMPANIED BY:

PROSSER GIFFORD, DEPUTY DIRECTOR

WILLIAM M. DUNN, ASSISTANT DIRECTOR FOR ADMINISTRATION

PREPARED STATEMENT

Senator HATFIELD. The Woodrow Wilson International Center for Scholars. Good morning, Dr. Billington, I am very happy to see you.

Dr. BILLINGTON. Good morning.

Senator HATFIELD. Dr. Billington, I note in my summary here that your total budget is $1.1 million, and this represents about a $158,000 increase over appropriations to date.

Your full justification will be placed in part 2 of the record, and your prepared statement will be included at this point.

[The statement follows:]

Five Years of the Center

The main features of this center as it has developed in its first five years can be outlined in terms of the words used in the name Congress bestowed upon it.

Woodrow Wilson. This is not just a refuge for researchers, but an official "living memorial" to the educational and civic ideals of our 28th President. Wilson knew and respected the new German-style research university, having taken a Ph.D. at the first of these in America (Johns Hopkins). But Wilson also wanted scholarship to assume a broader function in society. As President of Princeton, he insisted that learning involved both community within and communication beyond the halls of learning.

Congress decreed that Wilson's official national memorial be a community located in the heart of that unique national institution dedicated "to the increase and diffusion of knowledge," the Smithsonian. With neither ritual or fussiness, there has come into being a community of interdisciplinary research and dialogue within this great intellectual context.

International. About 40% of the 176 fellows at the Center so far have been foreign. Thirty-two different countries have been represented, assuring cultural as well as disciplinary diversity. The company of fellows has included more than a dozen foreign heads of states or cabinet officials, and will benefit from growing contacts with major advanced study centers abroad -- and from foreign financial contributions. Direct fellowship support for foreign scholars came from abroad for the first time last year: from the Japan Foundation and from the predominantly German-funded German Fulbright program.

Center. Unlike many comparable institutes, the Wilson Center remains compact. The body of fellows has never exceeded 35 at a time, and even our distant projections foresee 50 as the upper limit. The experience of other institutes for advanced study indicates that after this size is exceeded, bureaucracy is unimpeded.

Many of the fellows from our highly compartamentalized and committee-laden universities often are grateful for a common language of discourse. The Center brings key faculty to this central place in Washington to interact with new people and ideas and to take something new back to their campuses.

For Scholars. The Center has gradually increased the overall percentage of its fellows coming from academic environments to about two-thirds. Promising projects are still aggressively sought from distinguished statesmen and journalists, as well as from a wide variety of practitioners and professional people. Perhaps our most demanding and unending task is simply finding and bringing high talent to Washington.

The inventory of some 40 books and innumerable articles published to date is only a small part of the product of these early years. Other works are nearing completion, and it is possible to foresee some of the qualities that will generally be characteristic of the scholarship to come from this Center.

It is, first of all, free, individual scholarship -- with each fellow working full-time on his or her own project, and openly sharing the results. There is, second, emphasis on synthesis by scholars seeking to put things together and not merely take them apart; on the distillation of wisdom rather than the mere processing of information; on the development of perspective rather than technique. Finally, there is an essentially humanistic approach. There are separate divisional panels of scholars to advise on selection and assure overall balance. But there are no divisions among the fellows once selected. There is a special interest in projects with a historical, philosophical or comparative dimension.

Located amidst the respositories of human accomplishment and experience in Washington, the Center seeks to provide a kind of mediation between the urgency of politics and the necessity of disinterested study.

The Center serves, finally, a switchboard function: making new connections within and beyond this city among different groups (academic, governmental, private sector) that often have difficulty communicating with one another in our heavily-specialized society. The Center seeks to connect the present and the past, and people of differing backgrounds, cultures and occupations, who often have common problems but no common meeting ground.

The Current Program

The most important questions about a center like this will always be the hardest to measure precisely. How important did a promising project prove to be in reality? What was the catalytic effect of a given individual or group on the life of the mind in general or of this city in particular?

People

The company of fellows was unusually varied this past year -- ranging from Andrew Goodpaster, a former commander-in-chief of NATO, studying broad changes in strategic thinking, to Tom Petri, a young state senator from Wisconsin working on land-use problems. There were broad studies of post-war foreign policy by eminently qualified foreign fellows: of American policy by the professor of international relations at Oxford, Alastair Buchan; of Japanese-American relations by the head of an international relations center in Tokyo, Kei Wakaizumi; and of German policy by Professor Hans-Peter Schwarz of Cologne University.

There were historical studies like that of the American Revolution by Jack Greene (before leaving to become Harnsworth Professor at Oxford); of World War I by George Kennan (while working as well to set up the Institute of Advanced Russian Studies within the Center); and of American constitutional theory by Martin Diamond.

A self-generated discussion group on problems of ethnicity sprang up within the Center and involved a lively group of American fellows as well as Grace Ibingira, a distinguished Ugandan diplomat-scholar studying the revival of ethnic and tribal loyalties in post-independence Africa.

The vitality of exchange within this group -- and elsewhere in the Center -- was much enhanced by the arrival of Prosser Gifford as deputy director. His intellectual versatility (with advanced degrees in literature at Oxford, law at Harvard, and history at Yale) and administrative experience as dean of the faculty at Amherst for the last eight years have strengthened our staff.

Ideas

Two long-time fellows, Lincoln Gordon and Arvid Pardo, finished up their fellowships in the areas of sustainable growth and law of the seas. Continuity within these areas was provided by the arrival of Harald Malmgren, former Deputy Special Representative for Trade Negotiations in the Executive Office of the President, and Ann Hollick, executive director of the Ocean Policy Project at Johns Hopkins University. An inventory of work being done throughout the world on growth and its limits was published under the editorship of Chester Cooper. Study within the Division of Resources, Environment and Interdependence at the Center acquired a new East-West dimension in 1975, when the Center helped organize and co-sponsor a major conference at Ditchley Park in England in June 1975. The director of the Center co-chaired the conference with the vice-chairman of the Polish state planning agency, Jozef Pajestka. Other high-level

Eastern Europeans participated in two special evening dialogues at the Center on problems of the sea.

The major innovation of the year lay in the East-West area: the launching of the Center's new Kennan Institute for Advanced Russian Studies. Following the decision of the Board of Trustees in December 1974, the Institute came into being in 1975, serving as a kind of unofficial embassy in Washington for students of Russia and the USSR from this country and abroad. Bearing the name of Ambassador George F. Kennan, a fellow of the Center in 1974-75, and of his great-uncle, George Kennan, who worked in this building a century ago as a pioneer American student of Russia, the new Institute has successfully completed its first competition for fellowships.

Like other divisions of the Center, the Institute has its own outside academic selection panel drawn from an Academic Council of nine distinguished scholars. Frederick Starr has been named secretary to the Institute. In addition to its fellowship program, the Institute has already begun an active program of seminars, colloquia, and dialogues on Russian history and culture. Peter Scheibert of Marburg University and Kenneth Kerst of the Department of State were guest scholars; a number of leading Soviet thinkers were visitors; and the House of Representatives' delegation to the USSR conducted a four-hour dialogue after their trip with Center fellows and invited scholars from Ohio, Pennsylvania and Virginia. In addition, the Institute is preparing a detailed survey of Russian-related archival materials in public and private collections in the United States and a Scholar's Guide to Russian Resources in Washington. Though 1975 was its first year, the Institute has already gained recognition as a resource for East-West dialogue in Washington.

A second area of commitment at the Center is the special program in the problems of State and Local Government. Important works were completed by Brian Rapp on the management of cities, and by Elliot Richardson, on restoring responsibility and responsiveness to sub-national government. The only nationally syndicated column on the subject was launched by Neal Peirce, a long-time former fellow who had been involved with this program. John Gilligan, former Governor of Ohio, became a fellow in this program and succeeded Richardson as Chairman of its advisory council.

There are at least two other areas of concern: in the study of the visual media, the Center welcomed the director of studies of the Ecole Pratique in Paris, Marc Ferro, an energetic champion and astute pioneer of the historical study of cinema in Paris, and Thomas Cripps, a scholar of the role of black Americans in the early American films. The dean of American students of the media, Professor Erik Barnouw of Columbia, arrived at the beginning of 1976 to undertake a major study of American television.

The study of Latin America was enhanced by the presence of the head of the Chilean Christian Democratic party (Radomiro Tomic) and a future Mexican Ambassador to Paris (Carlos Fuentes), scholars like Colombian scholar-statesman German Arciniegas, and the Mexican diplomat Vicente Sanchez-Gavito. The development of Latin American links was assured by a three-year grant in support of Latin American fellows from the Tinker Foundation.

The Center's hospitality to humanistic research was exemplified by Henry Nash Smith (the idea of transcendence in the American novel); of Stanley Coben (American culture and values in the 1920's); and by Toru Haga, our first Japan Foundation fellow (comparative study of East Asian and West European literature). The Center was one of the winners in the nation-wide competition among institutes of advanced study for a grant from the National Endowment for the Humanities. This will help assure the strength of the humanities that we have been seeking.

Communication

The Center's important effort to communicate ideas more effectively has been concentrated during the past year in two areas: an expanded program of dialogues and colloquia and an intensive start-up effort to test and launch a new national quarterly of ideas for laymen: the Wilson Quarterly.

Our evening dialogues increased in both quantity and quality. Thanks to the Xerox Corporation, the Center increased the number from 10 in 1974 to 16 in 1975; and the average attendance rose from 33 to 43. The evening ranged from an extraordinary gathering of corporation heads, ambassadors and government officials that assembled to discuss David Rockefeller's paper on the monetary effects of the oil crisis to an evening commemorating the bicentennial of Gibbon's Decline and Fall of the Roman Empire. The remarkable conclusion of that evening (which was dovered by the Washington Post and New York Times) seemed to be that each person assumed everyone else thought America was declining -- but that no one thought so himself.

The number of Congressmen participating in these dialogues increased from 6 in 1974 to 56 in 1975; and it seemed fair to conclude by the end of the year that this format -- with dialogue before and after dinner -- has begun to play a role in bringing isolated sub-communities in Washington together to discuss basic questions. Colloquia on work in progress also increased in both numbers and quality, while the informal pre-luncheon speakers and discussions spilled over on a number of occasions into lunchroom discussions in the fellows' dining room on the fourth floor of the castle building.

The Wilson Quarterly has been designed to present a broad, national audience with samples of work here at the Center, and also with a summary of certain books, articles and discoveries throughout the scholarly world. Peter Braestrup, an outstanding journalist, who has also been a Nieman fellow at Harvard and a fellow of the Wilson Center will be its editor. A partnership with the business staff of the highly successful magazine, The Smithsonian, gives special promise to the undertaking. If all goes well, it will appear in 1976.

Funding

The Center continues to be deeply grateful for the sustaining annual support from the Congress on which its basic work depends. There was a gratifying increase from $800,000 in fiscal 1974 to $954,000 in fiscal 1975. The Center's current appropriation for fiscal 1976 is $962,000 and the requested appropriation for fiscal 1977 is $1,120,000.

The request for fiscal 1977 essentially maintains the Center's programs at their existing level with two adjustments. First, the stipend paid to Fellows is raised from an annual rate of $23,100 to $25,000, the first increase in stipend in five years. The quality of the Center's fellows has increased significantly during these years. The AAUP (American Association of University Professors) now gives $25,570 as the average for full professors in Class I universities in the mid-Atlantic region (exclusive of any fringe benefits or summer salary). The increase in stipend is necessary to enable the Center to honor its principle of "no loss, no gain" in relation to a fellow's previous year's salary, within limits established by the Board of Trustees. The number of fellowships supported by appropriated funds remains the same: 20 for the fiscal year.

Second: the greatly increased burden of raising money from the private sector means that we must provide for a Development Officer and a secretary. The Development Officer's responsibilities will include supervision of all private fund raising as well as coordination of many of the public service programs of dialogue at the Center.

Private support for the Center has markedly increased from $114,868 in fiscal 1974, to $551,933 in fiscal 1975, to an estimated $829,000 in fiscal 1976. This increased amount and the projected $920,000 of private funds required in fiscal 1977 reflect the one-time start-up costs of the Wilson Quarterly. Its first issue is scheduled to appear in October 1976, and it is planned so as to become self-supporting by the end of its second year. Thereafter this special demand upon private funds will be reduced. The new Kennan Institute for Advanced Russian Studies also accounts for a substantial amount of the increased private funds during this past year. Over the next five years the Institute will require approximately $350,000 of private monies annually.

Special credit for private support must go to the Chairman of the Board, William J. Baroody and to David Packard, a benefactor of the Center, and the energetic head of its Advisory Council. In addition to Foundation and corporate gifts, the increase in the number -- and interest in the Center -- of individual and smaller donors is heartening. They have repeatedly enabled events to take place and fellows to come to the Center when funds would otherwise not be adequate.

The Smithsonian Institution continues to provide not only a home for the Center in the castle building, but also practical support and intellectual encouragement. We were happy to welcome four distinguished senior scholars of the Smithsonian as adjunct fellows (Joshua Taylor, George Field, Forrest Pogue, and Daniel Boorstin) and to see one of them (Boorstin) subsequently named Librarian of Congress and thus become an ex officio member of the Center's Board.

The Board

New sub-committees of the Board of Trustees were formed -- and joint meetings held of the Executive and Finance Committees in July (to formulate five-year financial projections for the Center) and of the Program and Publications Committees in October (to revise the basic brochure of the Center and review plans for the Quarterly). Mr. Baroody chaired the former meeting; and Dr. McCracken chaired the latter. The increased number of inquiries and applications during the past year has put a correspondingly heavy burden on the Fellowship and Guest Scholar Committee of the Board and its Chairman Ronald Berman.

Chairman Baroody introduced an innovation in Board procedure by maintaining on Board committees two members of the Board whose terms had expired: John Roche and Harry McPherson. By agreeing to serve on the Program and Permanent Site Committees, respectively, they increased the debt the Center already owes them as energetic founding members of the Board. The new members who were welcomed to the Board during the past year were Dean Rusk, Robert Goldwin and Bryce Harlow; and all of them have participated in major meetings and functions.

The Future

Extensive discussions have been held about the future under Board guidance during the past year. Major changes are not contemplated, though there is a consensus on the need for a modest growth in the number of fellows and of assured support for them. As mandated by the Congress, the Center continues to pursue with the Pennsylvania Avenue Development Commission possibilities and plans for a permanent site for the Center.

STATEMENT HIGHLIGHTED

Senator HATFIELD. And now if you would care to introduce your associates and proceed with highlighting your statement, I would appreciate it.

Dr. BILLINGTON. Thank you, Mr. Chairman. To my left is Prosser Gifford, the Deputy Director, and on my right, William Dunn, Assistant Director for Administration.

Mr. Chairman, in the 5 years, almost exactly 5 years since the dedication of this new kind of living memorial, I think it is fair to say that it has become an institute for advanced study second to none, and that the quality of its work is superior to most as is our commitment to communicate.

Its basic purpose is to locate outstanding thinkers, get them to come here to use the extraordinary resources of Washington, to deal with important questions, and to communicate the results within and beyond this city. It is a kind of switchboard. We think of it as one that makes connections that do not now exist between the resources from the past and the problems of the present, between the world of affairs and the world of ideas, as our original congressional commission puts it.

There has been an increase in our activity markedly this last year, but it is still a compact community of scholars and will remain so. It increased to 57 last year, though there never were more than 35 at a time.

It increased in diversity. There are 17 different countries represented. About 40 percent of our body is foreign. Fellows come from 17 different universities, with heads of international relations institutes or programs from Oxford, Tokyo, Warsaw, Cologne, Trinidad. Most recently we added Nepal, and a variety of other outstanding foreign scholars. About two-thirds of our fellows are from academia. They take things back, I think, to their campuses throughout this country and throughout the world.

But they are not just academics. They come from abroad. The Deputy Prime Minister and Minister of Justice of two African countries. A former Foreign Minister and two Ambassadors from Latin America; one who is head of a leading political party there. Most recently a former head of state from Latin America, and from our own country, a former commander in chief of NATO, a top trade negotiator for the executive branch.

A former governor of a midwestern State, a theologian from California, a philosopher from Yugoslavia, the head of the only institute for the study of the future in Eastern Europe, just to name a few.

They are all involved in serious major projects. The Wilson Center is the only major institute for advanced study run largely through open competition. We have a number of special emphases. Two special programs correspond, I think, Mr. Chairman, to two of our major problems at home and abroad.

One is the functioning of our multilayered federal system. The other, relations with our other superpower protagonists in the Soviet Union. A State and local government program, in other words, for practitioners to come here and do studies. Our Institute for Advanced Russian Studies is a kind of unofficial embassy in this town for the

advanced study of the Soviet Union. It is under Ambassador Kennan's leadership, and it has had a host of meetings and activities in this last year.

There are also less formal groups, dealing with such problems as the revival of ethnicity worldwide, what the television and visual media are doing to us, with the future of our relationships with Latin America, giving us a kind of North-South focus, along with the East-West focus.

COMMUNICATION PROBLEMS

Now, we are very much involved in the problem of communication, and how ideas get out. We produce not only scholarly material, examples of which I have brought along here, not just books, such as some of these on the problems of the oceans, which is an old area of our interest but also pamphlets—there have been a number of columns in papers, particularly our State and local government people who, in fact—the only column nationally written on the problem of State and local government is by one of our former fellows.

But there are also transcripts of dialogues of our evening dialogues that come out in different forms; either in a condensed form like this, or the whole transcript, like this. Some of these are broadcast over the radio, and there have been television appearances by our fellows, including one who has won a number of prizes for his television presentation.

We are most interested in a new effort to communicate, Mr. Chairman. There is a new, quarterly journal which, if all goes well, and we are happy to have the cooperation of the Smithsonian magazine, there will be a national review of ideas and kind of intellectual digest, with 150 to 160 pages, designed to reach the layman, not other scholars, but to make the results widely available to laymen throughout this country who are interested in these matters.

So we are very much involved in and concerned with getting the word out, and we feel that important progress has been made.

Our evening dialogue program which attempts to interact the world of affairs and ideas here in Washington increased in number from 10 to 16 this past year. The average attendance went from 33 to 43.

The number of Congressmen participating from 6 to 56. We also have colloquia and formal luncheon groups, special events, which I think have increased in quality as well as quantity during this past year.

And in summary Mr. Chairman, we are, of course, grateful to the Congress for our creation and continuing support. The solidity of the support has provided the major assurance and background for increasing private funds, which have increased from $115,000 in fiscal 1974 to about $552,000 raised in the private sector last year.

And we project more for fiscal 1976 and 1977. We have improvised, however, and sliced ourselves very thin, and the first proposed increase is for assured positions related to this effort, which is often harder to sustain than it is to start up.

NEW POSITIONS

The fundraiser and secretary will also seek to free more time of our professional staff for the intellectual leadership which I, as a university professor for 17 or 18 years, and my associate, the dean of the faculty at Amherst for the past 8 years, are uniquely qualified to do, but find ourselves without the time to get the most out of this extraordinary body of fellows we have brought together.

So it is for those reasons that this is additionally proposed. Of course, the heart of our program are fellowships. They form the basis of scholarship and dialogue. They are the memorial. And their high quality plus the fact that they come through an open, competitive process, the fact that the applicants have nearly doubled, has dramatically increased our expense.

And since there has been no increase in the number of fellowships supported, we are requesting an increase in the rate, the stipend, not in the numbers but in the rate of the stipend by which they are computed from $23,100 to $25,000, for the 20 who are federally supported.

I might say, Mr. Chairman, Federal support accounts for only about half of our total fellowship costs. But this rate is important. The American Association of University Professors' average for full professors in class I universities in the Middle Atlantic States is higher than that, $25,570.

And this is inclusive of fringe benefits and summer salary. Our people are paid on a year-round basis, and it includes some benefits. So at that rate the differential there is even greater.

Finally, administrative and office expenses. Because of the vast increase in the number of applicants, which have about doubled, from 237 in fiscal year 1975 to 454 in fiscal year 1976, and the number of inquiries and contacts having increased even more dramatically, the number of institutional contacts, as well, that we are establishing as we become better known and establish contacts with these kinds of centers throughout the world, results in our request for a slight increase in money for support for scholars which still lingers substantially below that of comparable institutions.

The Stanford Center, for example, the Princeton Center, have a ratio of 1 to 5 for secretarial support, where ours still remains at 1 to 7.

So these are the major areas of the minor increase for which we would appreciate and hope to have your support.

PROGRAM INCREASE

Senator HATFIELD. Thank you very much, Dr. Billington. Speaking now of some of your increased programs, projected increases, I understand you have two positions that have been approved by OMB. Is that correct?

Dr. BILLINGTON. Secretary and development officer; yes, sir.

Senator HATFIELD. And these are vital to your projected program and expansion?

Dr. BILLINGTON. Yes, sir. As I have indicated, we have, through extended effort of the existing staff, we have raised substantially the level of private support and we would hope and plan to keep the level at essentially what it is.

Much of the dramatic increase has been for a one-time startup cost for this journal, and for this new Russian institute, under Ambassador Kennan. But to sustain this at a high level we feel it is essential to have such positions.

PRIVATE FUNDRAISING

Senator HATFIELD. Now the new position to head up the fundraising effort, I believe you call this person a director for external affairs?

Dr. BILLINGTON. Yes, sir.

Senator HATFIELD. And that is equivalent to a GS–16?

Dr. BILLINGTON. Yes, I believe that is the level.

Senator HATFIELD. Now, the secretary, in addition, is to handle the private sector financing program as well?

Dr. BILLINGTON. Yes, sir. They are both directly related to that function.

Senator HATFIELD. And I believe that you estimated that you will be raising about $350,000 annually for the next 5 years out of private gifts and fundraising?

Dr. BILLINGTON. No, we project considerably more than that. That $350,000 is the amount we will need just for the Russian Institute. The Soviet Institute alone.

Senator HATFIELD. Just for the one?

Dr. BILLINGTON. For that aspect of the Center's activities.

Senator HATFIELD. What is the figure you are projecting over an annual base that you will be raising in the private sector?

Dr. BILLINGTON. Yes, sir. We project for the current year, for fiscal 1976, about $829,000. It will go up in our projection for 1977 to a little over $900,000, and it will remain at the level of $800,000 and hopefully then stabilize itself at about that level.

Senator HATFIELD. This is the point that I am getting at. You have the $829,000 this year and yet with adding two new people, additional staff people, I am trying to understand why there isn't a more significant increase that you are projecting, that you raised the two additional staff.

You raised $829,000 with current staff. You want two new staff people. Wouldn't that go up, somehow, substantially, with two new people?

Dr. BILLINGTON. The essential fact is that what we have done so far has been, first of all, an enormous substantive drain on having this thing function as a proper memorial.

In a sense, this has been taking so much of the existing staff time that the full development of the internal program, I think, has substantially been impeded. So it is really essentially to more rational functioning.

Also, the sustaining of a level like this we feel will be as fully time consuming, perhaps more so, than raising the initial start-up on these matters and it is fundamentally just a question of taking a function which has become enormously time consuming.

The external aspect is not merely fund-raising, although the proposals that are written are very substantial and very heavy, but it is a question of freeing up the rest of us to do the job that I think we are essentially best equipped to do and expected to do.

Now I think the first year or two of increasing this level up to a rational level for the Center was an obligation of the new Director, and I think it was also an opportunity to make this more widely known throughout the country, throughout the private sector and the foundation world, in that an enormous amount of visiting and talking with these people and explaining what we were doing took place.

And in the academic world I think as well, institutionally it was useful for a new Director to have done. I think for me to continue to devote that degree of time, and my Deputy and others on the staff, would be not of as great benefit to this institution as it has been to get it known and to establish these kinds of contacts.

EXTERNAL RELATIONS

So the problem of external relations, which takes an enormous amount of time, these things have to be resubmitted every year. They have to be renegotiated. To deal with the various foundations, the corporate sources, with our large advisory council, which is a source of substantive value and advice, as well as private fundraising, takes virtually a full-time staff person.

So we have not really—I think it did make sense for us to lift it to this level on our own effort, and for us to find the natural level and also to work out, as we have done, a careful study of our 5 years' experience and a projection of 5 years into the future during this past year.

I think it would not make management sense or efficient use of extracting the most out of this remarkable body of fellows that we have assembled for us to continue to be so heavily preoccupied in those external affairs.

Senator HATFIELD. And yet you have been very successful.

Dr. BILLINGTON. We have been successful——

Senator HATFIELD. Are you going to continue to be, at least, a part-time fundraiser in your job?

Dr. BILLINGTON. Well, there is no way that the chief officer could escape playing a role in this, and I think that is entirely proper.

Senator HATFIELD. I would agree. I do not think you can turn it over entirely to staff, no matter how highly specialized they may be.

Dr. BILLINGTON. Well, what I would stress is sustaining it at this level is going to be as much of a full-time job, it has to be done all over again each year.

It is not something you can do once and then it is automatically self-renewing. So I do think it is a legitimate and important concern.

PRIVATE-FEDERAL RELATIONSHIP

Senator HATFIELD. Are you going to develop 25 percent of your program funding from private sources? How did you reach that particular figure, that percentage?

Dr. BILLINGTON. Well, that was essentially an extension of, roughly, the level that we sustain now, exclusive of the one-time startup costs over the next year, the next couple of years of the new journal, which we are starting entirely with this addition of private funding.

Senator HATFIELD. So that is a flexible figure, is it, that you may have reason to change as time goes along, and you have these expert fund-raisers that will be out there full-time raising money and bringing in money in great basketfuls. And you will be able to, maybe, increase the 25 percent?

Dr. BILLINGTON. Well, we would certainly hope to. The important point is those figures are kind of an extrapolation to what our experience has been so far. Perhaps they could be improved.

Senator HATFIELD. Are you changing that base of experience by the specialization program that you have undertaken here for external affairs?

Dr. BILLINGTON. Yes. Internally, what we divide I think is a rational division of labor between the two, in the sense that there is a feeling that on the public side the basic fellowship program which is the memorial to the President is the basis of everything else, it should be a major responsibility on the public side.

On the other hand, on the private side, fresh initiatives of this kind, innovative new programs of this kind, which may or may not have an enduring permanence in the life of the Center, such as the journal, such as this Russian Institute, these have been largely funded on the private side, and it is that division of labor we would see as a kind of rational one.

But I would stress that the basic, and I think this is in part a response to both the perceptions in the private community and our sense of the Congress' intention in founding this as a national memorial, that the basic fellowship program should not be subject to, essentially, the vagaries of where there are private sources of funds in a given year.

Moreover, to sustain an open national and international competitive entry into this, which we think is an extraordinarily attractive and exciting aspect of our Center, it has to have its own funding sources.

Otherwise, we might tend subtly to favor those people who come from more wealthy institutions which can provide larger elements of sabbatical pay and so forth. So that the integrity of the program which is its most precious element, along with its quality, very much does depend, I think, on sustaining the basic fellowship program, and the basic support which the Congress has provided.

BUILDING PLANS

Senator HATFIELD. You show $3,000 for building planning. Tell me a little bit about this projection, this program.

Dr. BILLINGTON. Well, sir, in the original legislation creating the Center the Board was enjoined to make plans and to follow up the whole question of future permanent site for the Woodrow Wilson Memorial.

And in order to do that, they need professional plans and studies. We have made one so far to try to translate the substantive functions and the vision into professional architectural reality.

We sustained that without making a special—we financed that without making any kind of special request but it seemed——

Senator HATFIELD. You have a site location in mind?

Dr. BILLINGTON. Well, by the original legislation we are enjoined to pursue discussion with the Pennsylvania Avenue Development Corporation, and therefore the Board needs professional studies and professional counsel.

And it seemed that this year we could no longer put off having that as a modest but formal request, having already subsidized in private funding one such study.

We now need to make more detailed studies, and the Board, in order to make a responsible decision on the eventual site, clearly needs the professional counsel which is represented by that small request.

Senator HATFIELD. I believe in your statement you mentioned the word, you used the word "mandate", the Congress mandated a permanent site for the Center. I think, looking at the act, it would appear to us that it is not a mandate. It is merely authorizing planning, subject to subsequent authorization. Do you have any disagreement? I think we ought to clarify that point at this time.

Dr. BILLINGTON. No, I would think——

Senator HATFIELD. In other words, won't you need specific authorization from the Congress before you can buy a site?

Dr. BILLINGTON. Yes, sir.

Senator HATFIELD. So you are not proceeding on a mandate but rather on an authorization.

Dr. BILLINGTON. I thought I had used the word "mandate" only in the sense that we were mandated to pursue discussion, and then we must come back for authorization; yes, sir, that is my understanding.

The wording, or if you want me to read this, is: "The administering Center and the Board shall have necessary and proper powers to", and this is section 4, paragraph 7, "prepare plans and specifications for the Center, including the design, development of all building facilities, open spaces and other structures on the site, in consultation with the President's Temporary Commission on Pennsylvania Avenue, or its successor, and other appropriate federal or local agencies. Such plans to include an exterior——"

Senator HATFIELD. Yes, that is routine authorizing language. It is not a mandate.

Dr. BILLINGTON. Yes.

Senator HATFIELD. It is merely an authorizing language. I think we just want to make for the record here, and be sure that this was understood on your part, that we would expect to have to give specific authorization.

Dr. BILLINGTON. Yes, sir.

PROPOSED BUILDING

Senator HATFIELD. Do you have any idea of what size structure, what estimated costs, such a structure might be at this time?

Dr. BILLINGTON. Well, we have made, as I say, one internal study of this, and it did not really have full and final costing.

Senator HATFIELD. Do you have any estimate?

Dr. BILLINGTON. The essential point was that we were thinking of a center that is not substantially much larger. We also not only

made building plans, but we thought 5 years into the future, and we do not believe that this should involve very much expansion in the size of the Center.

So we are not thinking of any very great increase in size, although the increase in space would have to be more than we have now, we are very compact.

But we are not thinking—we are thinking more of consolidating into something—a very incrementally small amount.

Senator HATFIELD. How many square feet do you have now?

Dr. BILLINGTON. Yes; we have 15,000 or 20,000 now, and it was a very substantial amount larger than that, because of course much of our many support elements are provided by the Smithsonian.

Senator HATFIELD. Can you supply for the record, when you talk about maintaining the size of your program about the present level but increasing the space, give us an estimate of what you are talking about in millions of dollars or thousands of dollars or square feet?

We would like both a cost estimate and a square foot estimate.

Dr. BILLINGTON. Yes, sir. All right, sir. I do have some figures, but maybe it would be better just to provide that also.

[The information follows:]

Before commenting specifically on the architectural study, we would like to confirm that there is no fixed date or immediate pressure upon the Woodrow Wilson Center from the Smithsonian Institution that the Center move to other quarters. During the past five years our relationships—both the intellectual and the housekeeping aspects—with the Smithsonian have been and continue to be cordial and mutually beneficial. The Center's Board of Trustees does, however, feel an obligation to explore the question of a permanent site and the nature of any permanent facility.

In commissioning the Faulkner, Fryer & Vanderpool study, we deliberately included all possible elements that a center for advanced research might contain, such as public space (C), and auditorium (E), and residential space (F), in addition to the essential functions. One difficulty in projecting plans arises from the fact that the space actually occupied by the Center in the Smithsonian Institution is supplemented to a considerable extent by service space, additional dining capacity, and public space in other parts of the building. If the Center is to occupy an independent structure, facilities of these kinds would have to be built into the structure or be readily available nearby. Another dimension of a related kind is provision for parking.

The enclosed table summarizes the preliminary space and rough dollar estimates of the Faulkner, Fryer & Vanderpool study.

The purpose of our $3,000 request for further studies is to relate these space and dollar estimates of two years ago to some design sketches and other studies that will enable the Board to consider which of any building plans and sites to recommend.

SUMMARY OF ESTIMATES

Function	Space (sq. ft.)	Amount
1. Site purchase	Not included	
2. Site preparation		$750,000
3. Building	106,000	6,360,000
A. Administrative space	9,900	
B. Study and library space	38,850	
C. Public space	7,600	
D. Dining space	10,600	
E. Auditorium space	4,500	
F. Residential space	21,550	
G. Service functions	13,000	
4. Garage	31,000	930,000
5. Cost escalation estimate		1,929,600
6. Contingency (10 percent)		996,960
7. Architectural and engineering fees and construction services		877,325
8. Total		11,843,885

TIME FOR RELOCATION UNCERTAIN

Senator HATFIELD. Are you under some pressure to move from your present location?

Dr. BILLINGTON. I would not say we were under pressure, although I think it is the understanding of the people at the Smithsonian that we will, in fact, make this move at some point.

Senator HATFIELD. What was the initial understanding with this facility, as far as time was concerned?

Dr. BILLINGTON. I do not think there was a time; no specified time, really, on it.

Senator HATFIELD. It did not come up in any discussion, 5, 10, 15, 20?

Dr. BILLINGTON. I have never heard, since I have been Director, I have never heard a specific time mentioned.

Senator HATFIELD. So there is no way Smithsonian has to put the pressure on you, as far as fulfilling a gentleman's agreement that you will be out by a certain date?

Dr. BILLINGTON. Well, I cannot really answer for how the Secretary and officers of the Smithsonian would feel, but I do feel that we have an extremely fruitful and cordial relationship with them, and that it has certainly been of great benefit to our center, and I hope it has been of some value to the Smithsonian complex as a whole.

Senator HATFIELD. Now you have to be located in some proximity to Smithsonian when you find your own individual quarters?

Dr. BILLINGTON. I think the ruling element of intent there is that it should be in the center of downtown Washington, preferably, in the campus area of the Mall where there are so many fruitful interactions with other intellectual, cultural institutions.

This is an enormous benefit to our fellows, and we hope of increasing value to the other institutions as well. So the Market Square area, which has been considered and is still under discussion with the Pennsylvania Avenue people is, of course, not directly on the Mall but adjacent to the Archives and close to other major cultural institutions as well.

Senator HATFIELD. Well, you have been very helpful. Thank you very much, Doctor.

Dr. BILLINGTON. Thank you, Mr. Chairman.

ADDITIONAL COMMITTEE QUESTIONS

Senator HATFIELD. I have some additional questions that I will submit and ask you to answer them for the record.

Dr. BILLINGTON. We will be happy to answer them, Mr. Chairman.

(The questions and answers follow:)

INCREASE IN FELLOWSHIP PAYMENTS

Question. You are proposing an increase in fellowship payments from $23,100 to $25,000. Do you feel that the quality of scholars' work done under fellowships would suffer without this 8 percent increase?

Answer. Yes, the quality of work is likely to decline because the quality of fellows doing the work would undoubtedly decline. The overall level of fellowship support is already inadequate. About one-half of all fellowship stipends now paid to fellows are either private monies given to the Center or sabbatic or other payments brought to the Center by fellows individually. Without an increase in the appropriated funds available for fellowships, we might have to give preference to those individuals who

come from institutions with generous sabbatical plans. This seems wrong in principle, is not consistent with recruitment by open competition, and constrains the judgment of independent scholarly panels which advise on selection.

Question. You show an increase of $43,000 for personnel costs under scholar support which is a result of transferring employees from the general administration area. Why is it that personnel costs under general administration decreases only $19,000?

Answer. The difference between the $19,000 transferred from General Administration and the $43,000 increase under scholar support is accounted for by the need of the Center to have resources on hand to meet the uneven but increasing demands for manuscript typing. Without adding new slots, the Center needs to be able to make use of part-time help to fill this need. Manuscript typing needs at the Center run in spurts, and there are peak periods which our regular typing pool cannot handle. For those periods we need to use additional part-time assistance to carry the load. In this connection, the Center maintains a ratio of typists to fellows of one to seven, while comparable institutes (such as at Princeton and Palo Alto) have ratios of one typist to every five fellows.

Question. You are proposing $2,000 for purchase of computer time. Do you propose using private or government facilities?

Answer. The $2,000 would be to reimburse the Smithsonian, on a cost basis, for the use of its computer facilities.

Question. How important is computer use to the type of studies going on at the Center?

Answer. The Center has always mentioned in its brochure that computer facilities can be made available to scholars who have need of them. We cannot predict in advance of selection which fellows will actually use the computer as a research tool. A few fellows, particularly in the social sciences, have recently made considerable use of these facilities. In addition, the Center itself makes modest use of the computer to maintain its mailing lists.

Question. What accounts for the large increase in supplies? You show a jump from $2,000 in the current year of $10,000 in FY 1977.

Answer. This increase is caused by the Smithsonian's decision to decentralize its own supply system. Whereas formerly the Center, which in this instance was treated like a unit of the Smithsonian, received its basic office supplies from the Smithsonian at no cost, the Center must now obtain all of these items from its own budget.

Question. How is it that under general administration you show an increase of $8,000 for supplies yet in your object class summary supplies and materials increase only $5,000?

Answer. The two figures are not exactly comparable because in the object class summary figure we are also including costs for the library. Under the government's accounting system, magazines are "supplies" while books are "equipment." Thus the object class figure for supplies ($20,000) includes purchase of magazines and other library supplies that are not shown in our general administration category of "supplies." The "supplies"under general administration include only general office supplies, while library materials are shown under "library" in the scholar support category.

COMMISSION OF FINE ARTS

STATEMENT OF J. CARTER BROWN, CHAIRMAN

ACCOMPANIED BY:

CHARLES H. ATHERTON, SECRETARY
DONALD B. MYER, ASSISTANT SECRETARY
FRANK SUMAN, BUDGET ANALYST, DEPARTMENT OF INTERIOR

BUDGET ESTIMATE

Senator HATFIELD. I would like to invite now the Commission of Fine Arts. Mr. Brown, very happy to welcome you here this morning.

Mr. BROWN. Thank you.

Senator HATFIELD. And I believe you have some colleagues with you?

Mr. BROWN. Mr. Atherton, who is the Executive Secretary of the Commission, and his assistant, Mr. Myer, and Mr. Suman from the Department of Interior, who works on our budgetary and administrative matters.

Senator HATFIELD. Mr. Brown, my information indicates that you have a request in for $215,000.

Mr. BROWN. That is correct.

Senator HATFIELD. And that this represents a $17,000 increase over appropriations to date.

Mr. BROWN. $12,000, I believe.

Senator HATFIELD. $12,000; thank you.

Mr. BROWN. It was $203,000 last time. I see, with the pay supplement, excuse me. You are right.

Senator HATFIELD. So long as we have ourselves—I suppose we should not argue over $5,000.

Mr. BROWN. It is very important to us. It is a large percentage of our budget.

PREPARED STATEMENT

Senator HATFIELD. Your justification has been included in part 2 of the record, and we have your full statement, Chairman Brown, and I would appreciate it if you would just either highlight it or let me submit it for the record, and we could move directly to the questions.

Mr. BROWN. In the interest of time I think we could move directly to the questions. It is a short statement.

[The statement follows:]

Mr. Chairman:

The Commission of Fine Arts is requesting an appropriation of $215,000 to carry on its activities for Fiscal Year 1977. This is an increase of $12,000 over Fiscal Year 1976.

Since 1910 the Commission of Fine Arts has advised the President, Congress, government agencies, and the District of Columbia government on projects affecting the appearance of the Nation's Capital. The design of public buildings, parks, and monuments in harmony with Washington's special requirements is an important and continuing task. Additionally, the Commission advises on the appearance of private projects within the Shipstead-Luce Act area, bounding the monumental core of the city, and the Old Georgetown Act area, comprising one of the nation's oldest designated historic districts. The development of some of the larger open spaces within both these areas is currently posing a problem of considerable concern to the Commission. Equally important are changes projected for downtown renewal, the development of the Pennsylvania Avenue plan in its final form, and much of the development contemplated in the so-called West End neighborhood along Rock Creek Park west of Washington Circle. The Georgetown Waterfront, of course, is a major focus itself.

In the coming Fiscal Year we expect to remain within the current level of activity generated by the Bicentennial. We can achieve this with the relatively small increase in appropriations we are requesting. You will note the Commission is adding no new programs or positions. In fact the Commission is actually cutting back on its publishing and printing expenditures by $5,000 and the increases are confined solely to accommodating the $6,000 increase in the cost of maintaining our permanent staff of seven, increases of $2,000 in space rental, and $9,000 in added costs of other services over the estimate for this year.

We hope that Congress will continue the same support the Commission has enjoyed over its many years.

PROPOSALS REVIEWED AND ADVISED, FISCAL YEAR 1976

SUMMARY:

Old Georgetown Act	115 cases (8 months)
Shipstead-Luce Act	40 cases " "
District Government	10 cases " "
Federal Government	36 cases " "
Mint Coins & Medals	7 cases " "
WMATA	27 cases " "
Legislative Review	9 cases " "
	244 cases for 8 months

400 cases projected for FY 1976
450 cases projected for FY 1977

Case Load in FY 1975 was 432.

ITEMS:

DISTRICT OF COLUMBIA PERMIT REVIEW

Old Georgetown Act, 115 cases
Shipstead-Luce Act, 40 cases

DISTRICT OF COLUMBIA, GENERAL SERVICES

Federal City College, Remodelling of Carnegie Library
Perry-Simmons Elementary School Replacement
Federal City College Master Plan

DISTRICT OF COLUMBIA, OTHER

"Streets for People" Information Kiosk, RLA
Fireplug Painting Proposal, Fire Department
"Streets for People" Pay Telephone Booth, RLA
National Children's Island

FEDERAL GOVERNMENT, SMITHSONIAN

Air & Space Museum, Sculpture for North Entrance
National Zoo, General Services and Parking Facility
National Zoo, Bear Exhibits
Mall Graphics

FEDERAL GOVERNMENT, NATIONAL PARK SERVICE

Franklin Delano Roosevelt Memorial, West Potomac Park
Muhlenberg Memorial, Connecticut Ave. & Ellicott Street, N.W.
Fort Dupont Stable
Temporary Installation of Sculpture "Antecedent"
Lafayette Park Comfort Station
Energy Resources Exhibit, Mall at 3rd Street, N.W.

FEDERAL GOVERNMENT, MILITARY

Request for Erection of Private Monument, Arlington Cemetery
Pershing Memorial, 15th & Pennsylvania Avenue, N.W.
Automotive Maintenance Facility, Bolling-Anacostia
U.S. Coast Guard Distinguished Public Service Award
U.S. Coast Guard Meritorious Public Service Award
Arts and Crafts Hobby Shop, Bolling-Anacostia
Child Care Center, Bolling-Anacostia
Expansion of First Division Memorial

FEDERAL GOVERNMENT, GENERAL SERVICES ADMINISTRATION

Precipitation Equipment, Virginia Heating Plant
Pedestrian Bridge, Treasury Department Building
Relocation of Government Printing Office, EIS
Draft Federal Design Review Policy
Winder Building Restoration
Landscaping of Virginia Heating Plant
Identification Signage for Federal Triangle Buildings

FEDERAL GOVERNMENT, PENNSYLVANIA AVENUE DEVELOPMENT CORP.

Design Studies for Pennsylvania Avenue between 13th & 15th, N.W.

FEDERAL GOVERNMENT, OTHER

Nuclear Regulatory Commission, New Agency Seal
Georgetown Waterfront Area Plan, Draft, NCPC
White House Swimming Pool
National Aeronautics & Space Administration, New Logo
Commodity Futures Trading Commission, New Seal
National Advisory Council on Adult Education, New Logo

DEPARTMENT OF THE TREASURY, BUREAU OF THE MINT

J. Edgar Hoover Commemorative Medal
1975 Medal - Paul Revere & Minute Man
1976 Medal - Thomas Jefferson & Declaration of Independence
1976 National Medal - Statue of Liberty & Great Seal
Bicentennial of the U.S. Army Medal
Bicentennial of the U.S. Navy Medal
Bicentennial of the U.S. Marine Corps Medal

WMATA

Bus Stop Shelter Site Plans and Locations
Federal Triangle Station, Revised Designs

LEGISLATIVE REVIEW

H.R. 7711 (General Draza Mihailovich Memorial)
H.R. 10306 (Federal Purchase of Scott-Grant House)
H.R. 10485 (Federal Administration)
S. 64 (Add Names of Alaska & Hawaii to Lincoln Memorial)
S. 1847 (101st Airborne Division Memorial)
S. 2925 (Federal Administration)
D.C. 1-228 (Subdivision of Historic Sites)

COMMISSION OF FINE ARTS
CASE LOAD COST DATA

March 1976

FY	CASE LOAD	PUBLICATIONS	EMPLOYEES	BUDGET
1972	177		7	$124,000
1973	335	1 new	7	$135,000
1974	428	1 new, 1 reprint	7	$153,000
1975	432	1 new, 1 reprint	8 (7)*	$176,000
1976	244 (8 mos.) 400 (est.)	1 new	8 (7)*	$203,000
1977	450 (est.)	1 new	8 (7)*	$215,000

*While the Commission has up to 8 persons employed at one time, the total man-years for these years still only amounts to 7.

DUPLICATION OF EFFORT

Senator HATFIELD. First of all, I want to commend your Commission for many fine contributions to our Federal city and assure you of my strong support for this kind of program.

Mr. BROWN. Delighted to hear that.

Senator HATFIELD. I asked awhile ago a question of the Chairman of the National Capital Planning Commission about any possible duplications or overlapping of responsibilities with your agency and his agency, and the local district planning agency. I appreciated his comments that there is really, by necessity, a certain amount of overlapping in order to maintain a coordinated effort here in areas of mutual concern.

Using the term "overlapping" in the more, shall we say, bureaucratic, administrative sense where one is doing a job, or two agencies are doing a job, and one agency could do it, duplicating or overlapping—could you comment on those interrelationships of your agencies in that light?

Mr. BROWN. I would be delighted to. We would like to see as little overlap as possible. The Fine Arts Commission was established in 1910, with very specific goals in mind. And there has been subsequent legislation which maps out very succinctly what its responsibilities are in various areas of the city. Primarily, it is in the business of aesthetic review and we feel that with a professional staff and the qualification of the members of the Commission itself, that we have, over the years, been able to render a service.

Naturally, very few decisions in life are made without an aesthetic component. We are certainly aware of that. So to that extent there are, perhaps, some grey areas. But we welcome a member from the National Capital Planning Commission to sit in as an observer on all our meetings, so that they are fully aware of our actions and deliberations.

We also have a reciprocal observer at their meetings, and we feel that to the extent we can fulfill our congressional, statutory duties and keep into the aesthetic area as completely as possible, we are doing our job.

Senator HATFIELD. Should such overlapping and duplication arise, how would that be solved? Would it be a matter of initiative on one agency's part? Would there be a resolving program or procedure that would be implemented? Or would you have to wait until you are asked the question up here before Congress, and then have certain programs looked into and budgetary cuts made in order to stop the overlapping and duplicating?

Mr. BROWN. No, I think in practice we have a very fine working relationship. We are in frequent contact, if there are decisions which seem to relate to both agencies, and we meet informally and in a couple of instances actually on the site in question, and have a chance, through the ancient and honorable approach of mutual discussion and conference, to work out any differences that might have arisen.

And it enspirits me that there is so much unanimity in our approach, in that we both have the interests of the Federal city at heart, and, in general, our reactions are very similar to the question.

CONTRACTUAL SERVICE

Senator HATFIELD. In your budget, the largest increase is for other services. What are other services?

Mr. BROWN. There are a lot of administrative services that are involved in the running of our meetings. We have stenotyping of our proceedings for the record. Our full staff attends the meetings, so that they can be there for all of the deliberations. And this means that we have to hire a temporary person to answer the telephones upstairs during this time.

Sometimes we need to examine the site firsthand, and have to hire transportation to do so. We have various physical services, which we buy, as it were, from the Department of Interior, and need to pay for the use of their computer. There are also legal services, photo services, office services, such as delivery messenger.

Senator HATFIELD. You are anticipating they will double in the coming fiscal year from your current fiscal year, almost double?

Mr. BROWN. Well, in point of fact, we have done an analysis of what they actually were last year, and I think the increase is less—it is closer to $2,500 that we are projecting.

Senator HATFIELD. Do you have a further comment to make on that point of why you are projecting the doubling of these services?

Mr. ATHERTON. It is not doubling. The actual expenses of 1975 were some $16,000, and we anticipate on the basis of those figures that our current fiscal year expenses will be close to that also.

And on that basis we anticipate another increase in the coming fiscal year. So, in the budget justification, Mr. Chairman, there was an error in noting that actual figure, that actual cost in fiscal 1975. On page 3 of our justifications, the object classification, line 24, "printing and reproduction," actually should be $7,000 and other services should be $16,000.

There is a $5,000 misprint in that notation.

Mr. BROWN. The total adds up to the same, but there was an error in that breakdown.

Senator HATFIELD. In other words, both of those figures should be lower in your statement than what we carry here on our record?

Mr. BROWN. In actual figures, one should be lower; one should be higher. Line 25, "Other Services", should have been $16,000.

Senator HATFIELD. $16,000, and line 24?

Mr. BROWN. Should have been $7,000 instead of $12,000. While we are fixing up the typography, there is one other misprint, I regret to say, on page 2 of the justifications on the third line from the bottom.

We are talking about fiscal year 1977, of course, not the past year.

Senator HATFIELD. Thank you very much.

Mr. BROWN. We regret these errors.

RENT AND UTILITIES

Senator HATFIELD. The $2,000 increase in rent—do primarily communications and utilities relate solely to or partially to GSA space increased costs?

Mr. ATHERTON. Well, the GSA costs, I think, have somewhat increased. But I think the major portion of our increases are the Federal telephone costs, which are imposed on us. And which, personally, we think is a little high.

Mr. BROWN. We have difficulty, because we do not do much long-distance phoning, and yet the FTS imposes a budget of $2,800 and that has to be in addition to our regular phone bill of $185 a month.

PUBLICATIONS

Senator HATFIELD. Let me ask you a little bit about publications. Would you briefly summarize the status of the program at this time?

Mr. BROWN. We are currently working on a new book on 16th Street. We have published in the last year the full two-volume study on Massachusetts Avenue, and we would be delighted to submit a copy of that to you.

It is the first time that such a study has been made. A lot of big buildings are threatened by demolition. It is one of the beautiful old avenues in this great city, and by calling public attention in a scholarly way to the importance of these structures, we hope to contribute to their preservation.

We are now working on 16th Street in a similar way, which has some of the great buildings in Washington on it, which has fallen on evil days and which has a more cheerful prognosis, we believe, as people begin moving back into the District from the outlying communities.

We have also published recently a study of the historic waterfront in Georgetown; a study of bridges in the city; and a survey of Washington architecture from 1700 to 1860.

Senator HATFIELD. Tell me about the Bicentennial pamphlet.

Mr. BROWN. We are working on this. We have contributed to an exhibition in honor of the Bicentennial which is currently on view on the Mall, in the original Smithsonian building. This is a joint enterprise with the Smithsonian and the National Capital Planning Commission and I think will make very visible to the public at large the kind of work——

Senator HATFIELD. Do you anticipate that that will be published within target date?

Mr. ATHERTON. The book on that exhibition has already been published, and we bore no part of the cost of that publication.

Mr. BROWN. But we did contribute significantly in time and research.

Senator HATFIELD. You have a new publication projected for the 1977 budget, and what will be the estimated cost of that?

Mr. ATHERTON. Well, the current figure for the Massachusetts Avenue volume II is, I think, close to $17,000. I would say the book would probably be in the same neighborhood and the same size. We do not have any final details.

PERSONNEL

Senator HATFIELD. Does the increase in personnel related object classes—some $6,000—relate to the staff, or does part of this go to the Commission members?

Mr. BROWN. The $6,000 increase for personnel is related only to staff expenses. No part of it would go to the Commission members, who are compensated only for expenses incurred in attending Commission meetings.

Senator HATFIELD. The material provided with your statement indicates that in 1975, 1976, and 1977 you have seven positions but eight persons employed. Tell us about this extra employee—is it a clerical or professional position?

Mr. BROWN. In fiscal years 1975 and 1976, seven full-time permanent positions were authorized. Of these seven positions, one has been occupied by an employee working part time. During the summer months we have had one student intern working full time for a period of 10 weeks or so. Also on one or two occasions we have had an overlap of a position while it was being vacated by one employee and filled by another. At no time did our overall staff expenses exceed the seven full-time positions that were authorized for that fiscal year. We would hope to have this same flexibility in fiscal year 1977.

FDR MEMORIAL COMMISSION

Senator HATFIELD. Now, Chairman Brown, you are wearing two hats here today. I am, too. I would like to ask for us both to turn our hats around to the Franklin Roosevelt Memorial Commission.

Has the Commission approved, your Commission approved, the proposed memorial design to the point that engineering and design work can move forward?

Mr. BROWN. My understanding is no. We feel that considerably more discussion is required to arrive at a design which we will feel comfortable in approving.

Senator HATFIELD. Why? First of all, did your Commission approve the FBI Building?

Mr. BROWN. I regret to say that, before I was personally a member, it did.

Senator HATFIELD. And you approved the Labor Department Building?

Mr. BROWN. And they also did.

Senator HATFIELD. And you are telling me that you have to have more discussions for the memorial, the Franklin Roosevelt Memorial? Why?

Mr. BROWN. Well, we are troubled by the scale of it, I would say.

Senator HATFIELD. Is that s-c-a-l-e, scale?

Mr. BROWN. Yes.

Senator HATFIELD. My, that is interesting. Were you troubled by the FBI Building scale?

Mr. BROWN. I think so.

Senator HATFIELD. The Labor Department Building scale?

Mr. BROWN. The Commission made the FBI put the bulk of the building to the rear, in order to try to save the cornice along the Pennsylvania Avenue side. I think the building is a monstrosity, if you want my frank opinion.

Senator HATFIELD. Just for the record, if I could interrupt, there is no structure in the memorial we are talking about here. In the

traditional sense of the word, the structure, for the record will only show—a picture would be more helpful, but we are talking here about a berm, a new configuration of earth. We are not talking about a structure in the sense of putting up a building, and it utterly boggles my mind when you start talking to me about scale that concerns you about the memorial.

Mr. BROWN. Mr. Chairman, I only wish you could have been with me yesterday, as I came before the Appropriations Committee of the House on the Fine Arts Commission in answering very much in this way the very short questions that were being put as to the amount of structure, the size of the wall and the way it would block the view of the Jefferson Tidal Basin. And I was defending the basic approach, which I think the Commission is very excited about and is on record as being totally for.

Instead of building structure in the concept it is a landscape solution and I find this very beautiful, very moving, potentially. I think the use of water will be the salvation of the design.

We are very enthusiastic about the choice of the architect and we believe that by working together we will be able to come out with the best possible solution for the city.

STATUS OF MEMORIAL CONCEPT

Senator HATFIELD. How long have you been considering this proposal?

Mr. BROWN. We have always responded to their initiatives within a few days or at least a few weeks.

Senator HATFIELD. But the delay now is on your part. What is your time frame?

Mr. BROWN. We have not had a submission for many months and we stand ready to act as expeditiously as possible.

Senator HATFIELD. What are the instructions to the Commission from your last meeting?

Mr. BROWN. I do not have them in front of me, Mr. Chairman. They were quite detailed and long. We went to the site with the architect and walked over it in the presence of the press, who thought we were not being hard enough on them. But we felt he was doing a very intelligent job and he agreed to come back with their most recent design, and when that happens we will be happy to go over them.

Senator HATFIELD. How much did you want them to reduce the scale?

Mr. BROWN. Well, the original design, if you remember, went all the way from almost the bridge directly opposite the Jefferson Memorial all the way around the Memorial. We walked it out.

It would take almost a half an hour to just walk the length of the Memorial. In view of the size of the Washington Monument and Lincoln Memorial in ground plan in comparison——

Senator HATFIELD. I would almost think there is a Republican conspiracy except that I find myself as a Republican fighting for this memorial, and I have been going through one obstacle course after another for the last 4 years—3 years that I have been on the Commission.

Mr. BROWN. We stand ready to be as helpful and positive as we can. I think that the Commission has chosen the right designer and chosen the right approach, and it is just a question of a meeting of minds with the exact drawings.

Senator HATFIELD. The uniqueness of it does not bother you. I mean, you are not having problems struggling with something new?

Mr. BROWN. I do not think that is a problem.

Senator HATFIELD. The first one, that was bad enough. But you should have seen the one when I was on the Commission that they were about ready to adopt, which would have been 24 acres of rose gardens, with a decapitated head of Mr. Roosevelt on a post in the middle of a rose garden. Unbelievable.

NATIONAL GALLERY EAST WING

Now, would you care to comment on the addition to the National Gallery of Art, or would you prefer to wait until the next budget on the Gallery itself?

Mr. BROWN. No, I would be delighted to comment on it here, in my role as Chairman of the Commission of Fine Arts.

Senator HATFIELD. And you approved that, did you?

Mr. BROWN. I did not. No, I came before them as a supplicant, with my knees knocking together, asking for approval.

Senator HATFIELD. It was your predecessor that approved that, then, as Chairman?

Mr. BROWN. Yes, my predecessor, as Chairman.

Senator HATFIELD. As Chairman of this Commission?

Mr. BROWN. That is right.

Senator HATFIELD. And when was he executed?

FUNCTION OF GALLERY WING DESIGN

Mr. BROWN. The design fulfills various roles. The first one is an urban design role for the city at large. Major L'Enfant, the original designer of Washington, projected a row of buildings along Constitution Avenue, including, and we have it in the original plan, one at that site, where Constitution and Pennsylvania Avenues come together.

He must have seen, as the people who have studied it since have seen, that it is crucial for the success of this angular design, where the axis of the Mall, coming down from the Washington Monument, and the axis of Pennsylvania Avenue coming down from the White House, join, and, symbolically, the branches of our government converge.

And the urban design imperative is to have something built there of some kind that will anchor that very important point visually.

Now, the architect spent a great deal of time studying those considerations first, and there is a cornice height along Pennsylvania Avenue which is the highest in the city that extends along the roofline of all the Federal Triangle buildings, many of which I find the most beautiful buildings in Washington.

And I only wish that sŏmeday that Federal Triangle could be completed, so we would have a row of buildings along Pennsylvania Avenue suitable to the dignity of that axis.

But unfortunately, before there was anything built on this site, that row of buildings stopped abruptly with the Federal Trade Commission, which is, perhaps, the least successful of all the buildings in the Federal Triangle, with its trimmed-down classic style. It does not have the beautiful, richly detailed style of the earlier buildings, nor does it have any contemporary design integrity of its own day.

And at that point of convergence the city used to become this visual spaghetti factory, where there was the interchange of the two avenues, and there was this little leftover plot, in a funny, trapezoidal shape, and space leaked out all over the place.

There was nothing to define these axes. So the architect's approach was to shore up, as it were, the great axis from the White House, so that if you come from the White House down toward the Capitol, the Capitol is framed there from both sides, and it is a very beautiful view.

Also, the building helps shore up the axis from the Washington Monument, and as millions and millions of tourists course along the Mall they will have the Capitol framed there in the way that Major L'Enfant had seen it.

As you drive down Constitution, as I do every day to work, it is very surprising, because the view that we all got very used to, of being able to see bits of the Capitol as you went along the avenue, is held up until you hit the confluence with Pennsylvania Avenue and the Capitol will be revealed to you in its full glory.

This, I think, is very exciting. It is a very happy and usual design system, used for example in the 16th century in Rome, where they save up the monuments until you get a great view of it.

But the heights of the building were determined by those urban design considerations. Now heights on the Mall are lower, and therefore the architect studied ways in which a lower cornice height could be expressed, which are by those bars that go across between the towers and help to bring the scale more down to the human scale of the pedestrian on the Mall and to the cornice heights of the National Gallery, and so forth.

I think the Fine Arts Commission, if I had been on it at that time, would certainly have rejected any design which allowed the National Gallery building as it now exists, which is very beautiful and very symmetrical, simply to be added on to by a building which would be a wing which is the standard museum practice.

It happened in New York. It happened in Pittsburgh. People wanted to build a modern building onto a classical building. It looks terrible. And this architect made a very strong plea, right from the beginning, that the building should be visually separable, and yet there should be a link which would be expressed now by a plaza which would use an old-fashioned kind of fan-shaped pattern of cobbles to join them. He also was careful to answer the symmetry around a central axis expressed by the existing building's Fourth Street facade.

But the point of the design is not yet apparent because it is in a terribly awkward stage, sort of like an adolescent girl, with braces on her teeth, and we think she is going to be a very beautiful woman when she grows up.

At the moment it is an eyesore. The towers are unfinished. The marble is not yet on it. And it is all torn up around there and

it is very difficult to understand the completed form that the architect had in mind.

When the marble is finished—because one of the specifications was that the marble be the same as the existing building, and that has cost almost $12 million to do——

But when that is all in place, and when one is able to go inside and experience the space of it from within, I think that the general feeling will be around the country that this is a major achievement.

The architectural critic of The New York Times has called it perhaps the best building in Washington, and she used the phrase, that it was "enough to make one go dancing down Pennsylvania Avenue".

The Gallery has received a lot of mail in favor, including a letter a couple of weeks ago from a very sophisticated collector, who thinks it may well turn out to be the best building in the United States.

So I think there are great currents of opinion, people that are very excited about the building, but I think it is going to be a very difficult one to adjust to, and I hope we can all keep our opinions suspended until it is finished.

Senator HATFIELD. I will be happy to reserve some of my intense feelings—I am almost a little reluctant to see the shoring before the building is fully appreciated.

I always think buildings ought to be able to be understood and appreciated during construction, rather than having to wait until the florist comes in to put the bouquets around to try to hide some of the harshness or to soften it or to do this or do that. I have so often heard architects say, "Just wait until the landscapers come in".

Mr. BROWN. Any time you would like to come down I would love personally to show you around and show you the big model of it, which does show you all about it.

Senator HATFIELD. I am going to be very excited about what is inside, and if I can just put on a blindfold as I approach the building and then come inside and open the blindfold, then it will be like that great vista that will open up, because what is inside is going to be magnificent, I am sure.

Mr. BROWN. I think it is going to be very beautiful.

Senator HATFIELD. I could not help but think about this dramatic presentation of the Capitol that you describe when we get past that building, coming up Constitution Avenue. I could only remind you that the traffic situation being what it is, you will either find yourself in a horrible accident, if you are going to be surprised like that, or you are not going to have time to see it, because that is a pretty heavily traveled and trafficked concourse, with all the streets there. Whereas, when we had a long vista going up Constitution Avenue we could enjoy a glimpse between the stop lights, and other diversions.

Mr. BROWN. Well, when Pennsylvania Avenue reaches the potential which it deserves then the aesthetically minded will be able to come and make their approach down Pennsylvania Avenue.

Senator HATFIELD. I did not mention one of my other pet peeves, and that is the Exxon gasoline storage tank on the Mall that is now called the Hirshhorn Gallery. You were not on the Commission when that was approved; were you?

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Mr. BROWN. I was not, and there would have been, I think, some amelioration if it had been built in the materials which the architect originally projected.

Senator HATFIELD. Again, I think what is inside is tremendous. But I suppose if I thought of other things, we should not judge a book by the cover or we should not make an evaluation of a structure from the outside entirely.

Chairman Brown, I have a question that has been submitted by Senator McGee, and I will ask you to respond to it. If you will just retain your seat we will then move to the National Gallery of Art, and we thank your colleagues here on the Commission for their presence here this morning.

[The question and answer follows:]

QUESTION SUBMITTED BY SENATOR MCGEE

Question. Mr. Brown, I believe you are aware that serious personnel problems exist in the Commission of Fine Arts. The details of these problems I will not go into at this time, but I believe they have already been brought to your attention. As you may not know, in my capacity as Chairman of the Senate Committee on Post Office and Civil Service, I have asked the Civil Service Commission to investigate these allegations. The Civil Service Commission has advised me that its investigation is completed and that a report will be made within the next few weeks.

While I realize it is unfair to ask you to comment on something you have not yet seen, I would like to have your assurance that you will faithfully carry out the recommendations made in the Civil Service Commission's report and that within a reasonable amount of time, you report back to this Committee, as well as the Senate Committee on Post Office and Civil Service, on the steps you have taken to implement the Commission's recommendations.

Answer. Senator, I shall be delighted to do exactly as you request.

NATIONAL GALLERY OF ART

STATEMENT OF J. CARTER BROWN, DIRECTOR

ACCOMPANIED BY:

LLOYD D. HAYES, TREASURER
JOSEPH G. ENGLISH, ADMINISTRATOR
PHILIP E. STRATMANN, BUDGET OFFICER

BUDGET REQUEST

Senator HATFIELD. Now we welcome Director Brown, of the National Gallery of Art. Mr. Brown, if you will proceed again to introduce your associates at this point.

Mr. BROWN. I have here the Treasurer of the Gallery, Mr. Lloyd Hayes; the Administrator, Mr. Joseph English; and the Budget Officer, Mr. Philip Stratmann.

Senator HATFIELD. I understand that we are talking about a request here of $12.3 million for fiscal 1977 which represents an increase of nearly $4.8 million over appropriations to date.

And it includes 89 new positions; is this correct?

Mr. HAYES. Correct.

PREPARED STATEMENT

Senator HATFIELD. The justification has been included in part 2 of the record. We will proceed to the questions, and your full statement will be put in the record, Mr. Brown.

Mr. BROWN. Fine.

[The statement follows:]

The underground Connecting Link to the Gallery's new East Building is scheduled for completion in July of this year, and a large portion of the exhibition space in the East Building is expected to be available for the preparation of exhibits by next January. These newly available areas are part of the Gallery's construction program being financed from donated funds at a cost now expected to exceed $92,000,000. With an estimated project completion date in July 1977, the total construction time will have been more than six years.

The $12,309,000 appropriation requested by the Gallery for the fiscal year 1977 provides a net increase of $4,537,000 over the current year requirement of $7,772,000. Eighty-five percent of the net increase ($3,844,700) represents costs associated with the preparation and occupancy of the new areas to be available within the year. Sixty-six percent of that amount ($2,551,200) is for one-time, nonrecurring costs. Excluding the added costs for preparation and occupancy of new areas, the remaining net increase over the current year requirement is $692,300. This portion of the increase which is due to rising costs and increased workloads is but 9.5% over the current year figure; whereas, comparable year-to-year increases over the past seven years have averaged 13.4%.

Of the total increase to prepare, occupy, and operate the newly available areas, $825,700 is for part-year employment in seventy-two new positions. Twenty-eight of these positions are to provide guards for the new areas; four positions are to staff the new information desk and checkroom in the Fourth Street entrance of the existing building; two positions are to provide operators for the new and larger telephone switchboards; seven positions are to maintain the additional grounds; six positions are to clean the new interior areas; ten positions are to staff the new computer console and control panels for the operation of mechanical and electrical systems serving the building; and fifteen positions are for operating and upkeep of the new areas and associated equipment and systems.

Costs, other than for new positions, required to occupy and use the newly constructed areas total $2,494,000, consist of $349,500 for landscaping, sidewalks, exterior signs, outdoor benches, and trash receptacles; $353,000 for furnishing and equipping the main auditorium, underground concourse lounge, and Fourth Street Lobby (existing building); $1,008,000 for preparing the exhibition areas, furnishing and equipping other public areas, and installing an electronic protection system for the window walls; $491,000 for utility and telephone services; $68,000 for additional grounds maintenance facilities and equipment; $124,500 for equipping storage facilities in the underground Connecting Link; and $100,000 for furnishing and equipping the offices and shops in the concourse level and basement. The remaining $525,000 is for reconstructing the art registration and shipping facilities in the existing building, and for equipping and furnishing the new art conservation facility, being constructed in the existing building from donated funds.

Some 10% ($475,800) of the total 1977 increase is to support the on-going functions of the Gallery at a level required without regard to the added responsibilities heretofore described. Of this amount, $190,800 will provide for seventeen new positions to manage backlogs and increasing workloads. Five of these positions are in the curatorial function; four are in the library; three are involved in the exhibition and installation function; and the remaining five are in administrative and technical support functions. The remainder of the $475,800 increase for on-going functions provides $260,000 for an increase in supplies, materials, and services for temporary exhibitions and extension service programs, and $25,000 for increases in bookbinding and supplies for the Library and Photographic Archives. The remaining 5% ($216,500) of the 1977 net increase is required for nondiscretionary personnel costs and equipment replacements.

In summary, the requested appropriation of $12,309,000 exceeds the current-year requirement by $4,537,000. This net increase will provide: $3,844,700 for preparing and occupying newly available areas; $475,800 for growth in on-going Gallery functions; and $216,500 for nondiscretionary personnel costs and equipment replacements.

NEW BUILDING EXPENSES

Senator HATFIELD. Mr. Brown, the largest part of your budget increase is directed to moving into the new building, and this request, I believe, according to my information, represents about $3.8 million and 72 new positions.

What period of employment is involved for these new employees?

Mr. HAYES. On the average, it would be about three-quarters of the year, sir. There are 28 guard positions, 4 art information and checkroom service positions, 6 labor positions, and 18 maintenance-type positions—operating engineers and electricians—that will be required for the full year. The others will be part-year.

SECURITY

Senator HATFIELD. What is your present guard force?

Mr. HAYES. The present guard force consists of 139 guards on duty.

Senator HATFIELD. That seems like an awful lot of guards. Is it related to the configuration of the building?

Mr. BROWN. Yes. It really isn't ever enough. Part of the problem is that we are open 363 days of the year and in the summer into evening hours. When you are operating like that 7 days a week we calculate you need 1.61 people for every post. One guard can guard two galleries from his post in the doorway which gives him visual contact with both.

But the minute you try to extend his area by one gallery, then one of those galleries is going to be unguarded, and we have had difficulties. We have had an act of vandalism just last year, in which a deranged visitor slashed a painting by Gauguin—I have here the photographs to show you.

We were very fortunate that we have a very expert conservation department that is able to attack problems like this, and you can see there a photograph of the way it looks now.

To the naked eye you can hardly tell. But we got off easy, where a sharp instrument almost went all the way through the canvas, and we came close to having a real disaster happen to an irreplaceable masterpiece.

Senator HATFIELD. You talk about a $200,000 window-wall security system. Does this have an impact upon the numbers of guards that you must maintain?

Mr. BROWN. This is primarily to accommodate the fact that there will be a great deal of glass in the design of the east building. We are pleased with this, because when it is finished, and the glass is in, it will have a very inviting aspect to the general public.

At night it will glow from within and the public passing by will be able to peer at that great interior space and get a friendly feeling of invitation from it and some excitement from the works of art contained therein.

But by the same token, we then have to set up a system whereby we are not increasing our vulnerability by this amount of glass, and through some very interesting basic research we have come up with an infrared system whereby we can get an early warning of any intrusion. At the same time we must maintain the patrolling that

we have had before in the existing building and have sufficient personnel to carry that out.

Senator HATFIELD. The point ascertained by the realization of modern technology and surveillance equipment—if you were not able to install this, I suppose, then you are saying to me that your manpower requirement would be higher——

Mr. BROWN. Way up. We would have to have guarding at night at a very high-density level. We are working on basic research that will, hopefully, reduce the need for manpower in our guarding. But so far we have not really come up with anything that is as efficient as a human being, who can immediately apprehend a wrongdoer, who is there to help watch people who are about to touch items.

EQUIPMENT FOR NEW POSITIONS

Senator HATFIELD. You list equipment cost in connection with new position expenses. Is this equipment over and above separately identified new equipment and furnishings?

Mr. BROWN. Yes, this equipment is in addition to that which is separately identified. It is equipment directly associated with the positions, such as uniforms, portable transreceivers, firearms, lockers, desks, chairs, typewriters, and hand tools; whereas the equipment items separately identified relate to the functional use of the building and grounds.

CHECKROOM AND SWITCHBOARD POSITIONS

Senator HATFIELD. In connection with opening the new wing you are requesting six new positions for a checkroom and telephone switchboard operation. How do these additional personnel relate to the new wing?

Mr. BROWN. The four additional positions requested for the checkroom and art information services are required at the Fourth Street entrance to the existing building heretofore not open to the public, but which must now be opened to provide convenient access to the new connecting link.

The additional telephone switchboard operators are required because the new equipment providing the necessary line capacity, utilizes two operators—double the number for the present switchboard which has been in use for 36 years and cannot accomodate additional lines. All 6 positions are for post-type services which must be provided 363 days in the year.

Senator HATFIELD. How many positions are now employed in checkroom and switchboard operations?

Mr. BROWN. At present, we have seven employees in art information services, two switchboard operators, and seven employees for the checkroom services.

Senator HATFIELD. What about the additional equipment requested for these operations? What is it and why is it necessary?

Mr. BROWN. This equipment consists of 2 typewriters, 2 desks, 6 chairs, 4 lamps, and 2 bookcases. Checkroom personnel are utilized as a typing pool and art information employees type drafts of replies to inquiries from the public. The equipment is necessary for the efficient performance of the duties of the positions.

BUILDING OPERATIONS

Senator HATFIELD. Your budget request includes 10 new positions to man a computer console controlling mechanical and electrical systems and another 15 positions for operating and upkeep. With modern systems controls, why do you need so many employees for this work?

Mr. BROWN. The requirement of 10 positions for manning the computer and control panel for the mechanical and electrical systems in the building is calculated on the basis that 2 posts are required for each of the 3 shifts—a total of 6 posts—with a 1.61 man-year requirement per post to allow for leave and to cover the post 365 days a year.

Five operating engineers are required for operating and maintaining the seven new air-conditioning systems serving the area. This work will include: lubrication of pumps, motors, and fans; washing of spray chambers; changing of filters; and miscellaneous adjustments and repairs to correct malfunctions.

One plumber is needed to care for the 10 additional toilet facilities involving a total of 57 fixtures.

An electronic mechanic is needed to maintain, calibrate, and repair the sensors and data acquisition points gathering and sending information from and to the equipment in the operating systems. One additional electrician is needed to maintain the new electrical systems in the connecting link, while an electrician's helper is required for servicing the electrical lighting fixtures in the newly available areas.

Four carpenter positions are needed for constructing the furniture required by the specialized needs of the Gallery, for erecting walls and partitions required in the preparation of exhibition areas, and for servicing the locks, bolts, and checks in the new areas.

Finally, two additional painters are needed for the finish painting of the newly available constructed areas and to maintain the painted surfaces in the new areas.

Senator HATFIELD. How many employees are now on board to handle that type of work in existing facilities?

Mr. BROWN. Forty-two employees are employed for that type of work in the existing building.

GROUNDS MAINTENANCE

Senator HATFIELD. Your request for seven new positions for grounds maintenance nearly doubles the gardening force, although the grounds seem to expand less than 40 percent. Why do you need so many additional gardeners?

Mr. BROWN. Although the increase in grounds area is only 40 percent, the new grounds will require more care because of the more formal and complex designs of the exterior plantings, also there will be 80 planter boxes located in the connecting link, trees in the main concourse of the building, and numerous plants throughout the exhibition areas. No comparable expanse of plants are maintained in the existing building.

Senator HATFIELD. You mention a ratio of 13,913 square feet of area per gardener. Do you consider this an overburden for a year-round worker?

Mr. BROWN. No, it is not an overburden, but it does represent our particular experience in maintaining the grounds and interior gardens at the Gallery.

NEW BUILDING EQUIPMENT

Senator HATFIELD. Your request for equipping the new wing totals nearly $2.5 million. Why does this cost run so high?

Mr. BROWN. That is the amount for equipping and putting to use the new areas. Of that total, $491,000 is for utility and telephone services; $68,000 is for additional grounds maintenance facilities and equipment; $349,500 is for landscaping and sidewalks, exterior signs and graphics, outdoor benches, and trash receptacles; $353,000 is for furnishing and equipping the underground concourse lounge, Fourth Street lobby of the existing building, and the main auditorium in the new building; $1,008,000 is for the preparation of exhibition areas and exhibition installations, furnishing and equipping the concourse, lounges and other public areas, and an electronic protection system for the window walls; $124,500 is for equipping the storage facilities in the underground connecting link for storing library and photographic archives materials, extension service materials and general supplies; and $100,000 is to furnish and equip the offices and shops in the concourse level and basement of the connecting link.

The amount is large, as you suggest, but the facilities involved are not inconsistent with the character and use of the $92 million structure being constructed from donated funds. Further as to the exhibition spaces, one has to understand that what is being turned over to us is an outer shell, analogous to a theatre backstage area. We then have to construct the installations that will provide the ceilings, partitions, lighting, wall and floor finishes that will convert the spaces into usable art exhibition facilities.

Senator HATFIELD. Since the wing won't be completed until late in the fiscal year, is all this equipment required within this budget?

Mr. BROWN. Yes, as all of the equipment requested is associated with preparation, installation, use, and occupancy of the new areas to be available within the year. Many other equipment items are being deferred to 1978.

PUBLIC AREAS

Senator HATFIELD. More than $1 million of the equipment request is for exhibition and public use areas. How much of that is for exhibition?

Mr. BROWN. A total of $575,000 is required for preparing and installing the exhibition areas in the 48,000 square feet of prime installation space and 15,000 square feet of secondary installation space in the new building. This total cost consists of $140,000 for carpeting, $20,000 for hung ceilings, $225,000 for drywall partitions, $5,000 for brackets and holders, $50,000 for bases and cases, $10,000 for paint, $45,000 for graphics in the exhibit areas, and $80,000 for 2,000 track-lighting fixtures.

Senator HATFIELD. Carpeting for the new facilities ranges in cost from $15 to $35 a yard. With the large amounts you are purchasing, aren't those prices pretty steep?

Mr. BROWN. Not necessarily, when you consider the quality of the carpeting and the underlay to be purchased. It is more economical to install a high-grade quality, heavy-duty, and long-wearing carpet in areas that are heavily traveled than to install a lesser grade and lower priced carpet that would need continual replacement. These prices include installation and are for carpeting obtainable under General Services Administration contracts.

ELECTRONIC EQUIPMENT

Senator HATFIELD. What is the need for the color television equipment and a $10,000 color camera for the auditorium?

Mr. BROWN. The two 23" color monitors/receivers and the color camera are to be used to relay programs going on in the auditorium to other areas of the east building, particularly to adjoining outer lobbies when the attendance at a major educational program exceeds the capacity of the auditorium. Our problem has always been how to serve the many people who are not lucky enough to get a seat in the auditorium when we have a lecturer such as Lord Clark. Unlike other areas of education, the visual images in an art lecture are essential for one to know what is going on.

Senator HATFIELD. While we are in the auditorium listing, tell us about your need for 100 four-channel receivers.

Mr. BROWN. These receivers—transmitters and receivers—are to be used in conjunction with multilingual symposia and similar kinds of events where participants of different languages need to communicate with each other through interpreters.

SHIPPING FACILITIES

Senator HATFIELD. The $425,000 request for reconstructing registration and shipping facilities in the existing structure sounds like a separate construction project of its own. Why is the cost so high, and why are so many new features required?

Mr. BROWN. The reconstruction of the registration and shipping facilities in the existing structure amounts to much more than the term implies. It involves the construction of a new facility for the circulation of all west building supplies and equipment; an art receiving and handling dock and complex; and a facility for packing, unpacking, examination, temporarily storing, and recording works of art. The construction of the connecting link makes it necessary to move these functions and provide interim temporary facilities. Permanent facilities must now be provided in space vacated by other functions moved to new locations in the connecting link.

GROUNDS EQUIPMENT

Senator HATFIELD. You list $68,000 in new equipment for grounds maintenance, and this includes a new $50,000 greenhouse. Why do you need a second greenhouse?

Mr. BROWN. An additional greenhouse is needed to provide plants for the many interior planters specified for the public areas of the new building. The proposed greenhouse will add 2,400 square feet of growing areas to our facilities. It will accommodate the large foliage plants, leaving more growing area for small plants in the existing

facilities. Most of the large plants needed for our new east building will be in the 15 to 20 foot range.

Senator HATFIELD. Why do you need so much additional equipment for a 40 percent increase in grounds maintenance area?

Mr. BROWN. Of the $68,000 requested, $50,000 is for the greenhouse; $5,100 is for a potting shed to accommodate the potting work associated with the greenhouse; $7,200 is for an equipment shed; $3,700 is for a tractor and accessories to remove snow from the new plaza and walkways and drives, and to haul material between work sites; and $2,000 is for a riding reel-type mower and two smaller rotary mowers.

LANDSCAPING

Senator HATFIELD. You have also budgeted nearly $350,000 for landscaping, sidewalks, signs and the like for your new grounds. What is involved here—about an acre?

Mr. BROWN. The cost of sidewalks on the grounds east of Fourth Street is estimated at $140,000. This will provide 1,000 linear feet of granite curb, 10,000 square feet of sidewalk, and 10,000 square feet of cobblestone in the area between the sidewalk and street curb along Pennsylvania Avenue. It will also provide for 13,400 square feet of sidewalk and 2,000 square feet of grass strip along Third Street, Fourth Street, and Madison Drive. Another $150,000 is required for landscaping the 40,800 square feet of grounds east of Fourth Street. In addition, $1,200 provides for eight trash and ash receptacles for the Fourth Street Plaza entrance, while another $3,300 is for stone benches matching those in use elsewhere at the Gallery. The remaining $55,000 of the $349,500 total provides for signs and graphics for the outside areas.

Senator HATFIELD. Tell us about the $55,000 for outside signs and graphics in the landscaping budget.

Mr. BROWN. The $55,000 estimated cost for signs and graphics for the outside areas includes: 5 kiosks at $6,000 each, 4 site identification signs at $5,000 each, and $5,000 for 15 traffic signs. The completed construction of the east and west buildings will be highly complex. We have a grave problem of communicating with the millions of expected visitors trying to alleviate their inevitable confusion about what is to be found where, and how to get to it.

SHOP AND CONSERVATION EQUIPMENT

Senator HATFIELD. Your justification lists $60,000 in shop and locker room equipment to be located in the connecting link. Aren't these facilities already available in the existing building?

Mr. BROWN. Some like facilities are in the existing building. However, it would not be feasible to centralize the location of much of the equipment, given the fact that the Gallery will cover the four blocks area between Third and Seventh Streets along Constitution and Pennsylvania Avenues. A total of $7,400 covers locker-room equipment for the additional staffing in the new areas. In addition, some $24,000 provides for silkscreening and framing facilities which are not available in the existing building.

Senator HATFIELD. Another request is for $100,000 to equip and furnish a new art conservation facility in the existing building. Why is this new facility needed at this time?

Mr. BROWN. With the underground connecting link to be completed in 1976, plans call for the present offices and other facilities including the existing cafeteria, to be moved, freeing space at the center of the Gallery complex for the development of comprehensive conservation facilities, including new analytical, restoration, and photographic laboratories, which have an integral relationship to the conservation work.

The location of the laboratory in the approximate center of the expanded Gallery complex allows for maximum efficiency in the travel flow of works of art from both public galleries and storage areas to the conservation work areas.

The conservation of our collections is a crucial priority. Owing to the relative youth of the gallery, and the splendid state of conservation into which a majority of our gifts were put prior to their donation, we have been able to coast a bit over the years. Recently, this has caught up with us, and we now face a mounting backlog of emergency treatment.

Funds have been donated by a private foundation to cover construction costs estimated at $740,000.

Senator HATFIELD. What additional start up costs are you planning for your fiscal 1978 budget? We had better look at the total bill while we're at it.

Mr. BROWN. We are estimating that our total 1978 budget will reach the $15.2 million range. This increase of $2.9 million over the 1977 request is associated with additional staffing required for the new areas, completion of furnishings and equipment for the new areas, and operating utility requirements for the entire new complex. We expect to reach a peak in 1978, and hope the 1979 budget will show a decline.

PRIVATE SUPPORT

Senator HATFIELD. Are you using contributions to cover some of the occupancy costs of the new wing?

Mr. BROWN. No contributions are expected to be available for occupancy costs; however, we are seeking contributions for works of art to be displayed in the new east building.

OTHER BUDGET INCREASES

Senator HATFIELD. In addition to all the expenses related to the new wing, you also list nearly $476,000 and 17 more new positions for ongoing functions. Now, you received 15 new positions in fiscal year 1975 and 18 new positions in the current year. Tell us why you need another 17 over and above the needs of your new facility.

Mr. BROWN. These 17 positions are needed to manage backlogs and increasing workloads. Acquisitions for the various collections have been, and will continue to be a major part of the Gallery's program. Extensive research is required in the consideration of a work available for acquisition. However, the Gallery's present limited research capability and knowledge of objects available for acquisition, due to insuffi-

cient staff, are adversely affecting its success in making important new acquisitions. Therefore, we are requesting 5 positions for the curatorial staff.

We have been successful in raising almost a million dollars in private donations for the acquistion of books, in addition to another $600,000 in private donations for the acquisition of photographs for our library. The understanding with these donors has been that these functions would be provided the personnel required to create a library and photographic archives in the visual arts which would be of first rank in this country. We have had opportunities to buy entire libraries but have not done so because of our 23,000-volume cataloging backlog. Therefore, we are requesting four additional positions for the library.

The design and installation of our temporary exhibitions has become more complex and demanding on the part of other Gallery staff as increasing public attention is being given to their layout and educational significance. We are requesting three positions to help meet these demands and to assist in the design and installation planning of the exhibitions to be installed in the new building.

With the increases in staff and activities of the various functions within the Gallery, the demands on the supporting staffs have increased accordingly. To meet these demands, we are requesting five additional positions in the areas of personnel, conservation, information, duplication, and national programs.

ADDED CURATORIAL POSITIONS

Senator HATFIELD. Tell us specifically why you need 5 new curatorial positions with 23 already on board.

Mr. BROWN. The other great national galleries of the world have been active publishing scholarly catalogs of their collections that have set a standard far beyond anything the National Gallery of the United States has yet been able to produce. A high priority is the adequate research into what we have so that we can be sure of not misleading the public in our attributions. This activity requires specialized knowledge.

Although Dutch art is an important segment of our total collection, we do not have any curator presently specializing in this field. A GS–11 curator of Dutch painting is requested to fill this void.

We are requesting a GS–11 curator for the Assistant Director's Office to carry out general assignments and coordinate the efforts of the various staffs and outside agencies involved in special exhibitions and other projects. This is a key job. The Assistant Director is charged with all the management functions of 125 souls in that aspect of the operation—assembling and analyzing curatorial budgets, and preparing material on the budgets, working on the agendas for the Acquisitions Committee of the Board with all the curatorial backstopping that requires keeping track of curatorial research projects, travel and so forth, being in charge of all our exhibitions program, and working on the manuscripts for our scholarly publications and for our calendar of events. Then constant interruptions from VIP's who want special tours around the building. And the phone rings with people who say they want to give something, and it turns

out to be something we don't want. And at the same time we feel our Assistant Director should be a recognized scholar who can lead by example in the field of original research, and be looked up to by the other curators. We have a marvelous man who is able to do all these things, like a one-armed paperhanger. But he will require some help.

Currently, we have only one curator for 20th-century art. We are requesting a GS–9 assistant curator to lend support to this collection which will be emphasized in the new east building.

Our American art collection will also be emphasized in the new building. A GS–7 research assistant is requested to provide research support in this specialized area.

At present, we have six secretarial-typing positions supporting 17 professional positions for the curatorial staff. To support these four additional curators, a GS–4 clerk-typist is needed for general assignment.

EXHIBITIONS

Senator HATFIELD. Tell us why a $260,000 increase is needed at this time for expenses of the exhibitions and installation function. What is the base cost?

Mr. BROWN. An additional $200,000 is requested for the support of temporary exhibitions to enable the Gallery to continue the organization and scheduling of temporary exhibitions of national and international importance, including an Egyptian exhibition scheduled for fiscal year 1977, and to provide the necessary funds to pay for the higher costs of travel, transportation, installation materials, and services associated with these exhibitions.

We are also requesting $60,000 for the development and production of four new slide-lecture programs for our Extension Service which loans art educational materials to schools throughout the country. Each new program includes slides, audio cassettes, printed texts, and study prints assembled together as a package of instructional materials. About one-fifth of the materials being loaned should be replaced annually because of deterioration beyond repair. It is also necessary to develop and produce new material to keep current with the increase in new subjects coming into the Gallery's collections and the major temporary exhibitions.

A total of $264,000 is currently being provided from the Gallery's annual appropriation in the support of temporary exhibitions, while $74,000 is currently provided for the replacement of extension service materials now in the system.

LIBRARY AND INFORMATION PERSONNEL

Senator HATFIELD. You are asking for two library technicians and two clerk-typists in your library to control this backlog. Will these positions put you on top of the program? This is on top of two new positions this year. How long is this growth to continue?

Mr. BROWN. The two positions added this year and the four requested for fiscal year 1977 will maintain control of processing new acquisitions, maintain essential services and prepare the library for the move to the new east building and the foreseeable demand

for greater services. The present staff will not be adequate to perform the tasks which will be required in the new building. In addition to the backlog which has resulted from the vigorous acquisition policy of the past 3 years, the staff inherited a huge unprocessed collection when the library was put progressively onto an active professional footing beginning in 1970.

Projections are for a staff of 24 in the library by 1980, when the library will have moved into its new quarters and increased its holdings to some 150,000 volumes.

Senator HATFIELD. You request a clerk-typist for the Information Office, citing the increase in media requests for information. Don't you provide the media with information on upcoming events on a routine basis?

Mr. BROWN. Yes, the Gallery's Information Office does provide information to print media, radio, and television on a routine basis, mainly through a growing system of press contacts and an efficiently administered press list. The response to the Gallery's press announcements has increased and become more varied and each request for further information or service adds to the clerical workload of the office. The response to the Gallery's press announcements has increased because of the number and variety of temporary exhibitions, requests for information about the new east building, and the growth of the public's interest in art and particularly in the Gallery and its activities.

To cite an example—at the time of the first loan show from the Soviet Union three film crews requested coverage. Last year when the second show came, 11 film crews requested permission to photograph the exhibition.

TEMPORARY EXHIBITIONS

Senator HATFIELD. An additional $200,000 is requested for the support of temporary exhibitions. Actually, the table on page 20 of your justification shows that this is a $100,000 program increase and another $100,000 to cover anticipated drop in donated funds. What prompts you to believe that donations will drop?

Mr. BROWN. In the current fiscal year we have two major Bicentennial exhibitions. Our temporary exhibitions program in this year of national celebration had greater appeal for prospective donors than it does in the normal year. We expect the amount of donated funds in 1977 to be slightly more than the $225,000 available in 1975.

NEW CURRENT YEAR PERSONNEL FUNDS

Senator HATFIELD. Last year the Congress provided nearly $170,000 for new positions in fiscal year 1976. You have reported half-year employment for 18 new positions. What is the cost of those new positions in the current year?

Mr. BROWN. The cost of the 18 new positions for the current year is estimated at $130,300.

Senator HATFIELD. What did you do with the balance of the funding?

Mr. BROWN. The balance of the funding, $39,000, is being utilized to partially cover increases in the costs of health benefits and utilities, steam and electricity, which occurred after the 1976 budget had been presented to the Congress.

Senator HATFIELD. You originally budgeted $364,000 for other services in fiscal year 1976. Now you are estimating $280,000. What caused the reduction?

Mr. BROWN. First of all, these estimated amounts are on a cost basis and reflect the effect of year-end undelivered orders. On an obligational basis, the reduction is $107,000. A good portion of this reduction is due to a shift of $29,000 from "services related to temporary exhibitions" to "supplies for temporary exhibitions." The remaining $78,000 reduction is in personal and real property repairs, art restoration work, photographic processing services, and other services. This reduction is being utilized to provide for increased costs of telephone services; equipment rentals; library books; general office, building operating, guard force and other supplies; and increased contributions for health benefits effective in the past year.

Senator HATFIELD. For the record please supply a statement explaining changes in your fiscal year 1976 object classification from your original submission. Indicate which changes resulted from congressional action, pending supplementals and other factors.

[The information follows:]

CHANGES IN FISCAL YEAR 1976 OBJECT CLASSIFICATION FROM ORIGINAL SUBMISSION

Object class	Estimate for 1976 in 1976 budget	Estimate for 1976 in 1977 budget	Difference	Explanation
Personnel compensation	$5,609,000	$5,767,000	+$158,000	Note 1.
Personnel benefits	479,000	534,000	+55,000	Note 2.
Travel and transportation of persons	43,000	43,000		
Transportation of things	29,000	16,000	−13,000	Note 3.
Rents, communications, and utilities	520,000	527,000	+7,000	Note 4.
Printing and binding	66,000	66,000		
Other services	372,000	265,000	−107,000	Note 5.
Supplies and materials	309,000	380,000	+71,000	Note 6.
Equipment	131,000	134,000	+3,000	Note 7.
Lands and structures	40,000	40,000		
Total obligations	7,598,000	7,772,000	+174,000	

NOTES: (1) Reflects increased costs of $221,000 due to pay raises for general schedule and wage-board employees for which a current-year pay raise supplemental is anticipated; a decrease in personnel costs for 3 positions cut from our original budget request; and a decrease in new position costs due to the deferment in filling them for 6 months.

(2) Reflects increased costs of $20,000 due to pay raises for general schedule and wage-board employees for which a current-year pay raise supplemental is anticipated; a decrease in benefit costs for 3 positions cut from our original budget request; the deferment in filling the 18 allowed positions for 6 months; and current-year costs of health benefit increases effective in the prior year.

(3) Reflects a shift of funds from "transportation incidental to temporary exhibitions" to "supplies for temporary exhibitions."

(4) Reflects a shift of funds to provide for increased cost of telephone and telegraph services and equipment rentals.

(5) Reflects a shift of $29,000 in funds from "services related to temporary exhibitions" to "supplies for temporary exhibitions," and a shift of $78,000 from photographic processing services, real and personal property repairs, art restoration work, and other services to provide for the increased cost of supplies, communications, rentals, and health benefits.

(6) Reflects a shift of $42,000 from "services related to temporary exhibitions" and "transportation incidental to temporary exhibitions" to "supplies for temporary exhibitions;" and a shift of $29,000 from "Other Services" to provide for the increased costs of general office, building operating, guard force, and other supplies.

(7) Reflects a decrease of $3,000 in equipment for 3 new positions cut from our original budget request and an increase of $6,000 for library books.

GENERAL NOTE: The object classification schedules contained in the printed budget and repeated in our justifications are on a cost basis and reflect changes in selected resources (mainly undelivered orders at the end of each year). Therefore, to conform with the explanation of increases in our budget submissions, the estimated amounts and differences for the various object classes are presented above on an obligation basis, as opposed to cost basis.

Senator HATFIELD. Last year we asked what kinds of things fall under the "lands and structures" object class. It increases this year from $34,000 to $604,000. Could you tell us what this represents?

Mr. BROWN. This object class increase is on a cost basis and reflects year-end changes in undelivered orders. On an obligational basis, the increase is from $40,000 to $755,000, for a net increase of $715,000. This amount reflects the following item increases: cost of sidewalks on the grounds east of Fourth Street, $140,000; cost of landscaping the grounds east of Fourth Street, $150,000; and the cost of reconstructing the art registration and shipping facilities in the existing building, $425,000.

DONATED FUNDS

Senator HATFIELD. Last year we requested that information be provided on the use of donated funds in the operation of the Gallery. Would you again provide us with that information?

Mr. BROWN. We would be happy to.

On that project, it brings it in perspective during the construction period, to think that our federal appropriation is taking care of about $650,000 a month of the basic necessities of our life.

But with the construction program going forward, we are spending about $2.5 million a month out of donated funds.

Senator HATFIELD. Two and a half——

Mr. BROWN. Million a month.

[The information follows:]

EXPENDITURES FROM DONATED FUNDS

[In thousands]

	1973 actual	1974 actual	1975 actual	1976 estimate
Construction	$8,327	$13,697	$19,823	$23,000
Administration and operation	741	756	762	770
Special exhibitions, education programs and projects	335	148	292	345
Music program	67	67	72	72
Fellowships	90	92	96	100
Conservation research	140	146	220	145
Art purchases	3,568	1,497	2,713	150
Cost of publications sold	526	507	670	700
Other	170	172	449	250
Total expenditures	13,964	17,082	25,097	25,532

NAVAJO-HOPI RELOCATION COMMISSION AND FRANKLIN DELANO ROOSEVELT MEMORIAL COMMISSION

Senator HATFIELD. All right. As I announced at the outset of the hearing, I have a statement and some questions and answers that I will submit for the record. Thank you very much.

Mr. BROWN. Thank you.

[The information follows:]

NAVAJO-HOPI RELOCATION COMMISSION

STATEMENT OF ROBERT E. LEWIS, CHAIRMAN OF THE NAVAJO AND HOPI INDIAN RELOCATION COMMISSION

Mister Chairman:

It is indeed a pleasure to appear before you today to explain our budget request for Fiscal year 1977 and answer any questions that you may have. The $500,000 requested will be necessary to fund the activities of the Navajo and Hopi Indian Relocation Commission for this period. These funds will provide the compensation for the three commissioners, a staff of 10 employees, and necessary other expenses to carry out our responsibilities.

We are proceeding to solicit applications and hope to be fully staffed very shortly. We will proceed to write the regulations for administering the funds and carrying out the activities for which we are responsible. In addition, we will be doing other things so that we can be fully operational when final adjudication and partitioning of the land in the Joint-Use Area is effective.

The Relocation Commission has been given the following responsibilities by Congress in order to carry out the intent of P.L. 93-531:

1. Within a 24-month period following the District Court order for partitionment of the Joint-Use Area, submit a report to Congress concerning relocation.

2. Report to include the:

   a. Name of the residents within the area partitioned that will require relocation services;

   b. Fair market value of habitations and improvements of people to be relocated.

3. Report to:

   a. Be developed with persons to be relocated and their tribal representatives;

   b. Take into account adverse social, economic, cultural and other impacts to avoid or minimize such;

   c. Identify sites and distance involved in relocation;

   d. Assure housing and related community facilities and services are available.

4. Commission is ordered to relocate the households and members thereof, including livestock, from any lands partitioned to the tribes of which they are not members;

   a. The plan to be completed by the end of five years;

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b. Commission shall make incentive payments;

c. Commission shall purchase from the head of each household who is to be relocated, the habitation and other improvements owned by the relocatee;

d. Reimburse each head of the household who is to be relocated for actual reasonable moving expenses as if they were displaced under Sec. 202 of the Uniform Relocation Assistance Act of 1970;

e. Make payments to each head of household who is required to relocate which, when added to the fair market value of their improvements, will equal the reasonable costs of a decent, safe, sanitary replacement dwelling adequate to accommodate such household but not to exceed $17,000 for household of three or less and not more than $25,000 for a family of four or more;

f. Shall be responsible for provision of housing for each household eligible for payments;

(1) Shall make payments to accelerate achievements of debt-free home ownership.

(2) Shall make timely arrangements for relocation housing by contracting for construction of housing or acquiring housing for relocatees.

g. Is authorized to dispose of dwellings and other improvements acquired or constructed pursuant to the Act.

We intend to do as much of the relocation plan as is possible with our existing staff but foresee the need for contracting to develop some of the essential base data. These contracts would include a social economic study, a human resources study, and appraisal of existing habitation and improvements, to name a few. In addition to this, we intend to be ready to handle all voluntary relocations when the new boundary is established.

I appreciate this opportunity to appear before you today and will be pleased to answer any questions you may have.

QUESTIONS SUBMITTED BY SENATOR HATFIELD

RELOCATION AND ASSISTANCE OBLIGATIONS

Question:

In the fiscal 1976 budget, $37.5 million was requested for relocation and assistance payments, an amount the Congress reduced to $12.3 million. Your justifications indicate that $2.1 million of this amount will be obligated in the current year and $7 million in fiscal 1977. It is also noted that you have no request for additional amounts of relocation assistance.

Is the program progressing well enough to insure that these amounts can indeed be obligated?

Answer:

Yes, the Commission will be fully organized very soon and it is anticipated that the program will expend that amount of money by the end of fiscal 1977. We wish to emphasize we can only anticipate, since many factors in this process are beyond our control.

Question:

You are estimating an unobligated balance of $3.2 million in relocation assistance payments at the end of FY 1977, indicating a sharp reduction in original obligation estimates. Why has this program slowed to such an extent?

Answer:

The original submission of the budget was structured to allow us to implement the program in the event of an immediate establishment of the boundary in the joint-use area.

Question:

What are your estimates on the total number of residents who will have to relocate?

Answer:

If the District Court follows the Mediator's recommendations, approximately 3,495 Navajos and 29 Hopis will be living on lands partitioned to the other Tribe.

RELOCATION INCENTIVES

Question:

What are your current estimates for costs of voluntary relocation in the current year and in fiscal 1977? What incentive payments do you anticipate will be needed?

Answer:

With the many variables involved, the amounts originally requested are our best estimates at this time.

Question:

Do you have any firm indications at this time of the response to voluntary relocation?

Answer:

No. Any real indication regarding voluntary relocation is not anticipated until the boundary is fixed.

JOINT USE BOUNDARY

Question:

There apparently has been some delay in fixing the boundary for the joint-use area. What is involved in this delay, and how does it affect your program?

Answer:

The Mediator's Report and Recommendations were submitted to the District Court by the deadline date on December 12, 1975. The Court first had to consider some problems on the South end of the joint-use area before proceeding. It is our understanding this has now been disposed of. The Court, we further understand, is now receiving and considering briefs and position papers from the involved parties regarding the boundary line. We cannot fully proceed until the boundary is fixed.

Question:

Do you have any idea when the boundary will be fixed?

Answer:

No.

PERSONNEL

Question:

What is involved in the $236,000 request for personnel compensation? Does it anticipate full staffing for the year?

Answer:

This will cover the pay for the three Commissioners and the complete staff. It also covers temporary help such as interpreters, census enumerators and others for which we anticipate the need.

Question:

How many positions have been filled to date?

Answer:

In addition to the Commissioners three positions are currently filled.

COMMISSION OPERATIONS

Question:

How often has the Commission met to date, and what is your projected meeting schedule through FY 1977?

Answer:

To date the Commission has met approximately 15 times since July 1, 1975. Meetings are scheduled for the first Monday of each month and others as needed. Therefore in the eighteen months from now until September 30, 1977, the Commission will positively meet 18 times. Since we will be more intensively engaged in the development of the Relocation Plan, I would estimate another 18 meetings for a total of 36 meetings in the next eighteen months.

Question:

How are commissioners compensated?

Answer:

Each Commissioner is paid an amount equal to the daily rate paid a GS-18, or $145 a day, for each day or portion thereof during which such Commissioner is engaged in actual performance of duties as a member of the Commission.

Question:

Do the operating increases requested represent any program increase, or is this amount simply reflection of full year operations?

Answer:

This amount is a reflection of a full year's operation with a complete staff.

ADMINISTRATIVE COSTS

Question:

Could you explain what types of expenses are covered in "other services" and why a $44,000 increase is necessary?

Answer:

In fiscal 1976 and the transition quarter we estimate a cost of $30,000 for consultative services and $100,000 for an appraisal contract. In FY 1977 we anticipate $50,000 for consultative services and $110,000 for a human resources, cultural and economic impact study. The Consultants would be persons who will help us in the writing of our regulations and the Relocation Plan.

Question:

What is the estimated cost of the social, economic and appraisal studies you plan to contract out?

Answer:

The $290,000 shown for FY 1976, transition quarter and fiscal 1977 includes these amounts.

Question:

Your $43,000 request for travel seems high. Is it mainly related to staff travel or is travel by the commissioners a significant portion of the amount?

Answer:

We anticipate a large amount of travel by the Commissioners and six of the ten permanent staff. In addition, we have anticipated GSA vehicle rental and per diem for temporary help while working with the people in the joint-use area and GSA vehicle rent for permanent staff.

Question:

You have no request for printing and reproduction in the transition quarter or for fiscal 1977. What does the $5,000 in the current year represent?

Answer:

This is the cost of printing the Relocation Plan. It was included in case of an immediate decision on the boundary and early completion of the Relocation Plan.

FRANKLIN DELANO ROOSEVELT MEMORIAL COMMISSION

STATUS OF MEMORIAL

Q. Please highlight your need for the $4,000 increase at this stage of the Commission's work.

A. Other than inflationary increases, this $4,000 represents an increase in travel expenditures for the Commission members. We anticipate having frequent meetings during the next fiscal year in that we are nearing completion of the design of the memorial. We are honored to have the former Governor Edmund G. Brown of California as a member of the Commission. He is a very active member of the Commission and we certainly feel it is appropriate to reimburse him for his travel from California.

Q. Where do we stand on preparations for moving the memorial to the design and construction stage ?

A. Lawrence Halprin Associates, retained by the National Park Service to design the memorial, has developed a design which has been approved by the National Capital Planning Commission and the concept of which has been endorsed by the Commission of Fine Arts. The Secretary of the Interior's National Capital Memorial Advisory Committee has approved the design as well. We are currently working with the Commission of Fine Arts to modify the details of the design so as to achieve their approval in the near future. The next step will be an environmental impact statement and further refinement of the design. Once this is complete, we will work towards selecting a sculptor or sculptors and develop final design and cost estimates. At that point, the Franklin Delano Roosevelt Memorial Commission will present the final design to Congress for their authorization to construct the memorial.

MEMORIAL DESIGN FUNDS

Q. The National Park Service has not included any memorial design funds in its FY 1977 budget. Did the Commission request any Park Service funding for this purpose?

A. We are informed, by the National Park Service, that from a programmatic standpoint the funding for advance planning is not a line item in their budget. Rather, the funds for this type of design are lump sum. The Park Service does have funds identified in their FY 1977 budget for continuation of the design process.

Q. Have conceptual drawings for the memorial been completed?

A. No. We are continuing to work with the Commission of Fine Arts to refine the concept. Once their approval has been secured we will move out of the conceptual phase and into more detailed design and analysis. We will be meeting with the Commission of Fine Arts on May 19 to seek their approval.

Q. Is there any reason why design work should not move forward if funds were provided to the Park Service?

A. None. The consultant will have expended all funds appropriated to date by May 1. The design cannot proceed beyond the May 19 Commission of Fine Arts meeting without additional funding.

Q. Do you have any estimate at this time on the total cost for the memorial development?

A. No. A cost estimate cannot be provided until the end of the next phase of the design process.

Q. What progress has been made in the effort to raise private donations for the memorial?

A. None at the present time. (See answer to next question.)

Q. What is being done specifically to raise private funds?

A. As of this date the Commission has not attempted to raise private funds. The Commission has no specific design to submit to possible donors, but we do have in mind soliciting private donations when we reach the point of coming closer to actual construction.

ADMINISTRATIVE EXPENSES

Q. Your estimate for travel increases sixfold from fiscal 1976. Is this increase related to reimbursements to Commission members for meeting attendance?

A. Yes. Also, the Chairman is reimbursed for expenses incurred when he must travel to Washington, D. C., on official business for the Commission. This includes meetings of the Memorial Commission's Executive Committee, Commission of Fine Arts, National Capital Planning Commission, National Park Service, etc. Former Governor Brown has paid his own travel expenses from California on three occasions and has not been able to attend other meetings because travel expenses were unable to be paid because of lack of travel funds.

Q. How often does the Commission meet?

A. The Commission meets as necessary at the call of the Chairman. The Commission's Executive Committee, Senator Mark O. Hatfield, James H. Rowe, Jr. and the Chairman, also meets at other times. There were three meetings of the full Commission in calendar year 1974 and three in 1975. We anticipate more meetings during FY 1977 in that we are in a critical period in the design process.

Q. How many members are there on the Commission and how far do they travel for meetings?

A. There are 12 members on the Commission. As the meetings are held in Washington, D. C., and all but four members of the Commission are members of Congress, the travel is kept to a minimum. Those traveling from outside the Washington area come from New York and California. The Chairman and Mrs. Anna R. Hoffman travel from New York and Edmund G. Brown travels from California.

Q. Your estimate for other services fluctuates widely between fiscal 1975 and fiscal 1977. What causes this?

A. Inflation as well as a cost of living increase for our salaried employee represent the increases.

Q. What items are included in other services?

A. Salary, printing, and a five percent charge by the Interior Department for administrative costs in handling our accounting.

Q. The other object classifications in your budget have doubled after a period of relative stability. Does this reflect inflation or are there program increases involved?

A. Other than increased travel, as previously outlined, the increases in the budget reflect inflation and stepped-up activities due to the critical period in the design process.

SUBCOMMITTEE RECESS

Senator HATFIELD. We are in recess until Tuesday at 10 a.m., when we will hear the Bureau of Land Management.

[Whereupon, at 11:40 a.m., Thursday, March 25, the subcommittee was recessed to reconvene at 10 a.m., Tuesday, March 30.]

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1977

TUESDAY, MARCH 30, 1976

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

The subcommittee met at 10:15 a.m. in room 1318, Everett McKinley Dirksen Office Building, Hon. Ted Stevens presiding.

Present: Senator Stevens

DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

STATEMENT OF CURT BERKLUND, DIRECTOR

ACCOMPANIED BY:

CHRIS FARRAND, DEPUTY ASSISTANT SECRETARY, LAND AND WATER RESOURCES
GEORGE TURCOTT, ASSOCIATE DIRECTOR
ARNOLD PETTY, ASSISTANT DIRECTOR, ADMINISTRATION
DWIGHT PATTON, DEPUTY ASSISTANT DIRECTOR, MINERALS MANAGEMENT
ROMAN KOENINGS, ASSISTANT DIRECTOR, RESOURCES
PAUL VETTERICK, CHIEF, DIVISION OF BUDGET AND PROGRAM DEVELOPMENT
FRANCIS M. WILES, DIRECTOR OF BUDGET, OFFICE OF THE SECRETARY

BUDGET ESTIMATE

Senator STEVENS. Good morning. This is the time scheduled to hear the fiscal 1977 budget estimates of the Bureau of Land Management. The requests total $256 million in new budget authority which is an increase of almost $24 million over appropriations to date. There is also a request for $5 million in appropriations to liquidate contract authority, which is up by $1.8 million over fiscal 1976. The justifications have been included in part 1 of the record.

PREPARED STATEMENT

Mr. Berklund, welcome again before the committee. Would you please introduce your associates for the record? Your prepared statement will be printed in full in the record. We will be happy to have you highlight your statement.

[The statement follows:]

Mr. Chairman: In comparison to the Bureau of Land Management, no other land or resource agency exists, public or private, which:

Administers holdings as large in size. These encompass—

450 million acres of land.

369 million acres of additional mineral estate under other public and private surface, and

1.2 billion acres of the Outer Continental Shelf.

No other agency has the diversity of BLM's program responsibilities. The broad range of multiple use functions undertaken by this Bureau include:

Energy and Minerals Management both on shore and on the Continental Shelf.

Lands and realty management to provide land for industrial, residential, agricultural, and municipal use.

Surface resource use and protection for the sustained yield of clean water, livestock forage, timber, recreation values, and wildlife.

Planning for multiple use management to insure the best possible allocation of the land and resource base in support of national goals and objectives.

No other agency exercises stewardship over so many public values, both tangible and intangible. In revenues alone, annual receipts from the sale or lease of lands and resources are expressed in multibillion-dollar terms. For fiscal year 1977 receipts are estimated at $6.7 billion, a large portion of which comes from OCS oil and gas leasing activities.

Budgets are the ultimate policy documents. Legislation, Executive orders, policy, and public pronouncements, all of which are oriented toward improving the environment, increasing resource productivity, or enhancing the symbols of our cultural past mean little without fund and manpower commitments to make them a reality.

To this end, BLM proposes appropriations of $261 million. This excludes $128 million in permanent appropriations which are primarily payments of shared revenues to States and counties. The $261 million represents a net increase of $23 million in additional program dollars over fiscal year 1976. Accompanying the request for additional funds is a proposed increase of 333 permanent positions which are equally vital to the management and development of our public lands.

For energy and minerals management, increases of $2,720,000 for onshore and $5,310,000 for offshore oil and gas leasing activities are requested to keep pace with public demand and implement the Department's offshore leasing schedule. Increases totaling $2,110,000 are requested for onshore nonenergy minerals programs to help reduce case backlogs and meet accelerating demands for minerals such as potash and phosphate.

For lands and realty management, a proposed increase of $2,850,000 is requested for the rapidly accelerating environmental analysis workload in processing right-of-way applications for private energy developments. A reduction of $1 million for the Trans-Alaska Pipeline inspection program is also included in the budget.

For surface resource use and protection, proposed increases of $520,000 for recreation management of the California desert, and $214,000 for fire protection management are requested. The forest management program decreases by $70,000 in management of lands and resources while the Oregon and California grant lands fund obligation program is reduced by $3,167,000. Range, wildlife, and watershed programs funded in the management of lands and resources appropriation are stable at the expanded fiscal year 1976 levels provided by Congress. An increase of $1,800,000 will also be available for grazing programs from the range improvement fund as a result of increasing the grazing fee to $1.51 per animal unit month in calendar year 1976.

Planning for multiple use management remains approximately level except for a $300,000 reduction. This money was provided on a one time basis in fiscal year 1976 for printing Alaska resource profiles.

In our technical and administrative support programs, an increase of $840,000 is proposed to help keep Alaska Native claims and State settlement cadastral surveys on schedule, and a small increase of $204,000 is requested for general administrative support of other program increases. Increases totaling $1,325,000 are proposed for urgently needed additional maintenance capability for buildings, recreation facilities, and roads. New road construction, under public lands development, roads and trails, will continue at about the same $5 million level as in fiscal year 1976. No new recreation or building starts are planned except for a

$2.6 million office building for the Fairbanks, Alaska district where our present lease will not be renewed and no other space is available.

Because of their size, their diversity and their real and potential wealth, BLM lands have become increasingly the subject of growing interest, public awareness and public pressure.

It is the concern for the present use and future productivity of this land—particularly its renewable, surface resources which has led to greater recognition and program support on behalf of the Department and the Congress. We are grateful for the support, understanding and assistance which this committee has rendered in the management of this valuable national estate.

INTRODUCTION OF ASSOCIATES

Mr. BERKLUND. Mr. Chairman, I appreciate the opportunity to appear before your committee again. I would like to introduce those with me. On my far right is Chris Farrand, the Deputy Assistant Secretary of Land and Water Resources. On my immediate right, Paul Vetterick. Paul is the Chief of Budget and Program Development. On my left, George Turcott, my Associate. On his left is Dwight Patton, "Red" Patton as he is called and he is the Assistant Director for Minerals Management. And seated on his left is Roman Koenings, Assistant Director for Resources. To his left, at the end of the table, is Arnold Petty, our new Assistant Director of Administration.

Mr. Chairman, with the statement entered into the record, we could forego a summary of it, unless you would like to have me summarize it. We would be prepared now to answer your questions.

INCREASES FOR ENERGY AND MINERALS MANAGEMENT

Senator STEVENS. All right. Tell me about this $11 million increase in the operating account for programs involving energy. Do you have the capability to handle that much of an increase, and what would the total be for that?

Mr. BERKLUND. The increase we have requested in the energy and minerals area is about $11 million. The breakdown would be $2.7 million for onshore oil and gas leasing; $5.3 million for the Outer Continental Shelf leasing program; and $420,000 for patent processing. For nonenergy mineral leasing, a plus-$810,000; material sales, $880,000; and the payment of personnel costs, $919,000.

Senator STEVENS. We have had some criticism that the BLM is turning more and more to the energy-related activities and neglecting the other land and resource programs. Do you think this is right?

Mr. BERKLUND. For the last 3 years, Mr. Chairman, our No. 1 priority has been in the energy area, and we have seen most of the increases occurring in those programs. This year we have submitted a budget that shows increases in some of the other programs. But the largest increases have been in the energy areas.

INCREASES IN PERMANENT POSITIONS

Senator STEVENS. What accounts for the sharp increase in your personnel? The staff tells me that in your operating account alone, you are up 333 permanent positions and your average paid employment rises by 406 in this budget alone.

Mr. BERKLUND. Mr. Chairman, of the increase of 333 permanent positions that we requested, 90 of those are transferred positions from the Federal Highway Administration coming into the Bureau.

They have turned the maintenance program in the western Oregon counties over to BLM, and have transferred the positions.

So there will be a reduction of 90 positions in the Federal Highway Administration and a corresponding increase in BLM. There is an increase in energy-related positions. We have requested 83 positions in upland oil and gas; patent processing, 18; mineral leasing, 22. In material sales it is up 29. In energy-related lands casework we have asked for 68 people, and 14 positions in recreation management. So the total in the MLR appropriations is 237 new permanent positions.

Senator STEVENS. These are permanent positions so far as the management-related activities are concerned?

Mr. BERKLUND. Yes, sir. These are all permanent positions. They are not all energy related as I indicated to you in the breakdown. There are some more that I did not include such as our maintenance program. There are six positions there, and then the 90 in the O and C area of western Oregon that are being transferred from the Federal Highway Administration.

Senator STEVENS. We are informed that you have increased your contracting out in the energy program. Is that so? And if that is so, why do you need so many new permanent people if you are contracting this work out?

Mr. BERKLUND. We are contracting as much as we possibly can. It is a matter of degree. You remember when we went into contracting for cadastral surveys. To find the capability we had to move in slowly. We are now expanding that program as fast as we possibly can although inflationary impacts are affecting our contract capability.

In our contract work for energy it is the same case. We have to find those skills and capabilities that are available to us. Yet you have to recognize that even through contracts, when the only information available is in the Bureau files, we have to have people to service the contractor.

So it takes a certain amount of permanent personnel in BLM, even to accommodate contracting. We have to have contracting officers. We have to monitor those contracts, to make sure they are properly fulfilled. I feel that we are stretched to the maximum even considering this request for 333 new permanent positions.

INITIAL PERMANENT POSITION REQUEST

Senator STEVENS. Did you ask for more than you actually got?

Mr. BERKLUND. Yes, sir.

Senator STEVENS. How many new people did you ask for originally?

Mr. BERKLUND. Our request, sir, was roughly 900.

Senator STEVENS. 900?

Mr. BERKLUND. Yes, sir, 981 to be exact.

Senator STEVENS. Does that relate to the average paid employment or to the operating account? We have 237. Does that relate to the 237?

Mr. BERKLUND. No, it would compare to the total that we now have of 333. That would have included the other programs such as construction and the transfer from the Federal Highway Administration.

Senator STEVENS. What were the requests that were cut last year that your proposal included?

Mr. BERKLUND. Some of them were in programs that we did not receive increases in. Some of them were in areas where the increases were not fully accommodated with extra positions.

I think Paul can give us the breakdown.

Senator STEVENS. Mr. Vetterick?

Mr. VETTERICK. Sir, the 981 positions, that is permanent positions that we asked for in the 1977 budget, included a number of programs that were not funded, such as nonenergy casework in our lands and realty program. It also includes additional resources in the range management program that were not accommodated. Additional programs on behalf of forestry, both in public domain and in western Oregon and further increases in recreation and wildlife that were not allocated.

There were positions associated with increases in the cadastral survey program in the lower 48. Those programs were not recognized, due to the overall budget priorities. There were additional positions in construction and maintenance as well.

It pretty well runs across all of the BLM activities as far as those 981 positions that were requested are concerned.

Mr. BERKLUND. Mr. Chairman, we can supply that list for the record, if you would like.

Senator STEVENS. All right. We would like to have that.

[The list follows:]

FY 1977 PERSONNEL INCREASES

The following table shows the number of increase positions requested of OMB and positions allowed by OMB:

	FY 77 Position Increases Requested	Allowed
Management of Lands and Resources		
Energy & Minerals Management		
Upland Oil & Gas	+ 96	+ 86
Energy Management - Offshore	--	--
Patent Processing	+ 28	+ 18
Mineral Leasing	+ 22	+ 22
Materials Sales	+ 29	+ 29
Subtotal, Energy & Minerals Management	+ 175	+ 155
Lands & Realty Management		
Energy Casework	+ 149	+ 68
Nonenergy Casework	+ 52	--
Trans-Alaska Pipeline	--	--
Subtotal, Lands & Realty Management	+ 201	+ 68
Surface Resource Use and Protection		
Forestry Management, Public Domain	+ 43	--
Soil & Water Resource Management	+ 28	--
Range Management	+ 138	--
Wildlife Habitat Management	+ 28	--
Recreation Management	+ 25	+ 14
Fire Protection	+ 15	--
Subtotal, Surface Resources	+ 277	+ 14
Planning for Multiple Use	+ 63	--
Cadastral Survey		
Alaska Survey	+ 10	--
Lower 48	+ 11	--
Subtotal, Cadastral Survey	+ 21	--
General Administration	+ 4	--
Total, Management of Lands and Resources	+ 741	+ 237
Construction and Maintenance		
Construction	--	--
Maintenance	+ 20	+ 6
Total Construction & Maintenance	+ 20	+ 6
Public Lands Development Roads & Trails (Oblig.)	+ 10	--
Oregon & California Grant Lands (Oblig.)	+ 170	+ 90a/
Range Improvements	+ 40	--
Recreation Development	--	--
Total	+ 981	+ 333

a/ Transfer of positions from FHWA.

CONSTRUCTION BACKLOG

Senator STEVENS. What about the construction program? It appears that this program is shrinking in this budget. Only one new facility has been added. What is the current backlog in terms of facilities, maintenance and roads, as far as your Bureau is concerned?

Mr. BERKLUND. The only project that we felt had number one priority that we had to move forward with was the construction at Fairbanks. It is a new district office at Fairbanks.

Senator STEVENS. I understand that is in here. I am happy to see it. We have some problems with that down the road. But what are the other facilities and roads maintenance programs elsewhere?

What is the backlog in that area?

Mr. BERKLUND. The construction backlog has been building over the last several years, but we feel that there will be opportunities to take care of that in the future. With our constraint on the construction budget we felt that we had to look at only the first priorities.

We found that we had this emergency in Fairbanks. Either we went ahead with construction there or would be forced into a tent city or something like that.

Now when we talk about maintenance we did receive a sizable increase in our maintenance program. It is our construction program that did not receive any increases. In fact, we are requesting an increase of $722,000 in building maintenance and $450,000 in recreation maintenance and another $100,000 in road maintenance.

Senator STEVENS. What have you done with regard to recreation-related construction? Is there anything in here for that?

Mr. BERKLUND. No, sir. The only actual recreation construction that we were able to accommodate in fiscal year 1977 was on the O and C lands. We have a small recreation construction program in western Oregon but the rest of the recreational construction will have to be delayed.

In fact, we may have to look to some of the funds that were committed for construction in order to take care of a separate emergency in our western Oregon program.

Senator STEVENS. What is the backlog in the recreation construction?

Mr. BERKLUND. We are only accommodating a small percentage of the site oriented use of the Federal lands. I think it is about 12 percent now. I do not have the dollar figure on our construction backlog.

INTERIOR COMMITTEE REPORT

Senator STEVENS. The Interior Committee has recommended to the Senate Budget Committee that BLM be given increases in forestry, range, wildlife, soil and water programs. That committee believes that these programs are badly underfunded at this time.

Are you familiar with that? And if you are, what are your comments about the Interior Committee's request?

Mr. BERKLUND. I have reviewed the report to the Budget Committee and I find that their concerns pretty well parallel those of the Bureau of Land Management. We feel that there is a tremendous resource at stake here in the public lands that needs protection.

We were pleased to see that the Interior Committee is aware of some of our program needs.

Senator STEVENS. I am going to ask the staff to give you the Budget Committee presentation for some specific comments. If you will respond to them in writing.

[The response follows:]

BLM COMMENTS ON SENATE INTERIOR COMMITTEE REPORT TO THE SENATE BUDGET COMMITTEE

The Senate Interior Committee's recommendation to the Senate Budget Committee makes numerous specific recommendations on BLM program levels. For renewable resource programs, the Interior Committee points out that the condition of much of the land base is low and that productivity is declining. Secondly, the Committee finds that additional investments in cost-effective resource management opportunities should be encouraged to improve the condition of these resources. Specific recommendations include increases of above the 1977 budget request as follows:

$8.0 million for Range Management
.4 million for Recreation Management
2.3 million for Multiple Use Planning
3.4 million for Forest Management
.8 million for Lands and Realty Activities
.5 million for Wildlife
7.4 million for Construction and Maintenance

BLM cannot dispute the Interior Committee's general assessment of the condition of our land base. Given the vast land area and extensive resources managed by the Bureau, it is inescapable that relatively large investments in comparison with present budget levels, would be needed to significantly reverse present condition trends and supply a significant portion of presently unmet demands for both renewable resources and recreation. The Committee's recommendations accurately reflect the Bureau's priorities and the accomplishments suggested would be possible with the additional funding recommended for each program.

In the area of non-renewable resources, the Senate Interior Committee makes one recommended change in the President's Budget - a proposed disallowance of the $4.9 million increase in BLM's Outer Continental Shelf Baseline Studies Program. The Committee indicates that in its view the way in which leasing and OCS management decisions will be influenced by the baseline and monitoring studies needs to be further defined. Secondly, the Committee believes the technical adequacy of the studies should be reviewed because of questions raised by the scientific community. The Committee states that to date lease sales have been planned before any data from the baseline and monitoring studies has been available to influence such planning.

BLM is sensitive to the concerns and stands ready to prepare the reports requested by the committee on use of baseline and monitoring study data and technical adequacy of the studies. A reduction in the requested funding, however, would only aggravate the legitimate questions raised. Specifically, the proposed reduction would preclude initiation of the baseline study for the Northern California-Washington-Oregon area where a lease sale is tentatively scheduled for 1978, and would require reducing the scope of several on-going baseline studies.

The entire program represents a commitment on the part of BLM, and the Department of the Interior, to a total minerals management approach that deals with short term decisions and with longer term information gathering for decisions to be made in the future. Because of the urgency of developing new domestic energy resources, and the fact that the baseline study program has only been underway for about two years, lease sales have been held before baselines are complete. BLM recognizes that this is not the most desirable situation, and it can be avoided by initiating studies for enough in advance of scheduled leasing actions. Such is the case in the Northern California, Oregon and Washington area; if start up funds for that baseline study are deleted from the Budget, however, BLM will be placed in the precise position for which it is being criticized.

Scientific concern on the technical adequacy of baseline studies has centered around the number and location of the sampling stations in the studies and in the overall design of studies. Without the portion of the Fiscal Year 1977 increase tied to that year's requirements for on-going studies, BLM would have to reduce the number of sampling stations in several studies. This would simply aggravate the concern that already exists and diminish or eliminate the utility of data already acquired in as much as a minimum of two years data from each station is considered essential from each station. Furthermore, the specific study plan for each area in which there is an on-going study has been fully coordinated with scientists representing the states, academia, industry, and other Federal agencies through the OCS Environmental Studies Advisory Committee and through open meetings. Input from these sources represents a major portion of the base upon which studies are predicated and designed. To diminish the budget at this time, and to subsequently reduce the scope of studies could seriously impair the relationship established by BLM with these sources since they are concerned already about minimal coverage.

RECEIPT ESTIMATES

Senator STEVENS. What is the record so far concerning estimates in receipts?

Mr. BERKLUND. In fiscal year 1976 our OCS receipt projections now are $3 billion with another half billion included in the transition quarter. That is on the OCS, and that is where the major changes are occurring.

The rest of our receipts projections are not as dramatic with some receipts changing very little. It gives us a total receipt estimate for 1976 of $3\frac{1}{6}$ billion and a transition quarter estimate of $635 million.

Senator STEVENS. What was your original estimate?

Mr. BERKLUND. $8.6 billion.

Senator STEVENS. It is about $4 billion slippage. Is that all on the OCS?

Mr. BERKLUND. Yes, sir. Most of it is. There are other minor changes. The O. & C. harvest is down so that timber sale revenues are off somewhat from that shown in our budget. Miscellaneous receipts have increased a small amount. But the major changes are in the receipts from the Outer Continental Shelf.

Senator STEVENS. What was your original estimate for 1977 for the OCS?

Mr. VETTERICK. Senator, it ranged up as high as $8 billion. That was an earlier estimate we had made prior to the time we published our budget.

Senator STEVENS. And your budget estimate now is $6 billion?

Mr. VETTERICK. Our budget receipts now are $6 billion from the OCS and a total of $6.6 billion which includes not only the OCS but other sources of revenue.

Senator STEVENS. Will the new coal policy have any substantial effect on your receipt projections?

Mr. BERKLUND. Not in 1977, Mr. Chairman. Receipts from coal sales, if they are held in the future, will be minor compared to OCS revenues. You will have to realize that there will not be any competitive sales until we get through the planning and EIS process. If we are able to hold those sales we think it will be possible receipts will be up some, but they will not change the receipt estimates significantly.

Senator STEVENS. We know that quite a few of those OCS sales were delayed. Isn't the California sale the one you have now?

Mr. BERKLUND. Yes, sir. We have had some delays. That particular sale has been held. We are now looking to the Gulf of Alaska as the next sale.

OCS LEASES AND RECEIPT ESTIMATES

Senator STEVENS. How much of those projected receipts of the $6 billion is from bonus money, and how much are other revenues from the OCS?

Mr. BERKLUND. We anticipate for the 1977 receipts, the $6 billion that you are referring to, that bonuses will amount to $5.3 billion, with royalties at $0.7 billion. That gives you a total of $6 billion.

Senator STEVENS. Do you have any other areas that are going to go ahead, besides the California and Alaska sales?

Mr. BERKLUND. Yes. We have nine sales scheduled for 1977. The sales that are still projected between now and the end of fiscal year 1977 would be Cook Inlet, the Gulf of Alaska, the mid-Atlantic, north Atlantic, a drainage sale scheduled in the Gulf of Mexico, the south Atlantic sale, and another sale programed for the west Gulf of Alaska, down by Kodiak Island as well as one in the Bering Sea.

We have another sale scheduled for the deep waters in the Gulf of Mexico, and we have another sale off southern California, an extension of the sale that we have already held. Then we have another sale in the mid-Atlantic. We have all these sales scheduled between now and the end of fiscal 1977.

Senator STEVENS. Are there nine projected?

Mr. BERKLUND. In fiscal 1977.

Senator STEVENS. And four of the nine are in Alaska?

Mr. BERKLUND. Yes, sir.

Senator STEVENS. Do you have any indication from industry that they can handle that much land going forward in the OCS in one year?

Mr. BERKLUND. The indications have been that they can. The acreage leased has been increased, but not to the extent that we had hoped we would be leasing. We are very desirous of opening and exploring all frontier areas to find out what resources are there, so that additional sales can be programmed later where oil and gas deposits exist.

I have not found any industry resistance to sales in frontier areas, the new areas that we propose sales in. The industry has been supporting the program very enthusiastically.

OCS PROGRAM REQUEST

Senator STEVENS. With the delays we have had, do you think it is realistic to have this $60.3 million that is the single biggest increase and $5.3 million for the Outer Continental Shelf leasing activities? Is that needed for this year?

Mr. BERKLUND. Yes, we feel that we need the additional money in order to move it ahead. Most of it is for baseline studies and whether the sales are held this year or next year, we need to have that information before we go into development in those areas.

This would give us a capability to fully fund the 14 baseline and monitoring studies that we have underway and initiate a new baseline study, one in the northern California-Washington-Oregon area in fiscal year 1977.

Senator STEVENS. You have $46.6 million for baseline and monitoring studies. What is the difference, really, between those two? You showed $17.8 in baseline studies; is that right?

Mr. BERKLUND. I do not have that number separated, Senator, but we will spend in 1976 about $41.7 million, and we are projecting $46.6 million in 1977, to continue ongoing studies and to initiate the new one in the Pacific Northwest.

Senator STEVENS. What we want to know is what is the difference.

Mr. BERKLUND. First we have to establish the baseline conditions, to find out what the environmental condition is before we start

developing an area. Then we must monitor, to see if there are any changes. The monitoring is a critical factor before and after the development proceeds, so you can see if you have environmental change. Then you have to make corrections in order to rectify adverse impacts from the original baseline as development takes place.

So the original baseline is the work that is done prior to any development. The monitoring phase is done to make sure that we are aware of any changes that occur as we proceed with development.

Senator STEVENS. You keep up your monitoring services without regard to whether there is development?

Mr. BERKLUND. I think Red can speak to that, Mr. Chairman. We have monitoring going on even before development.

Mr. PATTON. Our baseline study program ranges over 3 to 4 years. The first year or more involves a full baseline study. The last year or two is a continuation of that program. We have termed this latter phase "monitors." After that initial baseline and early monitoring program is over, we will not do more monitoring until development starts in the area.

Once it does start we will continue our studies to determine whether or not there are changes in the data that are shown in the baseline program, and then make judgments from that.

Senator STEVENS. Let us take the ones I am familiar with. Your estimate shows that you have baseline studies for the Bering Sea, for the Beaufort Sea, for Kodiak, for the Aleutian Shelf, the Chukchi Sea and the Norton Sound, all in the 1976 estimate.

Did you do those baseline studies? There is another one for the Gulf of Alaska. Did you do those? Have they been completed or are they underway?

Mr. PATTON. Going down that list, Chukchi Sea will start in May. The Norton Sound in May. Cook Inlet we have not started yet.

Mr. BERKLUND. There is additional funding required to continue the studies or finish them in 1977.

Senator STEVENS. I understand that, but if you have not done the basic baseline studies in 1976 you won't need monitoring in 1977.

Mr. PATTON. In the Chukchi Sea we will start that baseline study in May and will follow up with an additional amount for baseline study work in 1977.

COORDINATION WITH CANADA IN BEAUFORT SEA

Senator STEVENS. What about the Beaufort Sea?

Mr. PATTON. That has started.

Senator STEVENS. It has started?

Mr. PATTON. Yes, sir.

Senator STEVENS. Are you familiar with the request that was made by the State Department to Canada not to permit the drilling by Dome Oil in the Beaufort Sea?

Mr. BERKLUND. Yes. We were apprised of it, after that request went forward from the State Department. It was at a time that we had just completed negotiations with the State of Alaska. The State had planned to proceed with their sale in Beaufort. We are now discussing it with the State Department to try to get a definition.

We are concerned about development, technology and stipulations. We are dead serious about leasing and development in the Beaufort. We are exploring that with the State Department and with Canada at the present time.

Senator STEVENS. Incidentally, my British friends tell me that it is "Beaufort"—we will stick to either one that we want here.

Mr. BERKLUND. Your friends in Alaska say "Bofort"; your friends in Canada say "Beaufort" whichever one you prefer, Mr. Chairman.

Senator STEVENS. Are you going to spend the full $41.7 million in fiscal year 1976?

TEMPORARY REPROGRAMING REQUEST

Mr. BERKLUND. Yes, sir, we are. We have requested, which is a subject we will be talking about tomorrow, in our supplemental hearings, a reprograming out of our baseline studies, in order to facilitate start-up of the Sohio pipeline and continuation of Arctic gas environmental impact statements.

But we also follow it up with a supplemental, asking to replace that money because we are ready to contract all the baseline studies that we have outlined for you in 1976.

Senator STEVENS. What is the Sohio pipeline?

Mr. BERKLUND. That is an application that we have from Sohio to convert a gasline and build some new lines from Los Angeles to Midland, Tex. We have found that as soon as the oil starts to flow from Alaska, there will be a surplus of oil to the west coast needs. We are concerned about moving that to the Midwest refineries and markets.

Their application is to convert a gasline and to build some new lines to move this oil to Texas, where it ties in with existing pipelines that feed the Midwest and gulf coast.

Senator STEVENS. I hope you are more clear about it than your colleagues in the FEA have been regarding what causes a surplus down there, if there is going to be one. It is a blessing, not a curse. The surplus is only going to occur if Indonesia continues to sell its oil and if Reserve No. 1 comes into production. I agree with the process. I am willing to help you get your program approved. But I think the black eyes we have been getting about what follows the surplus and whether we should build a pipeline through Canada and to Alaska in regard to the system have been unwarranted.

I do not know if you have heard about it, but Senator Stevenson and I were in Canada just 10 days ago. When we were there I asked the Canadians if we had chosen the oil pipeline route would the pipeline be under construction yet. One of their ministers told us no, in his opinion, it would not yet be under construction. I hope that you make a point to the people whom you are dealing with that conversion of that pipeline is a luxury when we can think about handling more oil than we had anticipated getting at the time we had the oil pipeline decision before us.

CONTRACT OCS BASELINE STUDIES

But that is another matter. What I am interested in right now is with regard to this baseline study. Are you carrying out the un-

derstanding that we had in that we would contract with the NOAA people to do as much of this as possible?

Mr. BERKLUND. Yes; NOAA has, through cooperative agreement, taken the baseline studies in the Alaskan waters for us. So all of these particular studies are being carried out by NOAA.

Senator STEVENS. What portion of the total program in OCS is contracted out, as far as BLM is concerned, on baseline and monitoring studies?

Mr. BERKLUND. The entire baseline study program is contracted out or conducted through cooperative agreements with NOAA and the Geological Survey. BLM does not carry on any of the actual studies itself.

OCS PROGRAM ELEMENTS

Senator STEVENS. From your justification it appears that $46.6 million of the total OCS program is for baseline and monitoring studies. What is the balance used for?

Mr. BERKLUND. Well, Mr. Chairman, our program features consist of leasing, which includes the mechanics of operating a leasing program, calling for nominations, pre- and post-sale analysis, adjudication assignments and the like. That is $1.7 million.

Then we have $800,000 for resource analysis, which is looking at OCS potentials and alternatives. Environmental analysis, which is the actual preparation of the EIS, administration of environmental contracts and conduct of public hearings comes to $3.6 million. There is $600,000 for program support, which involves program coordination, the administration of programs, supervision and clerical support.

Then there is another $7.9 million for special studies beyond baseline monitoring efforts. These are such things as socioeconomic studies on the Outer Continental Shelf, the impact on local communities that are going to be effected by our OCS resources program.

Senator STEVENS. It would be helpful to have for the record an OCS leasing schedule in which your budget was based, and any subsequent changes in the schedule. When you supply that, please indicate how the changes might affect your program needs.

[The information follows:]

OCS LEASING SCHEDULE FOR FISCAL YEAR 1977

The fiscal year 1977 budget is based primarily on the June 1975 Proposed OCS Planning Schedule as modified because of slippages in fiscal year 1976. The original schedule identified 5 sales for fiscal year 1976, 1 sale for the Transition Quarter, and 7 sales for fiscal year 1977.

The schedule on which the fiscal year 1977 budget is based is as follows:

Fiscal year 1976	Transition quarter
*Central Gulf (No. 38A)	Mid-Atlantic (No. 40).
*Southern California (No. 35).	
Gulf of Alaska (No. 39).	
*Gulf of Mexico (No. 41).	
Fiscal year 1977	Fiscal year 1978
North Atlantic (No. 42)	Beaufort Sea (No. 50).
Cook Inlet	Outer Bristol Basin (No. 51).
Gulf of Mexico (No. 44)	North Atlantic (No. 52).
South Atlantic (No. 43)	California, Oregon, Wash. (No. 53).
Gulf of Alaska (No. 46)	South Atlantic (No. 54).
Bering Sea (No. 45)	Bering Sea (No. 55).
Gulf of Mexico (Deep—No. 47).	
Southern California (No. 48).	
Mid-Atlantic (No. 49).	

*Sales already sold.

The work involved in the OCS lease process covers a considerable period of time, somethimes up to 22 months. Most of the work is necessary prior to the final step, that being the actual conduct of the lease sales. Therefore our program needs are incurred in completing the steps throughout the leasing process and a delay of the sale date does not lessen the amount of effort needed to complete all of the work prerequisite to the sale. The above changes to the June 1975 proposed schedule will not lessen the level of administrative effort required in fiscal year 1976 and can be expected to increase the level of administrative effort needed in fiscal year 1977.

PRESENT SCHEDULES

Mr. BERKLUND. We do have a present schedule that we are operating on, as we indicated earlier. It includes nine sales in fiscal year 1977.

We are looking at the schedule both in the 1977 year as well as the out years. That will probably be modified later this fall. But I can provide for the record at this time a schedule that we do have, the one on which this program is now based.

As I indicated before, we are going to make every attempt to offer nine sales in fiscal year 1977. We do not have any basis for modifying that at this time.

Senator STEVENS. I think what we are trying to determine is if the schedule on which your budget request is based is the same. Have there been any changes since you worked up your budget estimates for OCS estimates?

Mr. BERKLUND. Not at this point in time. The budget estimates and the schedule are currently the same.

OCS OIL AND GAS PRODUCTION

Senator STEVENS. What is the current level of OCS oil and gas production, and what are your future estimates associated with the program schedule?

Mr. BERKLUND. For fiscal year 1977 we estimate the offshore areas will produce about 300 million barrels of oil, and about 3.8 trillion cubic feet of gas. Now, as far as the impact from leasing, there will be very little immediate impact on oil and gas supply because of the lead time to get into these areas and develop these leases and get the infrastructure necessary to start producing oil and gas.

However, we do have some estimates of reserves in these areas, as to what they could provide in terms of increased oil and gas

production. For example, the entire Atlantic area has potentially from 10 to 20 billion barrels of oil and from 55 to 110 trillion cubic feet of gas. In Alaskan waters, the estimates, for example, are 30 to 60 billion barrels of oil and 170 to 340 trillion cubic feet of gas.

Certainly, these will not all come on-line as a result of our immediate leasing operations. But as we open these areas, and encourage industry to develop them, hopefully these potentials will become available in time.

Senator STEVENS. You did not give us the estimate for 1976. Why don't you supply the estimates, the production estimates for 1976 and 1975 for comparison purposes?

Mr. BERKLUND. I would be happy to do that.

[The information follows:]

OCS PRODUCTION

The following table shows oil and gas production in 1975, and estimates for 1976 and 1977:

	Fiscal year 1975 actual	Fiscal year 1976 estimate	Fiscal year 1977 estimate
Oil (mil. bbls)	339	322	301
Gas (tril. cu. ft.)	3.4	3.6	3.8

Projected declines in oil production are due to a continuing downward trend which began in 1968 when production from oil reservoirs peaked. New discoveries coming onstream have not yet picked up the slack.

BASELINE AND MONITORING STUDIES

Senator STEVENS. Again, we want to get back to this monitoring money. You had a delay in California and Alaska. Does that delay at all affect the timing of your baseline studies?

Mr. BERKLUND. No, sir. We have tried to catch up. We got started on our baseline studies late.

Senator STEVENS. That is my point. We got started late. Why do we need so much monitoring money this year? We will not complete those baseline studies, according to the original schedule. You have not taken into account the delays that occurred in the baseline studies. We have gone into monitoring in areas even before we completed the baseline studies.

Mr. PATTON. It takes 3 to 4 years to build the basic baseline that we need including predevelopment monitors. In the first couple of years we conduct basic baseline studies under this program. In the last couple years of that process, after building that basic data, we have termed those "monitoring studies".

Now those monitoring studies will continue on as development takes place. But in the last couple of years of that initial 3- to 4-year program when building the basic data, we have termed those "monitoring" studies. They are technically a completion of the basic baseline work.

DEFINITION OF "MONITORING"

Mr. BERKLUND. I think I finally figured out what is bothering you, Mr. Chairman. You want to associate monitoring only with the development, period.

When we established the baseline here there is an original contract to accumulate the initial information, we have then carried on monitoring to follow up the studies, to either confirm the first year baseline or follow up on any changes that are out there, before we start development.

So I think it is in the definition of monitoring that is where our problem is.

Senator STEVENS. I am sure you are familiar with the argument that we had in the Appropriations Committee as to why this money should stay in the budget at all, why it should not go on to NOAA. I maintained that it should stay here, and the chairman agreed with me at the time. We have kept the money in this budget to get the information you need to go ahead with the decisions on the OCS.

I think that money should be related to the costs of the OCS development, and not be something that, in effect, displaces other items that would be done by NOAA. I think the NOAA budget would have been lower than the combination of your budget and the NOAA budget in this area.

But we are having a problem convincing some of our colleagues that you need this ongoing money as far as monitoring is concerned. I would urge you to give us the complete justification that you have for this amount, this $46.6 million, which covers both baseline and monitoring activities for fiscal 1977.

Do you see our problem?

Mr. BERKLUND. Yes, sir. Let Red speak to it one more time, then we will give you the breakdown.

Mr. PATTON. In the baseline program there are some studies that you do only once for example, geologic studies. There are other studies that have to be done on a repetitive basis, such as the study of the plant and animal communities, the living organisms in water, current and winds and that sort of thing that are subject to natural change.

As we repeat those studies, in order to establish the necessary baseline data by seasons, we have termed those "monitoring studies". Those repeat through that 3- or 4-year period.

Mr. TURCOTT. I think, Senator, you can look at it from a specific example. We are going to do a baseline of a small watershed in Alaska, but we cannot get the total biota measured because of the fluctuations and variations in the biological processes, due to seasonal, climatic or other fluctuating causes.

The same is true in the marine environment. On some of these data, especially the biological aspects, we have to measure it two or three times, in a sense, to get an average. Then, once we get that, two or three times, maybe even four, then we have a baseline, a base measurement of the biota of the marine environment.

Other things, like the geology and the surface sediments do not change. We do them once. The whole continuum to get done, through

the 3 or 4 years, is to get an average, so we can actually say, "This is the baseline, this is what we are talking about." I think we have a little bit of semantics here that we have called the last 2 years of that 3- or 4-year period monitoring. The whole thing is the process of the baseline study.

GEOLOGICAL SURVEY BUDGET

Senator STEVENS. What about USGS? Their budget shows a reduction of the $1.5 million in offshore geologic surveys this year. Would that affect your OCS work? Will that create problems for the leasing program?

And, thirdly, are you going to replace that money with some of your budget, if you receive it in this area?

Mr. BERKLUND. No. The budget that we have here does not include any requests for the geologic work of the GS. The GS will be doing some work for us in the environmental area, and that will be reimbursed from our funds.

They feel that they will be able to supply us all the information that we need in order to hold these sales. But there is always the question of whether that information will be adequate to evaluate the resources there.

So there is always that question of whether it is adequate or not. They feel that they are going to be able to give us adequate information to carry out the program.

ONGOING STUDIES

Senator STEVENS. Of your requested $5.3 million increase in the OCS program, $2.4 million is requested to fully fund ongoing, delayed baseline and monitoring studies in certain areas. When are these areas scheduled for sales?

Mr. BERKLUND. I think this relates back to your question of scheduling, which we are planning to provide for the record.

Senator STEVENS. We are talking about the $2.4 million, which is for ongoing baseline and monitoring studies.

Mr. BERKLUND. The $2.4 does not relate to any particular baseline study. We developed our total needs for baseline studies, including the reinstatement of the $3.2 million that this committee saw fit to cut from our 1976 budget.

All I can do is refer you back to the schedule of studies in our budget justification which, in the aggregate, totals $46.6 million. Certainly not all of these areas are going to be offered in fiscal year 1976 nor in 1977.

Some of the Alaskan OCS sales are scheduled beyond fiscal 1977, and into 1978.

IMPACT OF FISCAL YEAR 1976 OCS REDUCTION

Senator STEVENS. Last year Congress reduced your OCS monitoring studies request by $3.2 million, as you just noted. Did this create any problem in your monitoring program?

Mr. BERKLUND. It caused us to reduce some of our baseline and monitoring efforts. I would say, Mr. Chairman, that it did set our program back somewhat. But we are proceeding with the baseline

monitoring program and we have been able to adjust within the amount the Committee saw fit to make available to us.

Senator STEVENS. Well, it did not have any large impact on your overall program?

Mr. BERKLUND. I would not go so far as to say it did not have a large impact. We have been able to adjust around it. The major impact has been that we had to scope down some of the studies from what we originally anticipated. As a result there are some data elements which cannot be obtained to the degree we originally planned.

Senator STEVENS. But you also had a slippage in your lease program.

Mr. BERKLUND. We did have a slippage in our lease program. However, bear in mind that the longer we can conduct these baseline studies in advance of leasing and collect all the data we need, the better position we are in to determine what kinds of changes are caused by oil and gas exploration and development.

So our objective is to collect this data as long as possible before there is any man-caused disturbance of the offshore areas. This way we'll be better able to improve our permitted activities.

BASELINE STUDIES REDUCTION

Senator STEVENS. Within your baseline and monitoring request your justification shows $17.8 million for baseline studies alone, which appears to be down considerably from the current year. Why is this front-end work being reduced?

Mr. BERKLUND. Well, this gets back into our defition problem, as to what is baseline and what is monitoring. The new baseline studies and the continuation of the collection of the basic data is somewhat diminished in fiscal 1977 because we have done a lot of this initial work in 1976.

We are now going more into the monitoring phase, which includes both the monitoring of oil and gas exploration development as well as the other definition of monitoring, which is trying to measure the changes that occur in the marine environment from the first baseline study, so that we can better predict the flucutations in these key indicators within the natural state, and then compare the fluctuations that might occur as a result of oil and gas operations.

Senator STEVENS. We talked about clearing up the semantics problem, as far as defining the words "baseline" and "monitoring", so I hope that your submission for the record will make it clear how these funds are being used.

Mr. BERKLUND. We will try to clearly differentiate between the two phases of monitoring in our material for the record.

[The information follows:]

OCS LEASING BASELINE/MONITORING STUDIES

The Outer Continental Shelf (OCS) Environmental Studies Program is a multi-year, multidisciplinary program consisting of a baseline/monitoring aspect and a special studies aspect. The information derived will be used by decision-makers in the minerals management program. There are two broad decision areas in which the data can be used: pre-leasing and post-leasing.

The baseline/monitoring program is designed to establish a statistically valid benchmark for selected environmental parameters that might reflect the influence of OCS oil and gas development. Thus, at some later date after exploration and develop-

ment activities have begun, we examine the same parameters in the area immediately adjacent to operations and compare them with the benchmark. Information derived in this way will enable BLM to better evaluate the impact of individual operations on the environment, and to make the correct adjustments in the minerals management program if they are warranted. The terms baseline and monitoring when used separately may be misleading because they imply separate and distinct programs. Actually they are only two aspects of the same program, which together provide information that can be inserted in the decision-making process wherever possible. The arbitrary division between the two study phases occurs when all the initial data is collected for the first time (baseline). Physical and biological features subject to *natural* change due to seasonal or annual fluctuations are measured over a longer period of time so that the natural processes can be determined in advance of oil and gas activities (pre-development monitoring). As exploratory and resource development work takes place, the marine environmental conditions are monitored to determine what changes, if any, occur which are man-caused rather than those attributable to natural phenomena (post-development monitoring).

The studies program is designed to provide descriptive, benchmark, and predictive information to input to decisions ranging from tract selection and EIS's to operating orders and regulations which will affect current and future OCS minerals development actions. The entire program represents a commitment on the part of BLM and Interior to a total minerals management approach that deals with short term decisions and with longer term information gathering for decisions to be made in the future.

Funds requested in fiscal year 1977 for baseline/monitoring efforts will be utilized as follows:

[In millions of dollars]

	Total program	Baseline	Predevelopment monitoring	Postdevelopment monitoring
MAFLA	$4.6			$4.6
Southern Texas	4.0			4.0
Southern California	2.6			2.6
Gulf of AK	3.5		$3.5	
Mid-Atlantic	3.7		3.7	
Bering Sea	4.0		4.0	
Beaufort Sea	4.0	$4.0		
Kodiak	2.5		2.5	
Aleutian Shelf	2.7	2.7		
Chukchi	2.0	2.0		
Norton Sound	2.0	2.0		
North Atlantic	3.9		3.9	
South Atlantic	3.4	3.4		
Cook Inlet	1.2	1.2		
Northern California, Washington, Oregon	2.5	2.5		
Total	46.6	17.8	17.6	11.2

1977 OCS LEASE SCHEDULE

Senator STEVENS. Do you think you can go ahead with this lease schedule without any further delays?

Mr. BERKLUND. We don't know. That is one of the big unknowns right now. We proposed a sale in the Gulf of Alaska. The State has challenged that. We don't know how the courts will rule on it, but as far as the controllable aspects of it in BLM, we are getting the work done, yes. We will try to carry off those nine sales unless we are stopped for some unknown reason.

Senator STEVENS. You have four more sales for this current fiscal year?

Mr. BERKLUND. No, I think there is only one sale left for this fiscal year and that is the Gulf of Alaska sale. Then we have one planned in the transition quarter that will be held in the mid-Atlantic. Then there will be the nine sales next year, fiscal year 1977.

Senator STEVENS. And for the balance of this year, this calendar year?

Mr. BERKLUND. No, there were four sales programmed this fiscal year. We have held three of them to date and the Gulf of Alaska is to be held in April. Then in the transition quarter, in August, we are planning to hold the mid-Atlantic sale.

Senator STEVENS. You are in court on the Alaska case. What about the others?

Mr. BERKLUND. Three of them have been sold, the sales have been completed. The Gulf of Alaska has been challenged in the court. The mid-Atlantic has not received a challenge as of yet.

Senator STEVENS. There is $400,000 for the OCS leasing for bathymetric mapping. What sales are those maps for and what year are they for?

Mr. BERKLUND. This is for the fiscal year 1977 leasing program. It would be for the nine sales that we have mentioned.

ACTIVITIES IN THE BEAUFORT SEA

Senator STEVENS. Are you doing any work on the Beaufort sale as far as these problems that were mentioned by the State Department in relation to the proposed Canadian drilling activity?

Mr. BERKLUND. We have been meeting with the Geological Survey and with the State Department on these issues to see whether they can be resolved. We have not approached the technical problems with State. We have talked about surveys and boundary disputes with State, but not technical problems.

Red, did you have something else?

Mr. PATTON. We are analyzing some of the environmental data from Canada.

Senator STEVENS. I understand that the Canadians had some 38 or 39 volumes of environmental data for that area. Has that been made available to you?

Mr. PATTON. I don't know how much of that will be made available, but we have been working with the data that they have supplied.

Senator STEVENS. Are you doing any work on the basic procurement? I understand that they feel that the ice came in and shifted the drill ship and if they had had a blow-out, it would be impossible to plug the drill casing and move off. They could not control the blow.

Are you studying that basic problem that seems to disturb the State Department?

Mr. BERKLUND. That is being looked at by GS. Dr. Weyland is here. He may be able to answer that. I cannot, Mr. Chairman.

Dr. WEYLAND. I can't add anything to that other than what you have said.

Senator STEVENS. One of the things that apparently disturbed our Canadian friends was the weakness of the U.S. involvement.

Have you been working with them prior to their leasing of the Beaufort Sea? They leased it some time ago. This is development they are going into now.

Mr. BERKLUND. No, sir. Our bureau had not been working with the Canadian Government prior to the time that the State Department had contacted them.

Senator STEVENS. I will see if I can't make sure you have access to all the work they have done so far. It seems that we would be in a strange position if our State goes ahead and leases it and the State Department is asking the Canadians to hold up development.

Mr. BERKLUND. We would be inconsistent in signing the agreement that we have reached with the State of Alaska right now to permit the State to go forward with leasing in view of the statement that the State Department has made.

Senator STEVENS. What's more, unless it is resolved the bonus bids won't reflect the value. They would reflect a discount because of the delay in the program for development.

COAL LEASING PROGRAM

Let's go onshore now. What effect has the new coal leasing policy had on your budget estimates?

Mr. BERKLUND. We have now established a coal leasing policy. We have set up the procedures to get on with coal leasing. We feel that the amount of coal that will be leased in fiscal year 1977, if any, will be very small and will not have a major impact on the budget receipts.

We are now working with the Department, taking a look at the coal leasing program to see what will be required in terms of funding and personnel. And we have not included that in this budget request.

Senator STEVENS. Then may we expect a budget amendment on additional personnel and funding for the coal leasing program?

Mr. BERKLUND. It is very possible.

Senator STEVENS. When will that decision be made?

Mr. BERKLUND. Within the next 4 to 6 months.

Senator STEVENS. What effect will this coal policy have on production estimates as far as coal from public lands?

Mr. BERKLUND. Because of the leadtime it takes to develop the mine, production would not greatly increase until some time in 1980. Before that there would be no significant increase as a result of leasing new areas.

Of course, if the sales themselves are adjacent to an operating mine where you could get production in the next year or two, we could see some increase. But to open a new mine in a new area, we would be looking at 5 to 10 years to get into full maximum production.

I would not expect any major increases other than the projected increase that is coming forward now through diligent development, changes in our lease stipulations and increased activity on existing leases. We are seeing a continual increase in production from the Federal lands, but it is not from new leasing.

In 1975 we had almost 27 million tons produced from Federal lands. In 1976, 50 million tons. We expect in 1977 we will have

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about 78 million tons. But this is coming off existing leases, not the new leases we are talking about in our leasing policy.

Senator STEVENS. Do you have any personnel problems that come from any lack of funding which account for the delay of implementation of the new coal policy anywhere?

Mr. BERKLUND. We will have to have additional people if we are going to carry out the policy.

Senator STEVENS. Did you ask for money that you did not get in this area for positions?

Mr. BERKLUND. No, we did not because we did not have the coal policy firmed up at the time this budget request went to Congress.

Mr. VETTERICK. At this time we are working with the Geological Survey and the Fish and Wildlife Service on a departmental program to implement the Secretary's policy. Now, to what extent this will clear the Department as it is now being proposed and/or OMB, we have no way of knowing at this time.

EMRIA PROGRAM

Senator STEVENS. Under your current onshore leasing operations how much of the $6.4 million for coal leasing is directed to the EMRIA program? Why isn't EMRIA shown separately, as it was in your 1976 justification?

Mr. BERKLUND. Mr. Chairman, we have allocated all of our resources under the EMRIA program in coal. The reason being that the greatest surface disturbance is going to occur as a result of coal. We feel that the EMRIA program should fully support this coal leasing effort.

For the first part of your question, $3.6 million of the total budget shown for coal is related to EMRIA. As you may know, we pulled that capability away from oil shale and onshore oil and gas to make it all available in the coal program, for reasons I have just mentioned.

GEOTHERMAL STEAM ACTIVITIES

Senator STEVENS. No increase is requested for geothermal leasing, although you indicate that you expect renewed interest in noncompetitive leasing in fiscal 1976. Do you have any figures to support this?

Mr. BERKLUND. Yes, we do. In the first year that lands became available for noncompetitive geothermal applications, we received in excess of 4,000 of them. In fiscal 1975 that dropped down considerably to only about 700 applications for noncompetitive leasing.

So far this fiscal year, 1976, we have received through March 1, almost 600 applications, and with the remaining 3 months to go this fiscal year, we feel like we will hit the 900 level. We are projecting about the same level of activity in fiscal 1977.

I feel that as we make areas available for competitive leasing and we get reasonable bids this is going to encourage the public to also file on unknown structures for noncompetitive leases.

I might add that in the budgets in the past we have geared ourselves to processing about 900 noncompetitive lease applications a year, and offering about 20 competitive lease sales each year.

For the record, I do not think we will hit the 20 competitive lease sale objective that we have set for ourselves this fiscal year,

partly because of the lateness with which we got our appropriations, which prevented us from moving out and hiring the 25 additional people we asked for in the 1976 budget to carry this program forward.

Senator STEVENS. What do you expect, then, in actual lease offerings in fiscal 1977?

Mr. BERKLUND. In 1977 we are planning to do what we said in the budget. That is to issue 20 competitive lease sales, and to process, and this may be a correction in our budget language, to process 900 noncompetitive lease applications.

I believe in our budget we indicate we are going to issue 900 noncompetitive leases, but this is not correct. Many of these lease applications are on other Federal agency lands, and we are dependent upon them to act.

Therefore, we want to rephrase our objective as we laid it out on our budget, to say that rather than issue 900 noncompetitive leases, we plan to process 900 applications to completion, which would either be the issuance of a lease, the withdrawal of the application, or the rejection of the application or suspension of the application pending action by some other Federal agency.

Senator STEVENS. What kind of revenue does the geothermal leasing activity generate? Can you give us comparisons for 1975, 1976 and 1977 estimated?

Mr. BERKLUND. I can, Mr. Chairman. Like most of our programs, this one more than pays for itself. Against a budgetary request of about $2.2 million in fiscal 1975 we brought in something on the order of $13.4 million.

We are projecting about the same level in 1976, and in fiscal 1977 we are projecting about $15.8 million. So we are running a cost benefit ratio in terms of revenues to the tune of about 6 or 7 to 1.

Senator STEVENS. Do you have any figures on how this geothermal leasing activity is going to produce energy benefits or mineral benefits?

Mr. BERKLUND. Like all of our energy leasing programs, the actual development is somewhat beyond our control. That depends on how fast industry wants to move. But we do have projections of the potentials in terms of the power that we have and will make available.

We think by the end of fiscal 1977 we will have made about 300 megawatts of generation power available to industry through this program. In the long term, geothermal is not expected to be a major contributor of power nationally, but in certain local areas it can be significant, and equal, percentagewise, to what hydroelectric power is now bringing to the country.

ONSHORE OIL AND GAS LEASING

Senator STEVENS. What about your oil and gas leasing activities onshore? You are asking for an increase of $2.7 million and 86 positions. I am informed that is to reduce backlogs. What is the size of the backlog and is it manageable by that increase?

Mr. BERLUND. We think this increase will prevent the backlog from expanding. We don't think that we will be able to reduce the backlog very much when we take a look at what has happened in the last year or two because of the high interest in oil and gas development.

Our applications for simultaneous filings have expanded. In fiscal year 1974 we had 1,200,000 applications, and in 1976, 1,850,000. We expect that to go over 2,000,000 in 1977. That is just the simultaneous filing.

Then we have expanded our competitive leases by 150 percent over the last 3 years. We expect we will be able to maintain that level. We may be able to increase it slightly.

Senator STEVENS. Didn't we give you an $800,000 increase and 27 new positions in order to get that backlog decreased last year?

Mr. BERKLUND. Yes, sir. And the increase in applications outdistanced the increases we have received in funding and manpower. The backlog continued to increase.

We did process additional applications in the last year. Noncompetitive leases issued went from 13,355 in 1975 to 16,800 in 1976. We expect it to go over 20,000 in the next year.

Then there are assignments. Because of the interest in drilling more people are filing applications to reassign these leases to somebody who is interested in developing them. That has increased by about 10 percent. New well starts have gone up close to 15 percent.

Senator STEVENS. What about the amount of oil and gas coming into production on Federal lands? The estimate was 6 percent in 1974. What is the estimate for 1976?

Mr. BERKLUND. About 6 percent again in 1976. Our estimates are about the same as they were in 1975. We don't see any increase in production in upland oil and gas in 1977. We see a slight increase in gas, but not much increase in oil production.

Senator STEVENS. I am worried that we may just be handling more paper, but not increasing production or getting any more leases. How many leases did you issue in 1974 and how many in 1975?

Mr. BERKLUND. In 1974, new leases issued in that year, that is both competitive and noncompetitive, were 11,587; and in fiscal year 1976, it was 17,200.

So, we are getting more issued. We are getting more assignments and there is more development on public lands. But that has just started. We have to wait a year or two for discoveries and then another year or two for production. But with the number of leases that have been issued—and I think the one that is most encouraging is the number of reassignments that we were receiving. This means they are moving into the hands of the people who want to get out and do the development or exploration.

OIL SHALE PROGRAM

Senator STEVENS. What about oil shale? Is that increasing, too?

Mr. BERKLUND. We have asked for a level budget in oil shale. We have not asked to expand the oil shale program. But we are now working on developing the environmental impact statement on four tracts that we hope will lead to two tracts that will be offered for in situ development. It is going to be for in situ development because we have already issued four sales that are expected to use different types of technology and development.

Now we are looking to see if it is possible to lease two more tracts that could be developed by in situ procedures.

Senator STEVENS. The language in your justification for oil shale leasing sounds somewhat tentative regarding the two field sales that are planned for fiscal 1977.

How likely do you think it is that you will actually be able to bring off these two sales?

Mr. BERKLUND. We first went out to industry and asked for nomination. This was the first part of this process. Industry did identify nine tracts that they would be interested in pursuing. We then created an interagency committee to assist the BLM including the Geological Survey, ERDA, Fish and Wildlife Service and some of the State departments of natural resources. This interagency committee recommended two tracts as best suited for possible in situ leading, and two alternative tracts.

So the Secretary is now preparing a supplemental EIS on each of the four recommended tracts that came out of this interagency committee. We hope to hold these sales roughly in January of 1977, which depends of course, on the timing of the EIS.

I want to stress that it was industry that nominated these tracts. Therefore, it would seem logical that industry plans to pursue this.

Senator STEVENS. You are treading water on oil shale; aren't you?

If that is the case, do you need any funds that are requested for oil shale?

Mr. BERKLUND. Yes, because our workload has not lessened on the oil shale tracts that have been leased. The Geological Survey has received a request for suspension on one tract. They are evaluating that. We don't know whether that will give them a suspension or not. But we have to proceed with our work, as if they were going to full development. Until such time as some change does occur, we will not be lessening our workload in any way.

In fact, we are taking on the additional job of preparing the two tracts that we hope can be offered for development by in situ means.

Senator STEVENS. How much is tied up in oil shale resource planning activities in this budget?

Mr. BERKLUND. Our total budget for oil shale, sir, is $1,440,000 and 15 positions.

MINERAL PATENT PROCESSING

Senator STEVENS. In the nonenergy minerals, you are asking for 18 new positions and $420,000. What is that for?

Mr. BERKLUND. Within our overall nonenergy minerals program, the $420,000 and 18 positions are to process mineral patents that we have requests for. We are far behind in our work.

Last year when we came in and talked to this committee we were 400 man-years behind on our work in patent processing. We are steadily loosing ground and we have now asked for additional money and manpower to process the applications that we have for patents.

Since the time that we prepared the budget here, our backlog has increased again from 375 mineral patent applications to 382. We think that with this additional funding, our manpower capability will permit ws to process an additional 55 mineral patent applications a year which would result in about 25 mineral patents actually issued.

Senator STEVENS. What revenues did you get from this area last year? Nonenergy mineral patents.

Mr. BERKLUND. Nonenergy mineral patents are not revenue producing. This is a right that the applicant has under the 1872 mining law.

They pay for the patent itself but it is minor amount. This program is not self-supporting.

Senator STEVENS. What did you spend last year in that area?

Mr. BERKLUND. $1,024,000.

Senator STEVENS. This is completing the final action on patent requests. You don't get any revenues other than the patent application filing fee?

Mr. BERKLUND. That is correct.

Senator STEVENS. Are there indications that the requests for patents are going to increase?

Mr. BERKLUND. Yes, sir. We know that it will increase in Alaska due to the passage of the Alaskan Native Claims Act.

In the proposal that is before Congress now, the BLM Organic Act, there is a requirement in there to file those claims for patent within 5 years which would give the Bureau a massive workload.

Senator STEVENS. I disagree with that. I think we intended it to be 5 years after land had come out of Federal ownership. There is no need to have patents and have run against them while the land is still in Federal ownership.

Mr. BERKLUND. Yes, we have that request from you. We are analyzing it now.

Senator STEVENS. You did not have to do it before the land transfer. There is no sense in that.

POTASH AND SODIUM REPORT

Anyway, this GAO comment about your potash and sodium mineral policy. They claim that you have brought in less revenue than you would have from royalties on mineral production.

Have you answered the February 5 letter from the GAO in that regard?

Mr. BERKLUND. We have the Solicitor's Office reviewing that at the present time. The Bureau has agreed with the recommendation and we are taking a hard look at it now to see whether we will change our procedures, what can be done. This is a procedure that is of long standing.

Senator STEVENS. When did you start that practice? Don't tell me under a former Solicitor.

Mr. BERKLUND. I am trying to find out what year you were Solicitor.

Mr. PATTON. I think we have always done it that way.

Mr. BERKLUND. When the law was changed in 1948.

Senator STEVENS. Since it has been raised, I think it would be wise if you would include in the record at this point some statement saying that the GAO letter has been brought to your attention.

Mr. BERKLUND. Yes, sir. We will.

[The information follows:]

GAO REPORT ON COLLECTION OF ROYALTIES FOR POTASH, SODIUM AND PHOSPHATE

In response to the GAO letter of February 5, requesting the Department to base minimum royalty for phosphate, sodium, and potash on minimum production rates, the Geological Survey is presently formulating minimum production requirements for

all bedded mineral products leased by the Department. The methodology for establishing equitable holding costs for bedded minerals is complex because of problems in determining the volume of recoverable reserves. For example, ore grades are tied to commodity prices. Thus, as ore prices fluctuate, the volume of recoverable reserves, likewise, fluctuate.

Departmental provisions requiring minimum production or advanced royalty fees will be incorporated in new leases issued as well as leases that are continued or renewed. The financial terms for phosphate, sodium, and potash should be ready for application to new or renewed leases by July 1, 1976.

MINERAL LEASING PROGRAM

Senator STEVENS. Under mineral leasing do you also have a backlog related to potash and phosphate leases? How many of the 22 requested new positions and how much of the $810,000 will be directed to reducing this backlog?

Mr. BERKLUND. Almost all of this request is related to processing pending applications for potash and phosphate. The major States in which this occurs are Idaho, New Mexico and Utah. We are requesting some studies for mineral resource leasing relating not only to phosphate and potash but also in alumite and limestone. This study amounts to about $250,000.

But by and large this program increase is almost totally related to phosphate and potash. We are getting tremendous interest on the part of industry.

Senator STEVENS. Leasing in New Mexico and Idaho has been halted, pending the completion of environmental studies. What about other areas? Are you having any delays in other States?

Mr. BERKLUND. We have had delays in leasing such as the Osceola National Forest in Florida, where there are some major phosphate finds there.

Senator STEVENS. That is under Forest Service?

Mr. BERKLUND. The basic leasing responsibility rests with the BLM. We also have an EIS prepared for phosphate leasing in California, again, on national forest lands. Whether or not this will result in a lease later on in the fiscal year is yet to be decided.

Senator STEVENS. Do you have an estimate on how many potash and phosphate leases you will process, and perhaps award in the current year?

Mr. BERKLUND. There may be a few leases that are currently being issued in Utah. But if there are, they are of very minor scope. As I indicated just a moment ago, the issuance of the phosphate lease in California is yet to be decided. I cannot say at this time whether or not we will issue a lease this fiscal year in California. But the most likely single major lease that could be issued would be in California.

Senator STEVENS. What kind of revenues are you generating from your potash and phosphate leasing?

Mr. BERKLUND. The phosphate receipts estimates for both fiscal 1976 and 1977 run about $2 million. Potash runs about $6 million in fiscal 1976 and $7 million in 1977.

There are also other material minerals that we do lease, such as sodium, where we are projecting revenues of $5 and $6 million in the current and budget years.

So again this program, like most of our others, more than pays for itself.

Senator STEVENS. Won't you pick up even more revenue in compliance with the GAO recommendation to get this on a minimum production royalty?

Mr. BERKLUND. That would be correct. As I indicated a moment ago, the Bureau has agreed with the GAO people that the current practice is not in conformance with the law. And it is resulting in the loss of potential revenues to the public at large.

We have supplied for the record our actions to date, and the actions that we think we may be able to take to rectify this oversight.

REQUEST FOR MATERIAL SALES

Senator STEVENS. You have a 46 percent increase in material sales program funding with a corresponding increase in personnel—29 new positions.

Why does this have such a high priority? What is the program expansion involved?

Mr. BERKLUND. Most of the materials that are disposed of under this program are construction materials. In energy development there is a tremendous need for these sales, materials for drilling pads, roads, construction sites. We feel that if we are going to support power lines, pipelines and other critical facilities, that we have to be in a position to supply industry with the materials they need.

We receive a tremendous number of applications for these sales. About half of those are from municipalities, counties, States and they get free use permits.

Senator STEVENS. What were the revenues from this program last year?

Mr. BERKLUND. About $6 to $7 million in receipts.

Senator STEVENS. How much did the program cost?

Mr. BERKLUND. Our base last year was $1,006,000. We are now asking for an increase of $880,000 giving us a budget in 1977 of $1,880,000.

Senator STEVENS. How much of that activity is in my State; do you know? A lot of that is related to the pipeline. Isn't that coming to an end?

Mr. BERKLUND. There was a tremendous amount of sales made to Alaska, but the State highway program in Alaska has also received substantial free use permits from BLM.

Senator STEVENS. But the high level of activity in the sales program was related to the massive request for gravel for the pipeline. If that is the case, why hasn't this thing fallen off as the activity on the pipeline falls off?

Mr. BERKLUND. We expect to have it completed in 1977 but there will still be additional pumping stations under construction. There will be other facilities needed in the State. We are now getting applications for power line right of ways to support those pumping stations.

In fact, out of this increase we plan to put $180,000 in the State of Alaska and five additional people up there in order to accommodate those new needs. Then we have to have the maintenance of those roads. We have to have material to maintain those roads that Alyeska has built. The State will need that.

Senator STEVENS. Let's take a 5-minute recess.

[A brief recess was taken.]

ENERGY-RELATED LANDS CASEWORK

Senator STEVENS. Let's go back now to the management program. You request $2.8 million for processing energy-related rights of way. How much of that will you get back?

Mr. BERKLUND. The way we have our regulations established, we expect that about 80 percent of that is recoverable. This is what we have been saying, that 80 percent of this is recoverable. But our past shows that we have only been collecting about 40 to 50 percent of it.

Senator STEVENS. How much of that increase is related to the Arctic gas pipeline project?

Mr. BERKLUND. I don't believe there is any Arctic gas money involved in this regulator appropriation. It is in the supplemental that we will be looking at tomorrow. I don't believe that we have any Arctic gas in the appropriation here.

Mr. VETTERICK. We don't know what our involvement will be in the Arctic gas program in fiscal 1977 at this time, Senator. So whatever the involvement is, we feel it will be minimal in terms of money. And if there is involvement we will have to accommodate it within our total appropriation in this activity.

Senator STEVENS. What is this increase for? The $2.8 million.

Mr. BERKLUND. The $2.8 million is for the right-of-way applications that we have. We have about 133 applications before us right now for rights of way, for transmission lines, for pipelines, roads, all of which are related to the development of energy resources.

Senator STEVENS. I thought the rights of way were all compensatory, paid for.

Mr. BERKLUND. Just the pipelines are covered by recent legislation.

Senator STEVENS. Just the pipelines?

Mr. BERKLUND. Yes, sir. In the amendment to the Mineral Leasing Act—it was mandatory that costs be recovered on pipelines, oil and gas pipelines. Then we established regulations on cost recovery for all of the rights of way which should permit us to recover about 80 percent of our total expense. That has been challenged in the courts. Several utilities have gone to court to fight regulations which permit us to collect for the work that we are doing on these rights of way.

But, as of now, we are still collecting on all rights of way.

Senator STEVENS. Now this requested increase, under land and realty management, for energy-related rights-of-way, will this permit you to catch up on your backlog of applications? Will that get you current?

Mr. BERKLUND. The backlog on energy-related rights-of-way is a very fluid thing. Almost every month new projects are coming to the fore. Some projects which we began planning for 2 years ago have yet to materialize. Others that we did not foresee are now active projects.

Senator STEVENS. Let's put it this way: Do you anticipate this will permit you to catch up with your existing backlog?

Mr. BERKLUND. This will pretty well take care of what we can see at this point in time for fiscal year 1977.

Senator STEVENS. OK.

Mr. BERKLUND. As I indicated before, we do not know. These industries of course, are highly competitive. They are not too anxious to lay out their plans too far in advance. And so we cannot tell what final right of way projects we will need to be working on in 1977, not until we actually receive applications. Most of the projects which we have budgeted for in this year are projects that are either ongoing—ones that we do have applications in hand, or at least we feel like the applications are going to be forthcoming, as indicated to us by the management of these companies.

TRANS-ALASKA PIPELINE PROJECT

Senator STEVENS. You have a reduction of $1 million in contracts on the trans-Alaska pipeline. The staff informs me that there are problems with third-party contracts in monitoring of the pipeline welds. What is the situation there? How are you involved there?

Mr. BERKLUND. We are trying to work on an agreement right now where the BLM will take over the monitoring and operation phase of the pipeline. At the present time, the total responsibility for the construction monitoring is vested in the authorized officer in Alaska.

Senator STEVENS. I am familiar with the problem of the welds. Is that your problem or General Rollins problem?

Mr. BERKLUND. That is General Rollins problem. I understand that they have picked up about 18 miles of pipeline and are reexamining the welds.

That is totally within the responsibility of the departmental authorized officer, General Rollins.

Senator STEVENS. What is going to be BLM's role in monitoring the pipeline in terms of costs and people?

Mr. BERKLUND. We are working that out to see what our total costs will be for monitoring. That will become the main effort after 1977. We may begin the monitoring phase in 1977 although there may be some continuation of construction into 1978.

But, by 1978, in the next budget, we should have a proposal for monitoring and management of the pipeline corridor.

Mr. TURCOTT. There are two points of clarification.

First, the million dollar reduction is because the design and a lot of associated review work is done.

Second, under the permit issued by the Department of Interior to Alyeska for the right-of-way, they must submit a proposed plan for monitoring 6 months prior to the end of the construction period. The Department, the State director in Alaska and others are now working with Alyeska urging that that item be submitted more promptly so that we can analyze it for the future budget decisions that will be involved.

STATUS OF THE ANCSA PROGRAM

Senator STEVENS. All right. What about the Alaskan Native claims settlement? We see no increase in your nonenergy lands casework. That Land Settlement Act had a significant workload. Are you going to be able to complete processing the land selections on time?

Mr. BERKLUND. Mr. Chairman, it appears that the priority on ANSCA has slipped a little bit and has not received the priority

it did in the earlier years. Yes, we do see problems in completing our work on schedule. But with the priorities we had we thought we would have to continue at the level funding and try to pick up on it later.

Senator STEVENS. Tell me what the problem is. How much of a backlog are we creating in ANSCA work?

Mr. BERKLUND. So far we have only patented or issued interim conveyances for about 300,000 acres. Our backlog is building and we anticipate that the applications will continue to come in at the present rate. It will take us probably seven years to complete the processing of all the conveyances with our present capacity.

I can't see that we will be able to complete it any sooner than that.

Senator STEVENS. Why don't you come up here with a proposal for a tentative approval concept like we had for the Statehood Act so that does not become a burden? People will not be able to use their land until they get a patent or a tentative approval.

Mr. BERKLUND. That is correct. We have set up a procedure where we give them an interim conveyance, but the processes for that hasn't permitted us to move as fast because of the reservations that we need to put into those conveyances.

Some of the Native groups, whether they be the regional corporation or villages, have requested that they get a conveyance so they can proceed with some development. In some cases they have granted us the opportunity to take a blanket easement on their entire lands. That is the only way we could convey the land to the Natives with any speed.

Some of the regions wanted to do some development for oil and gas and they had parties interested in leasing and drilling. We could not get the conveyances to them, unless they would permit us to take a blanket easement and refine them as we went into patent.

IMPACT OF AMENDMENTS TO ANCSA

Senator STEVENS. We amended the act so that you could handle that as leasing for the Secretary with funds going into the account. That was the intention of it.

It just seems to me we are getting to the point where that is going to have to become a monumental problem as far as the Alaskan Natives are concerned unless we can work this out some way.

Mr. BERKLUND. Yes, we are now analyzing the complicated bill that you passed, the amendment to the Native Claims Act. We have not budgeted anything for the requirements imposed by that amendment.

We see some real problems in establishing the escrow accounts and in trying to come up with the exchange of lands for the Cook Inlet settlement. If the Natives and the State agree to it, there is nothing in our budget to facilitate that work. We are working to come up with an estimate. I don't know how we are going to implement it because the record keeping and the land appraisals alone are tremendous, Mr. Chairman.

Senator STEVENS. You could not have had that under consideration in this budget request.

Mr. BERKLUND. That is correct.

Senator STEVENS. Have you prepared amendments and requests for staff and funds to take care of the impact of the amendments to the Native Claims Act?

Mr. BERKLUND. We are doing that right now. We are just completing the analysis of it and trying to prepare our request of the Department for funding and manpower in order to carry out these amendments. They have not been presented to the Department. They are still in our Bureau.

Senator STEVENS. Have you worked up the estimates for fiscal 1977 impacts on the amendments to ANSCA?

Mr. BERKLUND. We have the estimates. That is what we are refining right now, Mr. Chairman. The workload, as we see it in those amendments alone, is going to impact BLM tremendously. We are preparing estimates for the dollar and manpower requirements right now and we will submit that to the Department shortly.

Senator STEVENS. We would like to have it for the record so that we can consider it if necessary.

Mr. BERKLUND. Very well, we will submit a copy of that for the record.

[The information follows:]

ADDITIONAL REQUIREMENTS RESULTING FROM OMNIBUS BILL (AMENDED ANCSA)

The amendment to the Native Claims Act set upon the Bureau two special requirements—establishment of an escrow account and settlement of the Cook Inlet Regional Incorporated problem. To meet these objectives, preliminary dollar and manpower estimates are as follows:

	Amount	Positions
A. Section 2 . Escrow account (support role)	$35,000	1
B. Section 12—Cook Inlet settlement	1,080,000	16
Total A. and B	$1,115,000	17

Because of the filing of a larger number of selection applications than anticipated, delays in filing applications, appeals and litigation, and a prolonged non-settlement of the easement question, a backlog of ANCSA cases has rapidly developed.

Additional dollars and positions needed to abate this backlog are estimated at $880,000 and 18 new permanent positions.

Senator STEVENS. I would also like to ask you to confer with your Solicitor's Office to see if there is some way that we can use the tentative approval so that we don't face a total impact of all of the patents being so vital to the economic planning of the Natives that we have to have some crash program to meet the deadlines of their plans.

There is no deadline in the act for the conveyance. I know that. But the tentative approvals might handle it.

Mr. BERKLUND. That is why we set up the interim conveyance. We thought that might help because they would not have to wait for cadastral surveys which must precede patents.

Then when we found out we had the lead for easement reservations that is when we started to delay the issuance of even the interim conveyances.

Now that we have the guidelines completed for the reservation of those easements, we should be able to move a little quicker on issuance of those conveyances.

STATUS OF OTHER NONENERGY CASEWORK

Senator STEVENS. Other than the ANCSA area, is your nonenergy casework rising?

Mr. BERKLUND. Yes, sir, it has been increasing steadily. The applications for desert land entries have been expanding. We have many other land programs in the lower 48 that call for a lot of additional work. Yet due to the urgency of ANCSA, we are putting about half of our people that we have in this program area into Alaska.

Senator STEVENS. Over half the lands are in Alaska. That doesn't bother me too much. It might bother other people.

BLM POSITIONS IN ALASKA

How many people do you have in Alaska right now?

Mr. BERKLUND. In this work we have 141 permanents in ANSCA.

Senator STEVENS. But in the Bureau, how many employees do you have in Alaska?

Mr. VETTERICK. About 430 permanent employees, sir.

Senator STEVENS. How many in the total Bureau?

Mr. VETTERICK. About 4,700. That is our end-of-year ceiling.

Senator STEVENS. We will continue to work on that, then.

REQUEST FOR CADASTRAL SURVEYS

What about your cadastral surveys? Is that Alaskan activity?

Mr. BERKLUND. Yes; not being the technician I would like to be, we refer to a new survey instrument as the black box of Litton Industries. We think that we can expedite our original surveys with this technique. We don't know how much of the resurvey we are going to be able to do, but in Alaska where it is all original surveys, we think that the autosurveyor, as it is also called, will save us a lot of time and effort. Even though the workload there has been increasing, through new technology we have been able to still maintain a completion target date by the year 2000.

Senator STEVENS. What kind of a system is this? You mentioned before you were trying to work one out. I did not know that you had one developed.

Mr. BERKLUND. Yes; we have developed it now.

Senator STEVENS. Is it a projection system?

Mr. VETTERICK. It is an inertial guidance system, sir. It is very similar to the device our nuclear submarines use. They always know their position by measuring the change in direction. System gyros measure changes in direction and distance. It is a very sophisticated piece of machinery. That is why it costs $600,000 a unit.

Senator STEVENS. How many are you going to get for Alaska?

Mr. VETTERICK. We have one now and of that $840,000 increase—we propose using $600,000 for the purchase of a second unit.

Senator STEVENS. Can't you also use that in the south 48?

Mr. VETTERICK. Yes, sir, in some instances. In fact, we are experimenting now with its use in resurvey work for the lower 48.

Senator STEVENS. What is this Alaskan employment for cadastral surveys? You have an 8 man-year increase in Alaskan employment for cadastral surveys. If you are going to use the autosurveyor, why do you need the personnel increase?

Mr. VETTERICK. Those are just temporary employees, sir, to fill out our crews. That is basically the rest of the request to provide additional temporary personnel to support our permanent survey people.

Senator STEVENS. What is the cost of completing these Alaskan surveys?

Mr. VETTERICK. What would be the total cost of completing them?

Senator STEVENS. Do you have any projection?

Mr. VETTERICK. We have had projections, Mr. Chairman, but the problem with these projections is that they go out of date very quickly due to the escalating cost of things such as aircraft in Alaska.

We could provide a cost estimate for the record if you desire.

[The information follows:]

ANCSA CADASTRAL SURVEY SCHEDULE

	Estimated cost to completion
	Thousands
The cadastral survey workload in Alaska has been identified by the following Acts of Congress:	
1. Statehood Act (July 7, 1958), 104,000,000 acres	
Surveyed to date (Jan. 1, 1976), 23,962,400 acres	
Surveyed by protraction, 32,261,775 acres	
Balance to be surveyed, 47,775,825 acres	$214,990
2. ANCSA (Dec. 18, 1971), 40,000,000 acres	
Reservations, 4,000,000 acres	
Surveyed to date (Jan. 1, 1976), 4,000,000 acres	
Balance to be surveyed, 40,000,000 acres	180,000
3. D-2 Lands, 83,500,000 acres	
All to be surveyed, 83,500,000 acres	62,625
4. Native Allotment Act (May 17, 1906), 160 acres each which may be divided into 4 parcels.	
Identified to date (Jan. 1, 1976), 15,000 parcels	67,500
5. Townsites (Act May 25, 1926).	
Homesteads and T&M sites (Act, May 14, 1898).	
Homesites and headquarters (Act, Mar. 3, 1927).	
Identified to date (Jan. 1, 1976), 4,000 parcels	13,500
6. Under ANCSA.	
Municipal boundaries and occupied lots of:	
Surveyed townsites 104	2,340
Unsurveyed townsites 120	5,400
Subsistance sites, 100 each	225
Historical cemetery sites, 2,000 each	85
Reindeer husbandry sites, 25 each	6,000
Total	552,665

STATUS OF CADASTRAL SURVEYS IN LOWER 48

Senator STEVENS. Your cadastral survey—it appears to be funded at approximately the same level in the lower 48. What is the situation in the lower 48? Why couldn't you reduce your program down there to offset the cost increase for the autosurveyor?

Mr. BERKLUND. Almost all of the programs we undertake in the lower 48 one way or another require cadastral survey support. This includes such things as mineral leasing, the sale of timber, the development of some of our range practices all of which depend on an adequate form of property corner control.

Of course, our program in the lower 48 is largely devoted to remonumenting and relocating old, obliterated corners. Without these

corners, Mr. Chairman, many of our programs would come to a complete standstill.

As it is, when we offer some timber sales where we do not have adequate control, we must leave buffer strips to make sure we are not cutting somebody else's timber. This is costly to the public, in terms of lost timber resources, or later going back and harvesting that narrow strip of timber, when we do have adequate corner control.

So I cannot overemphasize the importance of the cadastral survey program in the lower 48, both to our resource programs and our land disposal progams. We have a tremendous workload down there, and overall budget priorities will not allow us to come in with a fund increase in the lower 48.

SIKES ACT IMPLEMENTATION

Senator STEVENS. I am interested in the Sikes Act. How can you meet the responsibilities under that act with the limited funding that is requested?

Mr. BERKLUND. We are proceeding, I think, fairly well in the initial implementation of the Sikes Act, Mr. Chairman. We have now completed agreements with all of the States except Alaska. The Alaskan one is in final draft and it should be signed in the near future.

Then we will be working with the State in the planning for the wildlife habitat areas.

Senator STEVENS. But how can you do it without any more money? Doesn't that give you increased responsibility?

Mr. BERKLUND. We did receive an increase last year from this committee. We have maintained that increase in fiscal year 1977 which has helped us. But, again, our priorities did not permit us to expand that program.

Roman, do you want to explain why we don't need more money and people?

Mr. KOENINGS. We can't.

Senator STEVENS. How much is asked for in the request that has gone forward from the Bureau to meet the Sikes Act?

Mr. VETTERICK. I believe our initial request for the wildlife program was originally a $1,900,000 increase, but that was as compared to the President's 1976 budget.

Now, when the Congress saw fit to increase our budget by $1 million, the increase over and above the congressional budget then became $900,000 of which none was allowed.

ORIGINAL SIKES ACT REQUEST

Senator STEVENS. We are trying to read some charts requested by the committee. Did you ask for $2 million to meet this Sikes Act?

Mr. VETTERICK. $1,900,000, sir. That was our 1977 proposal over the 1976 President's budget.

Senator STEVENS. How much did you get?

Mr. VETTERICK. We were allowed to keep the $1 million that the Congress saw fit to add on in 1976 in fiscal year 1977.

Mr. BERKLUND. But there was no increase for 1977 over the 1976 level provided by Congress.

Mr. VETTERICK. Those funds then become part of our base and are available again in 1977. So the shortfall—the net shortfall in our request now amounts to $900,000.

Senator STEVENS. I see. What you are saying is that your increase that we added on was funded into the 1977 budget and you now need $900,000 that you would have added beyond that.

What would the $900,000 have done?

Mr. VETTERICK. That would have increased the number of habitat plans that we would have implemented in each of these agreement areas with the States. It would have identified certain habitat areas that ought to be improved. It would have accelerated our capability to improve those particular areas for the benefit of wildlife.

Mr. BERKLUND. The States will be contributing to that program, too. So it would have amounted to more than the direct $900,000 investment. In fact, with the million dollars that you gave us last year we are able to implement 10 habitat management plans. Four of these are for endangered species and four are for mule deer winter range.

We are also developing a habitat quality rating system which is modeled after the resource value rating system that we use in Alaska.

Senator STEVENS. Have you done anything with regard to endangered species on Federal lands in Alaska?

Mr. KOENINGS. Not specifically, sir. I say "not specifically" at this time because most of the critical habitat has not been identified in Alaska. We anticipate that this will be coming and we will join with the State and other agencies in attacking the problem of endangered species in Alaska.

FORESTRY PROGRAMS

Senator STEVENS. In your forest management program you are proposing a reduction in public domain forestry of slightly more than $1 million, and an increase in the western Oregon program of about $1 million.

First, how can you maintain public domain operations at the current level with a $1 million reduction?

Mr. BERKLUND. In the 1976 budget Congress saw fit to increase our public domain forestry program by almost $1.4 million. In our fiscal 1977 deliberations it was decided not to continue that funding. That funding had a commitment of an additional 35 million board feet of timber production attached to it.

And since positions were tight, even in the fiscal 1976 budget wherein we are proposing a similar reprograming action, one, we do not have the head count available to fully utilize those funds; and, two, we have some real receipt problems in western Oregon which affects the amount of new money that we would have in the O. & C. grant land fund.

Therefore, it seemed prudent in this budget to continue that and back out a million of that $1.4 million add-on and plow that back into the western Oregon program, where we are having problems with sufficient funding to maintain our current operations.

Senator STEVENS. I think the committee understands your problem in western Oregon. The question remains, first of all, are you saying

that the increase for public domain forestry did not result in any program increase for 1976?

Mr. BERKLUND. We will get into this tomorrow, but what is being proposed at this time is to adjust about $1.1 million out of the public domain program into western Oregon to take care of our O. & C. receipt problems this fiscal year as well as next fiscal year.

We are retaining $300,000 in the public domain forestry program in order to get ahead on some of our reforestation backlog and timber stand work. We feel we have to do it on behalf of western Oregon. We can do that without additional head count.

Therefore, this budget merely continues what we are proposing to do in the fiscal year 1976 redirection of forestry money.

Senator STEVENS. Will there be any change in your reforestation, particularly public domain forestry, outside of western Oregon?

Mr. BERKLUND. No, there will not, because we are retaining part of those additional funds for that purpose.

Senator STEVENS. To increase reforestation?

Mr. BERKLUND. To increase reforestation and other stand improvement work.

Senator STEVENS. Your justification states the 5-year reinventory of public domain forests outside of western Oregon is nearly complete. Last year you indicated in your justifications that this inventory would be complete, and would help to determine the 1977 harvesting level. Why has this inventory slipped?

Mr. BERKLUND. I do not believe, Mr. Chairman, that the inventory has slipped. Last year we did indicate that we would complete it in fiscal 1976. Our target is still to complete it in fiscal 1976. We have early indications that BLM forests outside of western Oregon can contribute at least twice what they are presently contributing.

That is 100 million board feet, twice the 50 million board feet that we are now offering and will offer in fiscal 1976.

Senator STEVENS. That was my next question. If you have those indications, why, then, do you come in with a budget for 50 million board feet?

Mr. BERKLUND. Again, Mr. Chairman, the national priorities would not permit us to accelerate this program, partly because of funding and partly because it is highly labor intensive. You cannot contract out for people to cruise timber and administer your contracts. Therefore because of the needs that this program has put upon the funding and personnel ceilings, it was decided not to advance an accelerated program in fiscal 1977.

We are hopeful that at some point in time we can accelerate that harvest and bring these forests into full intensive production.

Senator STEVENS. This 50 million board foot program that you are holding the public domain forestry to—I note it is called administration policy in the justification. Who set that policy? Was that OMB?

Mr. BERKLUND. I believe the final decision on the program was made in the Executive Office of the President.

Senator STEVENS. Do you know why? I mean aside from the usual budget constraints, why do you decrease this activity at a time when timber sales and forest management would appear to be increasing?

Mr. BERKLUND. There is a study proposed by OMB to look into this forestry program in depth. That study will be cranking up shortly.

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It could be that the Office of Management and Budget would like to conduct the study before we move out in any major way and accelerate the management of our public domain forest areas.

Senator STEVENS. Why is it necessary in the first place to reduce one area of public domain forestry in order to finance an increase in another? Is this simply a budget constraint imposed by OMB?

Mr. BERKLUND. Part of this is the constraint in the O. & C. fund as a result of reduced receipts. Certainly, the cost per volume offered has a much more favorable ratio in the western Oregon area. In addition to that, the value of timber in western Oregon is about twice what it is in the public domain on a per thousand board foot basis.

So I think those factors all considered would dictate that it is better to reduce public domain volume harvests in favor of maintaining the volume offerings in western Oregon.

Senator STEVENS. Why don't you give us the revenue figures, then, for the public domain forestry outside western Oregon. You can supply those if you do not have them here. We would like them for fiscal 1973 to fiscal 1976 estimated.

Mr. BERKLUND. I would be happy to provide that for the record.

[The information follows:]

PUBLIC DOMAIN FORESTRY RECEIPTS AND EXPENDITURES

The following table shows P.D. forestry receipts from 1973 to 1976:

	Receipts
Fiscal year 1973	$2,515,000
Fiscal year 1974	2,500,000
Fiscal year 1975	3,942,000
Fiscal year 1976 (est.)	4,700,000
Total	13,657,000

Senator STEVENS. The language in your justification implies that you will not actually be able to maintain the 1.2 billion board-feet cut in western Oregon because of rising costs. Why didn't you budget for these cost increases?

Mr. BERKLUND. This goes back to the receipt problems we are temporarily having in western Oregon. I don't think these problems are going to be long-standing. Already, the revenues are beginning to pick up as a result of accelerated harvest of timber that has previously been sold, and that would directly generate additional budgetary resources into this account, the O. & C. fund.

However, partly due to a lack of manpower, and partly due to a lack of funding, we have lost a tremendous amount of leadtime in planning. In the past, when we had good plans and got easements and presale work done well in advance, we could sustain the cut of 1.2 billion board-feet.

IMPACT OF POSITION CONSTRAINTS

Senator STEVENS. I was going to ask next what caused this delay in advanced planning. You say a shortage of manpower and funds?

Mr. BERKLUND. Principally manpower, Mr. Chairman. These people are key to keeping the timber sale program out ahead in advance. In the absence of that planning capability we have had to operate

in areas where it is easy to get volume, areas that do not require negotiations with private landowners for easements, that do not require the type of work that some of these other areas do. We are fast running out of these easier timber stands, and we are now faced with a situation where all of our lead planning has disappeared.

We are operating on a hand-to-mouth, year-to-year basis. Without getting additional planning manpower into this program, we cannot guarantee that we can make this cut in fiscal year 1977, even with the redirection of funds from the public domain to the O. & C. forest lands.

Senator STEVENS. What is the manpower provided in the budget estimate for fiscal 1977? Is there any increase?

Mr. BERKLUND. As we have discussed previously, there are 333 additional permanent positions allocated to BLM. Ninety of those are just a transfer of people from Federal Highway Administration to us.

But almost all of the balance of the position increases have got to be put into the energy and minerals and land and realty case work programs if we are to carry these energy development programs out as they are budgeted.

Senator STEVENS. So your answer is—to the manpower and increase in force—the answer is no?

Mr. BERKLUND. Given the manpower needs of these direct energy and mineral leasing programs and the land and realty programs that are also related to energy, we just cannot conduct those programs at the budget level without putting most of our manpower allocations into those programs.

So, essentially, there are no people. There is no additional manpower available to augment our western Oregon forestry staff.

Senator STEVENS. So the answer is no.

WESTERN OREGON FORESTRY PROGRAM

Mr. BERKLUND. The answer is no.

Senator STEVENS. It is very difficult to review your total forestry program as it is displayed in the justifications. Please supply a program breakdown by activity—construction, operation and maintenance, and protection and management—for your total forestry program.

Mr. BERKLUND. We would be happy to supply that summary for the record.

[The information follows:]

WESTERN OREGON FORESTRY PROGRAM

The following table portrays the Western Oregon forestry program for FY 1977 by activity and subactivity.

	($000)		
	O&C Funds (Obligations)	Management of Land & Resources	Total
Construction & Acquisition	($4,759)	--	($4,759)
Road Construction & Acquisition	3,608	--	3,608
Recreation Construction	1,151	--	1,151
Operation and Maintenance	($5,719)	--	($5,719)
Road Maintenance	4,800	--	4,800
Recreation Maintenance	919	--	919
Forest Protection, Development, and Management	($19,522)	($2,206)	($21,728)
Forest Protection	1,408	--	1,408
Forest Development	6,960	--	6,960
Forest Management	11,154	2,206	13,360
Total	$30,000	$2,206	$32,206

Relative to the above, the program activities/subactivities are defined as follows:

Construction & Acquisition - Work performed in the acquisition of existing connecting roads, easements, rights-of-way, and road construction in commercial timber areas for timber production and resource management; and for the development and construction of recreation facilities.

Operation and Maintenance - Work performed in maintaining access roads and for the operation and maintenance of recreation facilities.

Forest Protection - Work performed in the protection of forest land from wildfires.

Forest Development - Work performed to ensure maximum timber production to reflect the level of the annual allowable cut. Precommercial thinning, site improvement, stand conversion, reforestation, genetic tree improvement program, and mortality salvage operation make up this program.

Forest Management - Work performed in planning, environmental assessment, timber sale layout, cruising and appraisal, contract administration for all timber sales.

SOIL AND WATERSHED MANAGEMENT PROGRAM

Senator STEVENS. Let's go to soil and watershed management where you are requesting no increase, although your budget apparently does maintain the increase Congress provided last year.

Will the continuation of this program at the current level allow you to give proper attention to critical watershed areas and related range management needs?

Mr. BERKLUND. We are certainly a million dollars better off in the fiscal 1976 and 1977 budgets than we would have been had not the additional million been provided.

As far as saying that we can take care of all of our critical watershed needs, Mr. Chairman, given the conditions we are faced with out there, I would say we are certainly not going to take care of them all. But we are certainly going to be able to get on the highest priority work with that add-on.

We would give first priority to the completion of project condition surveys to determine what is the workload, the required maintenance cycles for facilities and structures to determine the out-year funding needs.

The second priority was given to the maintenance of some of the structures that we have that are deteriorating. We have also given some priority to the rehabilitation of old seismic trails and mineral extraction areas that industry has long since abandoned. Then we plan to complete some soil surveys on an additional 1 million acres.

The second part of your question relates to range support. The range management program now has incorporated in it all of the soil and water monies that used to support range management. In this budget, when we talk about soil and watershed resources, we are talking about soil and water only and we are not talking about any facilities that supported range programs.

Senator STEVENS. So this is no longer directly related to range management.

Mr. BERKLUND. That is correct.

RANGE MANAGEMENT PROGRAM

Senator STEVENS. Speaking of range management—again, we have a level program which does incorporate last year's congressional increase, but it is a level program. Will a level program allow you to remain on schedule with your environmental impact statement preparation in response to the court's decision mentioned in your justification?

Mr. BERKLUND. It just so happens, by coincidence, that the amount of the add-on is about what we plan to spend in fiscal 1977 to progress with the environmental impact statements required by the court's decision. So, although we are technically no better off, we are no worse off either.

Senator STEVENS. But you were saying that the environmental analysis cost is eating up, in effect, the congressional program increase.

Mr. BERKLUND. That is correct. The House committee expressed their concerns that monies that are appropriated, hopefully for doing more range improvements on the ground have, instead, been converted to doing environmental impact statements. But we must do these.

We are under a court-imposed 13-year schedule to do them—some 212 EIS's. If we are to meet that schedule we must put a part of the range management program funds into doing the environmental impact statements.

When they are completed, hopefully we will be able to move out on an area-by-area basis and begin to implement these management plans which, in the final analysis, will improve the condition of our range lands.

COSTS FOR ENVIRONMENTAL WORK

Senator STEVENS. While we are talking about environmental costs, I think it will be very useful to the committee to have some figures from you relating to that cost as a part of your fiscal 1976 budget and estimated for fiscal 1977. I imagine it is considerable, isn't it?

Mr. BERKLUND. We have just worked up some new tables for the cost to comply with section 102 of NEPA. We are looking at costs directly related to the preparation of environmental impact statements, analyses and review of other agency documents and participation in NEPA-related litigation.

We are looking at about $16 million in fiscal 1976 and about $19.5 million in 1977. Of course, some of these costs are reimburseable. Some were related to energy transmission rights of way. A good portion of those would be reimbursed, if not in the year incurred at least in the following fiscal year.

Senator STEVENS. Reimbursed or not, it is an ultimate cost to the consumer, isn't it?

Mr. BERKLUND. It is an ultimate cost to the consumer or the taxpayer.

GRAZING FEES

Senator STEVENS. The grazing fee for the current year is $1.51 per animal unit month, I believe. What will it go to in fiscal 1977?

Mr. BERKLUND. For the purposes of calculating our receipt estimates and the range improvement fund which is based on grazing revenues, we are projecting the next increment at 11 cents. So we are looking at about $1.62 in the grazing fee year starting in March of 1977. That is subject to being adjusted upward or downward depending on the current fair market value of private forage.

Senator STEVENS. But that is the basis of your estimate for the range improvement fund which is separate from the range management activity.

Mr. BERKLUND. That is correct.

WILD HORSE AND BURRO FUNDING

Senator STEVENS. The wild horse and burro program is part of your range management activity. How much of the funding in this activity is directed to the wild horse program?

Mr. BERKLUND. We are looking at that program and it is running at about $1.3 million, both in fiscal 1976 and fiscal 1977.

Senator STEVENS. Do you get any reimbursement for that?

Mr. BERKLUND. No, we do not.

Senator STEVENS. Your justification states that removal of wild horses will have a significant impact on the overall range program. What do you mean exactly?

Mr. BERKLUND. These animals, which are increasing from 20 to 25 percent a year, are competing not only with livestock but with wildlife as well. Because of the limitations we have in the capture methods and custodial arrangements that we have to live by in disposing of these excess animals, there is no way that we are going to be able to control the population at the levels deemed necessary in order to keep them from depleting the range any further.

They are like any other grazing animal. They will expand as long as there is feed available and they are expanding, often to the detriment of not only the rancher and his cattle and sheep but at the expense of wildlife.

Senator STEVENS. If this is a significant added burden to the range management activity, why haven't you requested additional funding?

Mr. BERKLUND. Again, it is a matter of priority within our overall funding ceilings. I believe there was probably some feeling at OMB that it is almost fruitless given our legislative restrictions.

Senator STEVENS. Did you request additional funding for it?

Mr. BERKLUND. Part of our overall range increase proposal had additional funds for wild horses and burros.

Senator STEVENS. Do you recall what the request was?

Mr. BERKLUND. I believe it was $1 million out of the $2 million over and above what the Congress provided that we went to OMB with.

RECREATION MANAGEMENT REQUEST

Senator STEVENS. Turning to your recreation program where again there is no overall increase, but a particular increase apparently for the California desert—why are you concentrating your funding increase on this particular area?

Mr. BERKLUND. This is one of the higher priority areas as far as the management of recreation uses within the BLM is concerned. You must keep in mind that the desert resource is very fragile and very easily damaged by uncontrolled use, such as off-road motor vehicles.

It is also an area that is in close proximity to very concentrated population centers—Los Angeles, San Diego, Las Vegas—and, therefore, given our priorities within the recreation management area, I would say the California desert is most deserving of our attention.

Senator STEVENS. How much of the increase is directed to the desert resource inventory?

Mr. BERKLUND. I think approximately $200,000 is related to the inventory—the planning, while the balance of the $300,000 or so that is not inventory and planning relates to control of recreation use.

TRANSFER OF CULTURAL RESOURCES CAPABILITY

Senator STEVENS. Now, you are proposing to transfer $600,000 and four positions associated with cultural resource management from your maintenance account to the operating account. This apparently is a level program, but are you having problems with it?

Mr. BERKLUND. You are right, there is no change in the amounts of money we will be spending for cultural resources. The purpose of the adjustment is to merely put our cultural resource protection and stabilization work in one place. This, we believe, gives us greater flexibility. In a particular year, as the occasion demands, we can go heavily toward planning. In other years we can go much heavier toward site stabilization work and other protective features.

We feel that right now the $600,000 that is in the maintenance account is only available for stabilization work and could not be used for inventories and planning. Thus, by bringing them all together in one account, we do have the flexibility to adjust between those two separate program features—planning or inventory and actual stabilization work.

Senator STEVENS. Are you having any problems with this program in particular?

Mr. BERKLUND. We have problems. In fact, in the California desert alone we are losing probably two sites a day. We have an estimated 400,000 sites on our lands that, as a minimum, should be looked at to determine whether or not they are significant enough to protect.

Senator STEVENS. Is the $600,000 program level going to permit you to get after these problems?

Mr. BERKLUND. It does help, Mr. Chairman. It does help.

GENERAL ADMINISTRATION REQUEST

Senator STEVENS. Under general administration, your requested increase is for $130,000 and it is to fund temporary manpower. Since the workload increases described in your justification appear to be continuing commitments, why don't you request permanent positions?

Mr. BERKLUND. Again, it goes back to some of the position ceiling restraints we are under, at least for the time being, in this program. We can get by by using temporaries, at least in the short term.

I think this is one area—one program area that people tend to overlook and tend to think of as not very important. The general administration activity is extremely important to the Bureau of Land Management. Without the necessary personnel actions, without paying our people, without property management, procurement, and contracting, the BLM could do very little, if anything. And we ask this committee to consider the general administration increases as significant as some of the other program increases. It is important to us.

Senator STEVENS. Where does this leave you next year, though? Are you going to be back next year asking for permanent personnel?

Mr. BERKLUND. Again, it depends on the personnel ceiling climate, how restrictive permanent positions are. Each year we do ask for additional permanent capability, but the ceilings are set by the administration to hold down Federal employment. It does not allow us to put in permanent people.

TRAVEL BUDGET

Senator STEVENS. Please explain your $6 million travel estimate under the management of land and resources account. What is the basis of the $500,000 increase requested for fiscal 1977?

Mr. BERKLUND. First, we have more people working, mostly on these energy-related programs. If those people are to be effective, they must be in the field. They must have travel dollars so that they can go to the field, to live in the field when the occasion demands.

Second, like the cost of everything else, the cost of travel has gone up. So both of these are factors in our increased request for $500,000 in travel costs.

Senator STEVENS. But last year you came up with an estimate of $7.3 million for travel in fiscal 1976. This was later reduced to an estimate of $5.5 million, which is a substantial reduction.

I guess the question is, why was your original estimate so high?

Mr. BERKLUND. It was not that our original estimate was high, it was our recognition over the concern for travel costs. We did attempt to reduce our travel. We found that in going from $7.3 million to $5.6 million in the management of land and resources appropriation, it was just too drastic, too ambitious a cut. We are now looking at a somewhat higher level in order to field our people so they can do the work, but still below our original estimates.

So I would say, Mr. Chairman, that we are not looking at a $5.6 million travel budget in management of land and resources, but have now revised our estimates upward to something in the neighborhood of $6.8 million. It is still a reduction of what we originally estimated in the 1976 budget, but it is somewhat higher than we implied that we could get by with in our 1977 budget.

REQUEST FOR FACILITY CONSTRUCTION AND MAINTENANCE

Senator STEVENS. Let's turn to construction now.

With regard to your construction and maintenance appropriations request, this $9.9 million looks like it is up $900,000. But on an obligational basis, I am told, it represents a decrease of $1.3 million.

What level did you actually request as your budget proposal went forward?

Mr. VETTERICK. We requested an increase in 1977 of $11.7 million in our construction and maintenance programs.

Senator STEVENS. An increase? You wanted a $20 million level?

Mr. VETTERICK. I believe that is correct, sir.

Senator STEVENS. All right. Will you detail that for the record? But tell me, what were the major projects involved that were left out?

[The information follows:]

UNMET CONSTRUCTION AND MAINTENANCE FUND REQUESTS

Of the requested $11.7 million increase, additional amounts of $117,000 for construction and $1,272,000 for maintenance are included in the Budget. The balance of the requests which went unfunded were for the following projects and programs:

	Thousands
Construction	
Buildings:	
Alaska: McGrath Fire Base - Modular Barracks	$ 264
California: Cedarville Area Office	264
Colorado: Craig Warehouse	382
Idaho: Shoshone Warehouse	408
Oregon: Medford District Office & Land Acquisition	5,300
Recreation Construction:	
Arizona: Aravaipa Canyon Entrance Station	65
California: Yuha Way Station	910
Utah: Little Sahara Visitor Center	190
Total, Construction	$7,783
Maintenance	
Oregon: Payment to Federal Highway Administration's Revolving Fund for undepreciated balance of road equipment associated with transfer of maintenance duties and personnel in western Oregon to the Bureau of Land Management in FY 1977.	$2,455
Bureauwide: Increase road, bridge, and trail maintenance.	128
Total, Maintenance	$2,583

Mr. VETTERICK. I know there were a number of buildings in Oregon that were proposed. There were a number of recreation facilities—of course, none of which are funded in this budget now.

The only recreation construction money we now have is an amount of approximately $170,000 for survey design.

FAIRBANKS DISTRICT OFFICE

Senator STEVENS. What happened with the Fairbanks district office? Didn't we put the money in that bill last year at the last minute? The money for the construction is here, but you don't have the design. Is that correct?

Mr. BERKLUND. That is correct. We have the money requested in fiscal 1977 for the construction of the Fairbanks office. We do not have any money for survey and design. So I don't know if we are going to be able to complete the construction in time to occupy the building when we need to. We don't want to lose the next construction season.

Senator STEVENS. You have an existing lease in the Burgess building there; don't you?

Mr. BERKLUND. Yes. We have been notified that that lease will expire in 1978 and it cannot be renewed.

Senator STEVENS. What is the time frame for construction? Do you need this season and next season?

Mr. BERKLUND. Yes, sir. We should be able to start construction in the spring in order to complete it in time.

Senator STEVENS. How much money do you need for design and construction?

Mr. BERKLUND. Well, we have the construction money in the 1977 budget.

Senator STEVENS. How much is that?

Mr. BERKLUND. $2.6 million, sir.

Senator STEVENS. How much of that is design?

Mr. BERKLUND. We expect the minimum basic design would be $300,000. It would be more like $400,000 to have the design complete.

Senator STEVENS. Are you going to request a reprograming?

Mr. BERKLUND. That is one of the alternatives. We are looking now at the money we have in the Paxton Lake campground. That will not cover the complete survey design cost. We are looking to see what we have programmed in Jordan Valley. I think we are going to have to reprogram if we are going to meet the construction schedule and get the money in time to move on this project.

Senator STEVENS. You are going to need that in the supplemental, so when you come tomorrow will you have this so we can add to that supplemental for design money?

Mr. BERKLUND. Yes, sir, we will.

SURVEY AND DESIGN

Senator STEVENS. What about the money for survey and design? What is that for?

Mr. VETTERICK. In our building design program, we have $209,000 for survey and design work. That would be for facilities that we would want to propose for construction in 1978 and beyond.

Senator STEVENS. Would you give us a list of the projects that are currently in the design stage, please?

Mr. VETTERICK. Yes, sir. We will provide that for the record.

[The information follows:]

CURRENT CONSTRUCTION DESIGN EFFORTS

Design work is currently underway for the following projects: Alaska—McGrath barracks, Glennallen Utilities; Arizona—Aravaipa Canyon campground II; California—Yuha Way Station, Aderville Office; Colorado—DeWeese recreation site, Craig warehouse; Idaho—Shoshone warehouse; Montana—Lewiston retardant facilities; Nevada—Red Rocks recreation site (redesign); Oregon—Wagontire Lookout; and Utah—Little Sahara administrative center, Fillmore storage building.

RECREATION CONSTRUCTION PROGRAM

Senator STEVENS. Going to recreation construction, I recall last year you had a reduction and now this year you are proposing what appears to be an 87-percent cutback from $1.3 million to $173,000. Why is this recreation construction getting reduced so severely?

Mr. BERKLUND. The only thing that remains in the recreation construction account is $173,000 for survey and design. This was an attempt on the part of the administration to control outlays, not only in fiscal 1977 but in subsequent years. Therefore, there was somewhat of a construction moratorium placed on the Bureau of Land Management. This impacted, as I understand it, some of the other agencies in Interior.

This reduction is merely a reflection of that construction moratorium.

Senator STEVENS. Don't you already have a backlog in this area?

Mr. BERKLUND. Yes. As I indicated before, for the types of recreation usage occurring on our lands that are amenable to recreation facilities, we are accommodating only about 12 percent of the 19.5 million visitor-day use that would be associated with facility development. So there is a substantial backlog.

CONSTRUCTION AND MAINTENANCE TRAVEL

Senator STEVENS. This budget would appear to increase that backlog even more. Your construction and maintenance travel also increases. It is up about 13 percent. With your overall program reduction, why do you need an increase in travel?

Mr. BERKLUND. Even though our construction account is going down, there are substantial increases in our maintenance activities. These require personnel to visit our recreation sites and to visit access roads to plan for, contract for, and supervise contracts for the maintenance effort. This also involves additional travel by our force account crews in their increased maintenance workload. So there would be a modest increase in our overall travel account.

Senator STEVENS. Another increase is in your object class under other services or contracted services. It is up 79 percent. Why do you need this increase?

Mr. BERKLUND. This is partly reflected in what I was just talking about—contracting for some of the maintenance effort, particularly the building maintenance where we do rely heavily on contracts. Some of our survey and design efforts are more and more going to A.

& E. type contracts with private architects. We find we can achieve some personnel savings in the construction programs by relying more heavily on contracting out in this program area.

PUBLIC LANDS ROADS AND TRAILS

Senator STEVENS. Let's turn to your roads and trails account now. You are requesting $5 million to liquidate road contract authority. This is $1.8 million over the 1976 appropriation. Your obligational program, however, is about level.

What is your total contract authority available for fiscal 1977?

Mr. BERKLUND. Is that before rescissions and deferrals, Mr. Chairman, or after rescissions and deferrals?

Senator STEVENS. As of now.

Mr. BERKLUND. We started fiscal 1976 with about $30 million of available contract authority; $10 million of that has got to be used in fiscal 1976 or it will expire. Counting the $5.1 million that was programed for use, that leaves about $4.9 million for rescissions.

Senator STEVENS. Which we did rescind for 1976. But what is available now in fiscal 1977?

Mr. BERKLUND. What would be available in fiscal 1977 would be the total fiscal year 1976 availability of $30 million, minus the $5.1 million we planned to use, minus that which was rescinded, or $20 million in contract authority at the start of fiscal year 1977.

Senator STEVENS. How much of that would lapse under your budget program?

Mr. BERKLUND. We plan on using another $1.1 million in the transition quarter. As proposed in this budget, another $5 million is planned for obligation in fiscal year 1977. That would leave about $3.9 million to rescind in fiscal 1977 based on this current budget.

Senator STEVENS. Thank you.

Your justification for road construction shows $1.8 million each for timber and recreation roads and $1.3 million for other roads. What is the fiscal 1976 allocation for these purposes? In other words, give us a comparison.

Mr. BERKLUND. I don't have an exact comparison with me, Mr. Chairman. With your permission we will supply that for the record.

Senator STEVENS. Please do.

[The information follows:]

COMPARISON OF ROAD AND TRAIL FUNDING

[In millions]

The following table depicts road funding by major categories for fiscal year 1976 and fiscal year 1977:

Support	Fiscal year 1976	Fiscal year 1977	Change
Timber	$2.5	$1.8	$-0.7
Recreation	1.0	1.8	+0.8
General	.6	1.4	+0.8
Total	4.1	5.0	+0.9

PACIFIC CREST TRAIL

Senator STEVENS. Overall, I note that you are allocating $1.3 million for roads and trails in California which is about twice the next highest amount allocated to any other single State. Why do you have this concentration in California, which is not one of the bigger public land States?

Mr. BERKLUND. This is the result of putting as much money as possible within our overall allowance into support of the Pacific Crest Trail in California. We are somewhat behind in our work compared to the progress of the Forest Service.

Included in our request is a construction of 27 miles of this trail. We feel that since it is a congressionally directed activity that we should give it the highest possible priority.

Senator STEVENS. What is your total estimated cost of the Pacific Crest Trail to the Bureau of Land Management?

Mr. BERKLUND. I would have to supply that, Mr. Chairman, for the record. I don't have that with me.

Senator STEVENS. All right.

[The information follows:]

ESTIMATED COSTS OF THE PACIFIC CREST TRAIL

Total costs of the Bureau of Land Management portion of the Pacific Crest Trail are estimated at $5,500,000.

These costs are divided as follows:

Acquisition of trail and scenic easements over private lands (from Land & Water Conservation Funds)	$500,000
Construction costs of trail which include survey, design, construction via contract, and contract supervision	2,000,000
Construction of trail shelters and trailhead parking facilities	3,000,000
Total	5,500,000

Without condemnation authority, it is unlikely easements can be obtained over the entire length of the project. If such is the case, the easement and construction estimates shown above will be reduced accordingly.

CONSTRUCTION MILEAGE

Senator STEVENS. On page 90 of the justification you break down planned construction mileage for fiscal 1977. Please supply comparative tables for the 1975 and 1976 fiscal years.

Mr. BERKLUND. I would be happy to do that.

[The information follows:]

BUREAU OF LAND MANAGEMENT ROADS AND TRAILS CONSTRUCTION

The following table depicts 1975 and 1976 construction mileage in the roads and trails program:

Type of work		Timber support program	Recreation support program	General support program	Total
Fiscal year 1975 actual:					
New construction, roads	(miles)	5	5	25	35
Surfacing roads	(miles)		7	24	31
Easement acquisitions	(each)	60	8	10	78
Trail construction	(each)		1		1
Fiscal year 1976 estimate:					
New construction, roads	(miles)	17	8	4	29
Surfacing roads	(miles)	8	18	2	28
Easement acquisitions	(each)	146	10	23	179
Trail construction	(each)		45		45
Bridges	(each)	5			5

CARRYOVER ROAD CONSTRUCTION FUNDS

Senator STEVENS. Now, for fiscal 1976 under your road construction account, your original obligation estimates have increased about $1 million as shown in the current justification, apparently because of unanticipated carryovers. What caused this increase in unobligated funds that were carried over from fiscal 1975?

Mr. BERKLUND. This is the result of a number of things. Some of our road projects are part of larger projects. Roads such as those in Red Rock, Nev., have been delayed pending completion of an environmental impact statement for the development of the entire area.

At other times we find that it is prudent to delay road construction that might be associated with, say, recreation construction in the following fiscal year and let it all under one contract. That way we would gain some economies which we would not be able to realize if we let separate contracts for the road construction in one year and recreation construction in another year.

EMPHASIS ON CONTRACTING

Senator STEVENS. Your 1977 object class shows a tripling of other services. What causes this?

Mr. BERKLUND. Again, this is primarily the result of our programs relying more heavily on contracting.

Senator STEVENS. Does this indicate a general trend toward more contracting in the road program than was the previous policy?

Mr. BERKLUND. I think you will find that throughout our budget, the use of other services is becoming more and more predominant as we have to go heavier and heavier to contracting duties given the restraints on personnel ceilings.

Senator STEVENS. Do you have any estimates on whether or not this is more expensive than in-house work?

Mr. BERKLUND. We have done some studies at the request of the House Appropriation Committee. The results of inquiries to our field offices have indicated in general, that the reliance on both contract

and temporary personnel is more expensive. It can be as much as one-third more expensive than it would be to do it with full-time Federal employment.

Senator STEVENS. So in a continuing program such as road construction, the shift toward contracting for temporary help is not cost-effective at all.

Mr. BERKLUND. In some cases, it could be. I think we have to look at these things on a case by case basis.

Senator STEVENS. I am speaking about the overall program.

Mr. BERKLUND. We are forced into contracting where we know it would be much more cost-effective to do it with additional permanent people. In those cases, I would have to agree that we are loosing some cost-effectiveness by going to contracts.

There is also a timing element. Very often it takes a lot longer to get work done through contracts. For example, we have to prepare the requests for bids, and you have to have a period of time while bidders prepare their estimates. You have to screen contractors. You have to look at the potential bids and prepare contract stipulations. Some of the contracts are determined not only on their bid but also their qualifications. So there is time spent in analyzing qualifications of various potential contractors. Therefore, from a timing standpoint, you can loose considerable time in some kinds of contracts.

O. & C. GRANT LAND FUND STATUS

Senator STEVENS. Thank you. Let's go to the Oregon and California grant lands account where the request is for $30 million in new budget authority. This is a $2 million increase, but a program reduction of $3 million in obligations.

Why is it that your carryover of unobligated funds from fiscal 1976 is expected to be so much lower than the 1975 carryover?

Mr. BERKLUND. These budgets, or course, are predicated on receipts that we are anticipating for the same year in which we are asking for the program. In 1975 we carried over about $8.2 million into fiscal 1976. We are only estimating $112 million in new revenues of which a quarter goes in this account. This is only giving us $28 million in new budget authority. When you add that to the $8.2 million carryover, it totals about $36.2 million available. With our proposed obligation program of $33.2 million, that leaves a carryover out of fiscal 1976 of only $3 million.

I might add, Mr. Chairman, that our receipt estimates, since this budget was prepared, has gone down so that we are now looking at about a $6 million shortfall in funds available to carry forward the obligation program as shown in this budget.

CARRYOVER FUNDS

Senator STEVENS. Well, first, give us the reason for the smaller estimated carryover of funds at the end of fiscal 1976. Is this just a programing policy?

Mr. BERKLUND. It is a product of the carryover into the year, the new money that is going to accrue that year, and what we plan to use. These three factors determine how much is going to be carried out of the year. We do feel it is prudent to maintain some reserves

because we are operating a program based on receipts that are generating in the same year. Therefore, if we don't have a buffer, it could be very easy to overobligate this account say, for example, the receipts should fall off drastically in the last 2 months of the fiscal year.

We won't even know that those receipts have dropped off until the close of the fiscal year. So we feel like we have got to maintain some kind of unprogramed balance in order to prevent an overobligation of the account.

REVISIONS IN THE O. & C PROGRAM

Senator STEVENS. All right. Now to the $6 million shortfall that you mentioned earlier. What is responsible for this?

Mr. BERKLUND. The value is there. The potential revenues are there on the stump. Our purchasers do not pay for most of the timber sold until they cut it and start removing it from the woods. The reason receipts are falling off, at least in fiscal 1976, is a direct result of the decline in housing starts.

Projections now indicate housing starts are going up. We look for increasing revenues, but whether they accrue in fiscal 1976 or fiscal 1977, we cannot say for sure at this time. We are fairly confident that within the next year or year and a half that the revenue picture for the O. & C. lands will be much better and we will have much more new budget authority accruing in this account as a result of those increased revenues.

Senator STEVENS. Your current fiscal 1976 estimate, based on revenues, is about $33.2 million, which is in itself a reduction from your original estimate of last year. So you are talking about a sizable program reduction from your original estimate?

Mr. BERKLUND. That is correct.

Senator STEVENS. What kind of a program increase for western Oregon forestry would be needed to offset this program reduction?

Mr. BERKLUND. If our revised receipt picture is correct, it would take about $6 million to bring us up to what our planned obligations are in our 1977 budget for the fiscal 1976 period.

Of course, the reduction comes mostly out of road construction. But the kind of reduction we are now facing starts getting into such things as reforestation, timber stand improvement, and timber sale offerings.

O. & C. PROGRAM ALLOCATIONS

Senator STEVENS. That was my next question. Under your present budget estimate for O. & C. grant lands you are reducing construction and forest management obligations, but increasing funds for operations.

Why is the increase going to operations at the expense of the other two activities?

Mr. BERKLUND. There is some decrease in management, but that shortfall is being picked up by our proposed redirection in the management of lands and resources appropriation. So there is no difference in the basic forest management for the western Oregon program.

Operations and maintenance is increasing. This increase is needed to keep up our road system and recreation sites.

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O. & C. RECREATION CONSTRUCTION PROGRAM

Senator STEVENS. Under the reduced construction activity you are cutting back road construction by about $3.1 million, but you are increasing recreation development slightly. First, what kind of revenues does the recreation program produce in the O. & C. account?

Mr. BERKLUND. Our total fee collections are relatively minor. They amount to not more than $300,000 a year. Of that amount, probably $80,000 or better comes from concessionaires outside of western Oregon.

But the balance largely comes from western Oregon, where we have had funding in the past to provide facilities that warrant fee collection. So I would say roughly that of the balance of $220,000, at least half of that comes from western Oregon.

Senator STEVENS. That suggests a question, then, about why you would increase recreation while you cut back road construction, which is more directly tied to timber revenues.

Mr. BERKLUND. The Loon Lake project, which is the only actual project work that we propose to undertake in this budget, is needed to improve an existing recreational facility. It is inadequate, from the standpoint of sewage and water systems. It is difficult to maintain and has some serious safety hazards to the public because of potential conflicts between swimmers and bathers and powerboat-launching facilities.

So we feel that even though we do have a reduction in the road program we have got to take care of the problems at this particular facility for the health and safety of the using public.

Senator STEVENS. The Loon Lake campground is budgeted at $425,000. Why is this project so expensive?

Mr. BERKLUND. We are talking about restroom facilities that are not adequate and sewage facilities. The restrooms are subject to vandalism. The sewage and water systems themselves are going to cost about $150,000.

Then, to rehabilitate and improve the site, such as the resurfacing of campsites with gravel, improving the boat-launching facilities to minimize the conflict of beach users and to put in a substantial restroom that is more vandal proof, those items together come to about $275,000.

So those are the elements that go into making up that $425,000 cost.

Senator STEVENS. I note in the justification that the facilities include such things as a waste disposal facility for trailer holding tanks, which seems to be a little more highly developed than most Federal campgrounds.

Please supply for the record the details of the Loon Lake campground improvements.

Mr. BERKLUND. I will be happy to do that, Mr. Chairman.

[The information follows:]

LOON LAKE CAMPGROUND RENOVATON PROJECT

The $425,000 requested for the Loon Lake project in fiscal year 1977 will provide for upgrading of sanitary and drinking water facilities to meet State standards, surfacing campsites, anchoring picnic tables and benches, relocating parking space for boaters, installing safety devices to separate swimmers from boaters, and construction of a sanitary waste collection station for self-contained trailers.

OUTLOOK FOR O. & C. REVENUES

Senator STEVENS. The justification states that the lack of new road construction in your O. & C. budget proposal will not impair long-term management plans provided there is adequate funding in fiscal 1978.

What is your outlook for 1978 revenues?

Mr. BERKLUND. The outlook for new revenues in fiscal 1978 is very good. As I indicated before, we do have the sales and they are selling. We are getting near-record prices for the timber that we are selling.

The timber sale contractors have up to a 3-year period in which to cut and remove their timber. This problem that we are now experiencing we feel is only temporary. As soon as housing starts to pick up, this volume will be cut, removed, and paid for.

We will see increasing revenues, perhaps record revenues, in the O. & C. account by 1978, if not sooner.

Senator STEVENS. What specific activities will be affected by the $930,000 reduction in forest management?

Mr. BERKLUND. There will be none, Mr. Chairman. If you will go back to our proposed redirection of that $1 million from the public domain program into the western Oregon program, the dollar funding would be essentially the same.

Senator STEVENS. You are speaking, then, of the increase proposed for western Oregon?

Mr. BERKLUND. Yes; the management of land and resources appropriation.

Senator STEVENS. But you have also just testified that revenues are decreasing in the O. & C. lands, so that you will be forced by the level of revenues to decrease O. & C. management activities.

Mr. BERKLUND. This budget does propose a decrease in the O. & C. account for the management of western Oregon forests, but as I indicated, that is made up by the adjustment in management lands and resources appropriation. Those moneys are also available for the total management program in western Oregon.

Senator STEVENS. Your revenue shortfall is made up?

Mr. BERKLUND. Not the revenue shortfall, but the shortfall in budget authority is made up in part by redirecting the money, the $1 million out of the public domain forestry program and putting it into the western Oregon program.

Senator STEVENS. Yes, but this still does not cover the revenue shortfall.

Mr. BERKLUND. It does not completely cover the revenue shortfall because we are showing reductions in road construction.

O. & C. RECREATION PLANNING, SURVEY, AND DESIGN

Senator STEVENS. More than $700,000 is budgeted for planning and designing recreation development. What is the urgency of this program?

Mr. BERKLUND. Mr. Chairman, I believe about $451,000 of that $700,000 you referred to is for planning, survey design, and project construction by the Forest Service, for which I do not have the details.

As far as our own program, I think we have to realize that unless we accommodate this recreational use and plan ahead for it, that we are going to have severe problems in the management of those forests as a result of that uncontrolled use.

And if we do not get out ahead and do site investigations, planning, and survey and designs for future recreational facilities, and put them where they will do the most good, then we are going to have other problems, more management problems, as these people go out and use these lands without proper facilities.

These problems express themselves in sewage disposal and unauthorized dumping, uncontrolled fires, and use of unsafe areas. We feel that this recreation program in western Oregon is a vital and important part of the overall management of those lands.

ARCTIC GAS PROJECT

Senator STEVENS. Let me go back just in closing to the problem related to gas pipelines.

Are you doing anything at all with regard to getting a passable proposal? I know you don't have an application for a permit, but have you examined the proposed right-of-way as it leads to the oil pipeline corridor and goes on?

Mr. BERKLUND. Yes. The El Paso line is being considered as an alternative in the gas Arctic impact statement. We have taken quite a bit of time to look at that as an alternative.

I would like to have Roman speak to that. He is the project manager on the Arctic gas line.

Mr. KOENINGS. As you know, we had an agreement with the Power Commission. Early on El Paso decided not to apply for an application to the Secretary for a right-of-way permit. Since we did not have an application, we could not actively participate in the environmental impact statement for the El Paso proposal.

However, in spite of the fact that they did not apply through the Department of Interior, we thought it was extremely desirable that we continue to work with FPC. We have provided them with some information for their environmental impact statement for the El Paso proposal.

We have included a similar type of proposal in the Arctic gas EIS as an alternative. So we have been looking at it and we feel that it has been done in sufficient depth so that the Secretary could take action if he so desired.

Senator STEVENS. Do you feel you would be prepared to proceed with that application without a substantial delay should the El Paso application be filed?

Mr. KOENINGS. I would feel that we would be able to do that, yes, sir. It is anticipated that we would speed up the whole process—we will have our people testifying before the Federal Power Commission in mid-April to start the process going.

FUNDS REQUESTED FOR WILDLIFE PROGRAMS

Senator STEVENS. I asked you last year how much of the money you had requested was for wildlife management programs. I ask you again to supply for the record the total request of wildlife management

programs for the BLM and how much of that will be going into Alaska. Include in that the request that went to the Department, then the request that went to OMB, and the amount that is in this budget.

Mr. BERKLUND. Yes, sir. We will supply that for the record.

[The information follows:]

WILDLIFE MANAGEMENT PROGRAM

Although no increase funding is requested in the President's fiscal year 1977 budget for Wildlife Management, the following additional funds for this program were requested to be provided in budget allowances from the Department of the Interior and OMB:

Increase request to department	+$1,900,000
Increase request to OMB	+1,900,000
Alaska allocation from OMB request	+122,000

Subsequent to these requests, BLM's wildlife budget was increased by $1.0 million through Congressional action on the fiscal year 1976 budget. These additional fiscal year 1976 funds were allowed to continue in fiscal year 1977 leaving a net shortfall of $900,000 between the amount of increase initially requested and that accommodated in final budget allowances.

The total fiscal year 1977 wildlife program for BLM is approximately $4.7 million. Of this amount, about $270,000 is allocated for wildlife programs in Alaska.

Senator STEVENS. We asked for an increase last year for the capability of the wildlife management program and were not successful. This refers back, of course, to the Sikes Act and other amendments too. I would very much like to know what we can do in that regard.

Second, in terms of the cadastral survey problem we mentioned, I would like to have you examine that situation again with regard to ANCSA to give us a tentative time table for meeting the requirements of the conveyances of native lands. And the funding that would be required not only in this year but in out-years to meet that time table.

Again, I urge you to meet with your Solicitor on the possibility of taking some action to meet that need under a tentative approval arrangement.

SURVEY AND DESIGN OF FAIRBANKS FACILITIES

Again with regard to the survey and design, we had $850,000 in the Senate bill last year. It is my understanding you now believe you can get by with less than that. You are going to give us the precise estimates tomorrow morning; right?

Mr. BERKLUND. Yes. We will give you the breakdown of what was planned for the $850,000 last year and then why we think that it will take about $400,000 this year. Yes, sir. We will supply that tomorrow morning; right?

Senator STEVENS. Have you examined the buildings that are under the jurisdiction right now of Alyeska during the period of construction of the pipeline to determine whether any of those would meet your needs?

Mr. BERKLUND. Yes. Before Alyeska took over the building, we took a look at it and we felt it would be cheaper to construct to meet our needs rather than remodel the existing structure.

Since then, Alyeska has spent a lot of money on their building and we have not been back to look at it. But we inquired about

their departing and whether there would be an opportunity for us to get into that building by the time we have to get out of the Burgess building.

They cannot assure us that they are going to be able to vacate in time. So with all the questions in hand, we think it best to construct.

They have a permit. They can stay there 6 years.

Senator STEVENS. They have to be out by 1980 and you have to be out of your building by 1978.

Mr. BERKLUND. Two years in Tent Town.

Senator STEVENS. Hopefully, there will be another pipeline under construction. We will do our best.

ADDITIONAL QUESTIONS

Senators McGee and Hatfield, who had conflicting hearing schedules, have several written questions. We will ask you to answer them for the record.

[The questions and answers follow:]

COMMENTS AND QUESTIONS BY SENATOR MCGEE

The following questions were submitted by Senator McGee and are answered for the record.

RANGE MANAGEMENT

Many ranchers in Wyoming are suffering considerably as a result of the Bureau of Land Management's failure to proceed with the Allotment Management Program. As I understand it, some ninety areas in Wyoming are being administered under Allotment Management Plans, but the rest of the State's Federal lands are awaiting inclusion under the AMP system. Except for the AMP lands, range improvements are being rejected unless arranged prior to the AMP program, are needed for public safety, or are vital to the continued and successful operation of an individual ranch. It is reported that efforts to establish new Allotment Management Plans in Wyoming have been diverted to the completion of an environmental impact statement on range management in Wyoming, and that there will be no relief from this situation until October of 1977. While I am in full agreement with the need to complete the impact statement, I am aware that a lot of people are thinking the Bureau has intentionally stranded the AMP program in order to provoke hostility between the ranching community and the environmentalists. It seems that neither the court nor the environmentalist organization which won the suit intended to require the impact statements anticipated or demanded the extremes to which the Bureau has gone in order to complete these 102 statements.

Question:

I would like your comments on this situation, and then I have some additional questions.

Answer:

On June 18, 1975, U.S. District Judge Thomas A. Flannery issued a final judgment adverse to BLM in NRDC vs. Morton. The judgment stated that ". . . BLM will not implement any AMP or its equivalent after the end of FY 1975 . . . prior to the completion of an EIS covering such AMP, and further that (BLM) recognizes that actions supportive of grazing (fences, water developments, etc.) may have significant impact on the human environment and it is hereby ordered in such cases, no such action will be undertaken without an EIS completed on such action or area."

Under the terms of the court's judgment and the schedule which was agreed upon as directed, it appears obvious that BLM did not "strand the AMP program in order to provoke hostility between the ranching community and the environmentalists." It was, in fact, BLM's contention that the programmatic EIS for grazing adequately assessed environmental impacts and that the AMP program should proceed in order to effect improvement in rangeland conditions, and lend further stability to the livestock industry.

Failure at the bar and the resulting judgment has forced BLM to make a significant shift in program emphasis from AMP development and implementation to data gathering and EIS preparation as directed.

Preparation of Environmental Impact Statements for Grazing

The court, in finding for the plaintiff in NRDC vs. Morton, directed that NRDC and BLM agree to a schedule for completing Environmental Impact

Statements on 150 million acres of public lands subject to grazing. The resulting agreement states that beginning in 1976, 71 of 212 EIS's will be completed in five years, and the balance at the rate of no less than 14% of the remaining area per year for the next eight years. Under this schedule the 212 EIS's will be completed by the end of 1988. During the period 1977 through 1981, BLM in Wyoming will prepare 7 EIS's covering about 6.8 million acres, or roughly 10,625 square miles.

Question:

Have you requested additional money for range management in Wyoming so the AMP program can move forward?

Answer:

The court directed agreement with NRDC precludes implementation of new AMP's without completion of the EIS. It further specifies that all other improvements must comply with the requirements of NEPA. Pursuant to the agreement, BLM has established policy which categories range improvements as follows:

(1) Improvements that are non-AMP related, and which are shown by site analysis to be environmentally sound, e.g. District boundary fences, can be installed without the EIS's being completed.

(2) Improvements necessary to complete AMP's that are already implemented, but which lack all the facilities necessary to be fully operational. If shown to be environmentally sound by site analysis, the individual projects can be installed without completion of the EIS. The AMP is subject to the EIS, however, and some modification may be necessary following completion of the EIS.

DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE MIDDLE FORK OF POWDER RIVER

Several concerns have been raised with me by my constituents in Kaycee, Wyoming concerning the proposed Middle Fork Reservoir, currently under study by the Bureau of Land Management. Therefore, I would like a description of this project, and I have some specific questions.

Answer:

In July 1973, the Powder River Reservoir Corporation filed a right-of-way application with BLM for a reservoir. The application was amended in March 1974 to cover 141 acres of national resource lands (NRL). The total acreage of the reservoir is 1,160 acres with a total capacity of 50,000 acre-feet.

The proposed project involves the construction of a reservoir to store water to allow better water utilization in an agricultural irrigation system. A total of 5,116 acres of presently irrigated lands will receive a supplemental supply, and 363 acres of previously non-irrigated lands will receive an original supply as they are developed.

Only a portion of the water, 8,000 acre-feet per year, is to be utilized for irrigation purposes. The applicant entered into a contract dated May 22, 1973, with Carter Oil Company for 25,000 acre-feet of water with a preference right to purchase any additional water the corporation

may wish to sell. Subsequent to this transaction, Carter Oil sold 12,500 acre-feet to the Atlantic-Richfield Company (ARCO).

The environmental impact statement (EIS) for the proposal was started in late 1974. Although Carter Oil and ARCO have not identified any definite plans for the use of the water, it has been assumed in the statement that it will be for industrial uses in the Eastern Powder Coal Basin.

A further environmental assessment will be required for site specific proposals if federally managed lands or resources are involved when the plans of these companies become firm.

On January 23, 1976, the DES was filed with the Council on Environmental Quality (CEQ) and made available to the public. A public hearing was conducted in Buffalo on February 24 and in Casper on February 26. The formal public comment period was extended from March 10 to March 25, 1976.

Under the current schedule for the EIS the final environmental statement (FES) will be available to the public some time this summer.

Question:

The draft environmental impact statement prepared by the BLM terms this reservoir an agricultural dam. Yet, I am asked if this be so, why doesn't the Sussex Ditch Company get first water rights instead of Carter Oil?

Answer:

In order to prepare the EIS the applicant, a private company, Powder River Reservoir Corporation, was requested to submit information and data concerning the proposal to construct and operate a reservoir. Part of the information furnished included a copy of a contract which was executed by the Powder River Reservoir Corporation, the predecessor of Sussex Irrigation Company, and the Carter Oil Company for the sale of water.

This contract, which is appended in the DES, provides that 25,000 acre-feet of water annually will be delivered to the Carter Oil Company. It also states that the Powder River Reservoir Corporation is entitled to 24,000 acre-feet in any consecutive three year period, but not to exceed 10,000 acre-feet in any one year after the amount sold to Carter is delivered.

As noted previously, subsequent to the execution of this contract Carter Oil sold 12,500 acre-feet of water to ARCO.

Both the agricultural and assumed industrial uses are discussed and assessed in the DES.

Question:

Has the Bureau established or verified the basis for allocating 25,000 acre-feet of water to meet industrial demand?

Answer:

The basis for allocating the 25,000 acre-feet of water for industrial purposes is predicated upon the contract between the two parties as discussed above.

Question:

Does the Bureau intend, or has it already, determined the impact of maintaining minimum flow or minimum storage on agricultural water requirements? That is, would minimum water flow mean shutting off water to irrigation units? What are the assumptions about demand and flow which the Bureau is using to determine this problem?

Answer:

Based upon the submitted operational plan of the applicant, the BLM has made an assessment of the environmental impacts of the proposal as identified in the DES. The assumptions made in the DES are predicated upon the information furnished by the applicant regarding his proposal and the Bureau's assessment.

According to the plan of operation and the contract, the water to be utilized for irrigation purposes would be released into the natural stream channel as needed during the irrigation season from May 1 to September 30. It would flow approximately 20 miles downstream from the reservoir where it would be diverted into the existing Sahara diversion structure. From this diversion ditch, the water would flow to the acreage to be irrigated.

During the period of October 1 to April 30, the operational plan indicates that a release of five cubic-feet per second is proposed.

Question:

The Wyoming Game and Fish Department and some local users of the Middle Fork believe that a minimal flow of 25cfs should be continually maintained. Will the Bureau accept this minimum requirement and formulate its recommendations from it?

It has been proposed that the minimum water level in the proposed reservoir be held at 2,400 acre-feet. If the reservoir is to have any recreational and scenic value, it is important, I would think, to keep fluctuations as insignificant as possible. It has also been suggested that 10,000 acre-feet would be more suitable. Please comment on these problems.

Finally, many of my constituents have complained about the absence of a permanent, and binding on all parties, plan of operation for the reservoir. The lack of such a plan is the major source of resistence to the Middle Fork Reservoir. What are the Bureau's intentions about developing this sort of agreement?

Answer:

These three questions involve requests that the Bureau stipulate in the right-of-way grant, if issued, the following three items:

1. That a minimum stream flow of 25 cubic-feet per second be released below the reservoir,
2. a minimum pool level for the reservoir of 10,000 acre-feet be maintained, and
3. that a permanent, definite, detailed plan of operation be required.

All three of these items raise serious legal and policy questions which prevent the BLM from responding to them at this time. The Bureau will be seeking answers to these comments and others which have been received in response to the public review period for the DES.

As established procedures require, these comments will be identified in the public comment section of the FES with the Bureau's response to each issue. If necessary, substantive and editorial change will be made in the FES.

Question:

An engineering firm is believed to have explored the possible addition of Red Fork waters to the Middle Fork Reservoir. There seems to be strong evidence that indicates the addition of this water would be necessary to insure adequate water storage to meet all demands. Yet there is no apparent mention of the Red Fork waters in the draft environmental impact statement. Could you explain the Bureau's reason for this seemingly important omission?

Answer:

During the public review process for the DES, the Red Fork diversion proposal surfaced as a possible addition to the Middle Fork Reservoir project.

The applicant, Powder River Reservoir Corporation, has made applications and received approval from the Wyoming State Water Engineer to divert 85 cfs from the Red Fork drainage to the proposed Middle Fork Reservoir. The applications were approved in 1972 and are subject to protection of senior downstream water rights. Under the existing construction permit, the applicants must begin construction by December 31, 1976, and complete work by December 31, 1978.

The Bureau will contact the applicant to obtain a formal statement concerning their plans regarding the Red Fork diversion. If that response indicates that the diversion is to be a part of the Middle Fork Reservoir project, we will request an operation plan that has been amended to reflect this inclusion. A determination will be made at that time as to the necessary extent of further environmental assessment on the amended operation plan, including the effects of this plan on the Red Fork drainage.

POTENTIAL PRIMITIVE AREA - NORTH FORK, POWDER RIVER

The Bureau of Land Management is considering the creation of a primitive area on the North Fork of the Powder River. Questions have been raised on this proposal, of which the following are typical:

Question:

Has the area been abused under the present system of management?

Answer:

The area is relatively undisturbed. That is one of the reasons why it has a high primitive value. However, with greater pressures being placed on National Resource Lands for various uses such as mining, timber production, rights-of-way etc., it is likely that without

primitive area status, the area could eventually be developed with a corresponding loss of its primitive characteristics.

Question:

Has there been an environmental impact statement filed?

Answer:

An environmental analysis report (EAR) will be developed at the same time the management plan is completed. At this time a determination will be made as to whether an EIS is needed.

Question:

Has there been any planning done to date that would explain how the area is to be managed under primitive area status?

Answer:

A general land use plan has been developed for this and surrounding areas. No detailed plans have been developed to specifically identify a management program for the area. However, the district is required to develop a management plan before a primitive designation will be approved. The public would be invited to participate in the planning effort.

Question:

Would the plan create a hardship on livestock producers who hold grazing leases in the area?

Answer:

It is unlikely that the grazing permittees would suffer hardships of any consequence. The Management Framework Plan for the area states that grazing would be allowed even if the area were designated primitive. The precise effect will not be known however until a detailed management plan is developed for the area.

Question:

Because the BLM lacks law enforcement powers, would it create an additional burden of responsibility upon law enforcement personnel in Johnson County?

Answer:

There may or may not be an increased workload on local law enforcement agencies. However, experience in other areas in the Bureau indicates that the added workload, if any, would be very small.

Question:

Because there will be no visitor use facilities in the area, would a serious sanitation problem be created as visitors become increasingly attracted to a wilderness or primitive type of recreational experience?

Answer:

The primitive area designation will not be approved until a management plan is completed and the District Office has proven they have the capability of handling sanitation and other management problems.

Question:

I would like to know how many different types of leases exist within the boundaries of the North Fork Primitive Area, how many leases exist in each category, and how these leases will be administered if the area is finally classified as primitive?

Answer:

There are four section 15 grazing leases on the area. All the leases are for cattle except one lessee who has an allotment for 43 AUM's of sheep use.

Question:

Do yo have an accounting of any other agreement which might be affected by such a change in status?

Answer:

There is an agreement between the Bureau and a livestock operator for the maintenance of a pipeline and livestock watering facility. It is unlikely that the status of this agreement would change. The operator may be required to maintain the pipeline with nonmechanized equipment.

Question:

Finally, could you given me some idea of the principles by which the Bureau will be administering primitive areas nationwide?

Answer:

Principles for management of primitive areas are contained in 43 CFR Part 6221 and BLM Manual 6221. In essence the guidelines state that the Bureau will manage primitive areas to preserve natural ecological succession and maintain as near as possible a pristine environment. Maintaining a condition of solitude is an important objective of primitive area management. Recreation use is allowed as is grazing, water storage projects, rights-of-ways and other purposes. All uses are subject to restrictions which the authorized officer deems necessary to preserve primitive values.

CADASTRAL SURVEY OPERATIONS IN WYOMING

Question:

Would you please provide this Committee with an updated assessment and progress report of Cadastral Survey operations in Wyoming?

Answer:

At the end of FY 1975 it was estimated that over 165,000 miles of Federal property boundaries in Wyoming were in need of cadastral survey. During FY 1976 the Wyoming cadastral survey program was increased from the

FY 1975 level of $134,000 to a new level of $331,300 in response to the energy responsibilities of BLM. We expect to meet or exceed the FY 1976 goal by surveying 1,194 miles of Federal boundaries and the establishment of nearly 2,000 monuments.

In addition to the BLM resource programs in Wyoming, cadastral surveys will be executed on approximately 121 miles of boundaries for other Federal bureaus or agencies during FY 1976 at a cost of $78,500. This work is for the U.S. Forest Service, Bureau of Indian Affairs, National Park Service, and the Bureau of Reclamation.

FY 77 INCREASE POSITIONS IN WYOMING

Question:

I understand that 333 positions have been requested for fiscal 1977 and that these are new positions. While I recognize that 90 of these positions are transferrals from the Federal Highway Administration, I would like to know how many of these new positions will be assigned to Wyoming?

Answer:

From the 333 increase positions in the BLM request for FY 1977, Wyoming is slated to receive 26. These positions include 15 for upland oil and gas leasing, 5 for material sales, and 6 for other programs.

IMPACT OF FY 77 BUDGET REQUEST IN WYOMING

Question:

Increases of nearly $12 million are requested for energy-related programs in the BLM request. Since my State is experiencing an unprecedented amount of energy-related impactment, just what would this appropriation mean to Wyoming in terms of programs and personnel?

Answer:

The Bureau of Land Management in Wyoming currently has an authorized organization of 320 permanent employees, and an energy-related budget of approximately $2.9 million. Appropriating the total FY 1977 budget request will increase the Wyoming organization to 346 permanent employees and increase funding for energy-related programs to approximately $3.4 million.

A detail of the Wyoming energy-related programs follows:

	FY 76 Base		FY 77 Increase		FY 77 Total	
Energy & Minerals Management	$	Pos.	$	Pos.	$	Pos.
- Upland Oil & Gas Leasing	$1,280,000	38	$525,000	15	$1,805,000	53
- Coal Leasing	537,000	26	--	--	537,000	26
Land and Realty Management						
- Energy Casework	1,080,000	52	--	--	1,080,000	52
Total	$2,897,000	116	$525,000	15	$3,422,000	131

The following questions were submitted by Senator Hatfield to be answered for the record.

OVERCUTTING

Q. In his testimony before a Senate Interior Committee hearing on legislation regarding clear-cutting, Mr. Charles Stoddard mentions a recent report by Oregon State University which states that there is overcutting taking place on BLM lands in all of western Oregon. Is the report accurate in this finding?

A. We believe the report referred to by Mr. Stoddard is Timber for Oregon's Tomorrow, An Analysis of Reasonably Possible Occurrences, Research Bulletin 19, January 1976, prepared by the Forest Research Laboratory, School of Forestry, Oregon State University. This report, however, does not infer that all Bureau lands in western Oregon are being overcut but, rather, analyzes the reasonably possible conditions under which the timber harvest in Oregon (from all ownerships) can continue at or above the current level. In fact, the report indicates that current allowable cuts from public lands (Forest Service, Bureau, etc.) could continue through the year 2000. The report further indicates public forests could yield increase harvests over current levels from 15-30 percent (15-26 percent for BLM lands) beyond the year 2000, assuming current policies and actions are continued and depending upon the management intensity. We believe this report is accurate in its findings.

Q. In his testimony Mr. Stoddard also mentioned a letter from Director Berklund to a member of Congress in which he acknowledges BLM cutting of timber beyond the allowable sustained yield level. Was there such a letter containing such a statement?

A. In researching our records we were unable to locate a letter to any congressional member stating that the "Bureau is still overcutting its allowable sustained-yield level of harvest more than 40 percent of the current growth" as indicated in Mr. Stoddard's testimony.

Though the Bureau's allowable cut is currently three times the annual growth, projections made by a computerized simulation model indicate that the gap between annual cut and growth progressively closes until they are the same, i.e., 1.172 billion board feet in approximately 70 years. Thus, current sustained-yield levels are realizing a "credit" for future growth which will be realized through conversion of old-growth stands (which have low or often negative growth rates) to high-yield vigorous, young-growth stands. Further, determination of an allowable cut is made each ten-years to incorporate new data and technology.

TANSY RAGWORT

Q. Please review for the record the nature and costs of the problems caused by failure to control this weed.

A. Estimates of the annual loss to the agricultural economy in Oregon, due to tansy ragwort infestations, range from $1.5 million to $10.7 million. This includes land in all ownerships, with the bulk of the serious infestation occurring on private lands. The BLM has no reported instances of animal loss on NRL's due to tansy ragwort poisoning.

Q. What has the BLM done to combat the continued losses caused by this noxious weed?

A. Prior to 1974, the Western Oregon BLM Districts may have contributed small amounts of money to local weed control districts.

In FY 1974 BLM entered into a cooperative plot and demonstration project with the Oregon State Department of Agriculture and other agencies to arrive at effective control methods. The project involves three primary control methods:

(1) Biological - cinnabar moth (feeds on the foliage)
- tansy ragwort flea beetle (feeds on the root system)
(Another insect, the tansy ragwort seed fly, is scheduled to be introduced into Oregon in 1976. Initial control efforts with this insect will not be on the NRL's.)
(2) Chemical - 2,4-D
(3) Mechanical

The efforts on NRL's have been limited to the biological method. Because of the scattered infestations on NRL's, the biological method is really the only practical course of action on these lands. The chemical and mechanical methods are more adapted to lowland pastures.

Under cooperative agreement, 30 colonies of 1,000 cinnabar moth larva were released on more heavily infested areas of 4 Western Oregon Districts: Coos Bay, Eugene, Roseburg, and Salem. To date the BLM has no reliable information as to the success or failure of these releases. It normally takes 5 to 7 years for a new colony of these moths to become established and start showing some inroads toward control of the tansy ragwort.

Under the cooperative agreement entered into in 1974, 50 additional colonies of cinnabar moth were released in 4 Western Oregon Districts.

In FY 1976, $100,000 of the $4.0 million appropriated for rangeland improvement was specifically earmarked for tansy ragwort control. BLM negotiated a sole source contract with the Oregon State Department of Agriculture in the amount of $85,000. In addition, $15,000 is being used by the BLM to coordinate the control efforts in the State and District Offices in Oregon. Under this contract, the State Department of Agriculture will:

(1) evaluate the 1974 and 1975 colony releases;
(2) collect and distribute cinnabar moth larva to establish new colonies on priority infestations, on NRL's or adjacent lands, identified by their inventories and our recommendations;
(3) determine the location and extent of the tansy ragwort infestations on NRL's and adjacent lands;
(4) prepare draft information for preparation of EAR's and other environmental assessments.

Q. What measures are currently available for control of tansy ragwort?

A. (1) The herbicide, 2,4-D, is commonly used. Excellent control has been obtained by spraying in the rosette stage of growth. 2,4-D is not effective after the plants start to bloom.

(2) Dicamba has been effective when applied before the plant blossoms.

(3) Soil sterilants, such as sodium chlorate and borate-chlorate mixtures, are effective but are less practical to use because of cost. Sodium chlorate is a fire hazard, so it must be used cautiously.

(4) Sheep grazing has proven effective when they are confined to the infested area. Sheep should be grazed on these areas for several years. The plant is consumed in the seedling and rosetta stages of growth, rather than in the flowering stage.

(5) Tansy ragwort is not a shade-tolerant plant. Reforestation is a good way of controlling this plant but requires many years.

(6) A biological control method which uses an insect, the cinnabar moth, whose larvae feed only on tansy ragwort and its close relatives, is being investigated. A research program is being conducted by Oregon State University.

(7) Tansy ragwort is seldom a problem in cultivated areas, as cultivation precludes maturation of these plants (It is a biennial). Cutting usually results only in creating more robust plants because of tansy ragwort's considerable ability to regenerate.

Q. What would be the maximum funding level for 1977 to undertake a comprehensive tansy ragwort control program? What would be the total costs of such a program?

A. Through our cooperation with the Oregon State Department of Agriculture over the last few years, it is felt that a comprehensive control program is under way in Oregon.

It is estimated that BLM would need $100,000 annually for 5 to 10 years ($10 to $15,000 would be for BLM operational support) to continue to provide the coordinated support of the control program in Oregon.

Oregon State Department of Agriculture estimates that more than $200,000 of State and Federal funds will be spent on the coordinated control effort.

Q. What would be the minimum level of funding required to undertake a limited, but still meaningful control program in FY 1977?

A. We feel that the program as discussed in the previous question constitutes a minimum level program. It also represents what is a feasible program because of the limited physical resources (colonies of cinnabar moth from which larvae collections can be made) available.

SUBCOMMITTEE RECESS

Senator STEVENS. It is nice to see you all here, gentlemen. Thank you very much. We appreciate your help.

We will stand at recess until 10 a.m. tomorrow morning when we will hear fiscal year 1976 supplemental requests.

[Whereupon, at 11:55 a.m., Tuesday, March 30, the subcommittee was recessed, to reconvene at the call of the Chair.]

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DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1977

WEDNESDAY, APRIL 7, 1976

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

The subcommittee met at 10 a.m., in room 1223, Everett McKinley Dirksen Office Building, Hon. Robert C. Byrd (chairman) presiding.

Present: Senators Byrd, Mansfield, and Hatfield.

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

STATEMENT OF ROBERT C. SEAMANS, JR., ADMINISTRATOR

ACCOMPANIED BY:

PHILIP C. WHITE, ASSISTANT ADMINISTRATOR FOR FOSSIL ENERGY

AUSTIN N. HELLER, ASSISTANT ADMINISTRATOR FOR CONSERVATION

WILLIAM T. McCORMICK, DIRECTOR, OFFICE OF COMMERCIALIZATION

M. C. GREER, CONTROLLER

ERNEST CHAPUT, DIRECTOR BUDGET PROGRAMS

BUDGET ESTIMATE

Senator BYRD. The subcommittee will come to order.

This is the time scheduled to hear the fiscal 1977 budget estimates of the Energy Research and Development Administration in support of fossil fuels and related energy programs.

The total is $550.4 million in new budget authority, which is a $102.4 million or 23 percent increase over appropriations to date for operating expenses and plant and capital equipment.

Included in the operating expenses request is some $422 million for fossil energy development. This is an increase of nearly $45 million or 12 percent over 1976. In terms of cost, the fossil energy program is budgeted for an $86.5 million increase, up 26 percent.

Conservation research and development funded in this bill is set at $71.2 million in new budget authority which is up some $33 million, or 86 percent. On a cost basis, conservation is budgeted for a $25.1 million increase, up 92 percent.

The request for plant and capital equipment totals $57.2 million in new budget authority, which is up $36.1 million, more than double

the fiscal 1976 appropriation. Outlays are budgeted to increase by $22.1 million, which is more than triple the current year's estimate.

JUSTIFICATION

The justification for ERDA's program that falls within this subcommittee's jurisdiction has been printed in part 2 of the hearing record.

The committee also has before it a supplemental appropriation request for fiscal year 1976 and the transition quarter for the proposed synthetic fuels commercial demonstration program. The request involves $504.4 million in additional operating expenses funding, $4.4 million for administrative expenses and $500 million in debt obligations authority. This program has not yet been authorized by the Congress. A copy of the justification will be included in the record at this point.

[The justification follows:]

Justification

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Operating Expenses

For an additional amount for "Operating expenses", $150,000, to remain available until expended.

For an additional amount for "Operating expenses" for the period of July 1, 1976, through September 30, 1976, $250,000, to remain available until expended.

Synthetic Fuels Commercial Demonstration Fund

For expenses necessary for the Synthetic fuels commercial demonstration fund, including necessary administrative expenses, $3,000,000, to remain available until expended: Provided, that this appropriation shall be available only upon enactment into law of H.R. 12112 or similar legislation.

The Administrator of the Energy Research and Development Administration is authorized to issue to the Secretary of the Treasury for the purposes of the provisions of H.R. 12112 or similar legislation, debt obligations which shall not exceed $500,000,000 and which shall remain available until expended: Provided that this authorization shall be effective only upon enactment into law of H.R. 12112 or similar legislation.

For an additional amount for necessary expenses of the Synthetic fuels commercial demonstration fund for the period July 1, 1976, through September 30, 1976, $1,000,000, to remain available until expended: Provided, that this appropriation shall be available only upon enactment into law of H.R. 12112 or similar legislation.

Operating Expenses
Program and Financing (In Thousands of Dollars)

Identification code L9-00-0100-2-1-999	1976 actual	1976	1976 estimate	1976 estimate
	Presently Available	Supplemental Pending	Proposed Supplemental	Revised Estimate
Program by activities:				
Direct program:				
1. Synthetic fuels commercial demonstration program	....	....	2,000	2,000
2. National security				
(a) Weapons	849,630	22,500	....	872,130
3. Program support				
(a) Program direction	180,833	....	150	180,983
Items not changed	2,866,600	....	....	2,866,600
Total direct program costs ...	3,897,063	22,500	2,150	3,921,713
Reimbursable program	383,093	....	....	383,093
Total program costs, funded ..	4,280,156	22,500	2,150	4,304,806
Change in selected resources (Undelivered orders and inventories)	361,347	7,500	1,000	369,847
Supplemental required for payraise	-6,876	6,876	....	....
10. Total obligations	4,634,627	36,876	3,150	4,674,653

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June 1973, Update:
Circular No. A-11, Revised.

Program and Financing (In Thousands of Dollars)

Identification code 19-00-0100-2-1-999	1976 actual	19 76	1976 estimate	1976 estimate
	Presently Available	Supplemental Pending	Proposed Supplemental	Revised Estimate
Financing:				
Receipts and reimbursements from:				
11 Federal funds	-391,868	....	....	-391,868
14 Non-federal sources	-670,000	....	....	-670,000
21 Unobligated balance available, start of year	-15,000	....	....	-15,000
24 Unobligated balance available, end of year	.....	....	....	
24.47 Authority to spend public debt receipts	....	....	500,000	500,000
Budget authority	3,557,759	36,876	503,150	4,097,785
Budget authority:				
40 Appropriation	3,557,759	36,876	3,150	3,597,785
47 Authority to spend public debt receipts	....	....	500,000	500,000
Relation of obligations to outlays:				
71 Obligations incurred, net	3,572,759	36,876	3,150	3,612,785
72 Obligated balance, start of year	1,088,772	....	....	1,088,772
74 Obligated balance, end of year	-1,439,088	-7,500	-1,000	-1,447,588
90 Outlays	3,222,443	29,376	2,150	3,253,969

Operating Expenses

Program and Financing (In Thousands of Dollars)

Identification code 19-00-0100-2-1-999	19TQ actual	19TQ	19TQ estimate	19TQ estimate
	Presently Available	Supplemental Pending	Proposed Supplemental	Revised Estimate
Program by activities:				
Direct program:				
1. Synthetic fuels commercial demonstration program	.....	.....	2,000	2,000
2. National security				
(a) Weapons	220,181	17,500	.....	237,681
3. Program support				
(a) Program direction	48,750	.....	250	49,000
Items not changed	755,245	.....	.....	755,245
Total direct program costs ...	1,024,176	17,500	2,250	1,043,926
Reimbursable program	104,485	.....	.....	104,485
Total program costs, funded ..	1,128,661	17,500	2,250	1,148,411
Change in selected resources (undelivered orders and inventories)	137,909	5,500	-1,000	142,409
Supplemental required for payraise	-2,427	2,427	.....	.....
10. Total obligations	1,264,143	25,427	1,250	1,290,820

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Program and Financing (Thousands of Dollars)

Identification code 19-00-0100-2-1-999	19 TQ Presently Available	19 TQ Supplemental Pending	19 TQ estimate Proposed Supplemental	19 TQ estimate Revised Estimate
Financing:				
Receipts and reimbursements from:				
11. Federal funds	-106,680	.....	.....	106,680
14. Non-federal sources	-107,000	.....	.....	107,000
21. Unobligated balance available, start of period	.....	.....	.....	.....
21.47 Authority to spend public debt receipts	.....	.....	-500,000	-500,000
24. Unobligated balance available, end of period	.....	.....	.....	.....
24.47 Authority to spend public debt receipts	.....	.....	500,000	500,000
Budget authority	1,050,463	25,427	1,250	1,077,140
Relation of obligations to outlays:				
71. Obligations incurred, net	1,050,463	25,427	1,250	1,077,140
72. Obligated balance, start of period	1,439,088	7,500	1,000	1,447,588
74. Obligated balance, end of period	-1,567,982	-13,000	.....	-1,580,982
90. Outlays	921,569	19,927	2,250	943,746

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U. S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
FY 1976 Synthetic Fuels Commercial Demonstration Program Supplement
Appropriation - Operating Expenses
(Dollars in thousands, except whole dollars in narrative material)
RESEARCH, DEVELOPMENT AND DEMONSTRATION PROGRAMS
SYNTHETIC FUELS COMMERCIAL DEMONSTRATION PROGRAM - OPERATING EXPENSES

PROGRAM STATEMENT	BA	BO
Previous Estimate FY 1976.....	$ 0	$ 0
Estimate Synthetic Fuels Commercial Demonstration Supplement		
Direct Appropriation.....	3,000	2,000
Borrowing Authority.....	500,000	0
Total Estimate FY 1976.....	$503,000	$ 2,000

The Synthetic Fuels Commercial (SFC) Demonstration Program is an essential part of the Nation's accelerated program to develop domestic technology and resources in order to prevent increased U.S. dependence on foreign energy sources. There are a number of potential benefits to be gained from a commercial-scale synthetic fuels program; (1) insure early development of information and industry infrastructure needed prior to possible major expansion of synthetic fuels production capacity; (2) increase domestic energy production and thus reduce reliance on imports with potentially higher prices and; (3) improve U.S. international position in energy matters by demonstrating a capability to develop domestic resources and thus become less dependent on Middle East energy supplies.

The SFC Program would be the vehicle by which the Federal Government will stimulate the private sector to invest in a limited number of commercial-scale plants to convert the Nation's hugh reserves of coal, oil shale and other domestic energy resources including organic wastes into clean liquid and gaseous fuels. Because of economic, environmental, regulatory and other uncertainties, there is no assurance of adequate near term-commercial development of synthetic fuels and therefore a financial incentives program of $6,000,000,000 for loan guarantees is required. As a first step in implementing this program a supplemental FY 1976 budget request would provide for $3,000,000 in direct appropriations and $500,000,000 in Borrowing Authority to cover ,000,000,000 in loan guarantees to initiate the program in FY 1976. These funds are designed to support a SFC Program which will lead to the production of 350,000 barrels per day, by 1985 and that would provide information concerning economic, regulatory, environmental, socio-impact and other considerations both to industry and Government.

	BA	BO
Previous Estimate Transition Quarter.....	$ 0	$ 0
Estimate Synthetic Fuels Commercial Demonstration Supplement		
Direct Appropriation.....	1,000	2,000
Total Estimate Transition Quarter.....	$ 1,000	$ 2,000

(Dollars in thousands, except whole dollars in narrative material)

RESEARCH, DEVELOPMENT AND DEMONSTRATION PROGRAMS

SYNTHETIC FUELS COMMERCIAL DEMONSTRATION PROGRAM - continued

To initiate this program direct appropriations for $3,000,000 in budget authority and $2,000,000 in budget outlays in fiscal year 1976, and $1,000,000 in budget authority and $2,000,000 in budget outlays in the Transition Quarter will be required for studies, analysis and development of regulations and guidelines concerning finance and incentives, technology evaluation, environment and socioeconomic impact and regional and macroeconomic analysis.

is a new program, and no funds have previously been appropriated for this activity.

Summary of Estimates
(Budget Authority)

Page No.		FY 1976 Previous Estimate	FY 1976 Supplemental	FY 1976 Revised Estimate	Transition Quarter Previous Estimate	Transition Quarter Supplemental	Transition Quarter Revised Estimate
SFC-2	1. Planning & Policy Analysis	$ -	$ 850	$ 850	$ -	$ 230	$ 230
SFC-2	2. Finance & Incentives	-	860	860	-	255	255
SFC-3	3. Technology Evaluation	-	640	640	-	285	285
SFC-3	4. Environment & Socio-Economic Impact	-	650	650	-	230	230
	Total	$ -	$3,000	$3,000	$ -	$1,000	$1,000

JUSTIFICATION
(Budget Authority)

Planning & Policy Analysis..... $ 850

Studies and analyses are required to determine the relationships of technology and plant size, the optimum plant mix and possible participation in the SFC Program by the major oil consuming nations through the International Energy Agency. Cost/benefit studies, econometric models, and regional Inflation Impact Assessments will be developed. Regional economic and employment effects resulting from the program will also be addressed.

A management information system will be developed and maintained to support program planning, control and execution of the SFC Program.

2. Finance & Incentives..... $ 860

A set of SFC Program regulations will be developed covering the method of program operation, including interagency relationships.

Standards will be developed to be used as a basis for determining eligibility for program participation. Analyses will be conducted to develop contractor proposal evaluation criteria and proposal ranking techniques. Procurement documentation for Requests for Proposals and Program Opportunity Notices will be developed for soliciting proposals and for identifying potential participants in the SFC Program.

Further, analysis will be conducted on the subject of the constraints to commercialization. Particularly, financial studies will be undertaken to measure the efficiency with which various financial incentives transfer risks between the Federal Government and the project sponsors. The effect of plant size and costs, and the regulatory, institutional and financial problems which could impact the SFC Program will also be examined.

3. Technical Evaluation..... $ 640

Technical studies will be conducted to evaluate state-of-the-art processes concerning the conversion of coal, oil shale, and biomass into synthetic fuels. An analysis of selected second generation synthetic fuel processes will also be conducted. Studies concerning manufacturing, storage and distribution of various forms of energy for industrial use will be used to evaluate contractor proposals and provide an assessment of candidate project proposals.

4. Environment & Socio-Economic Impact..... $ 650

A final programmatic environmental impact statement for the SFC Program will be completed. Uniform criteria and standards will also be developed to evaluate the impact of specific projects on the environment and local communities. As part of the procurement process, Environmental Impact Statements will be developed for each site. Procedures will be developed for monitoring environmental indicators during project design, construction, start-up and operations to insure adequate environmental data collection and assessment of the environmental impacts resulting from synthetic fuels facilities.

Studies will be conducted to facilitate the development of socio-economic impact assistance criteria and guidelines and regulations for implementing the impact assistance program. State and local governments will be consulted in developing these guidelines.

(Dollars in thousands, except whole dollars in narrative material)

RESEARCH, DEVELOPMENT AND DEMONSTRATION PROGRAMS

SYNTHETIC FUELS COMMERCIAL DEMONSTRATION PROGRAM - continued

Borrowing Authority

Estimate..... $500,000

Under the Congressional Budget and Impoundment Control Act of 1974 (Public Law 93-344) loan guarantees are not subject to the appropriations process. However, the Interagency Task Force on Synthetic Fuels Commercialization found a reluctance by lenders to make loans without an assurance of rapid repayment, and further that, if loans were made, a premium interest rate would likely be charged if rapid repayment in the case of default were not assured. The fact that these would be first commercial size plants and the potential size of the loan were important considerations. Therefore, a provision for a revolving fund utilizing, if necessary, borrowing authority from Treasury is deemed essential to provide assurance of rapid repayment to lenders on default. Under the Congressional Budget and Impoundment Control Act of 1974, spending authority, defined to include new borrowing authority except as otherwise provided therein, is subject to the appropriations process.

Although loan guarantees may never result in actual expenditure of Federal funds, the ERDA Administrator must have the authority to cover possible liabilities should some of the projects receiving guarantees for synthetic fuel plants default. This authority is also necessary to indicate to the private sector the credibility of the Federal Government's commitment. Thus, it is requested that the ERDA Administrator be empowered with a limited, renewable authority to issue notes or other obligations to the Treasury should payments be required, for a default on a guaranteed loan. $500,000,000 in Borrowing Authority is required to cover an estimated $2,000,000,000 in loan guarantees for the remainder of FY 1976.

U. S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
FY 1976 SUPPLEMENTAL BUDGET ESTIMATES

PROGRAM SUPPORT

PROGRAM DIRECTION PROGRAM - OPERATING

The Synthetic Fuels Commercial Demonstration Program is designed to demonstrate the technical, economic and environmental feasibility of commercial-scale synthetic fuel plants using available technology. The first phase involves the construction and operation of about 12-15 commercial-size plants using different energy resources and technologies. The early commercialization effort will require hiring about 30 additional people between now and the beginning of FY 1977, primarily for a concentrated effort in the following administrative support activities: planning and analysis; budget and procurement; incentive evaluation and financial assessment; technology evaluation; and environment and socio-economic analysis. This administrative support effort will require supplemental funding of $150,000 in FY 1976 and $250,000 in the Transition Quarter to cover salaries, travel and other costs such as employees' moving expenses, supplies and materials and communication services.

SUMMARY OF COST ESTIMATES
(In Thousands)

Program	FY 1976 Previous Estimate	FY 1976 Supplemental	FY 1976 Revised Estimate	Transition Quarter Previous Estimate	Transition Quarter Supplemental	Transition Quarter Revised Estimate
Program Direction	$180,833[a/]	$ 150	$180,983	$ 48,750[b/]	$ 250	$ 49,000

a/ Includes $5,241,000 for October 1975 Pay Raise.

b/ Includes $1,850,000 for October 1975 Pay Raise.

Senator BYRD. Dr. Seamans, we welcome you again before this subcommittee. If you will please introduce your associates, I would then suggest you highlight your prepared statement. The full statement will appear in the record, along with those of the two assistant administrators here today.

[The statements follow:]

DR. SEAMAN'S PREPARED STATEMENT

Mr. Chairman and members of the committee, I welcome the opportunity to appear before you today to discuss the Energy Research and Development Administration's request for appropriations for fiscal year 1977.

In the portion of the budget before you for consideration, we are requesting appropriations of $550 million in budget authority to carry out our end-use conservation, improved conversion efficiency, and fossil energy development activities. Of that amount, $493 million is requested for operating expenses and $57 million is for capital acquisitions. Corresponding budget outlays for 1977 are estimated at $495 million. A breakdown of our request is provided in Chart I.

During the energy overview hearings held by this Subcommittee last month, I discussed ERDA's major programmatic accomplishments in its initial year of operation, as well as some of the plans contemplated in our 1977 budget request. Today, I would like to continue in that context, focusing in detail on those ERDA programs under your jurisdiction.

As I indicated during my previous appearance, ERDA's National Plan for Energy Research, Development, and Demonstration, submitted to the Congress on June 30, 1975, established relative priorities for the various energy technologies in order to provide a better near-, mid-, and long-term balance in domestic energy supply and demand. From our analysis, we concluded that intensified R.D. & D. efforts in the areas of fossil and nuclear energy would provide the greatest potential for meeting the Nation's energy needs between now and the year 2000.

We also concluded that a concomitant effort to develop energy conservation technologies was essential to our national well-being in order to relieve the pressure for accelerating the introduction of the new energy technologies and reduce the impact of the rapidly increasing cost of energy in our economy.

An update of our national energy R.D. & D. plan will be released soon. It reiterates the priorities developed in the initial plan and places an even heavier emphasis on the accelerated development of conservation technologies.

The direction of our programmatic efforts during the past year strongly supports these national energy R.D. & D. priorities. I believe we have made important advances during the past year in the end-use conservation programs. Several efforts have been initiated which have the potential for significant near-term savings in energy consumption. For example:

> Ground was broken in Knoxville, Tenn., for a test residential dwelling using the Annual Cycle Energy System (ACES). The concept has the potential for halving the energy consumed for space conditioning in a house through the utilization of a heat pump and water-ice storage system.
>
> We are seeing promising results from engineering feasibility studies of a grid-connected total energy system in which waste heat from electrical generation is captured and utilized in the heating and cooling of office, commercial, and residential buildings. This system could provide great flexibility in energy conservation in densely populated areas.
>
> Finally, we are working with the Federal Energy Administration to assist industry in the commercialization of an electric water heater refit kit, which offers the homeowner the potential for considerable energy savings.

In our fossil energy development programs, we have been making sound progress in the development, testing, and demonstration of more efficient methods for the enhanced recovery and utilization of our fossil fuels.

Site selection has been made and a contract awarded for the final design of a $237 million synthetic fuel plant to demonstrate the commercial feasibility of converting high sulfur coal to clean-burning liquid and pipeline quality gasous fuels.

Promising responses also have been received on the high Btu demonstration plant request for proposals. The purpose of this plant is to demonstrate the commercial viability of producing pipeline quality gas from coal.

Major accomplishments in coal conversion and utilization include virtual completion of the 30 MW fluidized bed pilot plant, and the successful combustion of coal char in a fluidized bed combustor.

The past year has produced promising results on new processes for coal-derived liquids and gases. Additionally, a new program to develop metal alloys and ceramic materials which will greatly increase component reliability has been initiated.

A joint program with the British and West Germans has been arranged to construct and operate a fluidized bed research installation to explore more efficient and cleaner coal combustion methods.

Major demonstrations of fluid injection techniques for increased oil recovery have been undertaken. The first enhanced oil recovery project is presently underway in El Dorado, Kans., utilizing a micellar-polymer flood technique. We have established this year an Eastern shale gasification program, and are currently evaluating massive hydraulic and chemical fracturing techniques for enhanced oil recovery and stimulated gas recovery programs.

Let me now turn to a brief discussion of our fiscal year 1977 request for appropriations.

CONSERVATION RESEARCH AND DEVELOPMENT

Our request for end-use conservation and improved conversion efficiency programs totals $73.2 million in budget authority, which represents a virtual doubling of effort over the 1976 level. Emphasis will be placed on conservation technologies which promise to provide energy savings without making a significant impact on our standard of living. We plan to continue the acceleration of efforts having near-term savings potential, as well as efforts directed toward mid-term goals such as widespread use of substitute fuels and the development and commercialization of energy-efficient systems for transportation and community development.

More specifically, in the buildings conservation program, efforts will be directed toward the reduction of energy consumption through more efficient space conditioning and utilization of waste heat. Industry-oriented R. & D. efforts will aim at achieving greater efficiency in processes which are applicable to energy-intensive industries, such as primary metals.

Conservation R. & D. in the transportation sector also receives strong emphasis in our 1977 request. This sector consumes 25 percent of total U.S. energy and over half of the total petroleum used in this country annually. The additional funding is requested to exploit newly identified areas of savings and to move the alternative automobile engine program into a demonstration stage.

Finally, our request includes $15 million to develop improved energy conversion technology for use in electric energy systems, transportation, buildings, and industry. Efforts will be directed toward the development of techniques for increasing the efficiency of combustion devices, improvement of component efficiency and reliability, alternative fuels technology, and the development of advanced cycle energy conversion equipment such as fuel cells and the stirling cycle engine.

During the authorization hearings, we have been urged to accelerate significantly our conservation R. & D. efforts. In fact, it appears that the authorization committees plan to add substantial funding to our budget request. Here I need to inject a note of caution. While we agree that it is vital to the Nation's interests to move ahead on an urgent basis, it is necessary to develop and put into place effective programs which maintain proper perspective as to the role of the Federal Government vis-a-vis the private sector. We believe that the President's budget presents a balanced, yet aggressive and properly paced, R. & D. program in the conservation area. To go significantly beyond this level would not represent, in my judgment, a prudent approach to the execution of the conservation R. & D. programs under ERDA's cognizance

FOSSIL ENERGY RESEARCH AND DEVELOPMENT

Our 1977 appropriation request includes $477 million in budget authority for our fossil energy R. & D. programs. This represents a $80 million increase over the 1976 funding level. Associated outlays total $442 million in 1977. Mr. Chairman, let me elaborate for a few moments on the program plans underlying this appropriation request.

COAL PROGRAM

We are proposing a funding level of $409 million for our coal program, which represents an increase of $76 million over the 1976 funding level. This increase is principally related to a greater emphasis on the demonstration of new processes to convert coal to synthetic liquids and gases. Funding is being requested for the design, equipment development, and construction efforts associated with three major demonstration projects which will be cost-shared with industry. Included is continued funding for a clean boiler fuel demonstration plant and initial funding for a high Btu synthetic pipeline gas plant and a low Btu fuel gas demonstration plant. Increases are also requested for efforts associated with the expansion of critical elements of our MHD program, which holds the promise of significantly higher conversion efficiencies; for engineering and hardware development related to fluidized bed combustors and combined cycle power systems; and for construction and operations of additional test facilities in support of our direct combustion programs.

PETROLEUM AND NATURAL GAS

At the present time, approximately 75% of the Nation's energy is supplied by petroleum and natural gas. Projections indicate that enhanced recovery of oil and gas could extend the supply of domestically available resources by up to ten years beyond the mid-1980s, thus buying crucial time while alternate energy technologies are being developed.

In the area of enhanced oil recovery, micellar-polymer flooding method seems to be the most promising alternative. Three field tests are currently underway and the 1977 budget provides for five additional tests in order to maintain the accelerated rate of these efforts.

Massive hydraulic fracturing seems to offer the major promise for near-term increases in gas production and the 1977 budget request allows for continued development of this technology with emphasis on tests to stimulate gas production from Eastern Devonian Shales.

The funding of the petroleum and natural gas budget at $37.2 million in 1977 is commensurate with the full funding in 1976 of the numerous field projects already committed or planned.

IN-SITU TECHNOLOGY

We propose to continue efforts to develop in-situ extraction technologies for the production of liquid and gaseous fuels from oil shale and coal deposits. This effort offers the promise of substantial energy resources at a reduced environmental impact when compared to conventional mining and processing techniques. In order to pursue these efforts, appropriations of $31.1 million are requested, representing a significant increase over the 1976 funding level of $21.4 million.

I would reiterate the note of concern that I expressed earlier with respect to the anticipated add-ons to our budget request by the authorization committees. While we have made substantial progress in our fossil energy R&D programs, the achievement of our program milestones is paced primarily by technological advancements. The President's budget reflects a realistic assessment of the status of our technological development program and the funding we requested will permit us to undertake a highly effective program in 1977.

SYNTHETIC FUELS COMMERCIAL DEMONSTRATION PROGRAM

Finally, I would like to note that we strongly support the enactment in 1976 of legislation for a synthetic fuels commercial demonstration program which has been recently reintroduced to the Congress. This program would entail the construction and operation of a limited number of commercial-scale plants to convert coal, oil shale, and other domestic resources into clean liquid and gaseous fuels. This program is essential to provide the necessary early economic, environmental,

regulatory, and other information precedents to industry expansion in the late 1980's and early 1990's. Without initiating such a program now, we will not have the information or experience base upon which to move to the production of the projected requirement of 5 million barrels per day by 1995. The President has just submitted a 1976 supplemental funding request for $503 million in budget authority to cover $2 billion in loan guarantees for the remainder of 1976. It is expected that a total of $6 billion in loan guarantees will be needed over the 1976 to 1978 time period in order to reach the 1985 objective of 350,000 barrels per day of synthetic fuel production capacity. We are working closely with the Congress to obtain authorizing legislation at an early date.

At this time, Mr. Chairman, I would be pleased to respond to any questions the committee may have.

CHART I.—ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION FISCAL YEAR 1977 BUDGET REQUEST PROGRAMMATIC EFFORT UNDER JURISDICTION OF HOUSE APPROPRIATIONS COMMITTEE—SUBCOMMITTEE ON INTERIOR AND RELATED AGENCIES

[Dollar amounts in millions]

	1976		1977	
	Budget authority	Budget outlays	Budget authority	Budget outlays
Conservation R. & D.:				
End use conservation and technology to improve efficiency:				
Industry conservation	$4.2	$2.0	$12.4	$9.7
Buildings conservation	12.6	8.2	21.6	18.4
Transportation energy conservation	12.9	10.4	23.7	20.4
Subtotal	29.7	20.6	57.7	48.5
Improved conversion efficiency	9.1	7.0	15.5	4.6
Total conservation R. & D	38.8	27.6	73.2	53.1
Fossil energy development:				
Coal:				
Liquefaction	89.9	92.9	73.9	79.5
Gasification	78.0	73.3	78.2	99.3
Advanced power systems	10.0	7.5	22.5	12.8
Direct combustion	38.1	32.6	52.4	52.1
Advanced research and supporting technology	35.4	32.1	37.1	36.6
Demonstration plants	51.9	23.3	107.2	80.9
Magnetohydrodynamics	29.5	18.4	37.4	27.3
Other capital equipment	0	0	.2	.1
Subtotal	332.8	280.1	408.9	388.6
Petroleum and natural gas	43.3	34.5	37.2	32.4
In-situ technology	21.4	18.8	31.1	20.6
Total fossil energy development	397.5	333.4	477.2	441.6
Grand total	436.3	361.0	550.4	494.7

DR. WHITE'S PREPARED STATEMENT

I am pleased to provide testimony today regarding the fiscal year 1977 appropriations for fossil energy research and development in the Energy Research and Development Administration (ERDA).

The underlying premise for our fossil energy research and development program rests on the fact that no matter which projection of future energy demand and supply is examined, it must be concluded that (1) we must reduce demand; (2) increase the utilization of our vast coal and oil shale resources and insure that technical options to utilize them in an environmentally acceptable manner are available; and (3) we must develop technologies to more efficiently extract oil from known partially depleted reservoirs as well as develop technologies to extract oil and gas from presently uneconomic or unobtainable resources.

The near-term objectives (1975–1985) of the fossil energy research and development program include the stimulation of petroleum and natural gas production, the development of processes for the direct combustion of coal for electric power generation and for industrial process heat, the development of processes for the conversion of coals to clean liquid and gaseous fuels, the demonstration of in situ processes for generating low Btu gases from coal, and the development of in situ processes for production of oil and gas from oil shales. Process development includes the construction and operation of demonstration plants which are modules of commercial size plants.

Midterm objectives (1985–2000) include the commercialization of developed technologies and the development of advanced processes for the combustion of high sulfur coals, the development of advanced electric power generation systems directly utilizing coals, the development and operation of a commercial scale demonstration MHD powerplant, and the demonstration and transfer to industry of the technology for commercial scale implementation of significantly improved processes for synthetic fuels from coal.

Long-term objectives (2000+) include the development and demonstration of advanced technologies for producing electric power and process heat at increased efficiency, the development of new synthetic fuels, and the development of in situ recovery techniques for fossil energy resources not recoverable by currently available technology.

Our program strategy is based on the fact that we have not until recently been rapidly developing techniques for the conversion of coal to clean, fluid fuels and are not moving fast enough to efficiently extract the fossil fuels represented by much of our oil shale resource, by coal in the thick deep seams of the West and by natural gas in tight rock formations which we must learn to exploit economically. Legislation under which we are now operating clearly instructs us to demonstrate the technical feasibility of new technologies for providing energy from fossil fuels. This requires heavy involvement with various elements of private industry, State and local governments. Our program has been designed and implemented with this in mind. We have a balanced team of systems engineers, research laboratories, achitectual/engineering firms, designers, chemical companies, power companies, equipment manufacturers, and coal and oil companies as well as universities providing technical suport for our research and development programs. The use of cost-sharing for pilot and demonstration plants assures technology transfer to the industrial sector and total involvement in the scale-up decision by the people who will be responsible for implementing and operating these technologies.

Fossil energy projects are designed to incorporate appropriate environmental criteria. Environmental monitoring will be conducted at all such plants and installations to insure compliance with applicable environmental regulations. Environmental impact statements and careful assessments will be prepared and issued covering all proposed demonstration sites. It is estimated that fossil energy will commit approximately $17 million for environmentally related efforts during fiscal year 1977.

CURRENT ORGANIZATION

The fossil energy program is currently organized in the manner shown in figure 1. This is a recent organizational configuration and appointments to most of the key positions have been made.

The organization consists of an Assistant Administrator for Fossil Energy, a Deputy Assistant Administrator and five program divisions: Coal Conversion and Utilization; Fossil Energy Research; Fossil Demonstration Plants; Oil, Gas and Shale Technology; and Magnetohydrodynamics (MHD). Staff offices include

the Office of Program Planning and Analysis and an Administrative Office. A senior staff has been designated to provide special assistance, advice and counsel on program planning and management.

PROGRAM STRATEGY

The fossil energy program seeks to develop a mix of technologies because the complex American economy, requires an enormous amount of fuel in various forms: natural and synthetic gas for space heating, electric power and industrial processing, liquid fuels for transportation, electric power, heating and chemical feedstocks; and combustible solids for power generation and industrial application.

The funding levels and activities are different for coal, oil, gas, oil shale, in situ coal gasification and MHD. These differences reflect the state of development of conversion and extraction technologies for the different fossil fuels. The state of development has largely been a function of the differing levels of investment by the private sector in research and development for each of the technologies.

There is also recognition of the extent of our resource base for each fossil fuel type. The fact that coal conversion technology requires considerable development to reach maturity, coupled with the fact that coal is our most abundant fossil fuel resource, has resulted in the coal program receiving the largest share of funding.

PROGRAM ACCOMPLISHMENTS

Major accomplishments during fiscal year 1976 in the coal conversion and utilization effort include the extended operation of the CO_2 acceptor project and the HYGAS process, the near completion of the 30 MW boiler fluidized bed plant, and the successful combustion of coal waste in a fluidized bed combustor.

The fossil energy research program during the past year has produced promising results on new processes and catalysts for new process for coal-derived liquids and gases. Additionally, a new program establishing metal alloys and ceramic materials which will greatly increase component reliability has been initiated.

Our MHD program has completed a 100-hour electrode test in the Soviet U–02 installation. Tests have been completed at the University of Tennessee Space Institute (UTSI) demonstrating the feasibility of seedslag separation under powerplant conditions.

The first enhanced oil recovery (EOR) project is presently underway utilizing a micellar-polymer flood technique in El Dorado, Kan., and on schedule. Other contracts for fluid injection have been awarded. We also have established this year our eastern shale gasification program, and are currently evaluating massive hydraulic and chemical fracturing techniques for EOR and stimulated gas recovery programs.

Work is underway on our first demonstration plant, clean boiler fuel, and site selection has been made. Promising responses have been received to our high-Btu demonstration plant RFP.

THE COAL PROGRAM

The principal objectives of the coal program are to accelerate the development of the environmentally acceptable technology for converting coal to liquid and gaseous fuels, to stimulate improved methods for direct combustion of coal, and to foster the rapid advancement of power conversion systems for generating electricity from coal. The requested fiscal year 1977 budget represents an increase of $76.2 million in budget authority over the amount appropriated in fiscal year 1976 to provide for the continuation of a balanced and integrated coal program.

Several significant adjustments in the program structure are reflected in this fiscal year 1977 budget request. The coal MHD projects, previously included under the solar, geothermal, and advanced energy systems budget activity for fiscal year 1976, are now presented as part of the fossil energy coal program. In situ coal gasification projects, previously a component of the low-Btu gasification subprogram, are now included under a newly established in situ technology budget program. This latter adjustment brings together efforts related to oil shale and in situ gasification of coal to permit a more coordinated programmatic review of related technology.

To achieve the goal of increased coal utilization, we estimate the fiscal year 1977 operating expenses will be $354.5 million and plant and capital equipment obligations will be $54.5 million. The plant operating expenses and capital equipment projects described in the budget submission break down in the following way:

COAL PROGRAM

Subprogram	Program estimate, budget authority (thousands)		
	1976	Transition quarter	1977
Operating expenses:			
Liquefaction	$89,912	$26,443	$73,946
High British thermal units gasification	53,364	9,250	45,054
Low British thermal units gasification	24,552	6,720	33,052
Advanced power systems	10,001	3,500	22,500
Direct combustion	38,096	13,500	52,416
Advanced research and supporting technology	35,393	8,850	37,085
Demonstration plants	31,900	7,750	53,000
Magnetohydrodynamics	29,544	7,800	37,441
Total	312,762	83,813	354,494
Plant and Capital Equipment	20,000	8,000	54,450

I would like to take a moment to describe the objectives of each of these elements, list the major ongoing projects and describe how the requested authorization will be used.

LIQUEFACTION

The general objective of the coal liquefaction subprogram is to provide technology which is economically attractive and environmentally satisfactory to convert coal to a clean liquid for electric power generation or for industrial and residential heating. Simultaneously, technology will also be developed for converting coal into feedstock for production of transportation fuels and of chemicals.

Major ongoing projects in this area are given in figure 2.

Major categories in the coal liquefaction subprogram include research and development in each of the four methods of converting coal to liquids: direct hydrogenation, solvent extraction, pyrolysis, and indirect liquefaction. A parallel approach has been adopted because different coals will be converted and the optimum product mix from each process differs. Each process under development has uncertainties to scaleup which are reduced by testing the key process steps in a pilot plant. Selected process options are being investigated in the laboratory and bench scale units in order to build a broad technological base. From this base, an efficient process or a combination of processes will be developed.

In fiscal year 1976, research and development efforts in direct hydrogenation processes have been considerably accelerated; two projects are moving toward construction of pilot plants. The H-coal process plant project that was started in fiscal year 1975 will continue through fiscal year 1977. The design will be evaluated by means of an extended process development unit program and an independent economic feasibility study. In addition, construction of a Synthoil process development unit is planned to be completed in early fiscal year 1977.

The operation of a 50-ton-per-day solvent refined coal plant at Fort Lewis near Tacoma, Wash., construction of which was completed late in fiscal year 1974, will be continued through fiscal year 1977 with attendant evaluation of operational data. Engineering effort will be directed toward design modification of the pilot plant to recycle unconverted coal, thereby improving the efficiency of the process.

HIGH BTU GASIFICATION

The high Btu gasification subprogram is one of the furthest along technically of all our efforts and will be pursued with vigor. Four high Btu gasification pilot plants and one PDU will be in operation by the end of fiscal year 1976. The HYGAS plant in Chicago, Ill., and a carbon dioxide acceptor plant in Rapid City, S. Dak., have been in operation for approximately 3 years. The Synthane plant in Bruceton, Pa., was completed in late fiscal year 1975 and is presently undergoing shakedown operations. The self-agglomerating ash PDU in Columbus, Ohio, will be completed in fiscal year 1976 as well as the Bi-Gas plant in Homer City, Pa. In addition to the gasification pilot plants, a major auxiliary process project initiated in fiscal year 1973 is now in the construction phase adjacent to the HYGAS plant in Chicago. This pilot plant, utilizing the steam-iron process, will produce hydrogen for the hydrogasification of coal in the HYGAS process. It will be completed in late fiscal year 1976, and will begin operations in fiscal year 1977. Major ongoing projects in this area are shown in figure 3.

LOW BTU GASIFICATION

The objective of the low Btu gasification subprogram is to develop at the earliest possible date one or more gasification systems which are economically applicable for the use of coal as a substitute for oil or natural gas in power generation, industrial heating applications and the production of chemical feedstocks.

In order to compress the time required to develop a suitable gasification system, several feasible concepts are being studied concurrently. The results of these efforts will permit the evaluation and comparison of techniques and will provide a basis for selection of the most economic process in the shortest time.

The low Btu gasification subprogram was initiated in fiscal year 1973, and the projects are still in the early stages of development.

An atmospheric pressure entrained bed PDU of 5 ton/hour capacity is under construction. A novel system in which coal will be gasified under pressure in a pool of molten salt is in the final design phase. Experimental work on a 0.6 ton/hour fluidized bed pressurized gasifier is continuing at Waltz Mill, Pa. This unit is to provide design data for a larger gasifier which will be used to feed a combined cycle power generation system. Such a combined cycle powerplant has the potential of lowering the cost and increasing the overall thermal efficiency of coal conversion to electricity. During fiscal year 1977, construction of a plant to explore this concept is planned. It will process from 500 to 800 tons of coal per day, convert the coal to a purified low Btu gas and then utilize that gas to drive a combustion turbine for electrical power generation. Cost-sharing commitments for the project of two-third Government and one-third industry have been made.

The fiscal year 1977 budget provides for the initiation of efforts for a developmental unit to produce hydrogen from coal. The production of hydrogen from coal is necessary for coal conversion processes which are dependent on the reaction of coal with hydrogen. This developmental unit, for which an RPF is being prepared is being planned jointly with the liquefaction subprogram and may be located at the facilities of an industrial user of hydrogen and cofunding is anticipated.

Major ongoing projects in this area are shown in figure 4.

ADVANCED POWER SYSTEMS

The objective of the advanced power systems subprogram is to develop advanced power generation systems to the technology readiness stage in preparation for engineering into prototype electric power generation systems. The primary system under development is the high temperature gas turbine, using low Btu gas, and configured with a steam bottoming cycle. This gasification combined cycle plant has promise for generating electricity at lower cost than is possible from present coal-fired systems. In addition, closed-cycle gas turbines, using inert gas as the working fluid. and alkali metal vapor turbines are being evaluated to determine the economics of their use as coal-fired topping plants in combination with additional power generation from heat recovery boilers and steam turbines. All of these systems are based on the environmentally acceptable use of coal containing appreciable sulfur content or coal derived gaseous or liquid fuels. The major potential economic advantage offered by these advanced power systems results from the fact that high performance combined cycle turbine systems are expected to have lower capital costs and are expected to offer an attractive coal-to-power generation efficiency.

Major ongoing projects in this area are shown in Figure 5.

DIRECT COMBUSTION

The prime purposes of the direct coal combustion subprogram are first to develop atmospheric systems and then to develop pressurized systems capable of burning combinations of high sulfur coals of all degree, rank, and quality in an environmentally acceptable manner. The strategy for combustion research is directed at developing a new mode of clean and economical combustion for powerplants and industrial and institutional users, having the potential for substantial improvements over conventional coal firing modes; determining methods to burn synthetic low-sulfur fuels derived from coal and chars from coal conversion processes; and minimizing fouling and corrosion of heat transfer surfaces in coal-fired boilers. This new mode of coal utilization is that of fluidized bed combustion in which coal is burned in an inert bed of ash and

limestone, fluidized by combustion gases. During combustion, the limestone absorbs the SO_2 produced by the coal combustion and enables the emissions to meet air quality requirements without the need for scrubbers.

The fiscal year 1977 budget year period will see the start of fabrication of several prototype systems in the industrial and institutional fluidized bed combustion applications program. It is anticipated that these prototypes will lead to commercial applications promptly as curtailments of natural gas, the cost of oil, and the uncertainty of oil supply create the immediate need for equipment to burn coal cleanly and economically. It is anticipated that these units will lead to commercial implementation after a year or more of shakedown and testing. It is expected that in the fiscal year 1977 period, component test and integration facilities for both atmospheric and pressurized fluidized bed combustion systems will be constructed. These facilities are to provide the capability for component improvement, development testing, and system configuration research. The pressurized fluidized bed combined cycle project will continue with construction of the plant scheduled to begin in fiscal year 1978. This plant should lead to a demonstration project in the mid-1980's and later to commercialization. The results will be an increase in power generation efficiency from coal and improvement in power generation costs.

The fluidized bed concept lends itself not only to utilities and to industrial and institutional application, but also to coal conversion processes in that it can utilize the char byproduct of coal conversion processes for increased plant efficiency.

Major ongoing projects are shown in figure 6.

ADVANCED RESEARCH AND SUPPORTING TECHNOLOGY

The advanced research and supporting technology subprogram serves as a central research and system studies area for all elements of fossil energy. The major objectives of this subprogram are to develop and maintain the supporting science and technology base; to lay the foundation for innovative, new and improved processes; to assure reliable and efficient operation of synthetic fuel plants; to investigate and develop advanced techniques and support technology for direct utilization of coal including gas cleanup and improved high temperature materials for plant construction; to conduct analyses of fossil process technologies and systems; to formulate planning policy options for management decisionmaking; to continue efforts to comply with the National Environmental Policy Act; and to assure an adequate supply of trained personnel from the Nation's university system.

During fiscal year 1976, additional research projects were initiated in the areas of advanced synthetic fuels process research and engineering, basic coal science, materials and components, and direct coal utilization. This central research effort is vital to the progress of all program areas of fossil energy. Projects in this area are conducted in ERDA's Energy Research Centers and National Laboratories, other Government agencies, private industry and universities.

Intensive studies are underway on coal and oil shale structure and reaction characteristics which could lead to development of more efficient conversion processes. Properties of coal, oil shale, and synthetic fuels, combustion chemistry and the chemistry and engineering of conversion to synthetic fuels are likewise the subject of research. Work on the refining of synthetic fuels and testing of fuels which are alternatives to conventional gasoline is underway and is expected to lead to optimization of processes and products and to new fuels for transportation and electrical generation.

Major ongoing projects are shown in figure 7.

DEMONSTRATION PLANTS

The objective of the demonstration plants subprogram is to translate research and development results into technology that can be transferred to the private sector for use in commercial operations. This objective will be achieved by designing, building, and operating demonstration-scale plants in cooperative efforts with the private sector. Demonstration plants are defined as those plants that utilize either commercial-scale equipment or somewhat smaller units that can be scaled up to full commercial size with normal risk.

Competitive proposal procedures are used to solicit interest from private industry concerning proposed demonstration plants. The plants are all intended to be jointly funded. The present standard for cooperative Government/industry

joint funding is 50/50 sharing of construction and operating costs. The commitment of private funds indicates the industry's confidence in the process potential, assures the availability of top industrial personnel and continued management attention, and fosters technology transfer.

On January 17, 1975, a contract was awarded to COALCON for the phased design, construction, and operation of a 2,600-tone-per-day demonstration plant using a hydrocarbonization process for producing 3,900 barrels of liquid product and 22 million cubic feet of pipeline quality gas daily. This plant will support an objective of the coal program which is to provide a fuel substitute from coal for a portion of the low-sulfur oil and gas used in the generation of electricity and in industrial heating processes.

This plant is the first demonstration plant that fossil energy has undertaken. Initial construction phases will begin in late fiscal year 1977. Although the design engineering is being funded by the Government, the industrial partner will share the construction and operating costs on a 50/50 basis. The plant schedule is being accelerated and we hope to begin operation in fiscal year 1980.

To meet national needs and continue to accelerate coal conversion technology, we have requested funding to continue conceptual design activities through fiscal year 1977 for a high Btu pipeline gas demonstration plant and a low Btu demonstration plant. In addition, the fiscal year 1976 authorization will be utilized in fiscal year 1977 to initiate architectural engineering and long-lead procurement activities for these plants. These plants will build on the experience of the coal conversion technology. Products made in demonstration plants will be tested by potential users to insure compatibility with all elements of the product supply system.

Major ongoing projects are shown in figure 8.

MAGNETOHYDRODYNAMICS

The objective of the magnetohydrodynamics (MHD) subprogram is to achieve successful operation of a commercial facility to generate electricity from coal or a coal derived fuel by the late 1980's. This objective is being pursued in recognition of the potentially higher overall conversion efficiency available in MHD power generation.

Basic feasibility of the open cycle MHD system was established prior to fiscal year 1975. Early exploratory work conducted with direct coal combustion was highly encouraging and has led to increasing development activity aimed toward the open cycle, coal burning design concept. A recent experimental channel test, simulating a coal-burning MHD generator, achieved 95 hours without failure.

The current U.S./U.S.S.R. MHD agreement is contributing useful engineering data on basic "state-of-the-art" performance capability, using clean (natural gas) fuels. Progress in this program is reflected by the recent completion of a 100-hour continuous operation test of a 2 kg/sec experimental generator. Electrodes used in this successful test were designed and fabricated in the United States and delivered to the U.S.S.R. for assembly in the test channel.

The MHD effort generally into two basic categories, that is, open and closed cycle systems. Major emphasis is being placed on the open cycle concept because of intrinsic performance advantages and lesser experimental problems. Closed cycle work is being continued, however, mainly as exploratory heat exchanger and generator studies.

A combined cycle (coal burning) generating plant concept in which the open cycle MHD generator serves as the topping cycle offers the dual advantage of high overall thermal efficiency and low emission levels. To provide the necessary technology and design experience to design and build pilot scale facilities, an open cycle MHD program has been structured which progresses through three overlapping phases. The initial (current) phase will develop the technology required to design and test prototypes of all major components. These will be tested separately, and in various combinations, in a full integrated test facility which has been designed as the Component Development and Integration Facility (CDIF). The second phase carries the program through to a second generation of component design of increased scale and superior performance. These will be tested in the Engineering Test Facility (ETF). The final phase is aimed toward design, construction, and operation of the commercial scale plant.

A recent review of the subprogram's status has resulted in our recognition that the schedule for the Component Development and Integration Facility could be accelerated in fiscal year 1976 to permit the more timely evaluation of this

technology. We have recently submitted to the Congress a reprograming request which will provide an additional $20 million in budget authority in fiscal year 1976 for this purpose. We also plan to submit an amendment to the fiscal year 1977 budget request to identify the Component Development and Integration Facility as a line item construction item.

Major MHD projects are shown in figure 9.

PETROLEUM AND NATURAL GAS

Petroleum and natural gas will continue to be the Nation's main fossil energy source for many years. About three-forths of the Nation's energy is supplied from these energy resources. Very recent estimates indicate that without enhanced recovery, production of domestic petroleum and natural gas will begin to drop off rapidly in the mid-1980's. Enhanced recovery of oil and gas with requisite technological success could extend the supply of domestically available resources by approximately 10 years and is crucially important to the country while alternate sources are being developed.

To these ends we estimate that in fiscal year 1977, a $36.9 million for budget authority under operating expenses and $270,000 for plant and capital equipment obligations are required.

PETROLEUM AND NATURAL GAS PROGRAM

Subprogram	Program estimate, budget authority (thousands)		
	1976	Transition quarter	1977
Operating expenses:			
Oil and gas extraction	$41,423	$8,426	$35,074
Supporting research	1,797	450	1,831
Total operating expenses	43,220	8,876	36,905
Plant and capital equipment total	100	100	270

The oil extraction efforts emphasize the cost shared demonstrations of existing and improved secondary and tertiary recover techniques. A Federal role in enhanced oil and gas recovery is required because of the commercial uncertainties and financial risks associated with economically unproven technologies and the urgent need to accelerate progress beyond normal commercial capability. It is probable that the oil industry would eventually implement competitive advanced recover techniques; however, this would not be done on the accelerated scale or within the time frame required.

The industry response to the enhanced oil and gas recovery subprogram to date has been outstanding. Of the eight contracts entered into in fiscal year 1975 for enhanced oil recovery, the industry is supporting 67 percent of the total costs; in six existing enhanced gas recovery projects, the industry support is 47 percent of the total. Conversations with petroleum-industry spokesmen indicate general approval and support of the ERDA enhanced oil and gas recovery program.

An important function of the enhanced oil and gas recovery program is technology transfer. This is being accomplished by a quarterly report that summarizes progress on all contracts, technical presentations and publications, and symposia. The first symposium was held in Tulsa in September. Attendance of about 200 was expected; more than 500 persons did attend. It is planned to hold such symposia on at least an annual basis. In addition, we are looking into the possibility of putting all raw data received from our contractors into open files at several strategically located places, so the data can be available to anyone who wishes to consult them.

The natural gas stimulation efforts are designed to stimulate the commercial production of gas from formations containing vast quantities of natural gas but having natural permeabilities so low that commercial production to date has not been feasible. Experimental methods include massive hydraulic fracturing, combinations of hydraulic and chemical explosive fracturing, and wells deviated from normal to intersect natural fractures.

Micellar-polymer flooding is the most promising method for enhanced oil recovery and three field tests are currently underway. Five additional field tests

are planned in fiscal year 1977 to maintain the accelerated rate of the subprogram. Massive hydraulic fracturing appears to provide the major promise for near-term gas production increases. The fiscal year 1977 budget will provide for continuation of this vital technology with emphasis on test of stimulating gas production from Eastern Devonian Shales.

Major ongoing projects in this area are shown in figure 10.

IN SITU TECHNOLOGY PROGRAM

The in situ technology program contains two major subprograms; oil shale and in situ coal gasification. Technology for conventional mining and surface retorting of oil shale has advanced to a level believed capable of early commercial application to richer grades of oil shale averaging over 25 gallons per ton. However, commercial scale equipment and operations have not been demonstrated. The present ERDA strategy in this area consists of making its Anvil Points facility available for industry sponsored projects to provide for the technology transfer of results through the ERDA observer program, providing general consultation to industry, and conducting laboratory scale supporting research on general problems relevant to oil shale processing, both above ground and in situ.

In order to pursue these important efforts, we request fiscal year 1977 operating expenses of $30.6 million and $500,000 for plant and capital equipment. These figures are broken down in the following way:

COAL PROGRAM

IN SITU TECHNOLOGY PROGRAM

Subprogram	Program estimate budget authority (thousands)		
	1976	Transition quarter	1977
Operating expenses:			
Oil shale	$13,720	$1,950	$21,085
In situ coal gasification	6,137	1,680	8,236
Supporting research	1,265	300	1,310
Total operating expenses	21,122	3,930	30,631
Plant and capital equipment total	325	100	500

The ERDA oil shale subprogram is focused mainly on developing technology capable of improving total resource recovery and lowering environmental impacts and water requirements. This is accomplished through development of various in situ extraction techniques capable of exploiting the learner and deeper oil shale deposits as well as offering an alternative to present technology. Additional advantages associated with in situ retorting are reduced requirements for water, manpower, and shale disposal. The potential application to lower grade shales is important in that most of the total estimated resource of 1.8 trillion barrels of shale oil in the Western Green River formation is in low-grade deposits. Much of this may never be recovered by techniques that involve conventional mining. Laboratory scale research on new process technology includes fundamental research on methods potentially offering similar advantages for aboveground processing.

Eastern oil shales of the Devonian and Mississipian age represent an additional large potential energy resource although their extent is presently poorly defined. These shales are potentially major producers of synthetic gas and oil although they are considered lower grades than the western shale from an oil production standpoint. These 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.

Another major subprogram, in situ coal gasification, seeks to further enhance the use of vast coal reserves of the United States which will supply much of our short- and intermediate-term energy needs. More than 85 percent of our coal resources are too deep, too thin seamed, or otherwise unsuitable to be commercially exploited by conventional mining. In situ processing, especially by gasification, provides a means to utilize these otherwise unusable resources

while providing the benefits of minimal environmental disruptions, lower water usage, relief of mine safety problems and alleviation of the shortage of skilled miners.

Major in situ and oil shale projects are shown in figure 11.

Research on novel extraction processes that may form the basis for improved second-generation technology must be continued. Although the projects are currently oriented largely toward the specific needs of the in situ subprogram, the subprogram is considered supportive of oil shale development in general, providing data useful to both aboveground and in situ processes.

ENERGY RESEARCH CENTERS AND NATIONAL LABORATORIES

The Energy Research Centers and National Laboratories are playing an important role in achieving the ERDA's goal in fossil energy. These facilities are staffed by highly skilled scientists, engineers, and technicians with long histories of accomplishment in the production and utilization 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.

CONCLUSION

I would like to note in conclusion that the fossil energy program currently has over 271 contracts outstanding with the total value of nearly $567 million. We hope to maintain the present standard for cooperative joint funding which anticipates one-third private and two-thirds Federal funding for pilot plants and 50/50 funding for demonstration plants. Our participants include many aspects of American industry; oil and gas companies, chemical companies, coal companies, architect engineer, and manufacturing companies, utilities, universities, research centers, and trade associations.

In addition to the contractors performing the major project work I have described, we have contractors performing engineering evaluations, systems studies and planning studies, and environmental analyses. We have several interagency agreements including agreements with the Department of Commerce, Corps of Engineers, Department of the Interior, as well as strong intraagency support. We have international agreements with the United Kingdom, Russia, Poland, and Germany. We are constantly advised of work in the private sector and adjust our planning accordingly. We cooperate with both the American industry and utilities through the American Gas Association and Electric Power Research Institute to develop national plans which integrate privately sponsored and federally sponsored R. & D.

To assist this committee in review of the fossil energy program, we have included a summary table in figure 14 displaying by program and subprogram, the appropriations required for operating expenses.

We look forward to continuing our relationship with this subcommittee and are pleased to have this opportunity to present our program.

ERDA
FOSSIL ENERGY ORGANIZATION

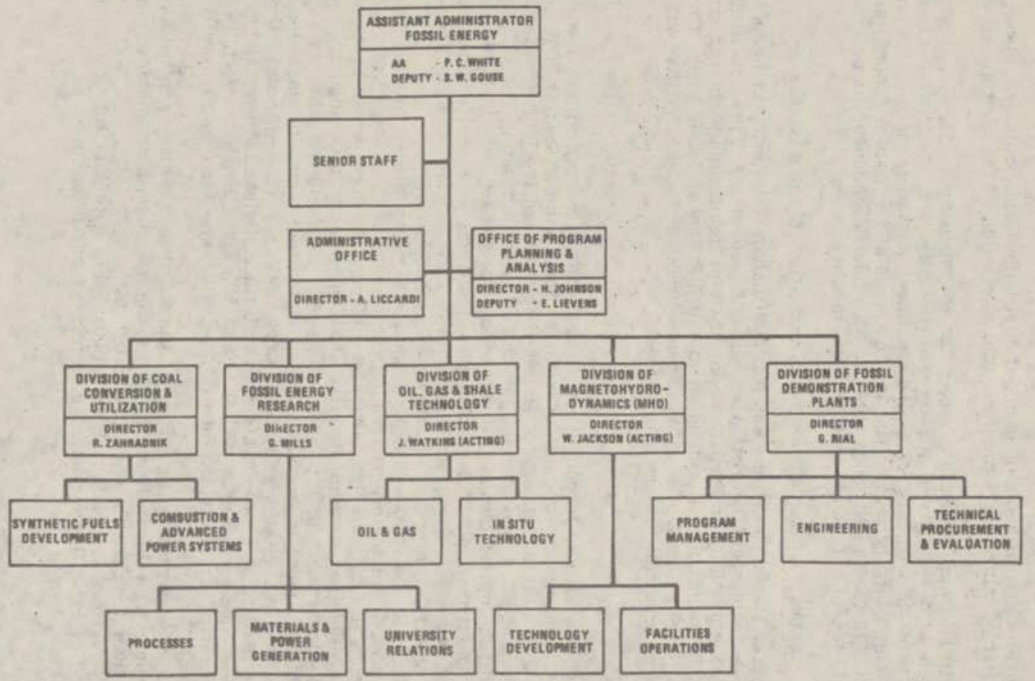


FIGURE 1

COAL LIQUEFACTION

MAJOR PROJECTS	*CONTRACT VALUE $M (COST SHARE)	CONTRACTOR	LOCATION	KEY EVENTS
• COAL OIL ENERGY DEVELOPMENT (COED)	$21.0	FMC	PRINCETON, N.J.	PILOT OPERATIONS COMPLETE FY 75
• SOLVENT REFINED COAL (SRC)	$42.0	P & M	TACOMA, WASH.	PLANT MODIFICATIONS NEARING COMPLETION
• H-COAL	$9.5 ($2.7)	HRI	TRENTON, N.J. CATTLETSBURG, KENTUCKY	PDU RUNS FY 75; PILOT PLANT DECISION MID FY 76
• CLEAN COKE	$6.5 ($1.9)	U.S. STEEL	MONROEVILLE, PA.	PDU COMPLETE FY 75; PILOT PLANT DECISION FY 76
• SYNTHOIL	$11.4 ($1.6)	FOSTER WHEELER	PERC BRUCETON, PA.	CONSTRUCTION LARGER PDU IN FY 76

*CONTRACT VALUES AS OF 12/30/75

FIGURE 2

HIGH BTU GASIFICATION PROGRAM

MAJOR PROJECTS	*CONTRACT VALUE $M (COST SHARE)	CONTRACTOR	LOCATION	KEY EVENTS
• CO_2 ACCEPTOR PROCESS	30.4 (7.8)	CONOCO COAL DEV. CO.	RAPID CITY, S.D.	METHANATION PLANT CONSTRUCTION COMPLETE FY 75
• HYGAS PROCESS	38.7 (11.1)	INSTITUTE OF GAS TECHNOLOGY	CHICAGO, ILL.	STEAM OXYGEN SYSTEM CONSTRUCTION COMPLETE FY 75
• ASH-AGGLOMERATING PROCESS	8.8 (0.6)	BATTELLE COLUMBUS	WEST JEFFERSON, OHIO	COMPLETE PILOT PLANT CONSTRUCTION FY 76
• STEAM-IRON-PROCESS	8.4 (2.3)	INSTITUTE OF GAS TECHNOLOGY	CHICAGO, ILL.	COMPLETE PILOT PLANT CONSTRUCTION FY 76
• BI GAS	66.0 (12.0)	BITUMINOUS COAL RESEARCH/CONOCO COAL DEV. CO.	HOMER CITY, PA.	COMPLETE PILOT PLANT CONSTRUCTION FY 76
• SYNTHANE	9.6	RUST ENGINEERING/ LUMUS CORP.	PERC BRUCETOWN, PA.	COMPLETE CONSTRUCTION FY 75

*CONTRACT VALUES AS OF 12/30/75

FIGURE 3

LOW BTU GASIFICATION

MAJOR PROJECTS	*CONTRACT VALUE $M (COST SHARE)	CONTRACTOR	LOCATION	KEY EVENTS
• FLUIDIZED-BED 2 STAGE FOR ELECTRIC POWER GENERATION	22.4 (6.7)	WESTINGHOUSE ELECTRIC	WALTZ MILL, PA.	PDU OPERATIONAL FY 75
• MOLTEN SALT	6.9 (2.3)	ATOMIC INTERNATIONAL/ ROCKWELL	NORWALK HARBOR, CONN.	PDU COMPLETE FY 77
• ENTRAINED-BED (ATOMSPHERIC)	20.6 (6.9)	COMBUSTION ENGINEERING	WINDSOR, CONN.	PILOT PLANT DESIGN & SYSTEMS FABRICATION FY 77

*CONTRACT VALUES AS OF 12/30/75

FIGURE 4

ADVANCED POWER SYSTEMS

MAJOR PROJECTS	*CONTRACT VALUE $M (COST SHARING)	CONTRACTOR	LOCATION	KEY EVENTS
ECAS	3.8 (2.2)	GE WESTINGHOUSE NASA/LEWIS	VARIOUS	PHASE II PRESENTATION SCHEDULED FEB. 76
OPEN CYCLE GAS TURBINE	7.7	TBD	TBD	RFP ISSUED FEB 75

*CONTRACT VALUE AS OF 12/30/75

FIGURE 5

DIRECT COMBUSTION

MAJOR PROJECTS	*CONTRACT VALUE $M (COST SHARING)	CONTRACTOR	LOCATION	KEY EVENTS
• FLUIDIZED BED (ATMOSPHERIC)	14.3	POPE, EVANS, ROBBINS	RIVESVILLE, W. VA.	STARTUP CY 76
• FLUIDIZED BED (ATMOSPHERIC)	3.5	COMBUSTION POWER CO.	MENLO PARK, CALIF.	FY 76 DRY HOT GAS CLEANUP DEVELOPMENT
• FLUIDIZED BED (PRESSURIZED)	24.0 (4.8)	CURTIS-WRIGHT	WOODBRIDGE, N. J.	CONTRACT BEING NEGOTIATED

*CONTRACT VALUES AS OF 12/30/75

FIGURE 6

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ADVANCED RESEARCH & SUPPORTING TECHNOLOGY

MAJOR PROJECTS	CONTRACT VALUE $M (COST SHARING)	CONTRACTOR	LOCATION	KEY EVENTS
• FIRESIDE CORROSION	$6.0	TBD	TBD	RESPONSE TO RFP BY 31 JAN
• GASIFICATION MATERIALS	$6.0	NBS ARGONNE MPC/IITRI	WASHINGTON CHICAGO, ILL. CHICAGO, ILL.	___
• VALVES FOR COAL GASIFICATION	$5.0	TBD	TBD	
• ADVANCED SYNTHETIC FUELS PROCESSES	$14.0	45	VARIOUS INDUSTRY ERC'S, & NAT LABS	
• UNIVERSITY PROGRAMS	$9.0/YR (1.0)	44	VARIOUS	___

FIGURE 7

DEMONSTRATION PLANT PROGRAM

MAJOR PROJECTS	SCHEDULED OPERATIONAL DATE (FY)	TONS/DAY COAL FEED	OUTPUT
• CLEAN BOILER FUEL DEMO PLANT COALCON	1980	3000	3500 BBL BOILER FUEL 22 (10^6) BTU PIPELINE GAS
• HIGH BTU SYNTHETIC PIPELINE GAS DEMO PLANT (RFP 2Q FY 76)	1981	3000-5000	50-80 (10^6) SCF
• LOW BTU FUEL GAS DEMO PLANT (RFP 3Q FY 76)	1981	3000-4000	250-350 MW^e

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FIGURE 8

MAGNETOHYDRODYNAMICS

MAJOR PROJECTS	*CONTRACT VALUE $M (COST SHARING)	CONTRACTOR	LOCATION	KEY EVENTS
• GENERATOR STUDIES	3.5	AVCO	EVERETT, MASS.	FY 76 100 HR. GENERATOR RUN
• HIGH TEMPERATURE AIR HEATERS	8.1	UNIV. TENN. SPACE INSTITUTE	TULLAHOMA, TENN.	FY 78 DIRECT COAL FIRED OPERATION
• HIGH PERFORMANCE GENERATOR DEMONSTRATION EXPERIMENT	3.6	AEDC	AAFS, TENN.	FY 76 15-20% ENTHALPY EXTRACTION
• COMPONENT DEV & INTEGRATION FACILITY	31.5	RFP	TBD	A-E DESIGN AWARDED
• ENGR TEST FACILITY	3.1	RFP	MONTANA	
• OPEN CYCLE PLASMA RESEARCH	2.9	MONTANA ENERGY R&D INSTITUTE	BUTTE, MONTANA	

*CONTRACT VALUE AS OF 12/30/75

FIGURE 9

1454

PRESENT PETROLEUM AND NATURAL GAS MAJOR CONTRACT PROJECTS

MAJOR PROJECTS	$ (M) FUNDING (COST SHARE)	PERFORMER	LOCATION	STATUS
• MICELLAR - POLYMER	7.1 (4.1)	CITIES-SERVICE	ELDORADO, KS.	UNDER INJECTION
• MICELLAR - POLYMER	9.8 (6.4)	PHILLIPS PET	BURBANK , OK	INJECTION TESTS IN MAY '76
• MICELLAR POLYMER	4.4 (2.2)	PENN CRUDE	BRADFORD, PA.	INJECTION TESTS IN MAY '76
• POLYMER FLOOD	3.9 (2.7)	KEWANEE	N. STANLEY, OK.	INJECTION STARTS JUNE '76
• POLYMER FLOOD	7.4 (5.2)	SHELL OIL	E. COALINGA, CA.	INJECTION STARTS JUNE '76
• MASSIVE HYDRAULIC FRACTURE	4.3 (2.2)	COLUMBIA GAS	W. VA. (DEVONIAN SH)	DRILLING 12/75: FRACTURING 3/76
• MASSIVE HYDRAULIC FRACTURE	2.8 (1.5)	CER-GEONUCLEAR	RIO BLANCO, COL.	FINAL TREATM'T & EVAL APR '76 START SEPT '75
• CHEMICAL EXPLOSIVE FRACTURE	.35 (.36)	PHYSICS INTERNAT'L	W. VA.	FIELD TESTS – OCT '75
• CHEMICAL EXPLOSIVE FRACTURE	.13 (.13)	TALLEY FRAC	MINERAL WELLS, TEX.	FINAL EVALUATION BEING MADE
• CHEMICAL EXPLOSIVE FRACTURE	.32 (.32)	PETROLEUM TECH	CAPON FIELD, W. VA.	3RD EXPLOS FRAC IN NOV '75
• CO_2 INJECTION	3.2 (2.0)	GUYAN OIL CO.	GRIFFITHSVILLE W. VA.	CONTRACT SIGNED 9/75
• THERMAL RECOVERY	6.8 (4.1)	HUSKY OIL CO	PARIS VALLEY, CA.	ECON-TECH EVALUATION 12/76
• THERMAL RECOVERY	3.0 (2.0)	HANOVER PET	LITTLE TOM FIELD, TX.	GETTING UNDERWAY 1975
• DEVIATED WELL RECOVERY PROJECT	.22 (.17)	KENT-W. VA. GAS	HAZARD, KY	TO STIMULATE 1ST WELL-FOAM FRAC
• MASSIVE HYDRAULIC FRACTURE	1.6 (0)*	EL PASO NATURAL GAS	EL PASO, TX.	CONTRACT SIGNED 9/75

UNIVERSITY OIL & NAT GAS RESEARCH PROJECTS, NOT INCLUDED

*INDUSTRY HAS ALREADY SPENT $4.6M

FIGURE 10

IN SITU AND OIL SHALE MAJOR PROJECTS

MAJOR PROJECTS	$ (M) FUNDING	PERFORMER	LOCATION	STATUS
• OIL PRODUCTION FIELD TESTS				
TRUE IN SITU	1.62	LERC	LARAMIE, WYO.	TEST EVAL THRU '78
	.60	SANDIA	ALBUQUERQUE, N. M.	INSTRUMENTATION
MODIFIED IN SITU	4.54	CONTRACTS		SIGN-OFF CONTRACT
	.65	SANDIA	ALBUQUERQUE, N. M.	INSTRUMENTATION
	.30	LASL	LOS ALAMOS, N. M.	
• SUPPORT				
EXPER. RETORTING & MODELING	1.80	LLL	LIVERMORE, CA.	EXPER. RETORTING & MODELING
PROCESS EVALUATION	.41	LERC	LARAMIE, WYO.	PROCESS EVALUATION
NEW PROCESS TECHNOLOGY	.25	LERC	LARAMIE, WYO.	NEW PROCESS TECHNOLOGY
CHARACTERIZATION OF OIL SHALE	.31	LERC	LARAMIE, WYO.	CHARACTERIZATION OF OIL SHALE
• GAS PRODUCTION				
EASTERN SHALE	2.50	CONTRACTS		SIGN-OFF CONTRACT
WESTERN SHALE	.60	LERC	LARAMIE, WYO.	
• ENVIRONMENTAL				
	.90	LERC	LARAMIE, WYO.	WATER MONITORING WELLS
	.10	CONTRACTS	VARIOUS UNIV AND LABS	STUDIES
• OIL SHALE SUPPORTING RESEARCH				
PRODUCTION OF CLEAN FUELS	.23	LERC	LARAMIE, WYO.	PRODUCTION OF CLEAN FUELS
ANVIL POINTS MONITORING	.11	LERC	LARAMIE, WYO.	ANVIL POINTS MONITORING

FIGURE 11

RESEARCH CENTER/ NATIONAL LABORATORY	SIGNIFICANT RESEARCH CENTER/NATIONAL LABORATORY SUPPORT OF ERDA/FE ACTIVITY ELEMENTS							
	COAL							
	LIQUEFACTION	GASIFICATION		ADVANCED POWER SYSTEMS	DIRECT COMBUSTION	ADVANCED RESEARCH & SUPPORTING TECHNOLOGY	MHD	DEMONSTRATION PLANTS
		HIGH-BTU	LOW BTU					
ARGONNE NATIONAL LABORATORY	SYNTHOIL PHYSICAL PROPERTIES					MATERIALS RESEARCH AND COAL CONVERSION	SUPER CONDUCTING MAGNETS PROGRAM; U25 GENERATOR	INSTRUMENTATION
BARTLESVILLE ENERGY RESEARCH CENTER	CHARACTERIZATION & UTILIZATION OF SYNCRUDE FROM COAL							
BROOKHAVEN NATIONAL LABORATORY								
GRAND FORKS ENERGY RESEARCH CENTER	CO-STEAM PROCESS		SLAGGING FIXED BED GASIFIER			LIGNITE LIQUEFACTION		
LARAMIE ENERGY RESEARCH CENTER						COAL LIQUEFACTION		
LAWRENCE LIVERMORE NATIONAL LABORATORY								
LOS ALAMOS SCIENTIFIC LABORATORY								
MORGANTOWN ENERGY RESEARCH CENTER	LIQUID-SOLID SEPARATION	HYDRANE HOT GAS CLEANUP; H_2 FROM CHAR	FIXED BED PRESSURIZED REACTOR; HOT GAS CLEANUP	COMB. CYCLE; FLUID BED COMBUSTION; FIRESIDE CORROSION	FLUIDIZED BEDS	LIQUEFACTION RESEARCH		
OAK RIDGE NATIONAL LABORATORY	PARTICULATE REMOVAL FROM SYNCRUDE; HYDROCARBORIZATION			ALKALI METAL VAPOR SYSTEMS	FLUIDIZED BED HEATER	CARBONYL CHEMISTRY; MATERIALS RESEARCH		COMMERCIALIZATION; CONCEPTROL DESIGN & PROCESS ENGR STUDIES
PACIFIC NORTHWEST LABORATORY			HOT GAS CLEANUP				MATERIAL CHARACTERIZATION	
PITTSBURGH ENERGY RESEARCH CENTER	SYNTHOIL; CO-STEAM; SRC; FISHER-TROPSCH	SYNTHANE; HYDRANE			SLURRY COMBUSTION AND STACK GAS CLEANING	FUEL PROD. ENHANCEMENT; CATALYST DEV.; COAL SCIENCE	HIGH TEMPERATURE COAL COMBUSTION	
SANDIA NATIONAL LABORATORY	SYNTHOIL CATALYST PERFORMANCE							
SAN FRANCISCO FE OFFICE OF PROGRAM COORDINATION AND MANAGEMENT								

FIGURE 12

RESEARCH CENTER/ NATIONAL LABORATORY	SIGNIFICANT RESEARCH CENTER/NATIONAL LABORATORY SUPPORT OF ERDA/FE ACTIVITY ELEMENTS						
	PETROLEUM & NATURAL GAS				IN SITU TECHNOLOGY		
	GAS AND OIL EXTRACTION			SUPPORTING RESEARCH	OIL SHALE	SUPPORTIVE RESEARCH	*IN SITU COAL GASIFICATION
	FLUID INJECTION	NON-NUCLEAR FRACTURING	DRILLING EXPLORATION & OFFSHORE OPERATIONS				
ARGONNE NATIONAL LABORATORY							
BARTLESVILLE ENERGY RESEARCH CENTER	IMPROVED RECOVERY TECHNIQUES; STIMULATION OF HEAVY OIL PRODUCTION	PRODUCTION STIMULATION	RESERVOIR AND THERMODYNAMIC CHARACTERIZATION; OIL UTILIZATION	HEAVY ENDS CHARACTERIZATION, OIL QUALITY IDENTIFICATION FUEL/ENGINE TECHNOLOGY			
BROOKHAVEN NATIONAL LABORATORY							
GRAND FORKS ENERGY RESEARCH CENTER							
LARAMIE ENERGY RESEARCH CENTER	TAR SANDS CHEMISTRY IN SITU RECOVERY FROM TAR SANDS			HEAVY LIQUID CHARACTERIZATION, ASPHALT STUDIES		CHARACTERIZATION, ASPHALT, TAR SANDS AND CHEMICAL STUDIES	LINKED VERTICAL WELLS
LAWRENCE LIVERMORE NATIONAL LABORATORY		FRACTURING SUPPORT; MASSIVE HYDRAULIC & EXPLOSIVE FRACTURING; RIO BLANCO EXP.				RETORTING IN SITU	PACKED BED PROCESS
LOS ALAMOS SCIENTIFIC LABORATORY						IN SITU RECOVERY FRACTURE DESIGN	
MORGANTOWN ENERGY RESEARCH CENTER	CO_2 RECOVERY	MASSIVE HYDRAULIC FRACTURING, EARTH FRACTURE STUDIES					LONG WALL GENERATOR
OAK RIDGE NATIONAL LABORATORY	CHEMICALS FOR ENHANCED OIL RECOVERY						
PACIFIC NORTHWEST LABORATORY							
PITTSBURGH ENERGY RESEARCH CENTER							
SANDIA NATIONAL LABORATORY		MASSIVE HYDRAULIC FRACTURING SUPPORT; INSTRUMENTATION & FRACTURE DESIGN					
SAN FRANCISCO FE OFFICE OF PROGRAM COORDINATION & MANAGEMENT	SOLVENT RECOVERY OF HEAVY OIL						

FIGURE 13

FOSSIL ENERGY
U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
FY 1977 BUDGET ESTIMATES
(DOLLARS IN THOUSANDS)
SUMMARY TABLE BY SUBPROGRAM

FOSSIL ENERGY DEVELOPMENT OPERATING EXPENSES	FY 1976 ESTIMATE			TRANSITION QUARTER ESTIMATE		FY 1977 ESTIMATE	
	B/A	OBS.	B/O	B/A & OBS.	B/O	B/A & OBS.	B/O
COAL							
1. LIQUEFACTION	$ 89,912	$129,485	$ 92,937	$ 28,443	$ 15,693	$ 73,946	$ 79,546
2. HIGH-BTU GASIFICATION	53,364	57,320	37,338	9,250	7,450	45,054	59,234
3. LOW-BTU GASIFICATION	24,552	49,215	38,026	6,720	4,113	33,052	39,952
4. ADVANCED POWER SYSTEMS	10,001	10,423	7,461	3,500	1,700	22,500	12,800
5. DIRECT COMBUSTION	38,096	65,302	32,645	13,500	5,100	52,416	52,116
6. ADVANCED RESEARCH AND SUPPORTING TECHNOLOGY	35,393	40,087	32,061	8,850	4,600	37,085	36,585
7. DEMONSTRATION PLANTS	31,900	32,650	14,250	7,750	3,700	53,000	50,600
8. MAGNETOHYDRODYNAMICS	29,544	32,583	18,400	7,800	4,200	37,441	27,341
TOTAL COAL PROGRAM	312,762	417,055	271,118	83,813	46,556	354,494	358,194
PETROLEUM AND NATURAL GAS							
1. GAS AND OIL EXTRACTION	41,423	43,546	32,859	8,426	9,000	35,074	30,374
2. SUPPORTING RESEARCH	1,797	1,797	1,582	450	500	1,831	1,831
TOTAL PETROLEUM AND NATURAL GAS PROGRAM	43,220	45,343	34,441	8,876	9,500	36,905	32,205
IN SITU TECHNOLOGY							
1. OIL SHALE	13,720	13,721	9,834	1,950	2,000	21,085	12,085
2. IN SITU COAL GASIFICATION	6,137	7,510	7,560	1,680	1,787	8,236	6,736
3. SUPPORTING RESEARCH	1,265	1,265	1,113	300	300	1,310	1,310
TOTAL IN SITU TECHNOLOGY PROGRAM	21,122	22,496	18,507	3,930	4,087	30,631	20,131
TOTAL OPERATING EXPENSES	$377,104	$484,894	$324,066	$ 96,619	$ 60,143	$422,030	$410,530

FIGURE 14

Mr. Heller's Prepared Statement

INTRODUCTION

Mr. Chairman and members of the committee, I appreciate this opportunity to appear before you today to request fiscal year 1977 appropriations for the End Use Conservation Program which include industry conservation, building conservation, transportation conservation, and improved conversion efficiency. For fiscal year 1977 we are requesting $71.2 million in budget authority for operating expeses which represents an increase of $33 million over fiscal year 1976. We are also requesting $2 million in budget authority for capital equipment. Before proceeding with an individual review of the programs mentioned, I would like to discuss briefly with you our rationale and program approach.

PROGRAM RATIONALE

Our society has lived for a long time with cheap, abundant energy. I think the result is pretty clear: a number of choices we have made in the way we live and the machines we use are ones we would not make today. We have every reason to believe that energy will remain abundant—that there is no fear of running out—but we may never see "cheap" energy again. Creating alternatives to oil and gas is going to be expensive, and the price of energy is likely to remain high.

So, there are two important reasons for saving energy: to relieve the pressure for accelerating the introduction of new energy sources; to reduce the impact of the high cost of energy—so that we can maintain a stable, productive economy and continue to enjoy the products and services we value, while using less energy.

PROGRAM APPROACH

Although it has been clear for some time that energy can be saved, it is not as simple as you might think to locate the best targets for savings and to map a strategy for implementing them. This has occupied a lot of our time and thought, and I would like to outline briefly what we have found and what we are doing about it.

First, I must make one thing clear. There are two ways to save energy: (1) to change how we live—what we want and how much we use; (2) to improve the efficiency of the things we use. Our approach falls squarely in this second category. Our program is devoted to finding new and more energy efficient technology, power systems, and community systems, and to making these new technology options available for all elements of our society. In short, our approach is to develop more efficient machines and equipment and ways of using them so that we can save energy and live more comfortably and safely.

I want to underline one thing I said: our job is to develop more efficient technology and to encourage the use of new and alternative energy conserving technologies. As we have gained experience with our program, we have come more and more to realize that this second step is crucial and difficult.

Industry has known for years that R. & D. is only a small part of the problem in bringing new products to the market. All you have to do is look at the expense budget of any company—even a technology oriented company such as a G.E. or a Du Pont—to see where the effort must be put. R. & D. is the smaller part of the job of getting products out to the market. Industry has also learned that "market pull" is far more effective than "technology push," and has moved the R. & D. function and the marketing function closer together.

Our problem is similar, but more difficult for two reasons: (1) we are often dealing with technologies for which no established market exists; (2) there are many parties involved and many more ways to get the job done.

Consider, for example, just one possible technological development—improvement in the process by which heat can be transferred from a flame or a hot gas into a conducting medium. The first problem is that this is a basic process that affects a number of applications—such things as the design of boilers, furnaces, flue gas processors, and so on. Unless the knowledge gets to the right people and gets used, we have accomplished nothing. Our product—technology—has diverse markets.

This example also illustrates our second problem—that there are many ways to promote the use of new technology. A partial list includes free market operation of the price of energy, loans, subsidies, tax credits, regulations, et cetera.

What I am saying is that our immediate job is new technology. But the "bottom line" is Btu's saved, and since it is not usually true that better technology will sell itself, we must be concerned about how our technology will get used. This means that our research planning brings us into contact with many parties whose actions determine ultimate use of technology: agencies of the Federal Government, State and local government, industry and the consumer. In short, to plan our work so that we develop things that will be used, we must understand—and sometimes we must stimulate—the marketing proceess. This is a comparatively new function for an R. & D. program that impacts on practically every function in our economy, and we are still learning how to do it.

Before getting into specifics on our program, I would like to relate to the subcommitttee how we are choosing projects. This has been a major concern of ours during this startup year, and we are just now approaching a uniform procedure; we recently established a management capability within the Office of Conservation to further improve our planning.

The process we are working toward is to look at each of the end uses of energy to find out how large they are and to ask a series of questions regarding when and how energy savings might be accomplished. For example:

1. Is it technically feasible—can it be done?
2. Is it economically viable—will improved technology justify its cost to the user?
3. Is it being done—has private industry taken the initiative?
4. What additional can the Federal Government do to assist industry's commercialization?
5. How much would this cost?
6. How much impact would it have?

These are the "hurdles"—a project must have a passing score on each one. And most of them involve technical judgment—on cost, performance capability, and marketability—which is why we are establishing a close alliance with the technical community in our planning.

We haven't, by any means, managed to apply all these criteria to all projects yets. But our reasoning has followed this logic, and our procedures are rapidly becoming more formal.

PROGRAM CONTENT

I have talked about why energy conservation is important, and generally what our approach is. Let me describe our budget and our current activities.

Budget

We know that, because of the desirable features of conservation, a number of our concerned citizen's groups and members of this committee, are eager to see progress in this important area. I can assure you that we at ERDA share the sense of urgency. Although R. & D. is only a part of the conservation program, the President's budget indicates the administration's desire to explore major conservation alternatives in which technology plays an important role. The fiscal year 1977 request of $71.2 million for end use conservation and technologies to improve efficiency represents an 86-percent increase over the fiscal year 1976 level. While the President's budget request for conservation has steadily increased—both absolutely and relatively, it takes time to develop programs and strategies to spend money wisely. During the year we have identified areas that have the greatest potential for conservation, and I would like now to describe our programs and cite some examples of projects currently underway. Before proceeding, however, I would like to point out that these Federal programs can act only as a catalyst to private sector efforts * * * they are designed to encourage but not displace the efforts of private industry, as we recognize that most of the efforts that will ultimately be required must come from the private sector if we are to realize the full potential of improved conservation technologies.

Programs and projects

The buildings program addresses ways technology can be employed to reduce the energy required to heat and cool our homes, offices, and factories, to increase the efficiency of our appliances and to improve the design and operations of buildings and the grouping of buildings within the community to allow less wasteful systems to be used. The industry program is developing technology to increase the efficiency of manufacturing processes and equipment. It addresses unit opera-

tions—which find application in many industries—and highly energy intensive processes in such industries as steel, glass, and cement.

Key program elements begun in fiscal year 1976 and ongoing are:

A. Annual Cycle Energy System (ACES)—Table I

Ground was broken in Knoxville, Tenn., for a test residential dwelling using the Annual Cycle Energy System (ACES). This concept has the potential for halving the energy consumed for space conditioning through the utilization of a heat pump and water-ice storage system.

B. Grid-Connected Total Energy System—Table II

We are seeing promising results from engineering feasibility studies of a grid-connected total energy system. This system could provide great flexibility in energy conservation in populated areas by capturing waste heat from electrical generation for utilization in the heating and cooling of concentrated office, commercial, and residential buildings.

C. Electric Water Heating Refit Kit—Table III

An example of how we are working with other agencies in pushing a product forward in the marketplace is the electric water heater refit kit. Here, FEA and ERDA are assisting industry, through its combined expertise, in the successful commercialization of an energy-saving product.

D. High Temperature Recuperator System—Table IV

Heat energy can be extracted from industrial exhaust gases and reused. Fiscal year 1977 R. & D. will concentrate on design of a system for accomplishing this. High efficiency recuperator systems would have immediate application in areas such as glass and cement manufacturing, aluminum and steel remelt operations, and steel soaking pits.

E. Microwave/Vacuum Grain Drying—Table V

Conventional methods for drying crops rely on high capacity gas or oil fired hot air driers. Energy consumption could be halved (or better) by use of new microwave/vacuum systems. A modified and redesigned microwave oven has been installed in an existing vacuum chamber, and sample grains were dried while monitoring the process.

The transportation program includes: improving operational procedures; developing more efficient propulsion systems; encouraging the use of proven technologies in air, water, rail, highway, and pipeline transport modes. Initial emphasis is on reducing petroleum consumption and preparing the transportation system for efficient use of nonpetroleum energy sources. As the program proceeds, increasing emphasis will be given to the reductions of total energy consumption.

A. Truck Drag Reduction—Table VI

Fuel economy on long-haul trucks can be increased 20 percent by reducing air drag. ERDA and major component manufacturer have agreed to demonstrate the best devices in a cross-country run; the manufacturer will proceed with marketing the device to the U.S. trucking industry. The demonstration, including information dissemination, will be cost shared by the contractor and ERDA.

B. Gas Turbine Demonstrations—Table VII

In fiscal year 1977 road testing will be expanded to include demonstrations of a new gas turbine in passenger cars, using a fleet of vehicles. The turbine has been developed as part of the ERDA program to develop alternative engines to the older conventional internal combustion engine. The vehicles to be demonstrated will be virtually pollution free without exhaust aftertreatment, will have greater fuel economy than a conventional automobile engine and will have the capability to burn any gas or liquid which is flammable. Demonstrations will include use of different fuels on each leg of a cross-country journey, for example, low-grade gasoline, methanol, diesel fuel and hydrogen.

C. Waste Heat Utilization—Diesel Trucks—Table VIII

Another ongoing transportation project is to find ways to use heat which is normally wasted by diesel trucks. The concept is to take the exhaust normally at about 900° F. and use this heat energy as the energy source to operate a new version of a steam engine which, in turn, can run either the refrigeration and other auxiliaries needed on specific goods being transported, or be used to aid in

providing power to the wheels. When used in either way, the fuel normally consumed by the diesel is less, as is the resulting air pollution. Tests with the diesel and waste heat system hardware have proven at least a 13-percent reduction in diesel fuel consumption using this approach. We are now proceeding to refine this development for use with trucks on the highway.

Energy conversion is concerned with research and development to improve the efficiency of existing and new energy conversion systems. Systems are being designed to make waste heat utilization economic. Research and development is directed toward improvement of the efficiency of components such as heat exchangers, compressors, pumps, motors, generators, and fuel cells. Research aims also include the improvement of materials and increasing the performance of Rankine, Brayton, and Stirling cycles engines and extra-high-temperature conversion machines.

A. Fuel Cell—Table IX

The fuel cell is a device that converts fuel to electricity without the use of thermal cycle; its inherent efficiency is greater than conventional conversion equipment. Fuel cells are quiet, safe and modular in construction so that very large increments in capacity need not be added at the same time. Our program is working on technical and economic aspects of these devices. Initial cost/benefit studies show that this is a high payoff area, and we are now initiating contracts to advance the present technology and demonstrate the state-of-the-art. Specific savings which can be accrued from implementation of this technology are projected to be from 200 to 230 million barrels of oil by 1985.

Let me now describe briefly two additional conservation programs that do not fall under the auspices of this subcommittee. I believe it is important that the subcommittee understands the entire conservation program for fiscal year 1977.

ELECTRIC ENERGY SYSTEMS

The goal of the electric energy systems research program is to make sure that efficient and reliable systems are available and in place to meet steadily increasing demands for electricity. A viable electric power system is the indispensable link between the new energy sources this Nation is committed to developing and the improved efficiency end uses to which we are equally committed.

Benefits from this research include significant energy savings (590 million barrels of oil annually by 1985, and 1.8 billion barrels annually by the year 2000) through reduced power losses, improved load management, improved controls and network structures, and integration of distributed generation. In addition, the program will result in a substantial reduction in capital investment requirements and lower electricity costs to consumers, improved reliability, conservation of materials, reduced land requirements, lessened environmental degradation, and the assurance of safe equipment and systems.

ENERGY STORAGE

Energy storage is vital to the achievement of effective conservation in energy consumption in existing industries, buildings, and residences. Storage is also necessary for efficient use of many of the new technologies now expected to play a significant role in future energy production. Sun and wind energy are by nature intermittent, and their effective utilization virtually depends on cheap energy storage. Certain alternate transportation modes, such as electric vehicles or hydrogen engines, are currently storage limited. New storage technologies will enable widespread adoption by the electric utility industry, significantly reducing the huge quantities of oil and gas now used to meet daily peak loads. Thus, the realization is quite solidly emerging that energy storage as a recognizable technology has come of age and that storage will play a vital role in the Nation's energy future.

To sum up, conservation will yield both immediate and continuing benefits. Through more efficient technologies, the program will buy valuable time needed to develop new energy supplies and will reduce the impact of the emerging energy supply system upon our economy and lifestyles.

Thank you, Mr. Chairman, for the opportunity to discuss ERDA's conservation program. My staff and I would be delighted to answer any questions you and the members of the committee would like to ask.

PROJECT: ANNUAL CYCLE ENERGY SYSTEM (ACES)

POTENTIAL:
- SPACE HEATING AND AIR CONDITIONING CONSUMES 9.3 QUADS AT ANNUAL COST OF $10 BILLION
- CUT IN HALF ENERGY REQUIREMENTS FOR SPACE CONDITIONING IN NEW CONSTRUCTION IN THE MEDIAN CLIMATE ZONES OF THE U.S.

STATUS:
- PRE FY 1976 LABORATORY FEASIBILITY
- FY 1976-77 FIELD EVALUATION IN SINGLE FAMILY STRUCTURE
- FY 1977-78 WIDE SCALE COMMERCIALIZATION

MARKET PENETRATION:
- 15,000 NEW DWELLING UNITS AND 20,000 FT² OF NEW COMMERCIAL SPACE BY 1979 (1% OF THE MARKET)
- 75,000 NEW DWELLING UNITS AND 100,000 FT² OF NEW COMMERCIAL SPACE BY 1985 (5% OF THE MARKET)

FISCAL YEAR	RD&D COSTS ($ MILLIONS) *	SAVINGS (THOUSANDS BPDE)
1976	0.50	—
1977	0.25	—
1978	0.10	0.5
1979	0.05	0–1
1980		0–2
1985		0–5
TOTAL RD&D COSTS	0.90	

CUMULATIVE SAVINGS THROUGH 1985—9 MILLION BARRELS

* Costs to be Shared among Federal Agencies

Table I

ROJECT: PASADENA GRID–CONNECTED UTILITY SYSTEM

'OTENTIAL:

- PROVIDE COMMUNITIES WITH A PORTION OF THEIR ENERGY REQUIREMENTS AT A SAVINGS OF UP TO TWO THIRDS OF PRIMARY ENERGY CONCURRENTLY REQUIRED
- INITIAL MARKET FOR PASADENA PROTOTYPE – 550 MUNICIPALITIES OWNING AND OPERATING ELECTRIC POWER SYSTEMS MAY BE CANDIDATES
- ULTIMATE MARKET – UTILITY COMPANIES; HOSPITAL COMPLEXES AND UNIVERSITY AND COLLEGE CAMPUSES

STATUS:

- PRE FY 1976 DEMONSTRATION AND EVALUATION OF ISOLATED TOTAL ENERGY SYSTEMS INITIATED
- FY 1976-77 ENGINEERING FEASIBILITY ANALYSIS
- FY 1977-78 CONSTRUCTION
- FY 1978-79 EVALUATION

MARKET PENETRATION:

- 1978 – 1 SYSTEM (PASADENA)
- 1979 – 3 SYSTEMS OPERATING
- 1980 – 6 SYSTEMS OPERATING
- 1985 – 14 SYSTEMS OPERATING

	RD&D COSTS ($ MILLIONS)		SAVINGS
FISCAL YEAR	FEDERAL	LOCAL GOV'T	(THOUSANDS BPDE)
1976	0.50	..	
1977	3.00	15	
1978	3.00		0 – 0.6
1979	0.25		0 – 2
1980	0.25		2 – 4
1985			4 – 10
TOTAL RD&D COSTS	7.50	15	

CUMULATIVE SAVINGS THROUGH 1985 – 20 MILLION BARRELS

Table II

ROJECT: ELECTRIC WATER HEATER REFIT KIT

POTENTIAL:
- 20 MILLION WATER HEATERS IN THE U.S.
- REFIT KIT WOULD BE INSTALLED BY HOMEOWNERS
- EACH KIT WOULD SAVE ABOUT 5% IN ENERGY CONSUMPTION
- PAYBACK OF COST ($20 PER UNIT) WOULD BE ONE YEAR (600 KWH SAVED/AT 3.4¢/KWH = $20.40)

STATUS:
- 1976, INITIATE PROGRAM WITH JOHNS MANVILLE R&D CENTER, DENVER
- JOHNS MANVILLE AND S&S GASKET (TENNESSEE) HAVE CONCLUDED AN AGREEMENT
- JOINT ERDA/FEA PARTICIPATION

MARKET PENETRATION:
- AT THE RATE OF 2.5 MILLION UNITS PER YEAR STARTING IN 1976

	RD&D COSTS (THOUSANDS $)			
FISCAL YEAR	FEDERAL	PRIVATE	TOTAL	SAVINGS (THOUSANDS BPDE)
1976	20	80	100	–
1977	20	40	60	10–18
1978	0	0	0	20–35
1979	0	0	0	20–35
1980	0	0	0	25–35
1985	0	0	0	40–45
TOTAL COSTS	40	120	160	

CUMULATIVE SAVINGS THROUGH 1985–44 MILLION BARRELS

Table III

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PROJECT: HIGH TEMPERATURE RECUPERATOR

POTENTIAL:
- ESTIMATED 100,000 APPLICATIONS FOR HIGH AND INTERMEDIATE TEMPERATURE RECUPERATORS
- RECUPERATORS WOULD SAVE UP TO 80% OF STACK LOSS OR TOTAL SAVINGS POTENTIAL OF 4.8 QUADS

STATUS:
- FY 1976 START DEVELOPMENT
- FY 1977 EXPERIMENTAL VERIFICATION
- FY 1978 COMPLETE VERIFICATION
- FY 1979 IMPLEMENTATION

MARKET PENETRATION:
- 5,000 STACKS RETROFITTED BY 1980
- 10,000 STACKS RETROFITTED BY 1981
- 20,000 STACKS RETROFITTED BY 1982
- 30,000 STACKS RETROFITTED BY 1983
- 40,000 STACKS RETROFITTED BY 1984
- 50,000 STACKS RETROFITTED BY 1985

FISCAL YEAR	RD&D COSTS (MILLIONS $) FEDERAL	INDUSTRY	TOTAL	SAVINGS (THOUSANDS BPDE)
1977	1.1	0.11	1.21	0
1978	1.1	0.21	1.31	0
1979	0.5	0.04	0.54	0
1980	–	–	–	41–63
1985	–	–	–	688–1170
TOTAL RD&D COSTS.	2.7	0.36	3.06	

CUMULATIVE SAVINGS THROUGH 1985—1,100 MILLION BARRELS

Table IV

ROJECT: VACUUM/MICROWAVE GRAIN DRYING

POTENTIAL:
- 5.85 BILLION BUSHELS CORN DRIED IN 1975 CONSUMING .1 QUADS NATURAL GAS
- LAB SCALE EXPERIMENTS INDICATE V/M DRYING REDUCES ENERGY BY ONE-HALF

STATUS:
- FY 1976—START CONSTRUCTION OF PILOT PLANT
- FY 1977—START EXPERIMENTAL PROGRAM
- FY 1978—COMPLETE EXPERIMENTAL PROGRAM
- FY 1979—IMPLEMENT

MARKET PENETRATION:
- 1% (.0585 BILLION BUSHELS) IN 1979
- 4% (.2320 BILLION BUSHELS) IN 1980
- 8% (.464 BILLION BUSHELS) IN 1981
- 12% (.696 BILLION BUSHELS) IN 1982
- 16% (.928 BILLION BUSHELS) IN 1983
- 18% (1.045 BILLION BUSHELS) IN 1984
- 20% (1.1600 BILLION BUSHELS) IN 1985

FISCAL YEAR	RD&D COSTS (MILLIONS $) FEDERAL	PRIVATE	TOTAL	SAVINGS (THOUSANDS BPDE)
1977	0.715	0.050	.765	—
1978	0.100	0.032	.132	—
1979	0.05	—	50	0—0.2
1980	0.05	—	50	0—2
1985	—	—	—	15—25
TOTAL COSTS	0.915	0.082	0.997	

CUMULATIVE SAVINGS THROUGH 1985—23 MILLION BARRELS

Table V

SUBPROGRAM: IMPLEMENTATION
TYPICAL PROJECT

PROJECT: DRAG REDUCTION ON TRUCKS

POTENTIAL:
- TRUCKS CONSUMED 4 QUADS (20% OF TRANSPORTATION) IN 1974
- SUFFICIENT EXPERIMENTAL EVIDENCE INDICATES 20% FUEL ECONOMY IMPROVEMENT
- POTENTIAL SAVINGS ARE 0.5 QUAD PER YEAR FROM PROJECTED CONSUMPTION LEVELS FOR THE YEAR 2000

STATUS:
- FY 1976 COMPLETE COLLECTION OF DATA; EVALUATION OF PREVIOUS PROGRAMS
- FY 1977 START DEMONSTRATIONS, EVALUATE DATA, INFORM TRUCKERS, FLEET OWNERS AND INDUSTRY
- FY 1978 CONTINUE STRONG INFORMATION DISSEMINATION PROGRAMS

MARKET PENETRATION:

	1980	1985	2000
•PERCENT OF INTERCITY TRUCKS USING DEVICE	20	80	80

FISCAL YEAR	RD & D COSTS ($ MILLIONS) FEDERAL	INDUSTRY	TOTAL	SAVINGS (THOUSANDS BPDE)
1976	0.18	0.2	0.38	0.001
1977	0.15	0.5	0.65	2–4
1978	0.1	0.2	0.3	10–15
1979	–	0.3	0.3	19–50
1980	–	–	–	39–123
1985	–	–	–	179–252
CUMULATIVE THROUGH 1985	0.43	1.2	1.63	247–350 (MILLION BARRELS)

Table VI

SUBPROGRAM: [illegible] ENGINE HIGHWAY SYSTEMS
TYPICAL PROJECT

PROJECT: GAS TURBINE AUTO ENGINE DEVELOPMENT

POTENTIAL:
- AUTOMOBILES CONSUMED 9 QUADS IN 1974
- ANALYSES INDICATE GAS TURBINE ENGINE WILL HAVE 40% IMPROVED FUEL ECONOMY OVER PROJECTED 1985 OTTO ENGINE
- MULTIFUEL CAPABILITY
- MEETS ALL ENVIRONMENTAL STANDARDS

STATUS:
- FY 1976 ERDA DECISION ON PROCEEDING WITH ADVANCED GAS TURBINE PROGRAM
- FY 1976 INITIATE TESTING OF IMPROVED GAS TURBINE ON ENGINE DYNAMOMETER
- FY 1977 COMPLETE UPGRADED ERDA/CHRYSLER GAS TURBINE TESTS IN AUTOS
- FY 1982 COMPLETE DEMONSTRATION OF 2200°F FIRST GENERATION ADVANCED GAS TURBINE IN AUTO
- FY 1985 COMPLETE DEMONSTRATION OF 2500°F SECOND GENERATION ADVANCED GAS TURBINE IN AUTO

MARKET PENETRATION:	1985	2000
• PERCENT OF AUTO STOCK	1.1	27.0

FISCAL YEAR	RD & D COSTS ($ MILLIONS) FEDERAL	INDUSTRY	TOTAL	SAVINGS (THOUSANDS BPDE)
1977	4.2	–	4.2	–
1978	10.3	1.8	12.1	–
1979	16.7	4.2	20.9	–
1980	26.2	8.7	34.9	–
1985	10.0	23.0	33.0	–
CUMULATIVE THROUGH 1985	175.0	118.7	293.7	0 (MILLION BARRELS)
CUMULATIVE THROUGH 2000				2500-3500 (MILLION BARRELS)

Table VII

SUBPROGRAM: HEAT ENGINE HIGHWAY SYSTEMS
TYPICAL PROJECT

PROJECT: WASTE HEAT UTILIZATION IN DIESEL TRUCKS

POTENTIAL: TRUCKS CONSUMED 4 QUADS (20% OF TRANSPORTATION) IN 1974
EXPERIMENTAL EVIDENCE INDICATES 15% FUEL ECONOMY IMPROVEMENT
POTENTIAL SAVINGS ARE 100K B/D FROM PROJECTED CONSUMPTION FOR THE YEAR 2000

STATUS: FY 1976 DESIGN PRE-PROTOTYPE ENGINE
FY 1977 TEST PRE-PROTOTYPE ENGINE ON DYNAMOMETER
FY 1978 TEST PRE-PROTOTYPE ENGINE IN TRUCK

MARKET PENETRATION: PERCENT OF TRUCK FLEET	1985 1	2000 30

	RD&D COSTS ($ MILLIONS)	PRODUCTION COST		SAVINGS
FISCAL YEAR	FEDERAL	INDUSTRY	TOTAL	(THOUSANDS BPDE)
1976	0.8	-	0.8	-
1977	0.5	-	0.5	-
1978	1.1	-	1.1	-
1979	0.4	-	0.4	-
1980	-	-	-	-
1985	-	100.0	100.0	-
CUMULATIVE	2.8	100.0	102.8	-

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TableVIII

SUBPROGRAM: FUEL CELLS
TYPICAL PROJECT

PROJECT: PHOSPHORIC ACID FUEL CELLS

POTENTIAL:

- SAVE 275,000 BARRELS OF OIL PER DAY BY 1985
- SAVE $1 BILLION PER YEAR IN ELECTRIC COSTS BY 1985
- IMPROVE ENVIRONMENTAL IMPACT OF ELECTRIC GENERATION
- USED FOR REPLACEMENT, LOAD FOLLOWING, PEAKING, AND ON-SITE LOCATING

STATUS:

- FY 1976 COST BENEFITS AND TECHNICAL EVALUATION COMPLETED. FUNDING INITIATED
- FY 1977 INITIATE 4.8 MW DEMONSTRATION
- FY 1978 INSTALL 4.8MW DEMONSTRATION UNIT IN A UTILITY GRID. INITIATE 26MW DEMONSTRATION
- FY 1979 DEMONSTRATE 26MW FUEL CELL GENERATOR. INDUSTRY PROCEEDS WITH COMMERCIALIZATION

FISCAL YEAR	R&D COSTS ($MILLIONS) FEDERAL	INDUSTRY	TOTAL	MARKET PENETRATION	SAVINGS (THOUSANDS BPDE)
1976	2.5	36	38.5	–	–
1977	1.0	50.0	51.0	–	–
1978	22.5	87.0	109.5	–	–
1979	*	110.0	134.0	6%	30
1981	–	UNKNOWN	UNKNOWN	10%	40
1982	–	UNKNOWN	UNKNOWN	15%	75
1985	–	UNKNOWN	UNKNOWN	60%	275M BBL

CUMULATIVE THROUGH 1985

* DEPENDENT UPON COMMERCIALIZATION DECISION

Table IX

INTRODUCTION OF ASSOCIATES

Dr. SEAMANS. Mr. Chairman, we are very happy to be with you and your committee here today.

I have with me on my right Dr. McCormick, who is involved in a variety of studies having to do with commercialization of our development and demonstration projects, and Mr. Greer, who is our Controller. To my left, Dr. White, who is in charge of our fossil fuel program; and Mr. Heller, who is in charge of our conservation program. They in turn are backed up by experts in each of these fields.

Senator BYRD. Thank you, Dr. Seamans. We are glad to have your associates with you. Would you please now proceed.

ERDA'S ACCOMPLISHMENTS

Dr. SEAMANS. What I would like to do, Mr. Chairman, is to just quickly note that we have been in existence now a year and some months. During this period of time I believe that we have put together a very capable team of men and women to carry out the many responsibilities that have been given to us by the Congress.

In addition, at the request of the Congress we put together a national plan for energy research, development and demonstration. We submitted this plan to the Congress on June 30 of last year.

We have been updating this plan since. The updated plan is now at the printer's and will be available sometime the end of next week.

In addition to having the plan, it has been necessary to move into a wide variety of specific projects. We are utilizing 1976 appropriations from Congress to move out in many different fields, including the very important ones that are before your committee.

During the year we have had, we believe, a number of very important events that have taken place, in both conservation and in the fossil fuel area. Some of these are listed in my statement, which is going into the record, and I do not think I will take time here to run through them with you specifically.

There is one area that I would like to particularly emphasize, and that is the synthetic fuels commercial demonstration program. We feel that we must find a way in this country to move from the development and demonstration project stage into widespread use in the private sector.

Unlike NASA, for example, and the Department of Defense, our job does not end with Government operation. In the case of NASA the Government operation had to do with exploration of space, the lunar program, and planetary projects. In the case of Defense, obviously it has to do with operational capability.

Our job is to act as an agent so that the private sector can utilize this technology in order to improve our posture in this country, both by increasing the supply of energy and in conserving energy, so that supply and demand can become more nearly in balance.

The commercialization program is in the form this year of a supplemental request. It was an amendment to our authorization bill and was passed by a wide majority in the Senate. However, it did not pass in the House.

It is our hope that the authorization will pass the House in the near future. It is being reviewed now by the House Science and Technology Committee, and when it is authorized we hope to obtain the necessary appropriations to move ahead on a $2 billion loan guarantee program. The program requires $504 million in budget authority and would require expenditures or outlays of $4 million this year, and in the transition quarter.

Certain of the specifics having to do with both our conservation projects and our fossil fuel projects can be summarized for you by my two associates who are here. They also have statements for the record.

You might wish to call on them to give brief summaries in their two areas at this time, Mr. Chairman.

Senator BYRD. All right. Dr. White, would you proceed.

SUMMARY STATEMENT ON FOSSIL ENERGY

Dr. WHITE. Yes, Mr. Chairman. I will start out with the coal program which is increasing to a total level of $409 million, an increase of $76 million over the 1976 appropriations.

In the liquefaction area we have several pilot plants that have been in operation and some of which are currently finishing construction.

There are six gasification plants aimed at pipeline gas and several efforts now at the pilot plant stage on low Btu or fuel gas.

We have had very good success in operating our solvent refined coal plant this last year, and also two of the high Btu plants have done quite well in operations.

In coal utilization we are continuing our work in direct combustion, we are trying to develop systems where we could use high sulfur coal in an environmentally successful way, and we hope to start fabrication of several prototype systems for industrial or institutional direct combustion in the coming year.

There will be component tests and integration facilities for both atmospheric and pressurized fluidized bed combustion at ERDA controlled laboratories.

In demonstration plants, we have, of course, the approved clean boiler fuel demonstration plant for which we expect to begin construction in late fiscal year 1977. Funding is being requested for the design efforts on two other plants: a high Btu synthetic pipeline gas plant, and a fuel gas demonstration plant.

In magnetohydrodynamics we have an accelerating program which has basically three phases in its overall plan. The first two develop and test the components for the MHD operation, the combustor channel and the air preheaters and slag handling. These are going to be tested separately and then integrated in a facility designated as a component development integration facility which will put these components together for the first time.

Out of this work, hopefully, will come an improved design, which will lead to an engineering test facility, the second major phase. Finally the engineering test facility will lead toward design and construction of a commercial facility which will be the ultimate conclusion of that program.

Of course, as you are aware, there has been a request for reprograming to accelerate the program in 1976 and keep the component development and integration facility on an accelerated schedule.

In the petroleum and natural gas field we do most of our work in enhanced oil recovery. Here we have had very good response from industry. We had some eight contracts last year, supported two-thirds by industry. We are having very good response on new solicitations for extension of that program.

In enhanced gas recovery there are some six existing projects, and we are trying to accelerate our work in the field of Devonian shales, where there is a good deal of gas to be recovered if we can develop adequate extraction techniques.

Another program is in-situ coal gasification, where we are trying to tap some of the reserves that are too deep or too thin to be mined conventionally. And we are substantially expanding that and have some very successful operations going in in-situ demonstration out in Wyoming.

We have some tests planned for demonstration in eastern coal, but they are not yet operational. We are requesting some $30 million for expenses for the in-situ work this year.

I think that covers the highlights, and I would be glad to answer any questions on the details of the program.

STATUS OF MHD REPROGRAMING REQUEST

Senator BYRD. Now, before we proceed to hear Mr. Heller and Dr. McCormick, I want to ask you a few questions about MHD. And Senator Mansfield, our majority leader, is here. He will have some questions also.

You referred, Dr. White, to the reprograming proposal to accelerate work on a component development and integration facility. What is the status of that reprograming proposal? Is it likely to clear the other involved committees?

Dr. WHITE. We cerainly hope so. We were asked by Mr. Hechler and his subcommittee to consider alternate means of deriving the funds that would go into the MHD reprograming, and we submitted to his committee an alternate proposal several weeks ago.

This proposal has been considered. He has asked several questions with respect to the impacts of that program, and we have and are developing answers, and expect to submit those to him very shortly. We hope to discuss the implications of those with him.

He has serious concerns, of course, about the impacts on other aspects of the coal program, and that is what we are trying to satisfy him on. We think those impacts will be minimal, and we have assured him that we stand ready to request a supplemental in 1977 if it should be necessary. We do not think it will be, but if it should, we are prepared to do that.

Senator BYRD. What are the alternate means to which you refer?

Dr. WHITE. The revised proposal took $5 million from the 200 megawatt atmospheric fluidized boiler system. This is one of those programing overlaps. We found as we got into the details of procurement that the moneys have been tentatively assigned to this in two of our divisions, Demo Plants and Coal Conversion and Utilization,

and obviously we are only going to do it once. There was $5 million more than we needed after we detailed our procurements.

The low Btu gas demonstration plant which is one of our large budget items in demo plants for this year has been delayed. The request for procurement did not get out nearly as early as we thought, and it is apparent that there is no way in which we can spend the $8 million budgeted for this fiscal year on that plant. We feel the slippage in time is going to make $4 million available that can be made up in the flexibility of the budget next year.

Senator BYRD. What caused the slippage?

Dr. WHITE. This was a rather involved procurement request in that we hoped to have people offer proposals for both power generation and fuel gas generation. We requested some small gasifiers that might be useful in a plant at a 100 ton to 200 ton a day level. Now, because of this it raised quite a few questions with our procurement people and our lawyers, and it just took a long time to clear internally the questions that were raised. Therefore we did not get the RFP out as early as we expected. We expected originally to get it out in mid-fall, and we got it out in early January, as I recall.

Senator BYRD. How do you account for such a delay?

Dr. WHITE. It is an evolving program, Mr. Chairman. Frankly, we are a new agency. We have not tried a procurement of this complexity in terms of cost sharing with the industrial sector or with such a wide variety of applications before. And there were quite a few questions raised about just how this was going to work.

Really the question of whether we should have three RFP's or one, was one of the questions raised. We concluded finally we would do better with one. It was give and take back and forth, but evolved into what we think is going to be quite a successful program. But it took time.

Senator BYRD. Now you referred to a $5 million snafu in overprograming at some point.

Dr. WHITE. Well, we have been very successful in atmospheric fluidized bed combustion at the small scale for direct combustion of coal for power generation. We have a 30-megawatt plant under construction at Rivesville and we recognized that we should go ahead and design a demonstration 200-megawatt plant as soon as we could.

This was one of those cases where, in the enthusiasm of trying to push this, our demonstration people provided for it, and the coal conversion people equally provided for it. And it was not until we got to developing a detailed procurement plan that it became apparent that both of them had allowed money in their budgets for this.

POSSIBILITY OF A SUPPLEMENTAL BUDGET REQUEST

Senator BYRD. If this reprograming cannot be cleared, is ERDA prepared to seek a supplemental budget request to provide the additional money?

Dr. WHITE. Unfortunately, as we see it, a supplemental request at this time would be too late for construction of this facility in the 1976 summer construction season. This was the reason we chose to go with the reprograming of 1976 funds. We felt that this would be the quickest way to get approval.

If we do not have approval of those funds by, I would expect, the 1st of May, it is going to be very difficult to have the procurements completed and the construction done before the frost sets in this fall and we close down for the winter.

Dr. SEAMANS. Mr. Chairman, may I just add that it is our view that this program has tremendous potential. We have component work underway in a variety of places around the country, and we need a facility where we can put the components together and for the first time check out complete subsystems and systems.

If we cannot initiate that construction this summer we in effect are delaying the program by a year. We believe that would be very unfortunate.

Obviously, if the reprograming action is not successful—we believe that it will be and should be—we will find some other way to move ahead with the program. But there will be delays that we believe are unnecessary and would not be in the national interest.

Senator BYRD. Well, if you do not get either the reprograming or the supplemental request, what are the "some other ways" that you indicated that you would proceed with in order to get it?

Dr. SEAMANS. We would have to put in funds in subsequent years, and of course, the further along in time, the more the facility will be delayed.

Senator BYRD. Senator Mansfield?

NEED FOR MHD REPROGRAMING REQUEST

Senator MANSFIELD. Yes, Mr. Chairman.

Dr. Seamans and Dr. White, and your associates, I want to congratulate you as the Administrator of this program, Dr. Seamans, for getting together a high-quality staff and creating within less than 2 years an excellent agency, and in doing so recognizing the fact that there has to be allowed some margin for error as you get your various programs underway, and there are many in ERDA.

Some of the questions I may have to ask Dr. Seamans and Dr. White may in some part impinge on what the chairman has already asked, but if I do so, it will be to make the record straight.

Now, Dr. Seamans, for 8 years, along with Senator Metcalf and others, I have supported development of a national program for MHD technology. On February 19 you sent to the Congress a $20 million MHD reprograming request designed to complete the funding package for construction of the component development and integration facility, the CDIF.

For the record, would you explain to the committee the necessity for this reprograming action? Was it as a result of congressional error, or was it an oversight on the part of OMB and ERDA?

Dr. SEAMANS. I will be happy to answer that. The reason for the reprograming, as I already indicated is that we have had all along the plans to bring on this new facility and have it available in 1978. This has been our intention.

When budgeting was being done last year, frankly I had thought that the funds were being included for this. I did not, and probably should have, get into the details to trace down exactly what the funding schedule was, year by year. But this is the year, that is, fiscal year 1976, when the major share of the funding is required.

It turned out that we had not included the funds. It was certainly not any lack of congressional support or any oversight on the part of Congress; it was primarily an oversight on the part of ERDA.

Senator MANSFIELD. What is the current status of the reprograming request or requests, and do you see any impediments to its approval?

Dr. SEAMANS. Well, as Dr. White has indicated, we have submitted to the Congress our plans for the reprograming. The Senate has taken positive action; the House Science and Technology Committee still has this matter under review, by the subcommittee headed by Congressman Hechler.

The matter is still under discussion, and we recently received, on the 30th of March, a letter from the subcommittee requesting us to address a number of issues, including the need for the entire $20 million, the impact of the reprograming in future years on some programs, the current arrangements for land acquisition, and so forth.

We are right now in the process of responding to that letter. I am hopeful that the House will take positive action.

MHD REQUIREMENTS FOR COMPONENT DEVELOPMENT

Senator MANSFIELD. I am too, Dr. Seamans, because what the Congress did last year in passing legislation, it did in good faith and with good intent. But as I tried to indicate, a new agency is bound to make an error here and there, and it is perfectly understood, but it does create a problem for some of us who have been interested in the MHD program since 1968.

I am informed by members of the MHD community that construction of the CDIF is not the only MHD activity underfunded this year. You have requested $37.4 million for the national MHD program, of which $5 million will be needed for construction of the CDIF, which is estimated at an ultimate cost of $31.5 million. I have been informed that ERDA needs an additional $10 million, $10 to $15 million, to continue its parallel component development program and supporting science and technology effort across the country.

Do you believe the MHD program nationwide will have adequate funding this year under ERDA's budget request?

Dr. SEAMANS. The request that we made to the Office of Management and Budget was for $49 million. The difference of some $12 million is the additional funding that you are referring to here.

We did strongly recommend to OMB that this be included. You will note that we did not request of the OMB the funds for the component development and integration facility. And as I said, it was ERDA's mistake that we did not do that. But we did feel that in other areas of the program that funds would be required for experimental equipment and for work in other locations.

Senator MANSFIELD. Where do you estimate we stand in relation to the Soviet Union in the MHD field?

Senator BYRD. Senator Mansfield, could I interject a question at this point?

Senator MANSFIELD. Surely.

AGENCY REQUEST TO OMB FOR MHD

Senator BYRD. You referred, Dr. Seamans, to your request of OMB. Was any reduction made at that level in your request?

Dr. SEAMANS. Yes; OMB made a reduction from $49 to $37.4 million.

Senator BYRD. What were those funds to have been used for, the funds that were cut out at OMB?

Dr. SEAMANS. I would like Dr. White to respond to that.

Dr. WHITE. Those were allocated to a number of the aspects of the program. The largest single one was starting a detailed design of the engineering test facility, which of course, as I said earlier, is the second stage and comes along after the CDIF.

Certain of the components, such as the air preheater and slag recovery, were allocated a couple of million dollars and $1.2 million was requested for the other components.

In the CDIF itself, a few hundred thousand on the magnet development, and the channel—well, there were miscellaneous ones. I think that totals pretty much the whole thing. There were small cuts across the board as we felt we had to try to keep things moving along generally; but obviously at a lower level than the proponents of each of these programs had urged us to have funded.

Senator BYRD. Now, the division requested $59,350,000.

Dr. SEAMANS. That is correct.

Senator BYRD. ERDA requested $49,350,000.

Dr. SEAMANS. Yes.

Senator BYRD. What was the purpose of the $10 million reduction, and what would that have been used for?

Dr. SEAMANS. That reduction included funds for the component development and integration facility and the engineering test facility.

Dr. WHITE. Yes; that is correct, it did. We have an analysis of that cutback. It was primarily the Montana facilities.

MHD DIVISION ANALYSIS

Senator BYRD. This analysis will be placed in the record. It shows that the division request was $59,350,000; ERDA's request was $10 million less, $49,350,000; the OMB allowance was $37,441,000, or something like almost $12 million under ERDA's request, and something like $22 million under the division request.

[The information follows:]

MHD DIVISION—FISCAL YEAR 1977 BUDGET ESTIMATES

	Division request	ERDA request	OMB allowance
OPEN CYCLE			
I. Preliminary testing:			
A. UTSI coal burning program	2,269	2,269	2,269
B. All other preliminary programs	10,681	10,681	10,681
II. System and design analysis	2,990	2,990	2,990
III. Component development:			
A. Component development and integration facility	16,627	14,577	6,316
(CDIF) ( )*	(13,311)	(12,061)	(5,000)
B. Extended duration generator test facility (EDGF)	775	775	385
C. All other component development programs	10,508	10,508	9,859
IV. Engineering test facility (ETF)	10,600	2,650	0
V. Supporting science and technology	3,500	3,500	3,500
Total open cycle	57,950	47,950	36,000
CLOSED CYCLE			
I. Plasma	1,050	1,050	1,091
II. Liquid metal	350	350	350
Total closed cycle	1,400	1,400	1,441
Total program	59,350	49,350	37,441

*Indicates fabrication money.

COMPARISON OF U.S. AND U.S.S.R. MHD EFFORTS

Senator BYRD. Excuse me, Senator Mansfield.

Senator MANSFIELD. That is all right, Mr. Chairman.

Dr. Seamans, where do we stand in the field of MHD in relation to the Soviet Union?

Dr. SEAMANS. Well, I think that if you look at the capabilities of the two nations, we both have a base for moving ahead rapidly. The work in this country, for example, has led to operating a channel for 95 hours, pretty close to the 100-hour goal that we had.

Senator MANSFIELD. Was that done by the AVCO people?

Dr. SEAMANS. That was the test that was run recently in Everett, Mass. by AVCO. The operation there is headed by Dr. Arthur Kantrowitz.

However, the Russians have a little different style of operation than we. They have a goal to start with a large facility, and they have a facility just outside of Moscow that they have operated. It is much closer to a full-size operation then ours. It should be noted, however, that their goal is not to use coal, but to use gas, which is a cleaner fuel. It does not get into quite the number of problems that we are already addressing with respect to coal.

We do have a joint project with them, and we are going to have an opportunity to try out some of our new technology in the Moscow facility. Some of the funds that we have in the budget call for the development of equipment which will be taken over there, tested, and which will come back here.

GEOGRAPHIC DISTRIBUTION OF MHD EFFORTS

Senator MANSFIELD. I am concerned that the Montana Energy and MHD Research and Development Institute, and the facilities manager for the CDIF may not receive adequate management staffing and

supporting science and technology funding to enable it to be fully operational when the CDIF is completed in late 1978.

Will adequate funding be available to prevent any slowdown in operation of the CDIF when it comes on line?

Dr. SEAMANS. Certainly our intention is not to have that happen. We are looking to the Institute for management of the facility, as you indicate.

Again I would like to ask Dr. White what the exact status is of that operational funding.

Dr. WHITE. Well, the institute is expanding its staff quite rapidly, Senator. And it is our expectation to keep them funded for what they need in relation to the status of the program out there, so that we succeed in keeping on schedule.

Of course, the completion of the CDIF and it's initial operation, as you mentioned, will not be until 1978. So we are really looking at a funding beyond the fiscal 1977 budget. We see no problem in keeping them adequately funded.

Senator MANSFIELD. Now, MHD funds are apportioned to States like Illinois, Montana, Tennessee, and I believe last year we put in an additional appropriation for some MHD work in Mississippi. I may be mistaken. Is what I have said correct?

Dr. WHITE. There is a small program in Mississippi that is funded, yes.

Senator MANSFIELD. And are there any other States which could be included?

Dr. WHITE. Pennsylvania has work going on at the Pittsburgh Energy Research Center and at Westinghouse.

Senator MANSFIELD. Then there are five States concerned?

Dr. WHITE. Stanford in California has work, and there is a computer programing outfit in California, STD Research Corp., that does modeling work for us.

Senator MANSFIELD. But in all the Western States, including California, Montana is the only one which has extremely sizable coal deposits which can be put to use in the research and development aspects of MHD.

Dr. WHITE. Yes.

MONTANA COAL RESERVES

Senator MANSFIELD. And I think the coal reserves of Montana have been estimated roughly at 30 percent of the Nation's total; is that correct?

Dr. WHITE. I am not familiar with that figure, sir.

Dr. SEAMANS. It is a very sizable reserve. We will put the breakdown in for the record if you want.

[The information follows:]

PERCENT OF U.S. COAL RESERVES LOCATED IN MONTANA

Coal type	U.S. reserves (billions of tons)	Montana (percent of total)
Anthracite	7	0
Bituminous	233	(1)
Sub-bituminous	166	60
Lignite	28	25
Total	434	25

[1] Less than 1 percent
Source: U.S. Bureau of Mines.

MHD FUNDING BY STATE

Senator MANSFIELD. Now how much money did Mississippi get last year for its MHD work?

Dr. SEAMANS. $200,000, a very small amount of the total.

Senator MANSFIELD. And what did the University of Tennessee get for its work this fiscal year?

Dr. SEAMANS. $4.7 million, and we have $3 million projected for next year.

Senator MANSFIELD. But what about last year's budget, or the 1976 budget?

Dr. WHITE. The same for 1976 essentially.

Senator MANSFIELD. And what did Montana get in 1976?

Dr. WHITE. It is projected as $7.1 million this year.

Senator MANSFIELD. In 1976?

Dr. WHITE. Yes, and $3.5 million projected for 1977.

Senator MANSFIELD. What did Illinois receive?

Dr. WHITE. It is $7.2 million for next year.

Senator MANSFIELD. And Pennsylvania?

Dr. WHITE. Pennsylvania is $7.2 million also for next year.

Senator MANSFIELD. And the California institutions?

Dr. WHITE. It is $5.4 million for next year. The Parsons Co. is doing the architect engineering work for the Montana facility. Dr. Jackson over here is division director for MHD.

Senator MANSFIELD. Now Dr. White, can you provide the committee with the nationwide major breakdown of apportionment of MHD funds, not only for fiscal year 1977, but on a State-by-State basis since the MHD program was initiated in 1968?

Dr. WHITE. We would be happy to supply that, sir.

[The information follows:]

STATE BREAKDOWN OF MHD PROGRAM FUNDING
FY 1968 - FY 1977
(In Thousands)

State	Obligations Recorded								Estimated Obligations		FY 1977 Budget Request	Total thru FY 1977
	Thru FY 68	1969	1970	1971	1972	1973	1974	1975	1976	T.Q.		
California	$	$	$	$ 95	$ 89	$ 270	$ 557	$ 796	$ 2,587	$ 1,055	$ 5,400	$10,849
Illinois						26	11	900	5,832	950	7,200	14,919
Massachusetts..			3	275	650	973	1,673	3,833	6,075	1,300	7,200	21,982
Mississippi....									125	63	200	388
Montana.....								1,708	7,107*	500	3,500	12,815
Pennsylvania...	113	3	2		25	808	1,120	956	4,235	1,548	7,200	16,010
Tennessee.....				20	244	500	1,320	4,125	4,685	1,408	3,000	15,302
Other or Unallocated ..						120	345	59	1,947	976	3,741	7,188
Total	$ 113	$ 3	$ 5	$ 390	$1,008	$2,697	$5,026	$12,377	$32,593	$7,800	$37,441	$99,453

* Includes $3,049,000 FY 1975 carryover funds.

APPRAISAL OF MHD SUBPROGRAMS PROGRESS

Senator MANSFIELD. In your opinion, is the MHD program now meeting the accelerated pace required to comply with Public Law 93–404?

Dr. SEAMANS. My view of that is that we are moving ahead at an accelerated pace, that we are gearing the program to the very difficult experimental and theoretical work that is required, and although the rates are still relatively small, the foundation has been laid. The funding and the pace are picking up and really is accelerating rapidly at this time.

Senator MANSFIELD. Well, you have an excellent program at the University of Tennessee, Dr. Seamans. I have been interested in that, along with Senator McClellan and Senator Stennis, and I have supported that facility wholeheartedly ever since it began because it antedated the Montana facility. I shall continue to support it because I think it is doing excellent work in that field, and I would hope that we can do as well in Montana as they have done in Tennessee, because as I see it, the two most important facilities will be in Tennessee and Montana as we develop the MHD programs.

Dr. SEAMANS. We have to build our programs where the competence is available. There is great competence there in Tennessee, as there is with Dr. Kantrowitz's operation at AVCO in Massachusetts. We also have the responsibility to expand this competence and build up a body of knowledgeable and experienced personnel as we are planning to do in Montana, and as we will be doing in some of these other States that we have listed.

Senator MANSFIELD. Yes. Well, we have an excellent chief of the program in Dr. Jerry Plunkett, and he has a first rate staff which he has been acquiring over the months. And we have every confidence in the ability of the people who have been assigned to that project. We think we will do an excellent job, as I am sure that ERDA thinks as well.

Dr. SEAMANS. We were very, very pleased when he accepted the job.

STATUS OF MHD ENGINEERING TEST FACILITY

Senator MANSFIELD. I have noted that this year's budget contains no funds for conceptual design and preliminary engineering work for the engineering test facility which is to be built by the mid–1980's under Public Law 93–404. What preliminary work, if any, has been initiated on the ETF?

Dr. SEAMANS. Dr. White?

Dr. WHITE. Perhaps Dr. Jackson can give the best answer. It has been purely at the conceptual design stage.

Dr. Jackson would you amplify on that?

Dr. JACKSON. Yes. Mr. Chairman, we have done in-house some of the very front end systems engineering, and we are now out on the street with an RFP to engage industry in the systems engineering, which is the first step in preparing for the design of the engineering test facility, the ETF. By the time the data from the CDIF is available, we will be able to use it in finalizing the design of the ETF. So I believe we are proceeding on a good schedule on that project.

Dr. SEAMANS. We will utilize $3 million that we have in 1976 for this purpose.

Senator MANSFIELD. It has been more than a year since ERDA established its MHD project office and subsequently its MHD division. Has a director of that division been appointed yet?

Dr. WHITE. No, sir.

Dr. SEAMANS. We at this time are very fortunate to have Dr. Jackson as the Acting Director. We have, quite frankly, been exploring the possibility of strengthening the office with additional personnel, and we do want to retain some flexibility there. At the same time, we do not want to leave any uncertainty in our confidence in Dr. Jackson. He has been doing an excellent job. We have great confidence in what he has been doing.

Senator MANSFIELD. I would agree in what you have had to say about Dr. Jackson, who has been doing excellent work in this area and had been doing it for many years before he came with ERDA.

One last question, Mr. Chairman, if I may.

MONTANA MHD FACILITY SITE PREPARATION

ERDA first advised me this past Friday that ERDA would award a $1.5 million contract to the Taylor-McDonnell Co., of Butte for CDIF site preparation work. On Monday I was advised that this contract would not be officially approved at the moment.

Can you advise the committee of the reason of this delay since groundbreaking for the CDIF was planned for April 1?

And may I say before you answer the question that in Montana we have a very short construction season. I know whereof I speak because I lived in Butte for 10 years and attended the school of mines in that mining camp. And because of that we usually have a season at best beginning around April 1 and ending sometime in early September. So this is a factor also in any delay which might be caused in the awarding of this contract, and would further delay if delayed too long the timetable which ERDA has set for the CDIF and the ETF.

Dr. SEAMANS. I think on that point we cannot make a Federal Government commitment until the reprograming action is complete. It hinges on that action.

Senator MANSFIELD. Thank you, Dr. Seamans and Dr. WHITE. I just wanted to ask these questions to display my thoughts and my worries on the record.

I have no complaint with you or your agency. Quite the contrary, I think you have done a superb job in a very short period of time, that you have acquired excellent personnel to operate the various divisions. But I am sure you can understand my concern in view of the public law which I mentioned, the need to get going on the Montana project and to further the interests of MHD which I think has been most underrated in the general thinking, but which furnishes one of the brightest hopes, I think, in the area of energy development.

Thank you, Dr. Seamans and Dr. White.

That is all, Mr. Chairman.

ALTERNATIVES TO MHD REPROGRAMING

Senator BYRD. Dr. Seamans, in the event the reprograming request is not approved by the House, can you work out any acceptable compromise that will be acceptable to the House in your judgment?

Dr. SEAMANS. Well, we have by no means given up on the reprograming. We now have an additional set of issues from Congressman Hechler which we will be responding to in the very near term.

Congressman Teague, chairman of the committee, is very anxious to move ahead, and I believe the reprograming is by far the most expeditious method for handling the matter. However, if we should fail, and we don't intend to, and I think the odds are small that we will, we will come back with the next best proposition that we can. We are not really sure exactly the form that it would take.

DELAYS IN THE PROCUREMENT PROCESS

Senator BYRD. Dr. White, you made a statement earlier that indicated that at times the right hand does not know what the left hand is doing, and that there are delays in the letting of contracts and so on.

Many industrial concerns and contractors for ERDA have expressed, and are expressing dissatisfaction and frustration with the long-term procurement cycle which evolved in initiating and securing approval of contracts with ERDA.

Are you taking any steps to improve this system?

Dr. WHITE. Very definitely, Mr. Chairman. This problem is widely recognized within ERDA, and is being addressed at Dr. Seamans' level. Both the Division of Procurement and the Office of Internal Review are taking an independent look at it. We in fossil energy have had two full series of meetings to try to accelerate our own set of projects through the procurement cycle.

I am distressed particularly that the record which fossil energy seems to show in the length of procurement times is not as good as some of my associates are doing in other parts of the agency. I ascribe this in part to the fact that we are dealing with cost-shared projects with industry, which is a new way of operating, and many of the companies with which we deal are unfamiliar with Government procedures. This has often caused protracted negotiation of such matters as patent questions, proprietary data, disposal of facilities at the end of the contract, and so forth.

We are certainly, however, recognizing this as a serious weakness and are pushing to correct it.

Dr. SEAMANS. I would just like to add, Mr. Chairman, and strengthen what Dr. White has said. This is a matter that is of great concern to all of us. Bob Fri and I have been working on it. It is a matter that is not just the responsibility of any one office. Certainly the program people and Dr. White have to define the tasks that need to be accomplished, but they must be fully supported by our contracts and procurement people, as well as by our General Counsel's office.

I felt that we do want to expedite our procurements as rapidly as we can, but at the same time we must do it in such a way that we don't stub our toe and handle procurements in a way that could cast doubt on ERDA's credibility and ability to administer them properly.

So it is an educational process that is involved here, not just of individuals but of a whole team of people that must work closely together.

USE OF PRIVATE INDUSTRY VERSUS ERDA FIELD CENTERS

Senator BYRD. It appears that funding for work conducted in house at the national laboratories is accomplished in a much more orderly, condensed schedule than contractual work with industry.

Is ERDA favoring the national laboratories over private industry in their contracting and procurement procedures?

Dr. SEAMANS. On that issue, and it is a very good question, we do have great confidence in our national laboratories. It is our intention to have the national labs involved in our programs in an appropriate way. But in no way do we favor the national labs over industry, and universities.

Of course, most of the national labs are associated with various university consortia, and individual universities. This is a matter that we are watching very closely. Because the labs have been working within the government framework for so long it is relatively easy to assign them a task.

But we are watching this, as I say, and controlling it from the top of the agency, to be sure that we don't inadvertently expand the labs in such a way that we would curtail the possibility of working with new industries and with new universities.

Dr. WHITE. Mr. Chairman, may I give the figures for the record for 1976 on that point?

Senator BYRD. Yes.

Dr. WHITE. The Energy Research Center funding was $44 million this fiscal year. This is in fossil energy only that I am speaking of. The national laboratories, $27 million; universities, $15 million; industry, $31 million.

Senator BYRD. How does that compare with last year?

Dr. WHITE. I am sorry I don't have the figures right here. This is for fiscal 1976 that I was giving the general breakdown. It is projected that it will be quite similar next year. There is very little shift in that spread for 1977.

Senator BYRD. If you continue to fund more and more work with the national laboratories along this same ratio that you have just indicated, how will you subsequently get industry involved so that they can commercialize the processes?

Dr. WHITE. We are charging the national laboratories very seriously with the matter of the technology transfer to industry and requiring them wherever possible to work on a co-funded basis with industry. I have made it very clear to them that if they don't demonstrate they can do this successfully, we simply won't fund it through the national laboratories.

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

Senator BYRD. Yes.

Senator MANSFIELD. Where are these national laboratories located?

Dr. WHITE. The ones that are particularly heavy in the fossil program are Argonne near Chicago, Oak Ridge, Tenn.; Sandia in New Mexico working on instrumentation and particularly in situ applications and Livermore. Those are the main ones.

Dr. SEAMANS. Livermore is in California and Brookhaven is on Long Island.

Senator MANSFIELD. Which of those are engaged in MHD work if any?

Dr. WHITE. Argonne has a principal role in MHD.

Senator BYRD. That is Illinois?

Dr. WHITE. Illinois.

Senator BYRD. Senator Stevens, you have some questions in this area?

PRODUCTION OF METHANOL FROM NATURAL GAS

Senator STEVENS. Going to another topic, I want to know, Dr. Seamans, have you addressed at all the problems related to methanol and making methanol from natural gas?

Dr. SEAMANS. Yes. We are working on the possibility of methanol from wood waste, for example.

Senator STEVENS. We have just had a series of presentations in the Commerce Committee concerning the probability or possibility for making methanol out of natural gas in the remote areas of Alaska, and we are highly concerned over the loss that is involved in that process. We would be very grateful to you if you could take a look at it. We feel that in the remote areas of Alaska where we might have smaller deposits, smaller for us but quite large for the rest of the country, 2 to 5 trillion cubic feet of gas that will not be possible to build a pipeline to get the gas out, and we will have to have some process to convert it. And the methanol process seems to be the best process, but the losses are so great.

It appears that we may just have to leave the gas in the ground waiting for future technology, and I think that is something that should be addressed.

Dr. SEAMANS. I am not familiar with the specifics that you bring out. We certainly recognize that each region—and certainly Alaska is more than a State, it is a large region—has special problems, and we would be more than happy to work with the responsible technical people in Alaska. We will review this matter and see what might be done, that could be helpful at this time.

[The information follows:]

ANALYSIS OF PROCESSES PROPOSED FOR PRODUCING METHANOL FROM NATURAL GAS

The present manufacture of methanol involves conversion of natural gas to synthesis gas (cabron monoxide and hydrogen). The synthesis gas is passed over a catalyst to produce methanol. Current production of methanol by this route is about seven billion pounds.

Informal proposals have been received by ERDA to make methanol from coal but these have not been formalized.

RESPONSIBILITY FOR CATALYTIC CONVERTER TECHNOLOGY

Senator STEVENS. I thank you for that. The only other question I have is, what is your relationship to new technology such as the catalytic converter? Does your agency have any relationship to that at all?

Dr. MCCORMICK. Senator, the catalytic converter work was done at the Environmental Protection Agency.

Senator STEVENS. That was in terms of air quality rather than in terms of fuel efficiency, and we are getting highly disturbing reports about the numbers of them that are pulled off the automobiles that are actually consuming a great deal more energy than is considered efficient, at least by the users. And, I have just had some reports about fires that have been created by catalytic converters.

I wonder—I understand why you defer to them in terms of air quality, but do you defer to them in terms of fuel efficiency?

Dr. SEAMANS. We have not been involved in the development of catalytic converters. It has been, as Dr. McCormick said, the responsibility of the Environmental Protection Agency. Their research work, is broader than air quality. They do have quite a number of projects that do relate to energy and conservation of energy.

This is a matter that is pretty complicated. I have discussed this at length with Russell Train, and in turn with Mr. Fri of ERDA. We are going through all of our programs to look at the matters where there may be duplication, or where we feel that activities they have are not really sufficiently concerned with conservation.

Senator STEVENS. I appreciate that. I have a series of general questions relating to this type of coordination, too. But I am very, very much concerned that the consumers are being asked to pay for the price, that they are immediately taking them off, and those that aren't taking them off don't realize the safety hazards involved.

And particularly in cold countries, they tell us, for instance, that these things can't idle for more than 10 minutes. Well, if you hit a roadblock, or even a snowslide or something like that, up my way you have to leave your car running to keep warm.

And these things are not only a fire hazard, but they are consuming considerable amounts of fuel. I didn't know just exactly where you fit in in terms of the analysis of things like this. I am delighted to hear you are coordinating, but I am afraid we have got ourselves another problem like that seatbelt, Mr. Chairman, where we legislated the requirements for warning devices and suddenly found out that people are paying more to have them taken off than they cost to put in.

Senator BYRD. I don't believe we legislated specifically those particular devices.

Senator STEVENS. We legislated the standards and this was one of the things to meet the standards. The same thing with catalytic converters. A standard for air quality rather than a standard for fuel efficiency conservation.

Dr. SEAMANS. We are working in our program on advanced propulsion systems for automobiles including stirling cycles, gas turbines, and other advanced concepts. We really have not been doing any research development work on a catalytic converter.

Senator STEVENS. I can understand we shouldn't have duplication. But I would be hopeful that you would at least keep a good eye on the people whose objectives might not be entirely consonant with those that the Agency would have.

OIL AND EXTRACTION PROGRAM

Senator STEVENS. Why is there a decrease from $34.4 million to $32.2 million in your petroleum and natural gas extraction program operating expenses when advances in this field of research and development can have almost immediate benefits?

Dr. SEAMANS. Senator, the decrease in the fiscal year 1977 budget for petroleum and natural gas reflects some doubt expressed by OMB as to the number of enhanced oil recovery field tests required for a valid statistical evaluation of the applicability of the different enhanced oil recovery methods to a wide variety of petroleum reservoir conditions. OMB has requested a program management plan for enhanced oil recovery, which is being prepared, to clarify this question. I would note, however, that the budget request does allow for the addition of a number of new field tests which will add to the total amount of work underway, although at a lower rate.

Senator STEVENS. What was the funding request made by the Division to you, Dr. Seamans, and what was the request made to OMB for this item?

Dr. SEAMANS. The request by Fossil Energy to ERDA management for the oil and gas R. & D. program for fiscal year 1977 was $73.6 million in budget authority, $53.2 million in outlays; the same request was made by ERDA to the Office of Management and Budget. The OMB allowance was $36.9 million in budget authority, $32.2 million in outlays.

CAPITAL SHORTAGES

Senator STEVENS. According to a February 9, 1976, article in the Los Angeles Times, a recent study by Bankers Trust Co., concludes that the normal supply of investment capital will be sufficient to meet the energy industries' investment needs through 1990 without increased Government involvement. Please comment on the study.

Dr. SEAMANS. Our review of the study titled "Capital Resources for Energy Through the Year 1990," prepared by the Energy Group of the Bankers Trust Co., indicates that their conclusions are based on a reasonable set of assumptions. As such, we agree with their conclusion that a sufficient supply of investment capital will be available to meet the energy industries investment needs through 1990.

In a recent publication, National Energy Outlook, FEA concurs in this general conclusion. However, to say that the capital market will have the necessary capacity does not assure us that the needed funds will actually flow to the energy sector in the needed amounts. We expect that most of the needed energy sector investments will be able to attract the necessary financing from private sources without Federal financial assistance.

There are, however, some types of projects which, for various reasons, may not be able to attract funds in the near-term from the private market without some form of Government assistance. For example, the proposed synthetic fuels commercialization program involves first-of-a-kind plants with a number of uncertainties related to economics, environment, regulatory policy, marketability of the product, et cetera. As such, private investors will not commit the capital without some form of Federal participation. Federal assistance

in accelerating the development of this industry is in the Nation's long-term interest in that a significant portion of this Nation's energy needs after 1990, are projected to be met by synthetic fuels. Without such Federal assistance, no significant contribution from this new energy will be forthcoming to replace the projected dwindling supply of oil and gas in the post-1985 period.

It is important to further note in general that almost all of these long-term energy studies differ not so much in terms of the demand for investment capital over the next 5 or 15 years, but rather the conditions affecting the supply of savings. The key variable in these studies appears to be the size of future national budgetary deficits including Federal, State, and local budgetary accounts. Needless to say, large deficits will result in a capital shortage while surpluses contribute to an increase in savings. In the study published by the Bankers Trust Co., the Federal deficit is projected to gradually decrease through 1984, with balanced Federal budgets continuing through 1990. On the other hand, State and local budgetary deficits, are projected to slowly increase after 1979, with the negative impact of these deficits on national savings more than offset by a declining Federal presence in the capital market.

Even if the need to increase the Federal deficit should arise, appropriate economic policies can offset the potential impact of increased deficits on the rate of savings and in turn the capital markets. Henry C. Wallick of the Board of Governors of the Federal Reserve System has suggested one alternative for example, whereby the method of taxing corporations would be gradually altered so as to encourage less external corporate financing without loss of tax revenue. That is, tax rates on dividends and retained earnings would be lowered while the rate on corporate income applied to interest payments is increased. Other alternatives presented in "Capital Needs of the Seventies," Brookings Institution, 1975, "The Capital Shortage: Near-Term Outlook and Long-Term Prospects," Data Resources, Inc., 1975, as well as in other studies include easier monetary policy and higher interest rate ceilings.

SOLID WASTE MANAGEMENT

Senator STEVENS. Under its function of solid waste management, EPA is also conducting research into use of solid waste for generation of electricity. How does ERDA coordinate with EPA to insure there is no duplication?

Dr. SEAMANS. We carry out considerable informal coordination at the working staff level to include such activities as EPA participation in review of ERDA project proposals. We also participate in an Interagency Committee on Resource Recovery which is currently chaired by EPA. Beyond the staff level coordination, we are working very hard to develop a memorandum of understanding with EPA which, among other things, will delineate areas of responsibility and spell out formal coordination requirements to insure there is no duplication.

FUEL CELLS

Senator STEVENS. What is the current outlook for fuel cells in terms of efficiency and in terms of time frame as a viable producer of usable energy?

Dr. SEAMANS. The initial electric utility fuel cell systems are expected to operate at efficiencies between 38 and 40 percent. The efficiency will remain nearly constant over 75 percent of the range of operation. Utilizing waste heat, fuel cells in buildings and in industry will operate at efficiencies from 75 to 90 percent. The first commercial units for both applications should be available in the 1979–80 time frame.

Senator STEVENS. Thank you, Mr. Chairman.

Senator BYRD. Thank you, Senator Stevens.

ERDA'S ABILITY TO OBLIGATE FISCAL YEAR 1977 FUNDING

Senator BYRD. Dr. Seamans, the ERDA budget proposal for fossil fuels and energy conservation operating expenses overall shows a significant increase, up some $124 million, or more than 20 percent.

Can you obligate that kind of program increase effectively?

Dr. SEAMANS. We believe we can and should. We recognize that we have been somewhat slow in obligating this year, but we still have plans for coming reasonably close to obligating our 1976 funds by the end of the transition quarter. We believe that we are building a competent team that can do a sound job with the additional funding and get on with the number of extremely important projects.

Senator BYRD. Last year, as you recall, the committee was concerned over the large unobligated balance remaining from fiscal year 1975. It was well over $100 million, which would indicate that ERDA was having some problems handling the expansion that was provided by Congress.

Now, what are you doing to get on top of those problems?

Dr. SEAMANS. Well, this was a concern not only to the committee, but certainly a concern to us. When we take on responsibilities we intend to move out and utilize the funds in a sound way. This involves several organizations within ERDA including the program offices.

As Dr. White said earlier, we have had particular difficulties in the fossil fuel area for the reasons he enumerated. We believe we now have a much better coupling between our procurement and contracting organization, our legal organization, and our program office. We expect to be doing a progressively better job this year than last.

1976 OBLIGATIONS

Senator BYRD. Your 1977 budget projects no unobligated balance at all by the end of the current year. Is it realistic to predict that you can obligate all of the funding available by next July?

Dr. SEAMANS. Well, by this coming July we will not have obligated all of 1976 funds, but we have plans to complete the obligation by the end of the transition quarter.

I think we are going to come close, but I really think that there will still be some moderate carryover into 1977.

Senator BYRD. Can you indicate how much you have in mind?

Dr. SEAMANS. We don't have any in mind. Frankly, our plans call for obligating all the funds. I am just putting a little administrator's discount on whether we are really going to make it. I think we will come close.

Senator BYRD. Well, if you don't make it, can you give us some idea of how close you will come?

UNOBLIGATED FUNDS PROJECTIONS

Dr. SEAMANS. Would you care to address that Dr. White?

Dr. WHITE. Well, we would expect the slippage, if there is any, will be in the extension of negotiations where there has already been essentially a commitment to a contractor for a particular procurement. The contract may not have been signed by the deadline, but the commitment will have been made.

In terms of commitment in fossil energy, we expect to be within a few thousand or perhaps even tens of thousands of dollars. Regarding the slippage of legal obligations, that is the signing of contracts, it is hard to foresee that it would reach anything like last year's level unless there is a major change in one of the program plans between now and then. This is possible but not too likely.

I could see us having, perhaps, up to $50 million not legally obligated. These funds would be committed but the contracts would not be signed by the end of fiscal year 1976. The contracts might be signed 30 to 60 days after that. This is very difficult to estimate.

I think by 30 to 60 days before the end of the transition quarter we will have a much better fix, of course, on just what that will be.

Dr. SEAMANS. We have been asked by other committees to give our best estimates on this for the month of April, and we will be happy to supply that information to you as well.

Senator BYRD. All right. If you will, we would like to have that.

STATUS OF 1976 OBLIGATIONS

Now, what was the total obligational authority available to ERDA for fossil fuels and conservation programs that we are considering at the beginning of this fiscal year?

Dr. SEAMANS. Mr. Greer, our controller——

Senator BYRD. And, how much has been obligated to date?

Mr. GREER. The total availability for operating expenses Mr. Chairman, on fossil was $484 million for 1976. That consisted of $107.8 million carryover, and an appropriation of $376.5 million. In the conservation area, the operating expense availability was $41 million. That was a $3 million carryover, and a $38 million appropriation.

Senator BYRD. How much has been obligated to date in both of these areas?

Mr. GREER. I don't yet have the March figures. Those will be in in the next few days. But through February we had obligated $95 million in the fossil energy area, but we had some $266 million in various stages in the procurement process, and some $26 million dedicated to the energy research centers. This leaves $97 million that has not in some form been identified to procurement at this point.

Senator BYRD. How about conservation?

Mr. GREER. In conservation, the obligations through February were $7.5 million, but again we had some $17.5 million in the procurement process, and dedicated funds to the national laboratories of $3.5 million; leaving $12.7 million yet to be identified to procurement.

Senator BYRD. Will you supply a listing for the record by activity, by subactivity, and by program, showing the totals available and the

amounts obligated at the end of February and also for March when that is available?

Mr. GREER. Yes, sir. We would be pleased to do that.

Senator BYRD. And give us your June 30 projections?

Mr. GREER. Yes, sir.

[The information follows:]

STATUS OF OBLIGATIONS FOR FOSSIL AND SELECTED CONSERVATION PROGRAMS

[Dollars in millions]

	Fiscal year 1975 carryover	Fiscal year 1976					
		Appropriation	Availability	Obligations incurred	In procurement process	Additional dedicated funds [1]	Requiring division action
Feb. 29, 1976:							
Fossil	107.8	376.5	484.3	95.0	265.9	25.9	97.5
Conservation-end-use and technologies to improve efficiency	3.0	38.2	41.2	7.5	17.5	3.5	12.7
June 30, 1976:							
Fossil [2]	107.8	376.5	484.3	390.9	93.4	.....	.....
Conservation-end-use and technologies to improve efficiency	3.0	38.2	41.2	41.2	.....	.....	.....

[1] Funds for labs, ERC's, other GOCO's and interagency agreements above amounts already obligated.

[2] All items are expected to be in procurement by Apr. 15, 1976. Of the projected unobligated balance at June 30, procurement estimates the total ($93.4 million) will be obligated during the transition quarter.

NOTE.—Obligational data for March and April 1976 will be provided later at a higher level of detail.

ERDA'S CAPABILITY TO UTILIZE ADDITIONAL FUNDING

Senator BYRD. Now, Dr. Seamans, I noted the concern expressed in your statement about the pending increases in your authorization bill. Are you saying that ERDA cannot effectively utilize any increases above the present budget?

Dr. SEAMANS. That is a very difficult question. The present budget was put together with several overall considerations in mind. One was obviously the ability of ERDA to do the job and do it effectively. Another had to do with the overall budget constraints on total Government expenditures.

Our request to OMB was substantially larger than what was finally approved by OMB and the President. We believed when we submitted those larger dollar amounts that we could manage a program of that size, and that there were important objectives that could be achieved.

As time goes on, however, since we are not planning on additional amounts it becomes more difficult to use them and use the funds effectively. We could possibly manage a somewhat larger effort than that which is indicated by the present budget request.

Senator BYRD. Well, we recognize that you are here to support the budget levels, but Congress will undoubtedly make some changes. If budget increases were provided, in what specific areas do you believe that additional fundings would be most effective in achieving this Nation's energy goal?

Dr. SEAMANS. That is also an excellent question. Obviously, some of the increases would not be in areas that come under the purview of this committee. One of the areas we have been discussing here

this morning is magnetohydrodynamics. This matter would be resolved by the reprograming action that we have been discussing.

FUEL CELLS

One of the particularly thorny areas, and one where I am afraid I have not been doing as effective a job as I should in presenting it to either OMB or the Congress is in the area of fuel cells. When we met before your committee last year we did not have our plans fully characterized. I took the view at that time that $3.5 million would be quite satisfactory. A short time later, the utilities came in and discussed a possible program. This included not only individual utilities but also EPRI, the Electric Power Research Institute, and together we developed a series of projects which we think would be highly beneficial.

We did not, however, convince the OMB of this. Since then we have gone back to the OMB and discussed with them the possibility of increasing the funds in 1977 from $3 million in outlays to a $14 million level. This is one area that I feel can be extremely helpful in conserving energy. It is broken down into a number of detailed projects which we would be happy to discuss with this committee.

Now, I have not yet had a response from OMB, and I don't know the extent to which they will support our request for an amendment in this area.

Senator BYRD. Your new budget authority request for fuel cells is $10 million?

Dr. SEAMANS. In the budget, yes. As we have indicated to OMB, we now believe that should be $21 million.

Senator BYRD. How much did you request at OMB level?

Dr. SEAMANS. I can give you that in just a minute.

Mr. GREER. We will have to get a breakdown of that.

Senator BYRD. Does anyone have it here?

Mr. GREER. It was $12 million in budget authority. Let us provide the details for the record.

[The information follows:]

FUEL CELLS—FISCAL YEAR 1977 BUDGET REQUEST

[In millions]

	Budget	
	Authority	Outlays
Original request to OMB	$10.0	$8.0
Original OMB allowance	4.0	3.0
Appeal	12.0	8.0
Result of appeal	4.0	3.0
Amount in President's budget (by reallocation within total conservation budget with OMB concurrence)	10.0	3.0
Second appeal, Apr. 5, 1975	21.0	14.0

The original request was for a base R&D program only and did not include any demonstrations. Subsequently it was determined that a 4.8 MW demonstration program was desirable, hence, an appeal for an additional $12.0 budget authority and $8.0 budget outlay was submitted. When the appeal was disallowed, however, the program reallocated funds, with OMB concurrence, from within the total Conservation R&D budget to make a total of $10 million budget authority available for fuel cells.

FUEL CELL FUNDING

Dr. SEAMANS. This is one of those areas that have been rapidly evolving, and we just haven't been effective enough in getting out in front and explaining the importance of having an expanded effort.

Senator BYRD. So $10 million, then, is not sufficient to meet the goals stated in your justification of commercializing fuel cells for 1980?

Dr. SEAMANS. Well, it is sufficient to carry out the program that we have described to the Congress, but it is not sufficient to carry out a number of projects that we feel are particularly important. One has to do with a 5 megawatt fuel cell development where the utilities and the supplier of the equipment would put up a third of the funding and we put up two-thirds of the funding. The total project comes to $50 million, and our contribution would be about $33 million.

Mr. GREER. Yes, sir.

Dr. SEAMANS. This would permit us to try out on a utility grid a system that would have close to 40 percent efficiency for peakload rather than roughly 20 percent that we are achieving today with turbine driven sources.

Senator BYRD. You mentioned the figure of $21 million. Would you elaborate?

Dr. SEAMANS. The $21 million in obligational authority goes with the $14 million in outlays. In the 4.8-megawatt project that I have just discussed that will involve $14 million in budget authority and $9 million in budget outlay.

FUNDING TO ACCELERATE FUEL CELL PROGRAM

Senator BYRD. Now, so that we have this straight, how much additional money for fuel cells could you effectively and economically utilize over and above the $10 million requested?

Dr. SEAMANS. Well, we are talking about an increase of $11 million in budget authority.

Senator BYRD. Senator Glenn has expressed a strong interest in this fuel cell program, and he thinks that it should be funded at a level that will allow the program to be accelerated. He has submitted a series of questions, and I am going to ask them.

Now, what do you think will happen to the EPRI, united technology–ERDA combined demonstration project if the budget outlays for 1977 remain at the level set by OMB?

Dr. SEAMANS. Well, it would not be possible within those levels to participate in that program. We will not have the funds to work out a cooperative agreement. The answer is that nothing will happen. The program will not get underway. And the question of whether it will get underway a year hence is obviously problematical, but there is always a danger that a year hence the teams of people who are now available to go to work will be on another project.

Senator BYRD. What level of funding is necessary for this coalition to remain intact?

Dr. SEAMANS. That is the level of funding I have already indicated, the $14 million budget authority and the $9 million outlay, two-thirds of the cost. That will be the Government's participation. The

industry participation would be one-third. I don't actually have the funding schedule for the private participants. I can supply that for the record, however.

Senator BYRD. All right. Please do.

[The information follows:]

ESTIMATED FUNDING SCHEDULE FOR FUEL CELL DEMONSTRATION

[Dollars in millions]

1. For fabrication of a 4.8 MW demonstration module (2 years)

	Budget authority
ERDA	$25
EPRI	5
United Technologies	12
Total	42

2. For test and demonstration program (1–2 years)

	Budget authority
ERDA (approximate)	$8
EPRI (to train operators, prepare site)	6

United Technologies support for test and demonstration program has not been determined.

TRANSITION QUARTER FUNDING FOR FUEL

Senator BYRD. Would funding in the second supplemental appropriations bill at this time significantly help in securing these funds?

Dr. SEAMANS. Our plan would involve using 1977 funds, and I don't think we have really considered the possibility of a supplemental.

Mr. GREER. Mr. Chairman, as I remember the schedule, the funding plan worked out with EPRI and UTC could begin as early as June if the arrangements were completed and the contract in place. So it is possible that some additional funding could be used in the transition quarter rather than in fiscal year 1976. I think we have adequate funds in fiscal year 1976. The squeeze would be during the transition quarter if we proceeded on this assumption.

Senator BYRD. In what amounts, looking to the transitional quarter?

Mr. GREER. As I recall, it is on the order of a few million dollars. The initial work starts at a fairly slow pace and then increases quite rapidly.

Senator BYRD. Could you supply that figure for the record?

Mr. GREER. We will give you a figure for the record.

[The information follows:]

Assuming a June 1 contract start an additional $1 million in budget outlays could be used during the transition period.

FUEL CELL REQUEST TO OMB

Senator BYRD. Have you submitted a request to OMB to cover this?

Dr. SEAMANS. No. What I was referring to was for fiscal year 1977. We have not done so for fiscal year 1976 or the transition quarter.

Senator BYRD. Have you had any reaction to the additional 1977 request?

Mr. GREER. We have not. No, sir.

With regard to the transition quarter there may be flexibility within our total conservation program, to make funds available, in which case we would propose to come back to the committee for reprograming.

Senator BYRD. Would this cover the transition quarter?

Mr. GREER. Covering the transition quarter.

Senator BYRD. Will you supply the committee with this information and the 1977 request?

Mr. GREER. Yes, sir.

Senator BYRD. How soon can you do that?

Mr. GREER. It should be within a week, sir, possibly within a few days.

[The information follows:]

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D.C. 20545

APR 5 1976

Dear Mr. Lynn:

In ERDA's 1977 budget, funding for fuel cells development activities is included within a Conservation subprogram designated as "Improved Conversion Efficiency." The request for fuel cells totals $10 million in budget authority and $3 million in outlays. As you are aware, we allocated funds to this program within the total provided for Conservation R&D programs because of the high potential for significant energy savings in the near to mid-term from the application of fuel cells to meet energy peaking requirements.

Our analyses continue to indicate that in electric and gas utility applications, fuel cells couple great flexibility in siting and type of fuel with a very high potential for savings of both dollars and energy. This view is widely shared within the utilit, industry. Certain electric utilities have already made initial commitments to future purchases and, through EPRI, have recently approved increased amounts for cooperative development programs with ERDA and the United Technologies Corporation (UTC). However, it is increasingly clear that the Federal Government will have to provide initial support to the development and demonstration program if it is to be carried out at a pace which would correspond to the high potential and level of utility interest. To proceed without delay at what we believe to be a technically sound pace will require additional funding in FY 1977.

We consider that a comprehensive fuel cells program at this time should have three components:

1. A cooperative program with EPRI and UTC to develop and demonstrate a first generation 4.8 MW unit for eventual use by the electric utilities.

2. A cooperative program with the gas utilities and UTC for the development and demonstration of multiple first generation 40 KW units.

3. A technology base program with a variety of industrial participants in studies, analyses, research, and technology development leading to second and third generation units. (The effort is also directed at broadening the industrial base of support.)

The financial aspects of these efforts are discussed in further detail below.

4.8 MW Program

This effort, including testing, will extend into FY 1979 at a total cost of $50 million and represents the culmination of a development program for which UTC has spent over $100 million to date. Of the $50 million required, EPRI and UTC will contribute one-third or about $17 million. The remaining $33 million would need to be provided by ERDA. We believe that a commitment to this level of Government participation is required if the program is to proceed; the participation will also lead to Government ownership of rights and data, and hence to broader industrial involvement.

We believe that $14 million in budget authority will be required by ERDA in FY 1977 to continue this program, which we plan to initiate in FY 1976. Our FY 1977 budget request includes $8 million in budget authority for this effort.

40 KW Program

It is estimated that the 40 KW program will require about $20 million through 1979, with the ERDA share being approximately $7 million. Of that amount, approximately $3 million in budget authority would be required in FY 1977. Funding for this purpose was not included in ERDA's FY 1977 budget request.

Technology Base Program

We believe that, eventually, an annual effort of $6 million is required for this program. This will necessitate at least $4 million in budget authority for FY 1977. The FY 1977 budget request now includes $2 million in budget authority for the technology base program.

In summary, we see a requirement for $21 million in budget authority in FY 1977, compared to the budget request of $10 million. Corresponding outlays total $14 million instead of the $3.0 million presently budgeted. The requirement for FY 1978 will be somewhat higher but should drop sharply in FY 1979 as the test and demonstration of the 4.8 MW and 40 KW units are completed. The following table summarizes our requirements:

	FY 1977 Budget		Revised Request		Outyear Funding	
	B/A	B/O	B/A	B/O	B/A	B/O
			($ in Millions)			
4.8 MW Program	$ 8.0	$ 1.0	$14.0	$ 9.0	$ 16.5	$ 21.5
40 KW Program	-	-	3.0	2.0	4.0	5.0
Base Technology Program	2.0	2.0	4.0	3.0	6.0 a/	6.0 a/
Totals	$10.0	$ 3.0	$21.0	$14.0	$ 26.5	$ 32.5

a/ Annual funding for technology development program.

At the present level of funding for fuel cells in FY 1977, progress of the program would be severely constrained, to the detriment of early development of what I consider to be an extremely promising energy technology. I would very much like to have OMB approval of an amendment to our 1977 budget to obtain the additional funding needed to move forward more aggressively with this program. We will be pleased to provide any additional information you may need.

Sincerely,

Robert Seamans

Robert C. Seamans, Jr.
Administrator

FUEL CELL FUNDING ASSESSMENT

Senator BYRD. Very well. And from what areas would that reprograming come.

Mr. GREER. What we would propose to do is look at our total funding patterns at this point in time, and see what availability there might be, Mr. Chairman. Right now I don't have a good candidate.

Senator BYRD. What are ERDA's plans to broaden the industrial base of the fuel cell industry so that one company does not develop a monopoly?

Dr. SEAMANS. Well, that is the reason for the amendment we are discussing with OMB for fiscal year 1977 outlays of $14 million. This would provide $3 million in what we call a base technology program which would be used primarily to get others involved in specific areas and hence ensure that there is lively competition in this field.

FUEL CELL TECHNOLOGY ASSESSMENT

Senator BYRD. What were the results of the technology assessment that you completed in November of 1975 on the fuel cell?

Dr. BELDING. The results show that the fuel cell is in fact a very attractive machine from a technological standpoint. We also then looked at economic aspects to see if it would, in fact, fit into the economic environment that we see today. We have just completed the economic assessment and those results will be published shortly. From a preliminary evaluation it looks very attractive.

Senator BYRD. How soon will those results be published?

Dr. BELDING. We have received the reports in-house and we are now reviewing them. We will finish the review within the next month.

Senator BYRD. Now how soon could you supply this subcommittee with your results?

Dr. BELDING. As soon as they are published, within the next couple of months.

Senator BYRD. Can you give us any preliminary opinions in this regard?

Dr. BELDING. From an economic standpoint the fuel cell looks very attractive. The major problem as we see it with the fuel cell is that we do have to put it into production and bring the cost down. Cost has been a major hindrance throughout the life of fuel cell technology development. We think that from a technological standpoint that can be done, and it is going to look very attractive economically.

Senator BYRD. What are your longevity and cost figures, the goals?

Dr. Belding. It depends on the size of the unit, but we are shooting in the larger units for a number like $250 to $300 a kilowatt hour which is very cost competitive.

Senator BYRD. And what about longevity?

Dr. BELDING. We are shooting right now for 5 years of cell life before failure. However, that is really a deceptive number because we define failure as a degradation in performance of 5 percent. The fuel cell will in fact continue operation after it has reached that 5 percent degradation. So the real goal is 5 percent degradation over 5 years and then it will continue to run at approximately 35 percent efficiency, which is still more efficient than a gas turbine.

Senator BYRD. How close would you say are the longevity and cost figures to the goals of 5 years and $250 per kilowatt hour?

Dr. BELDING. We have really no technological base for the economics at this point. That is one of the purposes of the overall program, to develop that technological base, the work cost.

As to the longevity, we do have one cell, a single cell which has run for 5 years with less than a 5-percent degradation. We are continuing now to put that cell through its paces and trying to scale it up to a real system. There is a larger 40 Kw system presently undergoing longevity tests.

So I think in answer to your question, the prospects of the technological longevity are very good.

Senator BYRD. What kind of fuel savings are realistically possible by 1985 with the use of fuel cells?

Dr. BELDING. The number that we have used is on the order of about 275,000 barrels of oil a day. This depends on the penetration we can make into the market. The markets examined are peaking, intermediate load, spinning reserve, old plant replacement, and onsite applications in buildings and industry. The market penetration assumed varies from application to application. It is a very complex market penetration, but overall the savings potential looks very attractive.

[The following information was subsequently provided:]

LONGEVITY AND COST GOALS

We hope to achieve the longevity goal of 5 years with less than 5 percent degradation and the cost goal of $250 per kilowatt hour in the next 4 to 9 years; that is at least by 1985. The first commercial units will probably not completely achieve these goals.

FUEL CELL TECHNOLOGY ASSESSMENT FINDINGS

A technology assessment conducted on October 15, 1976, determined that a demonstration program could begin as soon as possible, with a 90 percent chance of achieving a successful test and demonstration. Examining a series of cost/benefits studies ERDA believes that fuel cells have the potential of saving 275,000 barrels of oil per day by 1985 and over $1 billion per year in lower electric costs in the same time period.

Two fuel cell economic assessment studies have been completed; one by United Technologies and one by Argonne Laboratories as a check on the former. A third major study, conducted by the Office of Advanced Planning and Analysis, will shortly be released by ERDA.

Senator BYRD. Senator Hatfield, do you have some questions at this time?

AVAILABILITY OF CAPITAL FOR COMMERCIALIZATION EFFORTS

Senator HATFIELD. Thank you, Mr. Chairman. I have just one question on one issue that I would like to take up with Dr. Seamans.

I am sure you are familiar with the Banker's Trust Co. study concerning the capital requirements for private energy industries through 1990, I believe they used the figure $790 billion which they estimate will be the requirement. And I believe that one of their conclusions was that under normal procedures, and normal channels and sources of such capital that we could expect that private capital can meet those requirements without increased governmental involvement.

Coming from the Pacific Northwest and recognizing the tremendous increases in hydro investment requirements, I am just curious to know

what your reaction is to the Banker's Trust Co. study and estimate as to one, the figure, is it a realistic figure of $790 billion that is going to be required; and two, their conclusion that private capital can provide such requirements.

Dr. SEAMANS. Well, I don't sit before you as a financial expert. I am sure you realize that. I think the level that you mentioned is the kind of funding that will be required. I think the country does have before it a major and extended need for funding if we are going to work our way out of the untenable position we are in now. We are relying so heavily on oil and gas, and we know that the oil and gas production domestically is going to fall off and further that eventually the world supply will.

We have got to make a rapid transition into other forms of energy. Where the funds will come from, whether they can really come from the private sector is a matter of some concern to me. It implies that the investments will be attractive and this has not been so in the last few years.

For that reason there has been a drop in orders for such things as nuclear power stations. Now this is a matter that we have gone into quite carefully in connection with our synthetic fuels program and the possibility of commercializing it. And I just wonder if Dr. McCormick would care to add a thought here.

Dr. MCCORMICK. I think, Senator, in general we would agree with the primary conclusions of the Banker's Trust study which indicate the capital needs probably will be taken care of if industry is allowed to generate enough capital. Several other major studies that have been done in the government by FEA and also privately by the Brookings Institute, and several others have more or less confirmed the general results of the Banker's Trust study.

There was some concern last year in looking at the projected energy investments that generating the necessary capital would be a terrible problem. I think subsequent and more careful examination of the ability of the economy to generate capital has indicated this isn't a serious problem.

NEAR-TERM INCENTIVES

Senator HATFIELD. Then I gather that your assumption that you are moving on is that such investment capital of such magnitude or such levels of requirement will be met by normal channels of capital formation, capital availability?

Dr. SEAMANS. Yes. I think, looking at it overall, that is so. I think for the near term, for example in the synthetic fuels area, we believe that there will not be sufficient investment for a variety of reasons. The risks are high. There are a lot of uncertainties. There are environmental and economic and other uncertainties that are holding back companies from moving into large commercial plants, like coal gasification, for example.

Therefore we believe that there is a need for some form of Government loan guarantee support right now to get some of these projects started. But in the long run I have confidence that once we have cleared up the uncertainties in some of these areas that private capital will do the job.

I think that is the reason right now for the dramatic drop in, say, nuclear fuel plants. People don't know today exactly what is going to happen in California or in other parts of the country.

Senator HATFIELD. On the referenda?

Dr. SEAMANS. On the referenda I think all of that will get resolved one way or another, and then there will be a basis for people moving ahead.

Senator HATFIELD. I think you are quite right that the referendum situation has affected that. I would also think that for the record it ought to indicate that where we have been computing or calculating nuclear power plants in our part of the country in the hundreds of millions of dollars, the one that is closest to being realized in the next step is $1.3 billion. And $1.3 billion for one private corporation, the size of the corporations that are attempting to undertake these projects, is a rather significant capital requirement.

They are not certain at this point that it is going to be available in the normal market, the capital market.

COMMERCIAL SYNTHETIC FUEL PLANTS

Dr. SEAMANS. Well, that is of course the same type of concern that we get into with commercial synthetic plants. They tend to be billion-dollar-type investments, and there aren't very many companies that can take the risk at this time with such a large percentage of their net worth devoted to a single facility.

Senator HATFIELD. That is why I think perhaps if our assumptions are for the long term then we have some maybe short range or short term innovations called for at this time to get us into that long term situation. Because at this moment I don't see the capital formation there, frankly. And in the experience of our own hydrothermal systems——

Dr. SEAMANS. I honestly agree with that.

Dr. MCCORMICK. Bankers Trust and others have already examined the long-term market for capital, and they generally indicated they saw in the future the capability to generate the capital.

Then there are the requirements of the next few years for more innovative energy technologies that entail larger than normal business risks. For these, such as the synthetic fuel area, and perhaps some other areas, there will in some cases be a requirement for the Federal Government to assist in some of these massive projects involving investments in single plants of $1 billion or more.

Senator HATFIELD. Do you have some recommendations along those lines?

Dr. MCCORMICK. One of the matters before the subcommittee is the supplemental request for the synthetic fuels commercial demonstration program. The request is for a $2 billion loan guarantee program backed up by $500 million in borrowing authority which the ERDA would administer along with the U.S. Treasury.

Senator HATFIELD. Thank you, Mr. Chairman.

Senator BYRD. Thank you, Senator Hatfield.

OMB CUTBACKS

Although the proposed budget increases are significant, they are well below the division and ERDA requests to OMB. For the operating programs in this bill, the final budget is $256.7 million below division requests and $215.7 million below ERDA's submission.

Other than budget constraints, what were the reasons for the OMB cutback?

Dr. SEAMANS. We got into a whole series of specific reviews. The OMB examiners reviewed each one of the program areas, and in some areas we convinced them of the validity of the projects and the need for the funds, and in some cases we did not. If you would like to get into this in a little more detail, I think it would probably be helpful to have Dr. White and Mr. Heller discuss certain of these specifics with you, or whatever you would like to do.

Senator BYRD. All right.

FOSSIL ENERGY CUTBACKS BY OMB

Dr. WHITE. Well, one of the specific areas was oil and gas, where we were doing a good deal of work in supporting tertiary recovery. OMB felt we were approaching this in a somewhat opportunistic and haphazard way and felt we did not have a very sound strategy, particularly relating to the work that was federally funded, and the Federal role contrasted to the private sector, which is quite active in this field.

They have charged us with coming up with a much more soundly based plan, and we are in the midst of developing the details of that plan currently.

We feel we are on sound ground, but we have to admit we have very little, other than our awareness of the activity in this field, to prove it. It is a difficult program to justify because it is based on the amount of statistical information you need to prove a commercially available technology.

They differed with our view of the importance of the in-situ gasification of coal. This was just a disagreement of how important it is. I happen to think they are wrong. We are pushing for that.

On magnetohydrodynamics they took the view that it was very long term technology and therefore it was not a critical matter from the standpoint of this year's program and it could move along more slowly.

Another area was low-Btu gas, which they felt again was one which was not as critical because the technology is basically available in Europe. What we are doing is improving it. Their view was that the improvements were hopefully going to be useful, but it was not critical to make them. In other words, if somebody wanted this technology, they could buy it today.

LOW-BTU GAS

Senator BYRD. What is your feeling on low-Btu gas?

Dr. WHITE. Well, there is no question that the technology is available in Europe, but it is very expensive to operate; the plants are not at all attractive economically by our standards, and we feel we have a number of approaches which could bring the cost of these

down to make them competitive, perhaps even by today's standards, with oil and gas in some parts of the country. A plant that was having to pay a lot for gas but had access to coal could have energy from coal through low-Btu gas.

We are taking that approach in our present program.

Senator BYRD. Is it possible that OMB felt you could not effectively obligate the tremendous increases that ERDA divisions have requested?

Dr. WHITE. I do not recall that they made that point to us particularly. I think it was more their views of the program itself.

Dr. SEAMANS. I think overall OMB had in mind that if projects grow too rapidly there may be management problems. Also I think they have had some concern about the number of people needed. They have wanted to keep the number of ERDA personnel down and they recognize this in turn as a constraint.

FOSSIL ENERGY AND CONSERVATION SHARE OF THE ERDA BUDGET

Senator BYRD. Despite your budgeted program increases, the fossil energy and conservation share of the total ERDA budget remains modest, little more than 20 percent of the energy R. & D. total. In view of the near- and mid-term payoffs, do you consider that a proper balance?

Dr. SEAMANS. Well, if we had it all to do over again, and could go back 10 years with the same urgency we feel today, we would have a better balance between fossil, conservation, solar and geothermal, and the other areas. However, starting where we did, with essentially no work in conservation and with a growing but still modest program in fossil energy, I believe that we are bringing these programs along as rapidly as we can. I think that is what we have been discussing with you. However, it by no means indicates the value of the programs reflected by the percentage of the total budget.

Senator BYRD. Are we making any shifts in this imbalance?

Dr. SEAMANS. Well, the problem we face in the other areas, as for example in the nuclear, is that we are just getting into a major demonstration program in the breeder, and that calls for nearly the same increase in funds as in fossil fuel.

Another aspect of nuclear has to do with the fuel cycle where we have the responsibility for such things as the storage of the high-level waste, safeguards and matters of this sort. We are really supporting an industry. And we just felt that we had to also increase those funds in view of that responsibility.

So it is not moving into balance really as rapidly as we would like, but I think we really have to look at each program area on its own. We have to look at where we stand and what needs to be done.

NUCLEAR FUEL CYCLES AND SAFEGUARDS

Senator BYRD. In view of the safety hazards in connection with the nuclear energy program which are resulting in increased concern over the country, do you feel that we ought to increase the percentage of the fossil energy and conservation share of the total ERDA budget?

Dr. SEAMANS. Well, I really think that we have an extremely important responsibility in the nuclear area with regard to the fuel cycle and safeguards. For example, in nuclear waste management, which is a public concern at this time, we have the largest single increase of any in our budget. We are going from roughly $12 million to around $63 million. I feel it is absolutely necessary to do that. I feel that with commercial plants it is a matter of licensing by the Nuclear Regulatory Commission. It is not our direct responsibility. But in supporting technology we really do have to increase our effort to support in the long run those powerplants that are now in operation.

FOSSIL ENERGY AND CONSERVATION PRIORITIES

Senator BYRD. Now in view of the necessity for stepping up the efforts to implement liquefaction and gasification of coal in order to meet the energy needs of this country quickly and reduce our dependence upon outside sources of oil, do you not have an equally important responsibility to increase the fossil energy and conservation share of the budget?

Dr. SEAMANS. I do not in any way mean to downplay the importance of the use of fossil fuels and conservation. I feel that the conservation area really has been neglected. We have to bring that up to a level with everything else that we are doing. I feel the same way about the whole synthetic fuels area. Frankly, we were very disappointed that the bill for the $6 million loan guarantee program for the commercialization of synthetic fuels did not go through. I feel that is one extremely important element in the chain of events that must take place all the way from the basic research to development and demonstration.

If I felt that we could move ahead more rapidly in these areas, obviously I would be telling you so. But I think that the budget that we have before you does give us a very substantial ability to grow. I think in some areas, as Dr. White said, we could do somewhat more, but I do not think we could really put a tremendous increase in these areas and manage it properly at this time.

Senator BYRD. The fossil energy and conservation share of the total budget represents little more than 20 percent of the energy R. & D. total. How does this compare with last year?

Dr. SEAMANS. It is pretty close to the same.

Dr. WHITE. It is up over 1975.

Dr. SEAMANS. How much percentagewise?

Mr. GREER. The percentages for 1976 and 1977 are roughly the same. The total energy R. & D. increased by a third, over 35 percent in terms of outlays. Those programs grew proportionally with the other programs.

Dr. SEAMANS. But the percentage increase of our overall budget was 30 percent. The fossil fuel increase is quite close to that. The conservation increase was close to 65 percent.

NEED FOR GREATER EMPHASIS ON FOSSIL ENERGY

Senator BYRD. Why is there not greater emphasis placed on the fossil energy share percentagewise? This seems to have a more immediate potential for helping the Nation to meet its energy needs.

Dr. SEAMANS. There is absolutely no question that we have to rely increasingly on fossil energy, and particularly on coal, plus use our oil and gas reserves and get the most we can out of them.

It is as I tried to express earlier, of a built-in history. It depends on the ability to effectively expand these programs. Also there is, particularly in the oil and gas area, a very considerable effort that does not show up in our budget that has been carried out with private funds.

Senator BYRD. You have not given me the percentage figures for 1975 yet.

Dr. WHITE. The operating funds went from $321 million to $377 million from 1975 to 1976. Percentagewise, that is——

Senator BYRD. What percent of the total budget?

Mr. GREER. It is 27 percent of direct energy research and development.

Senator BYRD. Twenty-seven percent when?

Mr. GREER. In 1976 and 1977.

Senator BYRD. Well now, my understanding——

Mr. GREER. I added in the total conservation program, and your figures probably have just that part that goes to this committee. The figures we have show that the conservation is 4 percent of direct energy R. & D. in 1976 and 23 percent for fossil.

Senator BYRD. Let me get back to my question. The fossil energy and conservation share of the total ERDA budget, as I said earlier, remains modest, little more than 20 percent of the energy R. & D. total. What was it in 1975?

Mr. GREER. It was 16 percent in terms of outlays.

Senator BYRD. Now, you have referred to the built-in history, Dr. Seamans. We may be strapped by that history, but why can we not move out and break the chain here and put greater emphasis on fossil energy research in our total budget? That seems to be where the potential is; that seems to be where the assured success is promised.

Dr. SEAMANS. Well this is the specific issue that we were looking at ourselves and which we have addressed to a certain extent here this morning; the ability to expand effort at more than a given rate and do it effectively, that is to manage an increased program properly.

Let me refer to Dr. White and let him answer the question whether or not we could double the effort in a year or something of that sort.

Dr. WHITE. Certainly contracts might be let to spend that money. I think our ability to manage them wisely is very questionable.

For the most part I think what we would be doing would not make new breakthroughs in technology, but simply reduce the risk by having more tests of the same general type.

We could accept more of the proposals that have come in, on industrial applications of low-Btu gas or direct combustion, for example. We have had excellent responses to requests for proposals in these areas.

We could have two demo plants for high-Btu perhaps instead of one. This would certainly have some impact overall on the commercialization of fossil fuel technology. It is very difficult to really assess how much faster the private sector would pick up the element of

technology and exploit it for the general use of the public by that type of accelerated program.

To make a cost benefit analysis of increased R. & D. against commercialization is not something I think we have the ability to do currently.

SYNTHETIC FUEL COMMERCIALIZATION

Dr. SEAMANS. I really feel that moving ahead with the synthetic fuel commercialization program is a way of dramatically increasing the effort in this country in the fossil fuel area. It is addressed at using near current technology, of course, but it will make a significant contribution to our use of synthetic fuels by increasing our knowledge in environmental and socio-economic areas. It would provide an opportunity for using what we are now developing in some cases, either in extensions to or improvements of the plants that would come on line, and then take the next step into more advanced and really large scale systems. This is what the country really needs to get some of these billion dollar operations going.

Senator BYRD. Well, why don't we?

Dr. SEAMANS. Well, if we can shake this $2 billion loan guarantee program through the House—the Senate which has been fully supportive of it—we are all set to move on it, I can assure you.

NUCLEAR POWER

Senator BYRD. What percent of the total energy use in this country is being supplied by nuclear power?

Dr. SEAMANS. Nine percent of our electricity is coming from nuclear at this time, and that works out to about 3 or 4 percent of our total energy requirements.

Senator BYRD. How does that compare with the anticipated goals, say going back 5 years? What did we anticipate the percentage would be?

Dr. SEAMANS. Nuclear has obviously grown more slowly than the proponents expected 5 or 6 years ago. I do not know what they were projecting for this particular time. I know that looking ahead to the year 2000 the projections were the equivalent of 1,200 plants of 1,000 megawatt capacity each. What we are projecting now is of the order of 750 plants by the year 2000. We are projecting on the order of 180 plants 10 years from now.

We do have 58 plants in operation, and we have another 65 or so that are under construction.

Senator BYRD. Are those plants in operation? Are they in full-time operation?

Dr. SEAMANS. The 58 plants are in full-time operation. The actual amount of time that they operate is on the order of 60 percent, which is not too different from fossil fuel plants.

Senator BYRD. Well now, is industry taking more and more a dim view of nuclear energy in view of the waste disposal problems and the hazards that are concomitant thereto?

Dr. SEAMANS. There is no question that we have to resolve the waste disposal issue. At this time it is an important issue, and it is unfortunate that we do not have demonstrated methods.

We have several different methods. I personally favor vitrifying the high-level waste, turning it into a glass and storing it either deep in the mountains or in salt mines. But the actual need for these facilities for permanent storage will not come along for another 8 or 9 years because the spent fuel from a generating plant will go through a reprocessing cycle where much of the uranium and plutonium will be taken out of it and recirculated through the reactors. It is only after that whole process starts that you end up with the final high-level waste.

There are some real problems that need to be addressed. We look at them as engineering problems that are solvable. We believe we have good approaches. But there is no question that a lot of work needs to be done.

These reasons, as well as environmental reasons, and the time it takes in licensing, have the suppliers and major contractors concerned. But their managements are planning to continue in this field.

ENERGY CRUNCH

Senator BYRD. Now Doctor, we have known for a long time that—at least some people have felt for a long time—that we are going to have an energy crunch. And of course in the last couple of years we have been confronted face to face with that energy crunch. We have had an oil embargo, we see ourselves spending $25 billion a year to import oil into this country from sources that are vulnerable in case of an international crisis.

We have known that these processes for liquefaction and gasification of coal are available. The Germans—were they not liquefying coal and producing petroleum from coal in World War II?

Dr. SEAMANS. They could not have stayed in operation unless they had this technology and used it widely.

Senator BYRD. Yes. Now we put on a big crash program. There was another crash program after we saw the Russians throw Sputnik up into the sky. We sent a spaceship to the Moon and landed men on the Moon, and brought those men back safely. Now we recognize the need for producing exotic forms of energy in this country, and we recognize the fact that we have almost limitless supplies of coal, at least for the next 500 to 1,000 years or longer. We recognize the need for producing a low-Btu pipeline gas and a clean liquid boiler fuel. Why do we not get this done? Why can we not get it done?

It seems to me with all the technology that we have and the recognized need for this, why do we keep talking about it year after year—and I am not just talking about you. I have been talking about this for a long time with people who appeared before these committees. What is the bottleneck? Why can we not get this done and cut out this drain of funds that we keep pouring out of this country to bring in increasing amounts of oil subjecting ourselves to blackmail in case of an international flareup?

Where is the bottleneck? Why can we not get hold of this thing and get this work done?

Dr. SEAMANS. Well, this country has the capacity to get the job done, and it is absolutely essential to our survival that we do get it done.

The question is, How do we do it? That is where we get into—I will call them our institutional barriers. It is our feeling that we do not want to build all of these plants with public funds; that is, have the Federal Government take over and build the plants and operate them. We want to use private capital; we want to use industry and industrial capability.

So you immediately get into issues that relate to cost, to return on investment, issues of this sort. The difficulty today with the technology that came from the Germans in World War II is that it is still not cost competitive with the price of oil. There has to be a mechanism found to get the experience with this technology on a large scale, and in that way to build a base so that as new technology comes on which has as its primary objective getting the cost down, we will trigger the private sector to really move out.

And I really think that to get this done we really do need to take a stronger Government initiative. I think that the commercial synthetic fuel program is one such initiative that really is terribly important.

Senator BYRD. Well, we have not hesitated to pour in the funds in the nuclear energy development program. Why can we not do the same with something here that has infinitely more promise, at least in the immediate future, and does not carry with it the hazards and the environmental and emotional problems that go along with nuclear programs?

Dr. SEAMANS. We have really a unique situation in the nuclear that is not too different from the situation that we have in aeronautics. Nuclear reactor developments were carried a very long way in connection with our naval reactor program under Admiral Rickover. He actually provided the first commercial system at Shippingport near Pittsburgh. That laid the groundwork in a major way. A great deal of effort went into these reactors for submarines and carriers and so on, just the way the Defense Department and the aeronautical business has built large airplanes for military purposes. Then an awful lot of that effort was also spun off into the private sector. We do not have a comparable situation in the fossil fuel area.

My hope is that a proper expansion of our research development and demonstration program which we have been discussing here, plus this commercialization program would provide the same type mechanism for getting the fossil fuel area off dead center.

INTRA-AGENCY RIVALRIES

Senator BYRD. Do you have any in-house frictions, factions of rivalries, each of which is espousing this or that approach over some other approach, or liquefaction over gasification, or gasification over liquefaction which might be accounting for some of this delay?

Dr. SEAMANS. Let me speak first on an overall basis of nuclear versus fossil fuel versus solar and so on. I really believe that we have to move each area along as aggressively as we can. I do not think we can see the future that clearly, and at this time the situation is close enough to crisis that I think we have to have some alternate choices.

Now as between gasification and liquefaction I would like to ask Dr. White.

Dr. WHITE. I am not aware of any real jealousies or discord that would be in any way slowing these programs down. I think on the contrary, to the extent that there is competition between various groups, the general effect is to accelerate things more than otherwise.

A little example of a conflict we had is where both groups want to go ahead with a conceptual design on a 200 megawatt direct combustion unit. This is an example of that sort of thing. I do not think that is a problem, I really do not.

Senator BYRD. Well, I was just wondering.

Suppose I am in your agency and I am a great proponent of liquefaction for coal, and I think this is the answer to our Nation's energy needs, and Dr. White is a great proponent of gasification of coal and he thinks that is the way to go. Now who gets the two of us together and pops our heads together and says, "This is what we are going to do"?

Dr. SEAMANS. The example you picked would actually first come to Dr. White's attention because he is the Presidential appointee responsible for both areas. So in the example you have given, he would be the person who would review this. And then, of course, it would come to Bob Fri and myself, as the Administrator and Deputy for review.

At this stage if two proponents came to us with programs that really are well thought out and can really be properly managed, we would endeavor to embark on both of them and not have it an either/or proposition.

Senator BYRD. We would like to meet again this afternoon at, say 2 p.m. And this room will be available, Dr. Seamans. Can we all make ourselves available at that time?

Dr. SEAMANS. I do have an appointment with a number of Congressmen at 2 p.m., but our appropriations have top priority. So if that is your pleasure, I will be here.

SUBCOMMITTEE RECESS

Senator BYRD. All right, then let us come back at 2 p.m. We will meet until about 4 p.m.

The subcommittee will stand in recess until 2 p.m. this afternoon.

[Whereupon, at 12:05 p.m., the subcommittee was recessed, to reconvene at 2 p.m. the same day.]

(AFTERNOON SESSION, 2 O'CLOCK, WEDNESDAY, APRIL 7, 1976)

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

FIVE-YEAR PROJECTIONS

Senator BYRD. The subcommittee will resume its hearing.

Doctor, your 5-year projections are meaningless when it comes to assessing our real financial commitments down the road. What is ERDA's realistic estimate of funding levels for fossil fuel and conservation programs over the next 5 years based on the fiscal year 1977 budget now before us, and ERDA's goals?

Dr. SEAMANS. We are in the process, Mr. Chairman, of putting together runout costs on all projects, and in that way building up a 5-year estimate. We are still in the process of doing it, but we will give you the best estimate that we have at this time.

Senator BYRD. All right.

Dr. SEAMANS. Mr. Greer?

Mr. GREER. We have provided commitment projections which represent the runout costs of the fiscal year 1977 budget. They do not include new starts. We are attempting to develop so-called requirement projections which would include proposed new starts in the program in the future years.

We will provide those as soon as we get them.

Senator BYRD. When do you anticipate having them?

Mr. Greer. Within a month or two. We are working on volume 2 of the ERDA plan and I think the schedule for that is within a month.

Senator BYRD. All right. Let us have those.

The construction costs of demonstration plants alone will be substantial in the next few years assuming orderly development of the plants planned in this budget. What are the estimated annual expenditures for their construction in the next decade?

Mr. GREER. I do not have a breakout for just the plants themselves. Our total commitment projections for fossil energy, for example, run in 1978, $675 million, in 1979, $566 million, in 1980, $604 million.

We can break out just the construction portion of that, the plant portion of that and provide that to you, sir.

Senator BYRD. All right, if you would do that, the subcommittee would find that to be helpful.

[The information follows:]

PROJECTED PLANT BUDGET AUTHORITY FOR THE THREE DEMONSTRATION PLANTS INCLUDED IN THE FISCAL YEAR 1977 BUDGET

[In millions]

	FY-75	FY-76	T.Q.	FY-77	FY-78	FY-79	FY-80	FY-81	Beyond FY-81	Total
Clean boiler fuel demonstration plant	13	20	8	30	15	5	0	0	0	91
High Btu synthetic pipeline gas demo plant	0	0	0	10	78	70	47	34	21	260
Low-Btu fuel gas demonstration plant	0	0	0	7.3	45.7	103	22	22	0	200

The above data are projections based on preliminary ERDA estimates.

HISTORICAL AND PROJECTED EXPENDITURES IN FOSSIL ENERGY AND CONSERVATION

Senator BYRD. It would be helpful to the committee to determine just where we stand with the programs funded in this bill. Please submit for the record the total federal expenditures through fiscal 1975 by subprogram and fiscal year, together with the amounts you estimate will be needed to meet ERDA's established program goals in the next decade.

Dr. SEAMANS. We will certainly submit this information on each one of these projects. Of course, most of these projects will be completed well before the end of the decade, and as Mr. Greer said, we are still putting together the cost of the new starts. We will include that when we have that, which will be in about a month from now.

Senator BYRD. All right.

[The information follows:]

HISTORICAL DATA AND FUNDING PROJECTIONS

Funding History

Many of the programs funded by the Subcommittee do not have a comparable set of records for the periods before and after the establishment of ERDA. To the extent that comparable data is available, the material contained in Table I portrays the history comparable to the ERDA FY 1977 budget for the period prior to ERDA's establishment.

Funding Projections

ERDA does not have a set of "requirement projections" for its programs beyond FY 1977. While ERDA 76-1 "A National Plan for Energy Research, Development and Demonstration" identifies the types of activities that are contemplated beyond FY 1977, the activities are not sufficiently definitized to permit reliable cost estimating. In addition, the plan was not developed from the viewpoint of constrained financial resources.

We have, however, prepared "commitment projections" through FY 1981 for those activities contained in the FY 1977 budget. These projections reflect the "price-out" of activities initiated or underway in the President's FY 1977 budget, but do not reflect new starts or initiatives which may be planned in FY 1978 or later. Table II contains commitment projections for the Fossil Program and Table III contains commitment projections for the total Conservation Program.

TABLE I
FUNDING HISTORY
(B/A - $ In Thousands)

FOSSIL ENERGY DEVELOPMENT	
Coal Program	
Liquefaction	$ 141,036
High-Btu Gasification	93,138
Low-Btu Gasification	70,384
Advanced Power Systems	5,637
Direct Combustion	51,394
Advanced Research & Supporting Tech.	33,271
Demonstration Plants	13,000
Magnetohydrodynamics	22,740
Subtotal Coal Program	430,600
Petroleum & Natural Gas Program	
Gas & Oil Extraction	33,632
Supporting Research (Utilization)	3,234
Subtotal Petroleum & Natural Gas	36,866
In Situ Technology Program	
Oil Shale	6,070
In Situ Gasification	8,217
Supporting Research (Comp.)	1,884
Subtotal In Situ Technology	16,171
Misc. Plant & Capital Equipment	516
TOTAL FOSSIL ENERGY DEVELOPMENT	$ 484,153
CONSERVATION R&D	
Industry Conservation	$ 0
Buildings Conservation	2,400,000
Transportation	34,912,000
Improved Conversion Efficiency	2,252,000
TOTAL CONSERVATION R&D	$39,564,000

PAGE TOTAL

TABLE II
ERDA COMMITMENT PROJECTIONS
FY 1977 - FY 1981 ($ IN THOUS)

CTOTB77

LINE NO	NAME	1977 B/A 1/	1977 B/L 2/	1978 B/A	1978 B/C	1979 B/A	1979 B/D	1980 B/A	1980 B/D	1981 B/A	1981 B/D
50.0	FOSSIL ENE DEV										
51.0											
52.0	COAL										
53.0											
54.0	LIQUEFACTION	73946	79546	125100	106500	143500	135500	153700	151600	125000	164200
55.0	GASIFICATION										
56.0	HIGH BTU	45154	59304	64700	50675	61200	57890	33800	53590	27400	39390
57.0	LOW BTU	33052	39952	52800	56200	36000	45400	42700	41900	35900	35900
58.0	ADV POWER SYS	22500	12800	24500	18600	24500	23200	24500	36000	24500	30000
59.0	DIRECT COMBUS	52416	52116	88300	80300	75500	78600	57100	64700	24000	36600
60.0	ADV RESEARCH &										
60.1	SUPP TECH	37085	36585	39000	38975	40900	40890	42900	42890	45100	45090
61.0	DEMO PLANTS	107200	80900	165200	97475	48000	127800	88000	110500	103000	84800
62.0	MAGNETOHYDRO-										
62.1	DYNAMICS	37441	27341	46900	44800	63200	51000	87200	97900	79500	74900
63.0	OTH CAP EQUIP	150	100	300	260	220	170	250	290	190	230
82.0											
83.5	TOTAL COAL	408944	388644	606800	493785	493020	560450	530150	599370	464590	511110
83.6											
93.0	PET & NAT GAS										
94.5											
95.0	GAS & OIL EXTRA	35174	30454	35000	34985	35000	43280	35000	45270	35000	41270
96.0	SUPPORTING RES	1831	1831	1800	1800	1800	1800	1800	1800	1800	1800
97.0	OTH CAP EQUIP	170	120	180	115	180	150	200	170	210	190
135.0											
136.4	TOTAL PET &										
136.5	NATURAL GAS	37175	32405	36980	36900	36980	45230	37000	47240	37010	43260
136.6											
146.0	IN-SITU TECH										
147.0											
148.0	OIL SHALE	21535	12525	21440	25180	26140	32140	26140	26140	26140	26140
149.0	IN-SITU COAL										
149.1	GASIFICATION	8236	6736	8860	11140	8860	10860	8860	8860	8860	8860
150.0	SUPPORTING RES	1310	1310	1300	1300	1300	1300	1300	1300	1300	1300
151.0	OTH CAP EQUIP	50	50	30	30	130	120	230	230	280	270
159.0											
160.4	TOTAL IN-SITU										
160.5	TECHNOLOGY	31131	20621	31630	37650	36430	44420	36530	36530	36580	36570
160.6											
178.4	TOTAL FOSSIL										
178.5	ENERGY DEV	477250	441670	675410	568335	566430	650100	603680	683140	538180	590940
176.9											

1/ Budget Authority
2/ Budget Outlays

LINE NO	NAME	1977 B/A	1977 B/O	1978 B/A	1978 B/O	1979 B/A	1979 B/O	1980 B/A	1980 B/O	1981 B/A	1981 B/O
50.0	FOSSIL ENE DEV										
51.0											
52.0	COAL										
53.0											
54.0	LIQUEFACTION	73946	79546	125100	106500	143500	135500	153700	151600	125000	164200
55.0	GASIFICATION										
56.0	HIGH BTU	45054	59254	64600	50600	61100	57800	33700	53500	27300	39300
57.0	LOW BTU	33052	39952	52800	56200	36000	45400	42700	41900	35900	35900
58.0	ADV POWER SYS	22530	12800	24500	18600	24500	23200	24500	36000	24500	30000
59.0	DIRECT COMBUS	52416	52116	88300	80300	75500	78600	57100	64700	24000	36600
60.0	ADV RESEARCH &										
60.1	SUPP TECH	37085	36585	38900	38900	40800	40800	42800	42800	45000	45000
61.0	DEMO PLANTS	53000	50600	50000	45800	43000	48400	88000	69600	103000	84800
62.0	MAGNETOHYDRO-										
62.1	DYNAMICS	37441	27341	46900	44800	63200	51000	87200	97900	79500	74900
82.0											
83.5	TOTAL COAL	354494	358194	491100	441700	487600	480700	529700	558000	464200	510700
83.6											
93.0	PET & NAT GAS										
94.5											
95.0	GAS & OIL EXTRA	35074	30374	34900	34900	34900	43200	34900	45200	34900	41200
96.0	SUPPORTING RES	1831	1831	1800	1800	1800	1800	1800	1800	1800	1800
135.0											
136.4	TOTAL PET &										
136.5	NATURAL GAS	36905	32205	36700	36700	36700	45000	36700	47000	36700	43000
136.6											
146.0	IN-SITU TECH										
147.0											
148.0	OIL SHALE	21085	12085	21000	24700	25700	31700	25700	25700	25700	25700
149.0	IN-SITU COAL										
149.1	GASIFICATION	8236	6736	8430	10720	8430	10430	8430	8430	8430	8430
150.0	SUPPORTING RES	1310	1310	1300	1300	1300	1300	1300	1300	1300	1300
159.0											
160.4	TOTAL IN-SITU										
160.5	TECHNOLOGY	30631	20131	30730	36720	35430	43430	35430	35430	35430	35430
160.6											
178.4	TOTAL FOSSIL										
178.5	ENERGY DEV	422030	410530	558530	515120	559730	569130	601830	640430	536330	589130
178.9											

ERDA COMMITMENT PROJECTIONS
FY 1977 - FY 1981 ($ IN THOUS)

LINE NO	NAME	1977 B/A	1977 B/O	1978 B/A	1978 B/O	1979 B/A	1979 B/O	1980 B/A	1980 B/O	1981 B/A	1981 B/O
50.0	FOSSIL ENE DEV										
51.0											
52.0	COAL										
53.0											
54.0	LIQUEFACTION	0	0	0	0	0	0	0	0	0	0
55.0	GASIFICATION										
56.0	HIGH BTU	100	50	100	75	100	90	100	90	100	90
57.0	LOW BTU	0	0	0	0	0	0	0	0	0	0
58.0	ADV POWER SYS	0	0	0	0	0	0	0	0	0	0
59.0	DIRECT COMBUS	0	0	0	0	0	0	0	0	0	0
60.0	ADV RESEARCH &										
60.1	SUPP TECH	0	0	100	75	100	90	100	90	100	90
61.0	DEMO PLANTS	0	0	0	0	0	0	0	0	0	0
62.0	MAGNETOHYDRO-										
62.1	DYNAMICS	0	0	0	0	0	0	0	0	0	0
63.0	OTH CAP EQUIP	150	100	300	260	220	170	250	290	190	230
82.0											
83.5	TOTAL COAL	250	150	500	410	420	350	450	470	390	410
83.6											
93.0	PET & NAT GAS										
94.5											
95.0	GAS & OIL EXTRA	100	80	100	85	100	80	100	70	100	70
96.0	SUPPORTING RES	0	0	0	0	0	0	0	0	0	0
97.0	OTH CAP EQUIP	170	120	180	115	180	150	200	170	210	190
135.0											
136.4	TOTAL PET &										
136.5	NATURAL GAS	270	200	280	200	280	230	300	240	310	260
136.6											
146.0	IN-SITU TECH										
147.0											
148.0	OIL SHALE	450	440	440	480	440	440	440	440	440	440
149.0	IN-SITU COAL										
149.1	GASIFICATION	0	0	430	420	430	430	430	430	430	430
150.0	SUPPORTING RES	0	0	0	0	0	0	0	0	0	0
151.0	OTH CAP EQUIP	50	50	30	30	130	120	230	230	280	270
159.0											
160.4	TOTAL IN-SITU										
160.5	TECHNOLOGY	500	490	900	930	1000	990	1100	1100	1150	1140
160.6											
178.4	TOTAL FOSSIL										
178.5	ENERGY DEV	1020	840	1680	1540	1700	1570	1850	1810	1850	1810
178.6											
178.7	COMPUTERS	0	0	0	0	0	0	0	0	0	0
178.8	OTHER	1020	840	1680	1540	1700	1570	1850	1810	1850	1810

LINE NO	NAME	TEC	1977 B/A	1977 B/O	1978 B/A	1978 B/O	1979 B/A	1979 B/O	1980 B/A	1980 B/O	1981 B/A	1981 B/O
50.0	FOSSIL ENE DEV											
51.2												
51.4	COAL											
51.6												
52.0	DEMO PLANTS											
52.4												
53.0	78-1 PIPELINE											
53.1	GAS DEMO PLANT											
53.2	(AE)	40000	0	0	40000	7000	0	23000	0	10000	0	0
53.4												
53.6	78-2 FUEL GAS											
53.7	DEMO PLANT -											
53.8	INDUSTRIAL(AE)	5000	0	0	5000	1000	0	3000	0	1000	0	0
54.0												
54.2	78-3 ADV LIQ											
54.3	UEFACTION DEMO											
54.4	PLANT (AECP)	15000	0	0	15000	2600	0	7400	0	5000	0	0
54.6												
55.1	77-1-A MODS AND											
55.2	ADDITIONS TO											
55.3	ENE RES CTRS	6900	6900	1200	0	5700	0	0	0	0	0	0
56.6												
58.4	76-1-A CLN BOIL											
58.5	FUEL DEMO PLANT											
58.6	($13.0M APPRO											
58.7	TO OCR FY75;											
58.8	$20.0M AUTH APP											
58.9	FY76, $8.0M TO;											
59.0	$50M AUTH,$30M											
59.1	APP REQ FY77)	91000	30000	25600	15000	21875	5000	18000	0	12400	0	0
59.2												
60.2	76-1-B HIGH BTU											
60.3	SYNTHETIC PIPE-											
60.4	LINE GAS DEMO											
60.5	PLANT (AECP)											
60.6	($20.0M AUTH											
60.7	FY76 & $5.0M											
60.8	TRANS QTR;											
60.9	$10.0M APPRO											
61.1	REQ FY77)	40000	10000	2000	30000	8000	0	20000	0	10000	0	0
61.2												
61.5	76-1-C LOW BTU											
61.6	FUEL GAS DEMO											
61.7	PLANT (AECP)											
61.8	($15.0M AUTH											
61.9	FY76 & $3.75M											
62.1	TRANS QTR;											
62.2	$7.3M APPRO											
62.3	REQ FY77)	18750	7300	1500	10200	5500	0	8000	0	2500	0	0
62.4												
62.7	TOTAL DEMO PLT	0	54200	30300	115200	51675	5000	79400	0	40900	0	0
63.2												

PLANT

ERDA COMMITMENT PROJECTIONS
FY1977-FY1981 (IN 1000 $)

CPL877 - 0

LINE NL	NAME	TEC	1977 B/A	1977 B/O	1978 B/A	1978 B/O	1979 B/A	1979 B/O	1980 B/A	1980 B/O	1981 B/A	1981 B/O
81.C												
83.5	TOTAL COAL	0	54200	30300	115200	51675	5000	79400	0	40900	0	0
160.6												
178.4	TOTAL FOSSIL											
178.5	ENE DEV	0	54200	30300	115200	51675	5000	79400	0	40900	0	0
178.9												

PROG TOTAL

TABLE III
ERDA COMMITMENT PROJECTIONS
FY 1977 - FY 1981 ($ IN THOUS)

CTOTH77 - 0

LINE NO	NAME	1977 B/A 3/	1977 B/O 4/	1978 B/A	1978 B/O	1979 B/A	1979 B/O	1980 B/A	1980 B/O	1981 B/A	1981 B/O
230.0	CONSERVATION R&D										
231.0											
232.0	ELEC ENE SYS &										
232.1	ENERGY STORAGE										
232.2											
233.0	ELEC ENE SYS	24460	19420	26600	24500	26600	26600	26600	26600	26600	26600
234.0	ENE STOR SYS	22340	18520	24500	22200	24500	24500	24500	24500	24500	24500
239.0											
240.3	TOTAL ELEC										
240.4	ENE SYS &										
240.5	ENE STORAGE 1/	46800	37940	51100	46700	51100	51100	51100	51100	51100	51100
240.6											
264.9	END USE CONSER-										
265.0	VATION & TECH										
265.1	TO IMPROVE										
265.2	EFFICIENCY										
265.3											
267.0	INDUSTRY CON-										
267.1	SERVATION	12430	9660	13600	12350	13600	13600	13600	13600	13600	13600
268.0	BUILDINGS CON-										
268.1	SERVATION	21600	18410	23800	22600	23800	23800	23800	23800	23800	23800
269.0	TRANSPORTATION										
269.1	ENERGY	23670	20390	26000	24250	26000	26000	26000	26000	26000	26000
269.2	ENE CONSERVATION	15500	4600	5500	4100	5500	5500	5500	5500	5500	5500
284.0											
285.2	TOTAL END-USE										
285.3	CONSERVATION										
285.4	& TECH										
285.5	IMP EFFIC 2/	73200	53060	68900	63300	68900	68900	68900	68900	68900	68900
285.6											
288.3	TOTAL CON-										
288.4	SERVATION										
288.5	RES & DEV	120000	91000	120000	110000	120000	120000	120000	120000	120000	120000
288.9											

1/ Funded in Public Works Appropriation
2/ Funded in Interior Appropriations
3/ Budget Authority
4/ Budget Outlays

LINE #	NAME	1977 B/A	1977 B/O	1978 B/A	1978 B/O	1979 B/A	1979 B/O	1980 B/A	1980 B/O	1981 B/A	1981 B/O
230.0	CONSERVATION RED										
231.0											
232.0	ELEC ENE SYS &										
232.1	ENERGY STORAGE										
232.2											
233.0	ELEC ENE SYS	20960	17920	23100	21700	23100	23100	23100	23100	23100	23100
234.0	ENE STOR SYS	20840	17920	23000	21200	23000	23000	23000	23000	23000	23000
239.0											
240.3	TOTAL ELEC										
240.4	ENE SYS &										
240.5	ENE STORAGE	41800	35840	46100	42900	46100	46100	46100	46100	46100	46100
241.6											
264.9	END USE CONSER-										
265.0	VATION & TECH										
265.1	TO IMPROVE										
265.2	EFFICICIENCY										
265.3											
267.0	INDUSTRY CON-										
267.1	SERVATION	11430	9260	12600	11500	12600	12600	12600	12600	12600	12600
268.0	BUILDINGS CON-										
268.1	SERVATION	21600	18410	23800	22600	23800	23800	23800	23800	23800	23800
269.0	TRANSPORTATION										
269.1	ENERGY	23170	20190	25500	23900	25500	25500	25500	25500	25500	25500
269.2	ENE CONSERVATION	15000	4300	5000	3700	5000	5000	5000	5000	5000	5000
284.0											
285.2	TOTAL END-USE										
285.3	CONSERVATION										
285.4	& TECH										
285.5	IMP EFFIC	71200	52160	66900	61700	66900	66900	66900	66900	66900	66900
285.6											
288.3	TOTAL CON-										
288.4	SERVATION										
288.5	RES & DEV	113000	88000	113000	104600	113000	113000	113000	113000	113000	113000
288.9											

LINE	NAME	1977 B/A	1977 B/O	1978 B/A	1978 B/O	1979 B/A	1979 B/O	1980 B/A	1980 B/O	1981 B/A	1981 B/O
230.0	CONSERVATION RED										
231.0											
232.0	ELEC ENE SYS &										
232.1	ENERGY STORAGE										
232.2											
233.0	ELEC ENE SYS	3500	1500	3500	2800	3500	3500	3500	3500	3500	3500
234.0	ENE STOR SYS	1500	600	1500	1000	1500	1500	1500	1500	1500	1500
239.0											
240.3	TOTAL ELEC										
240.4	ENE SYS &										
240.5	ENE STORAGE	5000	2100	5000	3800	5000	5000	5000	5000	5000	5000
240.6											
264.9	END USE CONSER-										
265.0	VATION & TECH										
265.1	TO IMPROVE										
265.2	EFFICIENCY										
265.3											
267.0	INDUSTRY CON-										
267.1	SERVATION	1000	400	1000	850	1000	1000	1000	1000	1000	1000
268.0	BUILDINGS CON-										
268.1	SERVATION	0	0	0	0	0	0	0	0	0	0
269.0	TRANSPORTATION										
269.1	ENERGY	500	200	500	350	500	500	500	500	500	500
269.2	ENE CONSERVATION	500	300	500	400	500	500	500	500	500	500
284.0											
285.2	TOTAL END US										
285.3	CONSERVATION										
285.4	& TECH										
285.5	IMP EFFIC	2000	900	2300	1600	2000	2000	2000	2000	2000	2000
285.6											
288.3	TOTAL CON-										
288.4	SERVATION										
288.5	RES & DEV	7000	3000	7000	5400	7000	7000	7000	7000	7000	7000
288.6											
288.7	COMPUTERS	0	0	0	0	0	0	0	0	0	0
288.8	OTHER	7000	3000	7000	5400	7000	7000	7000	7000	7000	7000

NATIONAL ENERGY PLAN

Senator BYRD. Last year we discussed at length ERDA's goals as set forth in the national energy plan for 1975. We have just obtained a draft copy of the 1976 revision. What is holding up your 1976 national plan?

Dr. SEAMANS. Well the plan is now being held up, you might say, at the printer's. But it is not their fault. We only got it to them a few days ago, and it will be available the end of next week. I think next Thursday is the date we are projecting.

We had a number of items that required extensive discussion with the Office of Management and Budget, and we did not resolve all these issues until a very short time ago.

Senator BYRD. Is OMB holding up this plan?

Dr. SEAMANS. No, they are no longer holding it up. I would in fairness say they were holding us up before. We just did not have agreement on some of the items that were in the plan.

Senator BYRD. How long did they hold it up?

Dr. SEAMANS. Let's see, I believe that we submitted a draft of the plan to OMB, it was either in November or early December of last year, and it was released last week.

IMPORT REDUCTION GOALS

Senator BYRD. In the draft plan ERDA speaks of reducing oil imports by 2 million barrels a day by the end of 1977 and achieving energy independence by 1985. Those are rather ambitious goals. How likely are they to come to fruition as expected?

Dr. SEAMANS. In my view there is no chance of going to zero imports in 1985. But the plan did not say that we would reduce imports to zero. It says we will get down to, I believe the figure would be on the order of 3 to 5 million barrels a day by 1985 compared to 10 or 12 million barrels a day unless we take strenuous action. However, if we get imports down to those figures, we are obviously in a much better posture if we also have sufficient storage capacity to deal with a potential embargo.

I think the plan, however, is optimistic. It can be done, but it requires great cooperation on the part of many different institutions in this country to achieve it.

Senator BYRD. And those institutions are?

Dr. SEAMANS. The institutions obviously involve a variety of industries and also the Government. The Government of course in turn is made up of quite a number of agencies, as well as the Congress.

Senator BYRD. What about your goal of reducing oil imports by 2 million barrels a day by the end of 1977?

Dr. SEAMANS. I do not have a breakout of that right here to discuss with you——

Mr. GREER. I am not sure it is stated that way in the revised plan, Mr. Chairman.

Senator BYRD. Do you recall what the goal is?

Dr. SEAMANS. Do we have somebody from the Planning and Analysis Office here to discuss that?

Dr. MCCORMICK. Perhaps I could shed some light on it, Senator. I think what you are referring to is the 2 million barrels a day

reduction that would result from the total program that was proposed by the President. I do not believe that is a figure that is in the ERDA plan per se. That results from a number of supply and demand actions, some of which the Congress has acted on and some of which have not been acted on.

Dr. SEAMANS. I might say, Mr. Chairman, that the actions that we could take in ERDA from a research and development standpoint cannot achieve a 2 million barrel per day reduction in the next 2 years. There is not time to carry out the development and get them into the private sector and used extensively enough to make that kind of saving.

Dr. MCCORMICK. The particular items that are in that list would be the completion of the Alaska pipeline, the use of the Naval Petroleum Reserves, auto fuel efficiency standards, appliance efficiency labelling, the conversion of oil and gas fired utilities to coal, and natural gas and oil deregulation. Those are the main elements of achieving a two million barrel a day reduction by 1977.

PRIORITIES OF VARIOUS RESEARCH PROGRAMS

Senator BYRD. This morning we were talking about the priorities with respect to various research programs, gasification versus liquefaction versus various other programs. Now, ERDA continues to pursue a great number of options. Why can we not begin narrowing the options and concentrate more effectively on the more promising technologies and programs?

Dr. SEAMANS. My answer to that would be that we have to deal with more than one particular date. We have to be working on options that can be of use to the country by the year 1985. We also have to have another set of options that relates to the 15 years following 1985, up to the year 2000, and then another set that really are not going to help us until the next century, such as fusion and solar electric.

Because we are dealing with more than the very long term, we have to get from here to the long term. Therefore, it is necessary to work on a variety of alternatives.

Senator BYRD. And what is your assessment now on the most promising technologies for the near, the mid, and the long term?

Dr. SEAMANS. This is outlined quite completely in the revised planning document. Just to give you a quick summary, we believe that conservation is important in all three areas. It can achieve real savings by 1985, and these will continue over time, and over time we can also bring in new energy efficiencies.

We feel that in the near-term development of techniques for tertiary recovery of oil and recovery of gas can be important and are areas where we in ERDA can make a contribution.

We feel that it is extremely important to utilize our coal reserves. As I was discussing here this morning, that we may achieve some additional supplies from coal by the year 1985, but coal is really going to become extremely important in the mid-term and well into what we call the long-term area.

Nuclear is coming on line as we discussed this morning, and will become increasingly important until the year 2000, at which point

we will have to make some decision—we will have to make a decision beforehand. The question of the nuclear area will be whether or not we go to the breeder reactor. The breeder is one of the alternatives for the very long term.

Another alternative for the long term is solar electric. The third area that could have extremely important long term significance is fusion.

REDUCED OIL AND GAS AND WASTE CONVERSION

Senator BYRD. You have mentioned oil and gas recovery. Last year you stated that the most promising near-term programs were enhanced oil and gas recovery, conservation and waste conversion, in that order.

This year two of those, oil and gas recovery and waste conversion, have smaller budgets. How do you explain this?

Dr. SEAMANS. Well of course, when you talk about importance, it has to be measured not in terms of our budget alone. It is a question of what the Nation is doing including other agencies of Government as well as private industry.

In the waste effort there is actually more effort in the Environmental Protection Agency than in ERDA. In enhanced recovery, there is considerable effort going on which is being privately financed.

If you would like, we can go into this in a little more detail. Dr. White and Mr. Heller are familiar with these two areas.

Senator BYRD. How do you explain the smaller budgets for oil and gas recovery and waste conversion, when as a matter of fact last year you stated that the most promising near-term programs were in these fields?

Dr. SEAMANS. I continue to feel that use of waste is extremely important, and we do look at it as part of conservation. There is a tremendous amount of potential energy recovery. It is an important energy resource that is available.

We believe that by the year 1985 we could have savings of as much as 500,000 barrels a day by using waste.

In the area of waste conversion, if we can get the synthetic fuel program enacted, we plan to have at least one waste plant operated in a cooperative effort with a municipality. We are thinking in terms of four to five plants operating in what we call bio-mass. Several of these could involve the use of municipal waste.

It is true that we in our budget have not reflected what I believe to be the importance of each of these areas.

Senator BYRD. So how do you explain this? This is the third time I have asked the question. In view of your statement last year, that the most promising near-term programs were the——

Dr. SEAMANS. I explained it on the basis that as far as research and development goes that the Environmental Protection Agency has been designated the agency that will do most of the research work on waste. The private sector is expanding the funding that is going into tertiary recovery of oil.

SCOPE OF 1977 OIL AND GAS RECOVERY PROGRAM

Dr. WHITE. May I add a little bit to that, Bob.

Mr. Chairman, in the gas and oil extraction tests, the nature of these tests are such that it has been attractive to fund them at the start of the test. So these tests run for 3 to 4 years, but the money is pretty much put in in the first year.

We had $41 million in last year's budget, and there is $35 million this year. What this really means is that we had new starts last year, and these are cost shared with industry of course. Costs have been shared more than half by industry, and these programs are going to be continuing. Now we are adding to them. So we essentially have a $75 million program in effect when this year's budget is fully implemented and these projects have been activated as contrasted to almost about 60 percent of that last year.

We are not having as many new starts this year as last year, that is true. But we will have a long-term continuing program, almost double the program of this year.

Senator BYRD. The Office of Technology Assessment has criticized the inadequacy of oil and gas recovery funding and said that more attention should be given to primary recovery as well as secondary production. Do you agree or disagree?

Dr. SEAMANS. Well I think the country ought to be doing more exploration and certainly ought to be learning how to recover oil and gas more and more effectively. So I guess I would agree with that statement.

However, it does not necessarily follow that our budget should increase for the reasons that we have already indicated. As a matter of fact, we are really not involved in oil and gas research because so much is being done in the private sector, excepting the work in tertiary recovery.

OIL SHALE EFFORTS

Senator BYRD. Your oil shale program, in concentrating on in situ technology, was also found wanting. OTA said there should be more effort devoted to surface processes where considerable environmental problems are involved. Can you comment on that?

Dr. SEAMANS. Dr. White?

Dr. WHITE. We recognize this criticism of OTA. It was our feeling, and I think it was well borne out by the approaches that have been taken by the private sector, that the several retorting processes that have been carried out through the pilot planning stage by the different companies or consortiums are deemed to be at the stage of insipient commercialization. The companies have indicated they are ready to design and construct small commercial size plants such as would be handled in the synfuel program.

With respect to the environmental work, there is a great deal also being funded by the private sector. Federal lease holders have requirements to do a great deal of baseline work. About the only remaining environmental aspect is what would be obtained by actually building and operating a large above-ground retort.

We have not found, thus far anyway, that we were justified in proceeding with a demonstration plant at that level. We have studied this very carefully. I would not say we might not at some point wish to come in and make such a proposal.

COMPETITIVE COSTS FOR SYNTHETIC FUELS

Senator BYRD. More than 10 years ago, in 1964, an interdepartmental energy study group wrote an assessment of coal conversion that said synthetic fuels cannot be produced at a competitive cost and it would take a decade or more to commercialize. With all of our investment in R. & D. since then, can you say that that situation has changed substantially?

Dr. SEAMANS. I would say that it has changed substantially, particularly because the cost of energy, particularly oil, has increased so dramatically that now the cost of synthetic fuels is closer to the world market price.

However, there is still some discrepancy. Our figures would indicate that the synthetic fuels are still 30, 40 percent more expensive than the world market.

Senator BYRD. Still 40 percent more than the——

Dr. SEAMANS. Our figures would be about $15 a barrel.

Dr. MCCORMICK. Oil shale, for example, would be in the range of probably $15 or $16 a barrel. It depends on how it is financed. Coal liquefaction using the first generation technology, such as the South Africa, is more in the $20 to $25 or more a barrel range.

The advanced technologies which are currently being developed in ERDA under Dr. White offer the prospect of significantly lowering that cost for liquefaction. In the gasification area the first generation technology is expected to be about 25 percent more costly than more advanced technology that is currently being developed.

Senator BYRD. Aside from the increased cost of energy fuels alluded to by Dr. Seamans which in itself would put some of these synthetic fuels more within reach—forgetting that outside factor—what progress have we made? Let us say that fuel costs had not increased, what progress have we made in producing the synthetic fuels at a competitive cost?

Dr. SEAMANS. Well to me the progress that has been made has been very recent and relates to the very programs that this committee has been reviewing; our pilot plants and the demonstration plants that are just being initiated. I guess the truth of the matter is we did not use that 12-year period. We did not really get started on this program until just a few years ago. So we have not made all the progress that could have been made if action had been taken in 1964?

DEMONSTRATION REQUIRED FOR SYNFUELS COST ESTIMATES

Senator BYRD. In our pursuit of all the varying coal conversion technologies, have we significantly reduced the cost of a barrel of synthetic fuel?

Dr. SEAMANS. I think we have to say that we believe the promise is there, but we have not demonstrated it on a full sized plant.

Dr. WHITE. No, we cannot speak to that with great confidence until we have built and operated a full-sized plant and have good figures on the investment cost and the operating experience. However, the best engineering estimates we have today would certainly indicate that we have processes ready for demonstration which will reduce the cost by 20 to 30 percent.

Senator BYRD. When can we expect that?

Dr. WHITE. With regard to pipeline gas plants, we have two pilot plants which have run more successfully, HYGAS and CO_2 Acceptor. At least one of those is being considered as a candidate for a demonstration plant now being bid. Those plants would be ready at earliest, the operating experience—I would have to call on Mr. Rial. The date of 1979?

Mr. RIAL. We would probably start the operation in the latter part of 1980.

Dr. WHITE. In 1980. So we are looking at another 4 years including design, building, and operation.

Senator BYRD. Can we step up that target date? What date did you say?

Dr. WHITE. The operation——

Senator BYRD. What date did you say?

Dr. WHITE. I said 1980. We would have the operational experience to sufficiently convince people that it was no question about its being ready for commercialization in 1980.

It might be possible, I am not sure, without thinking very carefully, to carve a year off of that, but design and construction is certainly a three to three and a half year time, and some period of operational time is needed.

Senator BYRD. What is the cost of a barrel of synthetic petroleum, did you say?

Dr. MCCORMICK. Using today's first generation technology, liquid products from coal, would be over $20 a barrel.

The first generation high-Btu coal gasification plants will produce gas in the range of about $3 to $3.25 per million Btu, which is slightly above the imported price of liquefied natural gas, which is around $2.80.

Senator BYRD. What do you think we can reasonably expect at today's prices to pull this cost per barrel down to in our synthetic fuel production?

Dr. MCCORMICK. Do you mean what kind of development?

Senator. BYRD. No. What price might this come down to?

Dr. MCCORMICK. I think for the liquefaction technologies there is a prospect of getting it down to the range of perhaps $15, in that range. By the time that happens in early to mid-1980's we expect the world price of oil to be at that level or above.

POSSIBILITY OF MORE RAPID ADVANCES

Senator BYRD. Can we not push that target date up? Can we not do better than that? Suppose this Nation's continued existence depended upon it, could we do it?

Dr. SEAMANS. I would answer that by saying that if we were in a war-time situation we could do a great deal better than these figures because we would be operating on a crash basis and we would have large-scale multiple operations. We would undoubtedly be doing a great deal of the financing directly out of the Government as we did with the synthetic rubber program.

I think, following our present institutional systems and relying on the private sector to move in and raise private capital, that these dates are about what we can expect.

Senator BYRD. Now, we have not waited on the private sector to take over the nuclear power development, have we?

Dr. SEAMANS. Yes, we really have relied on the private sector to build the nuclear plants. This has been entirely done with private capital.

Senator BYRD. How about the development of the technology?

Dr. SEAMANS. The development of technology obviously came out of, as I was saying this morning, the naval reactor and other governmental research, development and demonstration efforts, just as today we are doing a great deal of work in our fossil fuel program on research, development and demonstration. But what we are talking about here is when we could expect commercial plants to be available.

Senator BYRD. Now, you said, I believe, it would be the mid-1980's, did you not, before we could expect to get this cost per barrel down to $15?

Dr. MCCORMICK. Yes, sir.

Dr. SEAMANS. Well, I think you have to be a little careful comparing that date with one that Dr. White gave which was the demonstration plant in 1980. We are really talking about two different things.

Dr. MCCORMICK. I think they are consistent, because following the demonstration plant which Dr. White was referring to, there would be a full commercialization phase where plants would be built at full commercial scale, perhaps 50,000 barrels. Then the economics would be that of an integrated plant complex.

You would not get the scale economies with a demonstration scale plant because of its limited size.

Senator BYRD. In the meantime, we will spend $250 billion for imported oil at last year's rate of expenditure.

Dr. SEAMANS. Probably more than that if we are not careful.

Senator BYRD. That is what I say, at last year's rate of expenditures it would be $250 billion.

Dr. SEAMANS. That is right. I guess it was up to $29 billion last year and it is going to increase. The cost will probably go up per barrel and the amount is certainly going to have to go up for the next 5 years.

Senator BYRD. Well as long as we are able to get oil from abroad cheaper than the oil we are talking about here, the synthetic oil, are we going to really put on a crash effort to develop a process whereby we can produce our own oil from coal?

Dr. SEAMANS. At this time we are not talking about a crash effort. I do not know whether the country would support one or not. It has certainly been extremely difficult to put together what I call an aggressive, but certainly not a crash effort. The fact that we have not been able to get the support for a commercial synthetic program shows that the country is not prepared, does not seem to be prepared at this time, to support what I call a major endeavor.

Senator BYRD. Have we really tried?

Dr. SEAMANS. Well, we in ERDA have certainly tried. We have worked to the best of our ability—this is mostly on the House side with the Committee on Science and Technology.

There are still a lot of forces at work, some of which believe that the government should not play any role, but that it should have been done entirely by private industry. Some feel that the govern-

ment cannot be trusted, and if they get into this they are going to subsidize nothing but the very large oil companies. With these kinds of pressures we have not been able to mount an aggressive effort which the country desperately needs.

SECOND GENERATION COAL CONVERSION TECHNOLOGY

Senator BYRD. You have estimated that second generation coal conversion technology could cut synthetic fuel costs by 20 percent. How far away are we from achieving that?

Dr. WHITE. Well, as I think I indicated in the case of gasification, we think the basic technological approach is there and all that remains now is to demonstrate it on essentially a commercial scale. That would be our undertaking in the programs that we have asked for funds for for this year. On liquefaction it is a somewhat different story. It is a more difficult engineering matter, and while we have several pilot plants that have run, such as the Takoma pilot plant on solvent refined coal, there are a few problems that appear to need solutions before we are very confident about a demonstration plant.

If we were to build a demonstration plant on that technology today, we certainly would be taking some rather severe risks. They may be warranted, and we may decide to do that, but we have not quite crossed that bridge yet. We as yet are trying to do a little more work to try to solve those problems.

On the competing technologies—and there are a couple coming along, at least two or three, such as the synthoil plant where we are just building a pilot plant, and H-coal—there are many questions still to be resolved.

The most advanced program, of course, is our liquefaction program at Coalcon which has been the only demonstration plant as yet fully designed. I guess I would have to say that the design will not be finished for another month or so. If this runs satisfactorily, and it will be built with a certain amount of recognized risk, we will have that program ready for demonstration. Certain pieces of it were designed and estimated to be okay, but there was an extrapolation of experimental data to some degree. That one is a process for clean boiler fuel. It does not produce a syn-crude. If it runs, it could be producing data in 1978 and ready for commercialization by that time.

CLEAN BOILER FUEL DEMONSTRATION PLANT

Senator BYRD. Would you say that everything is on schedule with respect to clean boiler fuel plant?

Dr. WHITE. It is currently, yes.

Senator BYRD. When do you expect the first financial contributions from Coalcon?

Dr. WHITE. Let us see, Mr. Rial, by August?

Mr. RIAL. The decision on Coalcon will be made this summer, and we would expect the financial contributions by August.

Senator BYRD. How much would that first contribution amount to?

Mr. RIAL. I think it would be the contribution for the full project.

Dr. WHITE. The commitments for this year would be a 50 percent share on that project for the construction, and operation. The total project is $237 million.

Dr. SEAMANS. They are not paying for the whole amount. Is it $16 million or thereabouts for the design?

Dr. WHITE. The design work, all of the work up to that August decision point is 100 percent government funded. So it would be that commitment and the initial payments. The actual cash might not be that, but the total would be $75 million.

Senator BYRD. May we identify for the record the gentleman back there?

Dr. WHITE. Mr. Rial, Division Director for Demonstration Plants, R-i-a-l.

SYNTHETIC FUELS PRODUCTION GOAL

Senator BYRD. Dr. Seamans, you told the committee last year that an attainable synthetic fuel production goal was 1 million barrels of oil per day by 1985. Do you still consider that goal to be attainable?

Dr. SEAMANS. I think it is physically attainable still, but I think it is nowhere near as likely as it was a year ago. A year ago we had hopes of moving out on a program, first at 350,000 barrels a day, and we hoped to get that completed in this decade in time to go ahead with the remaining 650,000.

As things stand today we did not get the approval of the loan guarantee for the $6 billion and the bill that is currently before the House is for $2 billion in guarantees, which would support about a third of the 350,000 barrel per day, or say a 120,000 barrel per day program.

There is a long way to go to get to the million barrels per day.

MORGANTOWN COMPONENT TEST FACILITY

Senator BYRD. What is the projected funding level for the Morgantown Energy Research Center for fiscal year 1977?

Dr. WHITE. It is $14.3 million for 1977.

Senator BYRD. How does this compare with the funding level for fiscal year 1976?

Dr. WHITE. It was $9.4 million in 1976.

Senator BYRD. ERDA has announced plans to construct and operate a component test facility for atmospheric fluidized beds at the Morgantown Center. What is the status of that project?

Dr. WHITE. I think Dr. Zahradnik, Division Director for Coal Conversion, might give us some detail on that.

Dr. ZAHRADNIK. We have allocated about $4 million to the Energy Research Center to initiate conceptual design on that facility. We hope to have it completed sometime later this year.

Senator BYRD. About when?

Dr. ZAHRADNIK. Possibly near the end of the fiscal year which would be in September, at which point we would make a decision to initiate detailed design of the facility.

Senator BYRD. What is your total estimated cost for that facility?

Dr. ZAHRADNIK. Total estimated cost for the facility over its lifetime would be on the order of $22 or $23 million.

Senator BYRD. How will these funds be expended, for what years and for what purposes?

Dr. ZAHRADNIK. Well, during the next 2 or 3 years, Senator, we would be constructing the facility and expending at the level of about $5 million a year, at which point the construction would be completed. The operating phase would be about $2 million a year, running out into 1980 or 1981.

Senator BYRD. Will this project be constructed on the grounds of the existing energy research center or in close proximity thereto?

Dr. ZAHRADNIK. In close proximity, just around the corner from the current equipment.

Senator BYRD. Is this going to be a contractor operated facility, or do you propose to operate it with government personnel?

Dr. ZAHRADNIK. It is our intention now to include contractor operators so that it becomes available to industry.

Senator BYRD. You say you will include them. Does this mean you will have both government personnel and contractor operators?

Dr. ZAHRADNIK. We have assigned about 12 Government personnel to the project and hope to come up to a level of about 22, and these people would be largely in an administrative, managerial capacity.

PRESSURIZED COMPONENT TEST FACILITY

Senator BYRD. I note in your fiscal year 1977 budget submissions that you also plan to construct a pressurized component test facility for fluidized beds. Where will that be?

Dr. ZAHRADNIK. That will be at the Argonne National Laboratory.

Senator BYRD. Will this be one or two test facilities that you will have?

Dr. ZAHRADNIK. Well, we plan, if you consider the facility which is at Argonne, which is a pressurized system, and the facility in Morgantown, which is atmospheric, you would have two.

Senator BYRD. Would there be any justification for constructing both facilities at the one location?

Dr. ZAHRADNIK. The facilities are basically different, Senator. They are different construction. One is a thick-walled vessel; the other one is an atmospheric walled vessel. They have different size, different feeding mechanisms, they will probably use different inert material; one would use limestone, one would use coal. So basically they would be different, whether we co-located them——

Senator BYRD. Would there be any money savings in locating them in the same place?

Dr. ZAHRADNIK. We have done a detailed analysis on that. We would be glad to submit it to you. In summary, the bottom line is that you would save some monies in commonality of coal handling facilities and perhaps clerical and administrative services. However, the crews would be separate, and the functions would be separate. They would be supporting different pilot plants, and consequently the savings would not be all that large. But as I said, for the record we can supply you with a detailed breakdown item by item.

[The information follows:]

ANALYSIS OF CO-LOCATION OF ATMOSPHERIC AND PRESSURIZED FLUIDIZED-BED FACILITIES VERSUS SEPARATE LOCATIONS

A preliminary appraisal of co-locating the pressurized fluidized bed (PFB) Component Test and Integration Facility (CTIF) now planned for installation at the Argonne National Laboratory, with the atmospheric fluidized bed (AFB) CTIF at Morgantown Energy Research Center has been made.

The operational background and assigned mission of the two facilities are different. MERC has been conducting a significant portion of the AFB research program, most recently investigating the burning of coal wastes, while ANL has been performing PFB research. The MERC–CTIF has been assigned the job of testing AFB components at an intermediate size and to act as an investigative facility for problems encountered at the nearby Rivesville 30 MW plant. This will require testing improved coal, limestone and ash handling equipment as well as the sizes, shapes and materials of the internal parts of the AFB units. Argonne National Laboratory has been assigned the task of building a CTIF for pressurized fluidized bed boilers.

The AFB CTIF, and anticipated commercial boilers will operate at nominally atmospheric pressure while the PFB CTIF, and anticipated commercial power systems will operate at seven to 12 atmospheres pressure (105 to 180 psi) and are enclosed in heavy pressure shells. The associated auxiliary gas cleanup equipment, ash removal and other subsystems will also be different.

Overall there would be minor savings in operating costs due to joint administrative and support services for the two facilities; savings in technical or operational costs would likely be small. Co-locating the facilities would result in a serious delay in achieving program objectives since, new proposals, new planning and new or revised environmental assessments would have to be prepared for the combined facilities.

Dr. WHITE. I would like to expand on that. We recognize that Argonne National Laboratory through contracts with the Environmental Protection Agency has been working in the general area of pressurized fluidized bed combustion for quite a few years, so there is a core of experience there which we are drawing on in expanding this test facility.

PROGRAM FOR TESTING VALVES

Senator BYRD. I am informed that ERDA plans to test different valves that will be used in coal conversion processes. What is the status of that program?

Dr. WHITE. Dr. Mills is head of our Fossil Energy Research Division and I would like to have him reply to that.

Dr. MILLS. That program is also in a planning stage. We have, through request for proposals arrived at a decision and are beginning negotiations with two valve manufacturers. Their program will be such that at the end of about 2 years they will be able to produce a valve to be tested at a facility. Morgantown and three other government facilities are being investigated as far as the incapabilities vis-a-vis various factors such as environmental experience, coal handling and factors such as that.

I might also mention that there is an interaction between the facilities we have just been discussing, and we are attempting to manage these both so that we do not overload one facility. Specifically Morgantown is being very actively considered on that.

Senator BYRD. What is the estimated cost of the program?

Dr. MILLS. The cost for the valve manufacturers is just under $5 million over a 4-year period. The cost for the valve test facility and its operation will probably be in excess of about $3 million over this same time.

Senator BYRD. When will you reach your decision as to where this program will be located?

Dr. MILLS. We expect to reach that early this summer when the study has been completed, and we have actually negotiated contracts with the valve manufacturers to get their best input for the activity that they will plan when they manufacture these larger valves.

HYDROGEN PILOT PLANT

Senator BYRD. In your budget submissions, you have proposed in your fiscal year 1977 low-Btu gasification programs $5 million to initiate the design of a coal to hydrogen pilot plant. How did ERDA move into this area of hydrogen production?

Dr. WHITE. Any of the coal conversion processes, to either pipeline gas or to liquid, require a certain amount of hydrogen for, in the case of pipeline gas, converting the synthetic gas from the gasifier to methane. Separate hydrogen supplies or supplemental hydrogen are required. In the case of liquid some of these processes are under hydrogen pressure, either with or without catalyst. The Coalcon process, for example, is high pressure hydrogen, high temperature, but without catalyst. H-coal has a catalyst, but has hydrogen. Even if it is not involved in the process, it is required for the upgrading of the coal liquids to anything resembling a refinery crude oil ready to go into the refinery process.

So we feel the hydrogen supply is important, and while there are available today means of getting hydrogen from coal which are practiced in Europe, like the gasification process from which they are derived, they are very expensive. We felt it was worthwhile to try to reduce the cost of hydrogen manufacturing and we sought sources for companies interested in engaging in this development.

Senator BYRD. Who will be the end users of the product, hydrogen which will be produced from the coal?

Dr. WHITE. The private sector interests that do the coal conversion will be using the hydrogen for either gas or liquids. The company who builds a large coal conversion plant will have to build a hydrogen plant to supplement right along with it as part of the whole installation.

Dr. SEAMANS. I think there is a chance here for some confusion, because a lot has been said of the possibility of a hydrogen economy or using hydrogen as a fuel. It obviously is a good fuel. It was used in the Saturn space vehicles, the Apollo program. But hydrogen as a fuel is further away. We need this hydrogen as part of the processes that we have been discussing here today.

Senator BYRD. What will be the total funding required to construct this plant, and what is your projected time schedule?

Dr. ZAHRADNIK. We have asked in the 1977 budget for $5 million to do a conceptual design. We have anticipated the cost of the plant in 1976 dollars will be about $60 to $65 million, and we would expect some cost sharing. The operating phase over the last several years would add probably another $30 million. So the entire project cost would be in the area of $100 million.

We would anticipate from the time we initiate a detailed design it would take about 3½ years, to construct a plant followed by a period of operation to get the data.

Senator BYRD. And what cost-sharing arrangements are you presently projecting for this project?

Dr. WHITE. This would be at the pilot level, and we normally hope for two-thirds Government one-third industry funding. Whether we have that degree of interest remains to be seen.

Senator BYRD. Have you received any expressions of interest from private industry on this program?

Dr. ZAHRADNIK. Yes, Senator. We have received several, but since they are preliminary we would prefer to provide the information later.

LOCATION OF HYDROGEN PILOT PLANT

Senator BYRD. What factors will be considered in deciding upon a location for this hydrogen facility?

Dr. WHITE. It is expected that the companies which express an interest will probably propose a site for this work. If not, we would probably conduct a site selection approach as we did with coal.

But the availability of the coal supply at the site and the co-funding would all be factors in the selection, as well as the technical approach proposed for the process, although that is fairly straightforward.

Senator BYRD. Would adequate water supply, rail transportaton, water transportation——

Dr. WHITE. Certainly. The usual plant siting parameters would all be factors. You can do without any one of them, but they are apt to be of lesser importance. They are usually available if anybody seriously offers a site. And on the other hand, they will all be considered including the environmental aspects of possible air pollution or water disposal.

Senator BYRD. How about location of chemical users of the product?

Dr. WHITE. It would seem to us most reasonable to have this plant built by someone who is a user and built adjacent to the site where they could use the hydrogen. We would certainly look with favor on a proposal of that nature. However, as far as simply developing a technology it would not be essential. After all hydrogen is a straight gas, and once purified you know what you have, and it is not necessary to test the use of it as it is say for a coal liquid.

FISCAL YEAR 1976 SUPPLEMENTAL REQUEST

Senator BYRD. As noted at the outset of the hearing the committee has just received a supplemental appropriation request involving $504 million to initiate a synthetic fuel commercial demonstration program. This arrived less than 2 weeks ago and the program has not yet been authorized, of course.

Nevertheless, commercialization is an integral part of the priorities and goals we are discussing, and I think the committee should go into at least a preliminary examination of the proposal at this point.

PREPARED STATEMENT

Dr. McCormick, you have a statement I believe in support of this program of loan guarantees, and we would be glad to include that statement in the record at this point.

Do you care to say anything further about the statement?

Dr. MCCORMICK. If you wish, Mr. Chairman, I can summarize the major aspects, or if you want go into the questions right away.

Senator BYRD. All right. Why don't you summarize and it will all be included in the record.

[The statement follows:]

Mr. Chairman and Members of the Committee:

I am pleased to appear before you today to discuss the appropriation request which supports the loan guarantee authorization that ERDA is requesting in connection with the proposed Synthetic Fuels Commercial Demonstration Program.

Mr. Chairman, the President strongly supports this Program and believes it is imperative that the Congress act promptly and favorably on this proposed legislation. As we are all acutely aware, the U.S. dependence on foreign sources of oil and gas continues to grow. Today, we are importing on an annual basis 40 percent of our petroleum supply compared with 36 percent two years ago shortly before the OPEC oil embargo. Most forecasts indicate a further growth in our dependence if appropriate actions are not initiated. The legislation before you today is designed to provide the necessary measures for one part of a comprehensive set of energy supply and conservation measures proposed by the President which are intended to halt this trend and to move the Nation toward energy independence.

As you know, production of domestic oil and natural gas has already fallen in the last several years and even with prompt deregulation of gas and oil decontrol, domestic oil and gas supplies would only be sufficient to postpone further growth in imports for another 5-10 years. Even using advanced oil and gas recovery techniques, aggressive programs in energy conservation, solar and geothermal development and extensive production from the Outer Continental Shelf and Alaska, our studies indicate that imports would resume their rise if synthetic fuels were not available in substantial quantities by the early 1990's. If any of these domestic energy actions fail to provide its expected contribution, then the need for synthetic fuels could be much more than the currently estimated demand of 5 million barrels per day in 1995.

Initiating a synthetic fuels industry to be financed in the private sector and capable of providing about 5 million equivalent barrels/day of production capacity by 1995 will require early commercial experience to resolve a number of uncertainties. These uncertainties must be resolved by the middle 1980's in order to enable adequate plant capital investment in the late 1980's. Thus, the lead times involved require the construction and operation over the next 5 to 10 years of a representative mix of synthetic fuels plants to obtain all the necessary information precedent to a major industry expansion.

Mr. Chairman, there are at the present time a number of serious impediments to private sector commercialization of synthetic fuels. The uncertainty in the future price of world oil is an important factor discouraging private investment. If world oil prices were to fall substantially, forcing synthetic fuel prices down with them, large plant investments could not be amortized from revenues of low price, but initially high cost, synthetic fuels. In addition to the large plant capital risks, there are numerous environmental uncertainties, regulations that must be met, and uncertainties concerning the adequacy of available labor and materials. Federal Government

involvement is needed to reduce the risks posed by these uncertainties for first-of-a-kind synthetic fuel plants.

Although there are a number of commercial-scale synthetic fuel plants in various stages of planning and design, none has yet proceeded to construction or has even obtained firm financing. The general reasons for this are the large risks which I mentioned, even though in some cases the fuels produced from these plants are expected to be about competitive (e.g., shale oil) or are in great need (e.g., synthetic gas). Thus, a Synthetic Fuels Commercial Demonstration Program is needed now in order to initiate the construction and operation of a limited number of first-of-a-kind synthetic fuel commercial size plants. With the large projected demand for synthetic fuels in the 1990's, the lead time (10-15 years minimum) required to build a new industry, and the present financial and other risks associated with investments in these commercial-scale synthetic fuel plants, action is required if an orderly and environmentally sound industry is to be developed in time to meet our projected energy requirements.

Mr. Chairman, this supplemental FY 1976 funding request is for Federal loan guarantees and for administrative support funds to initiate the first phase of a synthetic fuels commercial demonstration program designed to achieve about 350,000 barrels/day of oil equivalent production by the early 1980's. An initial $500 million in budget authority to support $2 billion in loan guaranty authorization is requested for FY 1976. The remaining budget authority to cover the proposed full $6 billion loan guarantee program and for price guaranties is contained in the Administration's funding request for the Proposed Energy Independence Authority (EIA) for FY 1977. It is expected that a total of $6 billion in loan guarantees will be needed over the 1976 to 1978 time period in order to reach the 1985 objective of 350,000 barrels per day of synthetic fuel production capacity.

It should be noted that the proposed program if carried out by ERDA is completely "on-budget". The loan guaranties and the borrowing authority to cover potential loan defaults under the proposed authorization (H.R. 12112) would be subject to full approval by the appropriation committees. The borrowing authority, initially $500 million, would be counted in the budget authority totals under prevailing budget resolutions. The proposed method of handling this guaranty program is totally consistent with the spirit and the letter of the Budget Control and Impoundment Act.

While the total authorizations for guaranties requested for the program exceed $11 billion and the budget authority needed is about $3.1 billion, the actual cost to the government of the program is expected to be only a fraction of the total authorization, at most only about $2 billion. This is because most loan guaranties are expected to be repaid and at least a portion of any defaults will be covered by loan guaranty fees charged against the remaining loan guaranties and sale of project assets that are recovered from any plant defaults. Also, price guaranty payments are likely to be significantly lower than the requested authorization and may actually result in revenue to the government if the world price of oil continues to increase, which is expected.

Although there is a good possiblity that loan guaranties and price guarantees may never result in the expenditure of Federal funds, the ERDA Administrator must, in order to make the recommended guaranties credible and effective, have the authority to outlay funds in the event they may become needed.

Finally, this supplemental request also provides for $3 million in FY 1976 and $1 million during the Transition Quarter for program administrative expenses. These funds are required for the development of program regulations and requests for proposals and developing guidelines concerning the offering of financial incentives, undertaking technical project evaluations, and assessing environment and socio-economic impact.

The attached program budget fact sheet contains additional information concerning the proposed program.

Thank you, Mr. Chairman, I will be pleased to answer any questions you or any other member of the Committee may have at this time.

FACT SHEET

Program Budget Estimates - Synthetic Fuels Commercial

Demonstration Program

Estimating the exact expected cost and corresponding budgetary authority necessary for the commercial demonstration program is complicated by the long-term nature of the synthetic fuel plant construction and operation (25-30 years) and by other significant uncertainties including:

- the future foreign/domestic market prices of oil and gas;
- the cumulative effect of inflation over this time frame;
- the overall success/failure rate of the plants.

In view of these uncertainties and the need to develop "best possible" estimates for the program, a rigorous financial analysis effort has been completed. This analysis included:

- detailed plant cost estimates for the various technologies
- detailed social infrastructure development cost estimates based on estimated increases in population in a locality attributable to the synthetic fuel plants
- use of a series of computerized cost models for each plant type with flexibility to change plant mixes to evaluate differing programs and the capacity to estimate capital as well as operating phases for each plant
- the capability to alter key assumptions for future market prices, inflation rates, plant and operating costs and the cost of energy resources used by the conversion technologies.

In the process of developing budgetary estimates, numerous program cost scenarios were estimated by changing assumptions for the market price of oil, inflation rates, cost of coal resources. Extreme scenarios were calculated based on pessimistic assumptions, e.g., market price of oil $7 per barrel. As a result of the many differing calculations, recommended budgetary requests have been formulated that are adequate for the program and will be ample to cover most unforeseen contingencies. The estimates are for the full term of the program and unless extremely adverse developments occur, the authorizations will be adequate to complete the program. It must be recognized that the budgetary authorization estimates do not represent actual cost to the government but rather reasonable estimates of funding authority necessary to implement the program.

Authorizations

Exhibits 1 and 2 show the individual plant cost estimates by type of plant including social infrastructure costs and the estimated number to be included in the commercial demonstration program. The basic assumptions used in developing these estimates are enumerated on the Exhibits. The anticipated levels of funding authorizations for loan guarantees, price guarantees and construction grants are shown at the bottom of the Exhibits and derived directly from the plant cost and operating estimates.

The President is requesting an initial $2 billion in loan guaranty authorization for FY 1976 to initiate the program in ERDA. The remaining funding authorization for loan guarantees and for price guarantees is contained in the Administration's funding request for the Energy Independence Authority for FY 1977. In the event EIA is not enacted in 1976, ERDA would need an additional authorization of $4 billion in loan guarantees and would request price guarantee and grant authorization on a project by project basis. In that event, the following authorization levels will be needed to allow execution of Phase I of the Synthetic Fuels Commercial Demonstration Program:

Loan Guaranty.....	$6.0 billion
Price Guaranty.....	4.5
Construction Grants.....	.6
Total Budgetary Authority....	$11.1 billion

Up to $425 million of the $6 billion authorization might be needed for guaranty of debt service for municipal financing of necessary social infrastructure caused by substantial increases in local population because of a synthetic fuel plant. Under this proposal the ERDA Administrator would be given the authority to guaranty debt service of municipal bonds that are necessary to finance the construction of essential capital facilities (e.g., sewers, water, public safety) to service the influx of new population caused directly by the synthetic fuel plant. A detailed description of this proposal is contained in the Socio-economic Impact Assistance fact sheet. (Tab O)

In order for the government to proceed with the complete program, the requested authorizations are needed prior to the execution of any agreements with the private sector. However, certain plants can be initiated with only a loan guaranty authorization.

While the total authorizations requested for the program exceed $11 billion, the actual cost to the government of the program is expected to be a small fraction of the requested authorization because:

- most loan guarantees are expected to be repaid and at least a portion of any defaults will be covered by fees charged for the loan guaranty and sale of any project assets that are recovered.

- actual price guaranty payments are likely to be significantly lower than than the requested authorization if the world price of oil continues to increase, which is likely.

Costs to the government will be incurred for the construction grants up to $600 million and for expenses to administer the program estimated at $10-$15 million annually. The possible cost to the Government for the program over its 20 to 30 year life is about $2.1 billion (Exhibit 5).

Borrowing Authority/Appropriation Approach/Estimates

Although there is a good possibility that loan guarantees and a somewhat lesser possibility that price guarantees will never result in the expenditure of Federal funds, the ERDA Administrator must, in order to make the recommended guarantees credible and effective, have the full authority to outlay funds in the very unpredictable circumstances when they may become needed. To accomplish this purpose, it is proposed that the ERDA Administrator be provided with a limited, renewable authority to issue notes or other obligations to the Treasury should payments be required in connection with either loan or price guarantees.

The authority to borrow from the Treasury to make payment, if required, for guarantees, was selected in favor of no specific appropriation authority or an advance appropriation arrangement for several reasons including:

- Credibility. It is important for the ERDA Administrator to have, in advance, a clear-cut authority to make payments in the event of either default or on account of the requirements of price guarantees. Such authority is necessary to remove the uncertainty on the part of investors about the timeliness of payment and/or the USG intent to pay.

- Continuity. Default or price guaranty payments are not likely to occur for a number of years.

- Surety. The precise amount of such payments are difficult to estimate and may not occur if favorable conditions result in the future.

In view of these factors, giving the ERDA Administrator limited authority to issue debt, if and when the need arises, is the most expeditious and efficient means of financing the program. Repayment of ERDA's obligations held by the Treasury would be accomplished through subsequent specific Congressional appropriations.

The Administration will transmit to the Congress separate appropriation requests for the borrowing authority consistent with the terms of the Budget Reform Act.

The following basic factors were considered in assessing the amount of borrowing authority needed:

- Time-phasing of project starts over the 1977-1979 period.
- Likelihood of projects simultaneously defaulting on loan guarantees and likely cost of default to the government.
- The expected future market price of oil and gas and any indicated price guaranty disbursements.
- The 20 to 30-year economic life of the synfuel projects.
- The need for flexible and credible program administration as well as periodic accountability to the Congress.

After analyzing these factors, it is recommended that $1.5 billion in loan guaranty borrowing authority be provided to cover possible loan default costs. ERDA debt outstanding under this authority could not exceed $1.5 billion at any time. Outstanding debt would be repaid by the ERDA Administrator by obtaining specific appropriations. This amount is 25% of the gross Federal loan guaranty liability of $6 billion (Exhibit 3). Although default costs could exceed 25%, it is very unlikely that this would occur before Congress had the opportunity to repay ERDA's debt to the Treasury. The $1.0 billion borrowing authority recommended for price guarantees will provide for about 3 years of price guaranty payments under the very pessimistic assumption that oil prices fall to $7 per barrel. Should recent trends continue for the price of oil, it is unlikely that any price guaranty payments will be made.

Construction grants are different from loan and price guarantees because they will require budgetary expenditures. A straightforward appropriation request will be made for this incentive. Consequently, even though construction grant outlays are not anticipated during FY 1976 because of the lead time in incurring construction costs, the full authorization of $600 million in grants is expected to be needed to enter into contractual agreements during FY 1977 even though outlays will be spread over a number of subsequent years.

In the event EIA is not enacted and the program were funded in ERDA, the following borrowing authorities and appropriations would be needed:

Loan Guaranty.....	$1.5 billion
Price Guaranty.....	1.0
Total Borrowing Authority.....	$2.5 billion
Construction Grants.....	$ .6 billion
Total Appropriations.....	$3.1 billion

The program's five-year projections for construction grants, administrative costs, and guaranty fees are shown in Exhibit 4.

Exhibi 1

Phase I Program Budget Authorizations
($ million, statistics include 7% annual inflation)

Plant Type	Number Scheduled for 1976-1978	Total Capital Invested	Construction Phase		Operation Phase
			Loan Guaranty	Construction Grant	Price Guaranty
High BTU Gas (regulated)	3	2,700	2,000	-	-
Shale Oil (unregulated)	2	2,100	1,050	-	900
Utility/Industrial Fuel (unregulated)	2	1,300	650	-	3,600
Utility Industrial Fuel (regulated)	2	1,000	-	500	-
Biomass (regulated & unreg.)	5	1,200	900	-	-
Social/infrastructure asst.			425		
CONTINGENCY			975	100	-
TOTAL BUDGET AUTHORIZATION REQUESTED			6,000	600	4,500

Specific Key Assumptions:

- Assumes recommended incentives of 50% loan guaranty for unregulated utility/industrial fuel, and oil shale plants; 75% loan guaranty for biomass and high-BTU gas plants; and price guaranties for shale oil and unregulated utility/industrial fuel. Should higher than recommended percentages for loan guaranties be necessary, the Contingency Reserve could accommodate.
- All statistics include 7% annual inflation rate for capital and operating costs.
- Total project investment is based on a 7-year development schedule for all plants, except for biomass conversion which are expected to be completed in a 3-year period. Plants are assumed to have a 20-year operating life.
- Investment totals do not include costs of such auxiliary developments as coal mines, roads, pipelines, etc., which, if they occur, could be accommodated by the Contingency Reserve.
- Loan guaranty statistics refer to the gross Federal commitment. The cost of an actual default will be less depending on the number of defaults if any, the timing of the default and the amount of recoverable assets.
- The contingency amount for loan guaranties and construction grants provides for construction delays, extraordinary inflation, different plant mixes, increased incentives, etc.
- The price guaranty statistics were calculated assuming that the market price for shale oil rises at 7% per year from a 1976 base of $7 per barrel, and for utility/industrial fuels, the price rises from a base of $9 per barrel. The statistics further assume that no revenues accrue to the government even if market prices exceed the guaranty level.

Synthetic Fuels Commercialization Program Budget

Exhibit 2 - Individual Project Statistics 1/

Plant Type	Size (bbl/d)	Investment 2/	Loan 3/ Guaranty	Construction Grant	Price 4/ Guaranty
Shale Oil	50,000	1000	500	-	450
High-Btu Gas	40,000	870	650	-	-
Utility/Industrial Fuel Regulated	25,000	460	-	230	-
Unregulated	25,000	610	300	-	1800
Biomass	6,000	230	170	-	-

1/ Data are rounded and a detailed cost analysis is available in the Synthetic Fuels Commercialization Task Force Report, Volume III.

2/ The 7% annual inflation rate is included, and the projects are all assumed to start in 1976.

3/ Presumes recommended incentives of 50% loan guaranty for unregulated utility/industrial fuel, and oil shale plants; 75% loan guaranty for biomass and high-Btu gas plants; and price guaranties for shale oil and unregulated utility/industrial fuel.

4/ Contingent costs for price guaranties were estimated assuming that the price of shale oil rises at 7% per year from a 1976 base of $7/bbl and for utility/industrial fuels, the price rises from a base of $9/bbl; and further assuming that no revenues accrue to the government even if market prices exceed the guaranty level.

Synthetic Fuels Commercialization Program Budget

Exhibit 3 - Possible Outlay Schedule for Price Guaranty Payments [1/]

($ millions)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	Total Payments Thru 2005
Payments to Unregulated Utility/Industrial Fuel Plants [2/]										
$9 Oil Scenario:	50	109	166	233	229	225	220	215	209	3600
$11 Oil Scenario:	34	71	106	144	134	123	111	98	84	1100
Payments to Oil Shale Plants										
$7 Oil Scenario: [3/]	167	153	137	120	102	83	63	41	18	900
$9 Oil Scenario:	58	35	12	-	-	-	-	-	-	105
$11 Oil Scenario:	-	-	-	-	-	-	-	-	-	0

1/ Calculations assume 7% per year inflation in capital and variable operating costs; projects start according to the schedule of Exhibit I.

2/ No payments are assumed to accrue to the government even if oil and gas prices exceed the synthetic fuel price guaranty level.

3/ Oil and gas prices are presumed to rise at 7% per year from a 1976 base of $7 per barrel for oil and $1.65 per MMBtu for gas. The $9 and $11 scenario have proportionately higher bases, but same inflation rate.

Synthetic Fuels Commercial Demonstration Program Budget

Exhibit 4: Five-year Budget Projections for 350,000 bbl/day Program

($ in millions)

	FY 1976&TQ	FY 1977[1]/	FY 1978[1]/	FY 1979[1]/	FY 1980[1]/	FY 1981[1]/
Net Budget Outlays	3	12	26	37	55	91
Administration	3	10	15	15	15	15
Loan Guarantee[2]/	0	0	0	0	0	0
Price Guarantee[2]/	0	0	0	0	0	0
Grants	0	7	23	42	71	[illegible]
Loan Guarantee Fees Collected	(0)	(5)	(12)	(20)	(31)	(39)
New Budget Authority	503	2,610	15	15	15	15
Loan Guarantees	500	1,000	0	0	0	0
Price Guarantees	0	1,000	0	0	0	0
Grants	0	600	0	0	0	0
Administration	3	10	15	15	15	15
New Credit Authority	2,000	8,500	0	0	0	0
Loan Guarantees	2,000	4,000	0	0	0	0
Price Guarantees	0	4,500	0	0	0	0

1/ Funding for FY 1977 and beyond are shown for illustrative purposes as if these programs were funded in ERDA. If, however, EIA is created in FY 1977, the Synthetic Fuels Program would be transferred to it.

2/ No payments for either loan guarantee defaulst or price guaranties are anticipated during this period.

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Exhibit 5

Possible Total Cost to Government (FY 76 thru 2005)

350,000 bbl/day Program

($ million)

Financial Incentive	Fiscal Years '76-'81	Fiscal Years 1982 - 2005	Total Cost of Program FY 76 - 2005
Loan Guarantees -Defaults (2 plants)/1	-	$ 1000	$ 1000
- Fee collected by Government (Revenue) (1% annually-debt outstanding) /2	$ (108)	(720)	(828)
Price Guarantees (assumes $11 oil scenario)	-	1,100	1,100
Construction grants	258	242	500
Administrative (assumes $10-$15 million annually)/3	74	240	314
TOTAL COST TO GOVERNMENT/4	$ 224	$ 1862	$ 2086

/1 From Exhibit 1, 12 plants require $6 billion in loan guarantees. If two plants default then, at most, $1 billion would be lost.

/2 See Exhibit 4 for Fiscal Years '76-'81. Calculation for 1982-2005 assumes average annual outstanding debt over the 24 years of $3 billion.

/3 FY 76-01 statistic from Exhibit 4, and FY 1982-2005 assumes $10 million/year for 24 years.

/4 Fees are subtracted from outlays.

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SYNTHETIC FUEL COMMERCIAL DEMONSTRATION PROGRAM

Dr. McCormick. Thank you, Mr. Chairman. You recall, as Dr. Seamans mentioned last year there was a proposal to create a 350,000-barrel-per-day synthetic fuel commercial demonstration program. This would involve the construction and operation of 12 to 15 commercial scale plants utilizing existing technologies. The Senate, as you know, passed this bill. However, it was defeated on the House floor. The President feels strongly that this program should pass the Congress and we are here to discuss it today.

The President has sent up to the committee a supplemental appropriation of $500 million in borrowing authority to back up $2 billion in loan guarantees. There is also $4.4 million in administrative expenses included.

The statement that I have prepared summarize the major aspects of this program. The major rationale for the program is that the United States is becoming increasingly dependent on foreign energy sources. As you know, production of domestic oil and gas has fallen in the last several years, and even with deregulation of gas and decontrol of oil we expect that the supplies of domestic production of oil and gas will continue to decline.

The analysis that we carried out considered the programs in conservation and development of solar and geothermal resources. If any of the full range of domestic production and conservation measures fail to provide the expected contribution, then we estimate that the required demand for synthetic fuels would be much greater than 5 million barrels per day that we project in 1995 in order to maintain imports at current levels.

Mr. Chairman, the total amount of synthetic fuels that we estimate that will be in demand in the early 1990's is approximately 5 million barrels per day. We expect this could increase to 10 million barrels per day in the year 2000.

Therefore, ERDA has recommended essentially a joint program of carrying forward its energy research and development programs and, in addition, recommending this commercial demonstration program that would be aimed at examining the major institutional and environmental, economic, and other barriers that must be solved prior to the industry making large-scale investments in the 1980's to meet the capacities that are mentioned in the 1990's.

The number of commercial scale plants, as I mentioned, we would be recommending in the first phase is in the range of 12 to 15. We have done an analysis of why we believe that Federal assistance is necessary, and in general these plants represent an extremely large investment to the private sector, perhaps in the range of $1 billion or so each.

Because of the large capital involved, the risks of a first-of-a-kind plant, since we have not taken these plants through the regulatory and environmental systems in this country; we have proposed loan guarantees as a major financial incentive to assist in constructing these first-of-a-kind plants.

The request, as I mentioned, is $2 billion in guarantee authority, and $500 million in borrowing authority. And it entails initially approximately $4.4 million in administrative expenses.

We strongly believe, however, that the full program will require, as Dr. Seamans mentioned before, approximately $6 billion in loan guarantee authority and this is what was contained in the bill that was before the Senate and the House last year. The total borrowing authority that would be associated with that $6 billion is approximately $1.5 billion.

One other item. The supplemental also includes, $150,000 in additional program support funds for administering the program in ERDA.

I would like to note also that the request is totally on budget. The proposed authorization bill is being considered in the House and it was considered in the Senate last year. It specified that the Appropriation Committee would have full approval over both the loan guarantee as well as the borrowing authority to cover potential defaults.

I would like to make one other point with respect to the totals. Although the total guarantee authority is on the order of $2 billion, and the borrowing authority is on the order of $500 million, this should not be interpreted as the possible cost of the program.

If the plants operate successfully, as we expect they will, then this would entail no outlay to the Federal Government.

LIKELIHOOD OF SYNFUELS AUTHORIZATION

Senator BYRD. What is your realistic assessment of the likelihood that synfuels commercialization will be authorized for the current fiscal year?

Dr. MCCORMICK. Well, as you perhaps know, Chairman Teague in the House is holding full committee hearings this week. He has also scheduled a markup for next week, and we are hopeful that it will go to the floor shortly, for a vote. And since the Senate acted favorably on the proposal last year, we would hope that we could get fairly prompt Senate action.

Senator BYRD. Synfuels commercialization would apparently help respond to one OTA recommendation that a higher priority be given to commercializing the existing gasification technology.

Do you anticipate the proposed synfuels program would result in that kind of effort?

Dr. MCCORMICK. Yes, sir. The proposed set of projects we have recommended falls into four categories: the high-Btu coal gasification, which would utilize existing technology with a methanation step; the second category is shale oil; the third is electric utility and industrial fuels, and this would include both low- and medium-Btu gas as well as perhaps methanol; and the fourth area would be in waste conversion into synthetic fuel.

Senator BYRD. I understand ERDA is initiating various studies to augment the interagency task force report on commercialization. Where do you stand with those studies?

Dr. MCCORMICK. Well, we have just initiated several of them and hope to initiate the rest in the next month. These studies are aimed primarily at looking at the method of implementing the program should Congress authorize it and appropriate the funds for it.

We consider that we have done the analysis that would support the decision to go ahead with the program. As you may recall there

was an extensive interagency task force effort last year which resulted in extensive analysis of the costs and benefits of the program as well as the environmental, socioeconomic and other impacts.

Senator BYRD. The General Accounting Office has suggested that Congress ought to await the completion of your studies. What is your comment?

Dr. MCCORMICK. Well, we don't agree with that because, as I indicated before, we feel that the studies that support the decision to go ahead with the program have been concluded. The studies that ERDA has underway now are mainly aimed at questions of implementation. And we feel there is a tremendous amount of supporting information that would lead to the positive decision to proceed.

In addition to the work that was done last year by the interagency task force, hearings were held in the Senate previously and there were extensive hearings in the House last year. Thus there is an extensive record of review and I think most of the questions in our mind have been answered about the need for the program.

SECOND GENERATION SYNFUELS TECHNOLOGIES

Senator BYRD. The Congressional Budget Office in its analysis of the proposal pointed out that second generation technologies for which we are spending so heavily could very well make any commercial plant using existing processes obsolete before it is in production.

What is your reaction to that position?

Dr. MCCORMICK. Well, because we estimate the demand for synthetics to be so significant in the 1995 time frame, which is only 20 years away, our view is that we need to build up a fairly substantial production rate of synthetic fuels beginning in the middle 1980's. In order to do it with the second-generation technology that is being developed in ERDA, we believe there is a need to resolve the economic, environmental, institutional, regulatory and other non-technological issues that have to be resolved in order for the plant investments to be made.

The only way those can be resolved in time is to operate in parallel with the second-generation technology efforts a commercial demonstration program utilizing the technologies that we now have which are the first-generation technologies.

We would argue that we need to demonstrate on a limited scale a number of these first-generation technologies to lay the groundwork so that the second-generation technologies can be commercialized rapidly. We do not intend to build and operate a large number of plants with this commercial demonstration program, so the number of first-generation plants that would be operated, and constucted would be a very limited number.

We would not agree with the conclusion that this program would encourage the widespread commercialization of uneconomic first-generation technology.

Senator BYRD. How many commercial plants are we talking about?

Dr. MCCORMICK. We are talking in the range of 12 to 15 plants.

Senator BYRD. And how much would they cost?

Dr. MCCORMICK. That depends on the type of plant. If it were a coal gasification plant, commercial scale, it could cost in the range

of $1 billion. If it were a small biomass plant to convert municipal waste into liquid or gas, it might be in the $50 to $100 million range. They vary.

We have as an attachment to the statement a detailed breakdown by plant type and the total capital invested. Exhibit 1 of the attachment shows the total capital investment of each of the major plant types.

Senator BYRD. Does this also indicate the technologies that would be employed?

Dr. MCCORMICK. It indicates them generically. In the shale area there are certain technologies that are ready for commercial demonstration. One was developed by Union Oil, another by Tosco, and a third by Paraho. And in the utility industrial field area there are several technologies, again including Lurgi. In the biomass areas there are several pyrolysis type technologies which are currently ready for commercial demonstration.

Senator BYRD. The various exhibits will be included in the record along with your statement which will appear in its entirety.

INDUSTRIAL INCENTIVES

Industry seems to be divided on the most effective type of incentives. Some spokesmen favor loan guarantees. Others believe a grant program repayable upon successful commercialization would be more effective. What are your views?

Dr. MCCORMICK. The answer to your question of what industry views depends on which technology type you are talking about and which industry you are talking about.

Just briefly before I give our views I will summarize the industry views. In the high-Btu coal gasification area there is a high degree of unity among the major project proposers that the loan guarantee is an appropriate mechanism for getting these first plants built.

The recent Federal Power Commission ruling on the WESCO case has stimulated quite a bit of enthusiasm in the industry and they believe that with that type of Federal Power Commission ruling coupled with a Federal loan guarantee of up to 75 percent of the plant cost they could get those plants built.

In the shale oil area there are a mixture of different kinds of companies. Some are very small and some quite large. Depending on the particular financial needs of the company involved there is a difference of opinion about which is the best financial incentive. I would say, however, that there are several of the major shale oil projects who believe that a loan guarantee is an appropriate incentive, while several of the others believe that the price guarantees or grants might be the most effective mechanism.

Senator BYRD. And what are your current cost-sharing requirements for demonstration plants?

Dr. MCCORMICK. Well, for the second-generation technology plants that are being operated under Dr. White's program the current guideline is 50 percent Government, 50 percent industry, based on total project cost.

We believe, however, that many of the plants that we are talking about in this program using first-generation technology could be com-

mercialized with guarantees rather than outright Government expenditures, and the loan guarantee is one of the three major types of incentives that we recommended under this program.

Senator BYRD. What are your current cost-sharing requirements for pilot plants?

Dr. MCCORMICK. I believe they are two-thirds——

Dr. SEAMANS. Two-thirds Government, one-third industry.

Dr. WHITE. Yes.

Senator BYRD. What has been industry's response at these ratios of cost-sharing?

Dr. WHITE. Well, it has been generally good. The high-Btu gas pilot plants, of course, are cofunded in an arrangement with the American Gas Association. That has been going on now several years with their putting up one-third of the money each year, and our putting up the two-thirds. That covers several pilot plants.

In the case of the enhanced oil recovery, cost-sharing has been even more favorable, even though they are not a demonstration plant. They are field tests and they really correspond more to the small pilot operations. These have been funded at an average of 64 percent industry funds and 36 percent Government. Whether this will continue as we advance and add more tests to this program remains to be seen, but there have been very good response at generally the 50–50 level in these cases.

In these cases, of course, the private sector comes with a field ready to test and brings to it quite a bit of background as well as a certain amount of sunk investment.

Senator BYRD. You have indicated, Doctor, that the cost of synthetic fuels derived from coal are not competitive with petroleum and natural gas and not expected to be for quite some time.

What could possibly be the rationale for industry investment in demonstration commercial plants given this situation?

Dr. WHITE. The advantage to the company or group of companies who move in early is the knowledge that they gain; the ability to make judgments about further commercialization. But I think it is unlikely that that is going to be sufficiently attractive to have industry maintain an interest in a 50–50 cost-sharing in the absence of some assurance that synthetic fuel industry when it does become commercial is going to have some chance of economic viability.

I think they are going to look to the Government, the executive branch or Congress or both, to have assurance that they are going to operate in an environment which is going to enable them to make a go of it and make some net return on their investment. Otherwise, they won't finally put up the money when the decision point comes in my judgment.

Senator BYRD. Do you see that assurance forthcoming?

Dr. WHITE. It is certainly our hope as Dr. McCormick has expressed that this will be acted on favorably by Congress in one form or another. I think you had a little indication of what is likely to happen if it isn't passed in the reaction of some of those companies involved in oil shale commercialization last fall. When the Congress rejected the proposal at least one shale project collapsed within a few weeks. I understand it was for that reason.

CONDITIONS FOR PRIVATE PARTICIPATION

Senator BYRD. Do you really expect industry to participate in these plants as long as this price is so imbalanced vis-a-vis imported fuel?

Dr. WHITE. Not without some assurance of price protection.

Senator BYRD. And we don't have that assurance, so what are we talking about? We have been talking about this all day, this industry participation.

Dr. MCCORMICK. Mr. Chairman, I think we have to look at this by fuel type. First of all coal liquefaction, which we were talking about before, is probably the least economic of all the synthetic fuel types right now. We would not propose that it be included in the first phase of this program because the second-generation technologies which are currently under development in ERDA are expected to bring down the price significantly. The price differential in the high-Btu gas area between the first- and second-generation technologies is not expected to be nearly as great as in liquefaction.

The difference we expect would only be by 25 percent. However, the gas situation in the country is so critical in some areas that a number of project sponsors have indicated to us that they have the customers for the gas even for the first-generation plants, if they can borrow the funds to construct the plant. And that would be the purpose of the loan guarantee. In the gas area the situation is so critical in some parts of the country that the pipeline companies and distribution companies are even building naphtha conversion plants, plants which convert highly refined petroleum products into gas at prices far exceeding high Btu coal gasification.

In the gas area we have such a bad situation that we are going to see these higher price alternatives come on pretty quickly, and consequently we expect that proposed gasification projects will become economic very quickly.

In the shale oil area the price per barrel of shale oil right now is in the range of $14 or $15, which is only slightly higher than the world oil price of approximately $13. Shale oil is nearly competitive today. But for coal liquefaction, that is coal to liquid, we don't expect there to be any first-generation technology which will be competitive or even nearly competitive with imported oil in the next few years.

Dr. SEAMANS. It seems to me that what is being said here is perhaps not generally recognized. To maintain support and interest in our demonstration program involves a commitment to the synfuel commercialization program. That would be the avenue for getting started in the near term in some of these areas.

If we do have that, I believe that you will find a continued interest in joint participation in the demonstration area.

NEED FOR PRICE GUARANTEES

Senator BYRD. Is there any danger that the OPEC countries might lower their price in the hopes that they would throw your program into disarray and discourage industry investment?

Dr. SEAMANS. That is a good question, and one that we have looked at. It is the reason why in some of the programs, a price guarantee does become important.

I am not convinced in my own mind that a lower price is likely to happen. I think what is likely to happen is the price will tend to go up, but you can never be sure what a cartel might try to do. If they felt that we were really getting serious about a synfuel program, they might choose to reduce prices to throw us into disarray.

Dr. McCormick. That is a problem, for example, in shale oil. The shale oil would have to compete with world oil directly, and there are some of the shale oil project sponsors who are quite concerned about investing perhaps a billion dollars in a large shale project and then having the world oil price drop for a few years and not being able to amortize the plant investment.

However, in the regulated areas such as high-Btu pipeline gas there wouldn't be that problem. Because the regulatory system provides the mechanism for cost recovery through the rate base. So it is just in the unregulated fuels that we have a problem of potential price drop affecting the viability of the plant.

COMMERCIALIZATION TARGETS

Senator Byrd. Under your current projection when do you anticipate that your first liquefaction, high-Btu and low-Btu demonstration plants will actually come on stream?

Dr. McCormick. In the commercial demonstration program utilizing this first-generation technology, if we got the authorization and appropriation this year, construction could begin by the middle or late part of next year and have the first plant in operation by 1981. Dr. White mentioned before the schedule for the first high-Btu second-generation technology demonstration plant which I believe he said could be in operation by about 1980.

Dr. White. The end of 1980, and COALCON by the end of 1979. That is our present projection.

Senator Byrd. If Congress were to authorize and fund the first phase commercialization request in the near future what immediate response would you anticipate from industry?

Dr. McCormick. We anticipate a very good response. There are at the present time five major high-Btu coal gasification projects that have indicated to us that they would be ready to go if they could borrow the money. The Federal loan guarantee would provide that mechanism.

There are also four or five shale projects which are ready. There are a number of electric utility and industrial fuel projects, and quite a few bioconversion projects, as Dr. Seamans mentioned, both municipal waste and perhaps agricultural or wood waste or other.

We have identified what we call a project candidate list of about 40 projects throughout the country that we believe are at the stage where they could go to construction within the next 2 years if there were the appropriate set of financial incentives offered by the Government. We would be happy to make that list available to the committee.

COMPETING TECHNOLOGY STAGES

Senator Byrd. All right. We would like to have that list. Can we expect industry to go deeply in debt on commercializing some existing technologies and still invest heavily in your separate demonstration plant projects that might make commercial ventures obsolete?

Dr. McCormick. I think the amount of money involved in the commercial demonstration program, the total investment that we are talking about for all 12 or 15 of these projects is on the order of $8 to $10 billion spread out over 5 years. That represents an annual average of perhaps less than $2 billion among a wide range of companies.

We would not expect that the investments made in these commercial demonstration projects would draw significantly from the investments in the R. & D. projects. This is in large part due to the fact that many of these projects would be financed through debt financing made available by the loan guarantees.

Generally R. & D. projects which are funded by industry and those funded cooperatively with Government involve investment with internal company funds rather than funds secured in debt markets.

[The list of potential synthetic fuel commercilization projects was adopted by reference and held in the committee files.]

IMPLEMENTATION OF NEW TECHNOLOGIES

Senator Byrd. The OTA has suggested that ERDA is too preoccupied with second-generation technologies at the expense of commercializing existing processes. Do you think it might be wise then to slow down the demonstrations of newer technologies to offset the heavy cost of commercialization?

Dr. McCormick. We certainly would not recommend that, because the real price advantage contained in real cost reductions is going to come from the second-generation technologies.

And as I said before, the reason that we believe it is so important to go ahead with the first-generation is to obtain in parallel with the technical developments a lot of the environmental, economic and regulatory information that will be needed if we are to see the rapid commercialization of the second-generation technologies in the middle and late 1980's.

Dr. Seamans. I think that judgment on ERDA may have been fair about a year ago, but I really think today we have come a long way in our thinking on commercial type ventures using first-generation type technology. This has really involved a tremendous amount of effort in planning, in studies, in analyses, as well as a great deal of discussion in various parts of the country on potential socioeconomic impact and matters of this sort. We are way ahead today of where we were a year ago.

INCREASED SYNFUELS PRODUCTION ESTIMATES

Senator Byrd. Dr. McCormick, your statement foresees 350,000 barrels a day of oil equivalent production by the early 1980's. To what extent, in your judgment, would these plants contribute more substantially to energy production?

Dr. McCormick. To what extent could they contribute to more than 350,000?

Senator Byrd. To what extent do these plants contribute more substantially to energy production, and in what time frame?

Dr. McCormick. Well, according to the schedule that we have laid out if we get the authorization and appropriation we could have

in operation in the early 1980's, 350,000 barrels per day. That is the first phase of a possible two-phase program leading to the million barrels a day by 1985 that was in the original Presidential proposal.

We could see moving to a second phase of the program if it appears desirable and necessary. In that event we think we could get to a million barrels by perhaps not 1985 but shortly thereafter. That would entail a construction of about 20 or 30 major synthetic fuel plants around the country.

Senator BYRD. How does this dovetail with your estimate, Dr. Seamans, which I believe indicated that we would have 2 million barrels a day—we would cut our oil imports by 2 million barrels a day?

Dr. SEAMANS. Well, the 2 million barrels a day figure is one that I am not too familiar with. That was in the President's overall program. It was not directly related to ERDA R. & D. and the commercial program we are talking about here. I don't think they are directly comparable.

Senator BYRD. I don't believe that was in your statement. That is correct.

NEED FOR A SECOND PHASE

Well now, you spoke of phase 1 and phase 2. Wouldn't approval of phase 1 in effect obligate Congress to follow up with either price supports or construction grants?

Dr. MCCORMICK. No, sir. Phase 2 would have to be separately authorized and appropriated by the Congress. I should again point out that the $2 billion in loan guarantee authority and the $500 million borrowing authority to cover that would not, however, carry out the full 350,000-barrel-a-day first phase.

As I indicated before, we believe we need $6 billion in loan guarantee authority as well as price guarantee and construction grant authority. This is spelled out in some detail in the attachment to the statement.

CONSIDERATION OF GOVERNMENT-OWNED PLANTS

Senator BYRD. Has serious consideration been given to a Government-owned contractor-operated plant or to such plants to accommodate implementation of new coal conversion technology at the demonstration plant size?

Dr. SEAMANS. No. We have continuously been working on the concept that one or two plants are not going to solve the Nation's problem. What we have got to do is carry out development and commercialization in such a way that we get many more than one or two plants and that should be done by the private sector.

Senator BYRD. Don't you think that the use of Government-owned contractor-operated plants would reduce the 8 to 10 years required to implement a new process and get it to the commercial demonstration plant program?

Dr. SEAMANS. We could get the plants built. There is no question about that. We could start to get the product from the plant. But it would not put in perspective the economic and financial factors that are so important. It would put, of course, a burden on the

taxpayer. It would put a burden on our management capability, things of that sort. We really think that this other avenue is the more desirable approach.

Senator BYRD. But the burden on the taxpayer would be paid back. He would be relieved of that burden and he would recoup that in time.

Dr. SEAMANS. In time, but the front-end money would have to be put up. And there would be some period of time before you could amortize the cost.

Senator BYRD. But the Nation's security during that time may hang in the balance also. Are such plants being considered? Have they been seriously considered?

Dr. MCCORMICK. In carrying out the analysis last year and looking at the various kinds of mechanisms by which the Federal Government could get some of these plants built, we looked in detail at the option of Government ownership. I might summarize some of the major reasons that we felt that the guarantee approach was preferable as opposed to the Government ownership approach.

As Dr. Seamans mentioned, the guarantee approach would not involve direct Federal expenditures in the event that the plant was successful and we expect that they will be.

Second, the guarantee approach facilitates experience in the private sector in financing these projects which are very complex, large ventures. Eventually if we are to see the rapid commercialization of these technologies, the private sector is going to have to get experience in financing them. If the Government paid for them as opposed to the companies having to go to arrange commercial financing, industry would not get that experience.

Third, by operating the plant in the private sector the companies involved will have to carry the burden of product marketing and getting experience in marketing and selling synthetic fuel products in the various energy sectors. If the plant were built and operated by the Government, that burden would be placed on the Government.

Lastly and most importantly, the guarantee approach simulates in the best way the project as if it were being carried out in the private sector, and is, we feel, the best way to transfer the technology into the private sector. If it is a Government-owned plant, it entails more effort to transfer it into the private sector.

One other very important factor is, I think, that many of the patterns and the knowledge for these first-generation technologies currently exist outside of the Government. By giving guarantees as opposed to Government ownership there would be a better opportunity to get more participation by all the private sector sources which possess these technologies.

We of course would require that any participant which received a Government loan guarantee or any other kind of guarantee would make that technology available by licensing it at a reasonable royalty. Any new technology developed, the Government would take title to, and then have options for their use.

Senator BYRD. Well, wouldn't the Government-owned contractor-operated plants speed up the process, and then couldn't the contractor who operates it also contract to market the product? And couldn't you then shift to the other program?

Dr. McCORMICK. We don't think that would be any significant advantage in terms of speed, because many of the companies that have come to us have indicated that they would be willing to start tomorrow if they had a Government loan guarantee.

Dr. SEAMANS. There is perhaps a step in between. We do think in some areas the ability to provide construction grants is important, and this could be done with an option for industry to buy at some later date. That possibility is under consideration.

FASTEST METHOD OF COMMERCIALIZING KNOWN TECHNOLOGIES

Senator BYRD. Do you feel that you are following the fastest method to get existing known technology commercialized into the operating plant level traveling the routes that you have outlined?

Dr. McCORMICK. We feel that with the authority that is being requested we could get these plants started in the next year or so, and that is about as fast as you could get them started.

Dr. SEAMANS. Yes. I agree with that, but I think it is more important to recognize that it is not the 350,000-barrel-per-day capability that we are really working toward. What we are really working toward is on the order of 5 million barrels a day, say, in 1995, and maybe 10 million barrels a day in the year 2000. And I think we clearly are working toward that goal as expeditiously as possible by proceeding on this course.

COSTS OF FEDERAL CONSTRUCTION

Senator BYRD. Have you explored the amounts of total funding that would be required for Government-operated—Government-owned contractor-operated plants in the technologies of liquefaction, high-Btu gasification, and low-Btu gasification?

Dr. McCORMICK. Yes, sir. We have done that. And in the interagency task force analysis which I mentioned before there was a financial comparison of cost to the Government of all the major financial options, including Government ownership as well as grants, loan guarantees, price guarantees, and so forth. The result of that analysis was that if the Government owned the plant outright, it would incur the full cost of construction which for all of the plants that we have under consideration here would entail perhaps $10 to $12 billion.

Senator BYRD. What would be the cost, though, for one of each of these three types of plants—high-Btu, low-Btu, and coal liquefaction?

Dr. McCORMICK. Well, the four categories that we are talking about for the program are high-Btu, gas, oil shale, industrial fuel and biomass. If they were commercial scale plants, the shale plant would be about a billion dollars, and the gas plant would be about a billion. The low-Btu gas plant would be on the order of about $300 to $500 million, and the biomass perhaps $50 million. So you are talking about a little over $2.5 billion for the full cost.

Senator BYRD. And what about the coal liquefaction?

Dr. McCORMICK. As we indicated before, we wouldn't suggest going to a commercial coal liquefaction plant now, because the first-generation technology is so uneconomic compared to the second-generation technologies which are under development in ERDA.

Senator BYRD. What would be the time schedule for a Government-owned contractor-operated plant in each of these four areas?

Dr. MCCORMICK. Well, again if we had authorization and appropriations to proceed, we could presumably, after running a competitive award procedure, make awards some time next year. And design and construction could begin immediately.

As I said before, I don't think the time schedule would be significantly different whether you had guarantees or Government ownership. I think we have pointed out the number of advantages to guarantee for this type of venture as opposed to outright Government ownership.

Senator BYRD. If the commercialization program is not approved, then where would you stand with respect to the GOCO route? Would it not be the fastest way to request the crucial information to further develop these technologies?

Dr. MCCORMICK. If we could not get guarantee authority for this program, of course, direct funding authority could be a mechanism for getting the program going. There is no question about that. We prefer to see the guarantee route used.

Senator BYRD. Perhaps these questions on the GOCO approach are more pertinent to second-generation demonstration plants rather than commercialization plants.

ERDA'S GEOTHERMAL BUDGET

ERDA's geothermal budget is not before this committee, but we understand that you have requested a substantial increase of $6 million or so involving geothermal resource appraisal. The Geological Survey, on the other hand, has been forced to take a $6 million reduction in this area.

The Geological Survey is the traditional lead agency in this kind of work. What is involved in this shift of funding?

Dr. SEAMANS. Well, as far as which agency does the work, nothing is involved. We intend to use the U.S. Geological Survey and transfer some funds that are in our budget over to them so they can continue their essential activities. It is a matter of OMB wanting to show in our budget more of the items related to energy research and development. But we have in ERDA absolutely no desire to move into is area where the Geological Survey has so much competence.

Senator BYRD. How much of your geothermal appraisal work will eventually be performed by the Geological Survey? Will it all be performed by that agency?

Dr. SEAMANS. Well, it is the major share. We are doing some work ourselves. We have been doing some drilling and so on, but the U.S. Geological Survey is going to continue, with some of the $9 million for resource exploration and assessment going over to them. They still have some funds in their budget—about $3 million I think.

Senator BYRD. Now, why shouldn't they do all of this, the geothermal resource appraisal work?

Dr. SEAMANS. I honestly am not familiar with all of the details on this, but we do have to take their assessment and relate it to the development program that we have underway. And I believe it is more in that transition and overall evaluation that we have our

activity. But I can supply more information for you in this area for the record.

Senator Byrd. All right. Please do.

[The information follows:]

USGS AND ERDA GEOTHERMAL RESOURCE ASSESSMENT COOPERATION

Pursuant to the provisions of the Geothermal Energy Research, Development and Demonstration Act of 1974 (Public Law 93–410), ERDA has overall responsibility to initiate a resource inventory and assessment program with the objective of making regional and national appraisals of all types of geothermal resources. Acting primarily through the Geological Survey, ERDA assures the preparation of regional and national assessments needed for planning and sustaining the national geothermal program. In addition, ERDA has put a large emphasis on site-specific reservoir definition.

Resource exploration and assessment effectiveness depends upon the development of improved techniques, and both ERDA and USGS have activities aimed at technology improvement. The respective programs of ERDA and USGS in the resource exploration and assessment area are closely coordinated so that each complements the other. The major coordinating mechanism is the interagency Geothermal Advisory Council, but there are numerous less formal and more frequent contacts to assure an effective, integrated program.

With regard to the budget, ERDA supports site-specific reservoir definition projects and resource confirmation involving drilling. USGS supports regional and national assessments based on all available data and surface surveys and measurements but excluding drilling. As mentioned above, both ERDA and USGS support technology development, exchanging information continually to avoid duplication.

The ERDA budget for FY 1977 was prepared in close collaboration with USGS, based on the assumption that USGS funding would continue at the present level (about $9.4 million). The $6 million reduction in the USGS budget for FY 1977 would cause serious delay in resource development planned by ERDA. Whatever the outcome of the appropriations finally passed by Congress and enacted into law, we will continue to work closely with the USGS in order to maximize the value of their program to the national geothermal effort.

ENERGY CONSERVATION FUNDING REQUEST

Senator BYRD. The budget for energy conservation nearly doubles as you stated in your statement, Dr. Seamans, yet it is $50 million below ERDA's request to OMB. What the committee needs to know is ERDA's best estimate for an effective funding level disregarding budgetary constraints.

Dr. SEAMANS. Well, we have already discussed with you one item that we feel is extremely important, namely, fuel cells. I think we would say that the funding requested of OMB was well considered and that we could manage a program effectively at the level requested.

Senator BYRD. So you would say then your effective funding level would include the $50 million that was cut out?

Dr. SEAMANS. That is correct. Yes. I would like to be sure of one point on this. In our request we did not have the full amount that we are now requesting for fuel cells.

Mr. GREER. That is right.

Dr. SEAMANS. So we would want to add that amount. It adds $11 million to the budget request.

Mr. GREER. Since the request to OMB included $10 million for fuel cells, the net increase would be $11 million.

PLACEMENT OF FUEL CELL RESEARCH

Senator BYRD. Why was fuel cell research shifted to the conservation activity?

Dr. SEAMANS. I believe some was always included in conservation. We didn't have very much. There was $1.5 million of the $3 million last year——

Mr. GREER. There was a little bit going in——

Dr. BELDING. There was actually $600,000 carried in conservation, and the rest, $3.1 million, was in advanced energy systems.

Dr. SEAMANS. It was transferred from advanced energy systems because we felt we should consolidate all the effort in one place, and conservation was the logical area for it.

Senator BYRD. A breakdown of conservation funding was not included in the justification. It had to be requested by staff. That breakdown shows only $1.3 million in outlays, and a footnote says another $1.7 million will come from other conservation activities.

Can you explain that?

Mr. GREER. This year what we have identified is $3 million in outlays for that category, Mr. Chairman. If we need additional outlays, we will look to the whole conservation program and possibly reprogram to keep them on schedule as best we could.

Senator BYRD. What are the other conservation activities that involve the $1.7 million?

Mr. GREER. It includes the heat utilization system, crude component efficiency and reliabilities, advance cycles, materials fabrication, combustion technology, and the $1.7 million was never really identified. We have made an approximate allocation here as we see it today. That is approximately how the outlays would go as the program plans get firmer and the contracts get placed. We would propose to assign the outlays——

Dr. BELDING. The $1.7 million was actually a possible carryover from 1976, and at this point we are not quite sure whether we are going to have $1.7 million but that was a maximum possible carryover. And where that would come from in conservation has not been determined at this point.

Senator BYRD. Would you inform the committee as to where that will come from?

Mr. GREER. Yes, sir.

Senator BYRD. OTA has noted the difficulty in defining the fuel cell funding program in your 1977 budget, so would you elucidate a little more?

Mr. GREER. Yes, sir. We will identify the full $3 million in outlays and the funding for it.

[The information follows:]

FUNDING OF THE FUEL CELLS PROGRAM

In implementing the FY 1977 budget, $3.0 million in budget outlays (B/O) will be made available for the fuel cells program. Of this amount, $1.3 million was requested directly in the President's Budget with the remaining $1.7 million to be reprogrammed from within other conservation activities. The source of the $1.7 million to be reprogrammed has not been determined at this time and will depend on two factors: (1) FY 1977 implementation plans are continuing to be updated based on FY 1976 experience and expectations for the coming year, and (2) final plans must await completion of the Congressional appropriations process. Based on these factors the availability of B/O ceiling for the fuel program will be determined. If necessary, the amount will be arbitrarily prorated to minimize an adverse impact in any one area.

CONSERVATION FUNDING LEVEL

Senator BYRD. As to conservation, your statement emphasizes that it would not be prudent at this time to go beyond the $71.2 million in the budget. On what basis then did ERDA request a level of $122 million?

Dr. SEAMANS. Well, obviously there is somewhat of a conflict here between our view that we could carry out a larger program, that we could do it effectively, and the need on the part of the overall Government to stay within ceilings prescribed by the President.

When we get into this situation differences arise. I think we do have to realize also that this is a program that we almost started from scratch a year ago. There was some limited effort in the automotive area and in electrical transmission, but it really has been growing very rapidly. We have been putting people on the staff who are now starting to pull together very effectively. But it does take time to assemble a team and get the plans, and that does have to be taken into account in any budgeting that takes place.

Senator BYRD. Appropriations for conservation were increased threefold in the current year. What portion of this funding has been obligated to date?

Mr. GREER. Through February the actual obligations are about $7.5 million, but we do have in the procurement process the additional $17.5 million that I mentioned this morning, and additional dedicated funds at the national laboratories of $3.5 million. That would leave about $12.7 million yet to go to be identified for contracts or for national labs.

JURISDICTIONAL BOUNDARIES BETWEEN ERDA AND FEA

Senator BYRD. We have a continuing jurisdictional problem with energy conservation. Many of the programs in ERDA's budget, for instance, do not involve new technology but sound much like programs fiercely pursued by the Federal Energy Administration.

Why shouldn't ERDA restrict itself to the R. & D. aspects of energy conservation?

Dr. SEAMANS. Well, I think you will find that our programs really are in the research, development and demonstration area, and that the conservation program headed by Mr. Sant in FEA is really related to other areas, such as the speeds at which automobiles travel, funding arrangements for increased insulation for buildings, low-cost housing and matters of this sort.

We have gone over our two programs very carefully. Mr. Heller and Mr. Sant worked carefully together, and I really think that the duplication is minimal.

ENERGY CONSERVATION ACTIVITIES

Senator BYRD. The definition and range of conservation are too broad and vague in your budget justification. For example, why are activities that involve financial savings rather than energy savings included in conservation?

Dr. SEAMANS. I didn't appreciate that that was the case.

Senator BYRD. Such as electric energy systems and storage.

Mr. HELLER. Electric energy systems and storage have the potential for energy savings and also the financial savings. This is particularly true in the electrical energy systems program. The R. & D. associated with the electric energy systems program would result in overall improvement in transmission of electricity by increasing voltage capacities and achieving energy loss reductions and improved load management.

The work we are doing in electric energy systems such as overhead transmission and underground transmission research is intended to improve the efficiency of transmission and will result in added benefits of savings in land use, lowered capital and operating costs.

Senator BYRD. Do you show your energy savings?

Mr. HELLER. We do, sir, in our budget justification.

Dr. SEAMANS. Our objective is to conserve energy and find ways to operate more efficiently. We have to also consider what the economic and environmental and other factors are. But our objective is first and foremost energy savings.

Senator BYRD. We have conservation goals, but do we have overall strategy? How do you specifically intend to meet your goals with the varied conservation subprograms?

Mr. HELLER. The thrust of the budget justification is energy savings in the very near term; however, the programs to develop technologies that will impact the energy use in areas such as building, industry, and transportation are in the longer term as well. That is a driving force in making our judgments as to which projects we should fund both in the near term, the mid term and the long term.

So our strategy basically can be summed up this way: We are looking for every opportunity in the end use sector to show energy savings as soon as 1977, 1978, 1979. Our overall strategy is not only to achieve energy savings in 1985 or the year 2000, but begin to look in the end use sector for opportunities that will allow us to reach the market place in energy savings in 1977.

NEAR TERM APPLICATION OF CONSERVATION BUDGET

Senator BYRD. Well the testimony before the House Appropriations Committee indicated that only 40 percent of the conservation budget is directed to the near-term application. Isn't the near-term a primary target and one of the attractions of energy conservation?

Mr. HELLER. That is very true.

Approximately 40 percent of the conservation program addresses those projects that would be associated with near-term energy savings in buildings, in industry, and in transportation.

Generally the projects associated with electrical energy systems and energy storage are long term in nature. Parts of the transportation program are also long term. So an examination of our fiscal year 1977 budget thrust would show that about 40 percent of our activities are what I call the near term and 60 percent in the longer term.

Senator BYRD. Shouldn't it be just the other way around?

Mr. HELLER. It may develop as we begin to examine the energy conservation opportunities, particularly in the industrial sector, that the ratio may change.

CONSERVATION CONSTRUCTION

Senator BYRD. There were two end use conservation requests for construction that did not survive the OMB mark, $8.5 million for a combustion research center at Livermore and $15.3 million for a commercial building demonstration project. Why did these get knocked out?

Mr. HELLER. It is my understanding that the capital projects items that we requested to OMB were simply not deemed to be important enough to be included at this time.

Senator BYRD. How would these facilities be used and for what specific purposes?

Mr. HELLER. In Chicago the building would be used by Argonne National Laboratory personnel. The building would be designed with the best available technology for energy efficiency and would be used as a model for architects and engineers to come from all over the nation to observe.

Senator BYRD. Now suppose you supply details on these two project proposals for the record.

Mr. HELLER. I would be happy to.

[The information follows:]

DETAILS ON PROPOSED COMBUSTION CENTER

The Combustion Research Center (CRC) is proposed as a laboratory/office facility which will provide for the expansion of combustion research programs currently underway. The concept of a location providing facilities for intense research into combustion has received strong endorsements from the private sector. In fact, the proposed complex will facilitate the expansion of the existing program wherein eminently qualified research scientists work at the laboratory while on a sabbatical from their respective university positions. ERDA plans to expand this program to include scientists from industry.

Unique capabilities of this facility center about new high-powered lasers used for probing and analyzing combustion processes. This requires specially designed combustion laboratories with access to the lasers and computer access for combustion modeling. Activities include (1) basic combustion research, emphasizing turbulent reacting flows; (2) applied combustion research, emphasizing automotive propulsion, advanced coal-burning power cycles, and coal processing; and (3) diagnostics development, emphasizing new laser/optical techniques.

The CRC will be a multi-building complex of four structures segregated for functional purposes. Gross building area is planned to be approximately 45,000 sq. ft. to yield a net area of about 29,000 sq. ft. Gross area of the respective buildings will be nominally: Laboratory building 15,800 sq. ft.; office building 20,000 sq. ft., briefing room (seating 225 persons) 4,400 sq. ft.; and mechanical building 4,800 sq. ft. The proposed center will occupy 6 acres of ERDA owned unimproved land east of Sandia Laboratories, Livermore (SLL) existing engineering and computer facilities. Access to the center will be from the SLL tech area as well as from an adjacent public street.

A unique feature of the laboratory building will be four laser/laboratory modules, each comprising a laser room placed between two laboratories with a common control room for each module. Laser beams will be directed to either laboratory of a module through articulated closed tube systems. Also included are 13 general purpose laboratories each with an adjacent office space for technicians. Centralized computer and building control rooms, and a mechanical assembly/storage room will be provided. Laser laboratories and general purpose laboratories will be individually accessible from a central corridor and egress from each major laboratory will be directly to the outside.

Recent studies have shown that application of advanced technology to combustion systems can result in significant increases in fuel economy. Design improvements in practical combustion systems are severely restricted, however, by current limitations in the understanding of the fundamental combustion processes involved. The attainment of such knowledge is, in turn, currently restricted by the inability of established experimental techniques to obtain basic data on gas composition and temperature in combustion environments. Within the past few years, however, new experimental techniques utilizing the unique characteristics of lasers have been demonstrated to be capable of such measurements. For example, optical scattering experiments using high power continuous and pulsed lasers for Raman and Raleigh scattering, and using sophisticated tunable dye lasers for fluorescence scattering, have enabled detailed studies of flame combustion processes that have not previously been possible. Unfortunately, the laser systems required for the application of these new techniques to practical combustion problems are very complex and expensive, and widespread development and application of the new techniques has not been possible. The proposed CRC would include a central laser bank and data acquisition electronics to enable the new techniques to be used for a variety of basic and applied combustion experiments.

Details of Cost Estimate:

a. Engineering, Design, and Construction Management at approximately 16% of construction (Item b)		$ 900

1/ Estimate based on preliminary conceptual design.

	Item Cost	Total Cost
b. Construction		$ 4,900
(1) Improvements to land including security fencing, earthwork and grading, drainage, and streets, walks, and parking	$ 200	
(2) Building, approximately 42,000 SF about $98/SF	4,100	
Offices - 21,000 SF at about $75/SF Laboratories - 21,000 SF at about $120/SF		
(3) Utilities including steam, water, sewer, natural gas, and electric power	400	
(4) Building equipment including fuel handling, fume hoods and laboratory furniture, load transfer and control system, environmental process systems, instrumentation cooling and raceways	200	
c. Standard Equipment: Pulsed lasers, gas analyzers, mini-computers, dynamometers, and spectrometers		1,300
Subtotal		7,100
d. Contingency at approximately 20% of above costs		1,400
Total Project Cost		$8,500

1/ Estimate based on preliminary conceptual design.

CONSERVATION DEMONSTRATION BIULDING

This project will provide for the design and construction of a new energy efficient office building at ANL.

The office building, as proposed, presents a unique and strong base for the application of energy conservation methods and a very significant and timely application of solar energy heating and cooling technology to a large structure in the upper midwest region of the United States.

The benefits of such a program are several; the energy conservation methods employed in the design of the structure will reduce the amount of energy consumption as compared to a structure of standard design practice today. Over and above the energy savings as achieved by the energy conservation techniques will be the further reduction of energy usage by the use of the existing and essentially "free" source of solar energy for heating and cooling.

The building will be the first medium-sized office building in the upper midwest region to employ solar energy for heating and cooling. This will allow for the study of system operations in an environment having a large range of dry and wet bulb temperature extremes, a moderate amount of rainy and/or cloudy days, some solar screening due to atmospheric pollution, a wide variation of wind patterns and the actual impact of people working within a building. The project will be utilized by architects and engineers as a working model and is expected to be a tremendous aid in information transfer to the industry at large.

The Commercial Building Conservation Demonstration Project would make possible the consolidation of key management personnel of both ANL and ERDA-Chicago with their supporting staff in a single building and provide suitable space for appropriate administrative and service groups, all centrally located on the site convenient to the scientific and engineering community to be served.

The need for this center can be delineated into several categories such as economic considerations, ANL management needs, ERDA-Chicago needs, relief from unsatisfactory working conditions, needed additional space for administrative and service functions, improved service for scientific and engineering divisions, demonstration of an atrium as an energy conservation technique and solar and energy conservation demonstration.

Virtually every facet of the building design has energy conserving propensities, from window design to building mass.

Other energy conserving aspects of the project will be solar collector panels mounted on the south facade and the roof which are expected to provide as much as 70 percent of the building's total nonelectric energy consumption, including nearly all of the summer cooling load. Approximately 28,000 sq. ft. of collector will be used to capture the sun's energy in the form of heat which will be stored in underground tanks of 150,000 gallon total capacity. This heat will be used directly by the heating system in winter and as the energy source for absorption chilled water generators for cooling in the summer. The cooling load will be met by two absorption chillers and one steam turbine driven chiller all of 100 tons capacity each. Exhaust steam from the steam turbine will be used as a supplementary heat source for the absorption chillers.

Details of Cost Estimate:*

		Item Cost	Total
a.	Engineering, design and inspection costs at approximately 12% of construction costs, item b		$ 1,400
b.	Construction costs		11,490
	(1) Site Improvements	$ 149	
	(2) Building, Approximately 215,660 sq. ft. at $52/sq. ft.	11,186	
	(a) Architectural and Structural	$6,677	
	(b) Mechanical	3,363	
	(c) Electrical	1,146	
	(3) Utilities	155	
c.	Furniture		356
	Subtotal		$13,246
d.	Contingency at 13.5% of above costs		1,800
e.	Demolition of vacated structures, Building 801 in East Area		114
f.	Relocation of personnel and equipment		140
	Total Project Cost		$15,300

* This estimate is based on completed conceptual design.

SCHEDULE FOR THURSDAY'S HEARING

Senator BYRD. We have congressional witnesses tomorrow morning, and they will be heard in room 1318. And hopefully, if we can finish hearing them we could resume as far as I can foresee at the moment at about 1 o'clock with ERDA. And the clerk will be in a position to inform you as to where that afternoon hearing will occur, and as to whether indeed it will occur.

Tomorrow afternoon, or at least the next time we might be able to proceed with ERDA, I think we would not need Dr. Seamans. We could move with Dr. White and Dr. Heller.

ADDITIONAL QUESTIONS

We have additional committee questions which go into greater detail concerning the fossil energy and conservation aspects of your budget. If we are unable to resume the hearing, Dr. Seamans, we will give them to you to answer for the record.

Dr. SEAMANS. Yes, sir. We will be happy to provide the answers in writing if that is the case.

[The questions and answers follow:]

ADDITIONAL COMMITTEE QUESTIONS

FOSSIL ENERGY OVERVIEW

Q. Let's go to the specifics of the fossil energy program now. The request totals $433 million for operating expenses, which is an increase of nearly $45 million, or 12 percent. Accrued costs increase by nearly $86.5 million, or 26 percent.

Dr. White, you have already given us a summary of the fossil fuel program. Do you have anything additional at this time?

A. I feel my remarks have generally covered the major items contained in the FY 1977 Budget. However, I will add that I consider the amounts requested for FY 1977 to be essential to the continuation of a balanced and integrated Fossil Energy effort.

COAL PROGRAM OVERVIEW

Q. For the coal program you are requesting substantial increases in budget authority and outlays--up by 13 and 32 percent respectively --but obligations decline $62.5 million. Is this 15 percent reduction in 1977 obligations a result of the large carryover being obligated in the current year?

A. The reduction in 1977 obligations is the result of the large carryover funds being obligated in the current year. Major requirements for the construction, modification and renovation of several pilot plants and test facilities will be met with funds obligated in FY 1976. FY 1977 obligations for these projects will be mainly for operating costs, which are lower than construction costs.

Q. Although the coal program is up overall, you have reduced obligations for liquefaction and high-Btu gasification. Is this because of shifts to the demonstration phase, or are there other reasons?

A. There are some shifts to the demonstration phase of the liquefaction and high-Btu gasification projects, but the decrease in obligations for these two subprogram areas is mainly due to the lower requirements of plant operations as compared to construction requirements. Obligational requirements for procurement of long-lead items of equipment and other hardware and the initial construction costs for the H-Coal pilot plant will have been met in FY 1976 as will the Cresap test facility renovation, refitting and construction costs in the liquefaction area. Most of the high-Btu gasification pilot plant projects will be in the final phases of operation, and construction and shakedown activities for the Bi-Gas and Synthane pilot plants are expected to be completed in FY 1976 with operations beginning in FY 1977.

LIQUEFACTION SUBPROGRAM

Q. Your budget for coal liquefaction, just under $74 million, is not only lower than the current year but $21 million under ERDA's original request. What did you originally plan to do with the $21 million you lost at OMB?

A. The liquefaction subprogram, jointly with the low-Btu subprogram had planned to support a cooperative project with NASA to design, construct, and operate a developmental unit to produce hydrogen from coal. That project, based on discussions with and guidance from OMB, will now be

undertaken on a cost-shared basis with industry which stretches out funding and construction of the unit. In addition projects that have been initiated to solve problem areas common to most liquefaction processes, such as solid/liquid separation and utilization of solids containing bottoms, will be stretched-out.

Q. OTA says that hard facts of economics and construction capability make your 1985 goal for liquefaction unattainable. Are you revising your 1985 goals?

A. The goal for 1985 has been reconsidered. No estimate is presented in ERDA 76-1 for 1985; however, our current estimate is for 0.2 Quads. This is attainable, as is the 3.8 Quads by the year 2000 presented in the report. The question of how many liquefaction plants could be built by 1985 depends upon the rate of construction of other energy conversion plants and the urgency of creating a domestic supply of liquid fuels to reduce imports or to react to an embargo, as well as economic factors.

Q. How do you come up with a goal of 3.8 Quads by the year 2000 in light of the budget reduction for liquefaction (even counting Coalcon construction, liquefaction budget is down)?

A. The estimate of 3.8 Quads (1.9 million BPD) of synthetic liquids (including solvent refined coal) in 2000 is consistent with projections at the nominal level contained in Volumnes II and III, "Recommendations for a Synthetic Fuels Commercialization Program." This is our most recent and reliable estimate of the potential for developing synthetic liquid products from coal. It assumes that the economic climate, as a result of incentives at the outset of the program, would be sufficient to attract private investment capital to carry production to this level by 2000. AFE's program of RD&D is intended to make processes available which are capable of achieving such production levels.

However, our estimates may change as more base information is developed.

Q. How far away are you from a commercially feasible liquefaction process?

A. Commercial feasibility implies two separate criteria. First technology must be available that is adequate to successfully construct and operate a commercial plant. Second, the economics of the process must be such that product values exceed the costs involved. The economic equations depend on many factors external to the ERDA liquefaction program. Also, commercialization incentives are under consideration to adjust the cost/risk outlook. Therefore, our comments will be restricted to the outlook for commercial technical feasibility of liquefaction processes.

The Solvent Refined Coal process, the H-Coal process, and the Coalcon hydrocarbonization process are examples of the processes furthest along the technical development cycle at ERDA. If a significant technical risk is acceptable to achieve early commercial scale, the SRC process could enter the commercial design phase within about 2 to 4 years based on the Tacoma pilot plant and supporting studies. To reduce technical risk a demonstration plant program would be required and this would increase the time to about 8 years from the time of decision for a demonstration plant to start of the commercial design. Both the H-Coal and Coalcon processes are just entering a large scale experimental program and commercial design is presently indicated for the 1981 to 1983 period. Here again, technical risk and early commercial design are in a trade-off relationship.

Other projects, like the Donor Solvent process development, can also be candidates for commercial design in the early to mid-1980's if the

industrial and government support being sought is forthcoming soon. The ultimate backup for early commercialization is, of course, the present commercial technology of the indirect, Fischer-Tropsch process which is being practiced in South Africa. This technology is presently commercial but the lack of commercial activity in the U. S. is clear evidence that economic incentive does not exist now and is not predicted for the near future.

In summary, a steadily improving body of technology for coal liquefaction is being generated which should start a commercial activity in the 1982-1985 period if economic incentives are present. Risk/incentive tradeoff will be very important in setting the actual time table for commercial activity, however.

Q. What is the most promising liquefaction process, and what will it cost to commercialize it? By when?

A. The ERDA program attempts to support all processes which are unique and promise economic and/or technical improvements in the state of the art. As the scale of development proceeds, increased selectivity must be exercised, of course, but ERDA's responsibility is much broader than those of any single commercial concern which may select a single process early in the development cycle.

Solvent Refined Coal (SRC), H-Coal, and the Coalcon hydrocarbonization process are currently most promising for early commercialization. The cost to become ready to enter the commercialization phase appears to be in the $200 to $400 million range for each of these processes. The only exception could be the SRC process if the risk of scaleup from 50 tons per day to commercial size were taken; it is too early to evaluate the feasibility of this action. Commercialization of the first of the liquefaction processes should be in the 1982-85 period if economic incentives are present.

Q. What is the need for the $7 million increase for Solvent Refined Coal at this stage of development?

A. Most of the funds requested for FY 77 are required for direct operation of the pilot plants at Tacoma and Wilsonville, the yearly cost of which is about $16 million. The increment over FY 76 is primarily caused by the fact that prior year funding provided part of the FY 76 operating cost. Some funds are included in FY 77 to start the necessary design activities to extend the usefulness of the Government-owned facility at Tacoma. At least one of a group of possible alternative future uses of the facility will be implemented to make use of our investment for other liquefaction processes which would reduce the costs associated with the liquefaction program. Typical of the potential use for the facility is the integration of a second stage upgrading unit to produce a more refined liquid product. Another consideration is to convert the unit to an alternative liquefaction process to save time and money. The funds requested would provide for the studies needed to plan future changes in the facility and its function.

CRESAP TEST FACILITY

Q. Your justification mentions a lessening requirement for the Cresap Test Center projects at one point (p. FE/C-4) and discusses gearing up evaluation programs at another (p. FE/C-10). Exactly what is the 1977 program and is it up or down?

A. The lessening requirements for the Cresap Test Center (p. FE/C-4) refer to the scheduled mechanical completion date of November 30, 1976, only 2 months into FY 77. The projected costs for this project during the actual operations are lower than those for the construction phase.

During the early part of FY 77 Cresap will begin operations. The evaluation programs referred to on p. FE/C-10 indicate the areas in which data will be supplied during operation of the facility.

Q. What is contained in your FY 1977 budget for the Cresap test facility?

A. $5,000,000 is included in the FY 1977 budget request for operating costs of the facility.

Q. What funding are you carrying forward from previous years' approprations?

A. No carryover funds into FY 1977 are anticipated for the Cresap Test facility. The carryover from FY 1975 appropriations of $4,453,000 and the FY 1976 obligational authority of $17,514,000 will be fully obligated in this fiscal year for renovating, refitting and construction work of the facility, as will the $3,417,000 available in the transition quarter.

Q. When will the renovation, refitting and construction work be completed at Cresap?

A. Mechanical completion of the total plant is now scheduled for November 30, 1976. Checkout and startup procedures will begin after that date concurrent with any changes resulting from mechanical inspection. All construction activities are scheduled for completion before the end of December 1976.

Q. When will you start the test runs at Cresap?

A. Following checkout and startup, Phase I operations are scheduled to begin in mid January 1977.

Q. How long do you anticipate operating this facility?

A. Present plans provide operating this facility thru FY 81. This facility is expected to be a support facility for the liquefaction program. Consequently, it will be utilized to evaluate developments that are brought forth from other areas of liquefaction.

Q. What will be the annual operating expenses of the Cresap facility when it becomes operational, and how many persons will be employed there.?

A. Estimated annual operating expeneses, based on 1975/1976 dollars will be approximately $9 million. When the plant is fully operational, a work force of approximately 168 persons will be required.

HIGH-BTU GASIFICATION

Q. You have an increase in outlays but a reduction in budget authority for high-Btu gasification. What is involved in these changes.

A. The increase in outlays in FY 1977 for high-Btu gasification is due to the large uncosted obligations for the construction phases of the Bi-Gas, Synthane, self-agglomerating fluidized bed gasification and steam-iron pilot plants, which will be costed in FY 1977. With funding requirements for construction of all ongoing pilot plants having been met with prior year appropriations, new budget authority for FY 1977 is mainly for operation of the plants; operating costs are considerably less than construction costs.

Q. As your justification notes, ERDA has five high-Btu plants in operation this year and $10 million budgeted to get a demonstration plant going

next year. What is the state of the art here, and when are you going to be able to concentrate your efforts on a single, most-promising process?

A. Although five high-Btu gasification pilot plants, each devoted to the development of a different process for the conversion of coal to a high-Btu substitute natural gas, have been constructed, it is not correct to assume that all five facilities are operating. At present only two pilot plants, the HYGAS and the CO_2 Acceptor, have any operational record. The other three pilot plants have just been constructed and are now in various stages of the startup activities. The current status/state-of-the-art of each of these processes is described in the attached table.

Recently the demonstration plant phase in the development of a high-Btu coal gasification process has been accelerated greatly and the $10 million stated has been expended to support this new work. At present the Demonstration Plants Division of ERDA/Fossil Energy has received and is evaluating five proposals submitted in response to the Request for Proposal for the design and construction of a demonstration facility. It is anticipated that a decision on these offers will be made by mid-1976 and efforts will be initiated shortly thereafter on the design phase of this program.

It should be noted that this demonstration effort is not necessarily in support of the continued development of the single, most-promising process and that it is important to continue, uninterrupted, the pilot plant program now in progress. Until each of the candidate processes has reached a point in its development that its processing advantages and disadvantages can be compared on a common basis it will be difficult to make a decision on which is the single, most-promissing process.

LOW BTU GASIFICATION

Q. The requested increase for low-Btu gasification is intended mainly for building a combined-cycle plant. What is the potential of this process?

A. Economic evaluations, both by ERDA and by public utility groups, indicate that low Btu gasification with the purified gas utilized in a combined-cycle power generation facility offers the potential of supplying electric power at the lowest cost of any coal conversion process.

Q. The OTA analysis contends ERDA is underestimating the potential of the combined-cycle power-plant and the need to take it to commercialization. What is your comment?

A. Since ERDA is allocating over $150,000,000 of its budget over the next five (5) years for activities necessary to assist in commercialization of the combined-cycle concept, we feel that a major effort is being made. An integrated combined-cycle gasification test facility is being planned. In addition, development of new gasifiers is being oriented towards units which will fit the combined-cycle concept. Similarly, gas purification systems are under development which could reduce appreciably the costs of this important step in a combined-cycle facility.

Q. Where do you plan to locate the combined-cycle pilot plant?

A. Negotiations are in progress, as indicated by our report to the Congress, for ERDA to take part in an integrated combine-cycle gasification test facility to be located at the Powerton Power Plant of Commonwealth Edison at Pekin, Illinois.

TABLE I
HIGH-BTU COAL GASIFICATION PILOT PLANT PROJECTS

PROJECT	PRINCIPAL CONTRACTOR	DATE PROJECT STARTED WITH GOV'T	DATE PROJECT STARTED IN JOINT PROGRAM	CURRENT STATUS/ACCOMPLISHMENTS
1. HYGAS Coal Gasification Process	Institute of Gas Technology Chicago, IL	1964	1971	The Pilot Plant Program was started in 1971 with the completion of pilot plant construction. Since that time, the pilot plant program has progressed to the stage that it has established this concept of coal gasification as technically feasible with lignite as a feed. This current work is directed toward demonstrating technical feasibility while using Illinois No. 6 as a feed. Integrated operation of all plant subprocesses from coal preparation through methanation has been demonstrated.
2. CO_2 Acceptor Coal Gasification Process	Consolidated Coal Company/Conoco Coal Development Company Library, PA	1964	1971	The Pilot Plant Program began in 1972 with the completion of pilot plant construction in subsequent tests. The pilot plant has been operated to demonstrate technical feasibility with lignite as a feed. The plant has been operated in a totally integrated manner to continuously process lignite and produce a substitute natural gas with a heating value of greater than 900 Btu/Ft^3. The test program is now directed toward demonstrating technical feasibility while processing a high-sodium lignite, as well as, a subbituminous coal.
3. BI-GAS Coal Gasification Process	Bituminous Coal Research, Inc. Homer City, PA	1964	1971	The construction of the pilot plant has been completed and shakedown operations are now in progress. The experimental program's first phase will be started early in the transition quarter.
4. Steam-Iron Process for Production of Hydrogen	Institute of Gas Technology Chicago, IL	1972	1972	The construction of the pilot plant is 80% complete and will be completed during FY-76. The shakedown activities will be started in the transition quarter with the start of the experimental program scheduled for early in FY-77.
5. Lurgi Coal Gasification Tests	Woodall-Duckham Ltd. Sussex, England	1972	1972	This test program performed at Westfield, Scotland was completed in May 1974 when the last of six american coals had been gasified in a Lurgi reactor under previously specified conditions. These tests were considered successful in obtaining a wide range of data suitable for evaluating Lurgi performance on coals.
6. Ash-Agglomerating Burner Coal Gasification Process	Battelle-Memorial Columbus, OH	1972	1972	This project was dropped from the Joint Program in 1974 at the request of A.G.A. at a time when the A.G.A. felt it needed to reduce its total commitments in order to continue funding the remaining projects at the agreed upon ratio of two-thirds Government, one-third A.G.A.
7. Synthane Coal Gasification Process	Pittsburgh Energy Research Center	1961	Not part of Joint Program.	Upon completion of the PDU work the design of the pilot plant was started in 1971. The construction phase which followed was completed in March of 1975. Since that time shake down, startup and preliminary process performance activities have been under way. Currently, cold fluidization tests are being completed in the gasifier as part of the startup process.

ADVANCED POWER SYSTEMS

Q. The largest percentage increase in new budget authority under coal is for advanced power systems. Why are you more than doubling this program?

A. The High Temperature Turbine Program is just beginning and is in the program definition stage. Extensive funding is required in FY 1977 to support component testing for this program. In addition as alternatives the closed cycle topping systems (both gas and metal vapor turbine systems) were of negligible funding levels and are in transition to a level of several million dollars per year per system.

Q. A technology breakdown obtained by the staff shows the bulk of the advanced power system increase is for open-cycle gas turbines. What successes have you had to support this increase?

A. The open cycle gas turbine (HTT) program rests on a base of over 35 years of industrial and aircraft gas turbine development. Industry now has the ability of design, fabrication, test, and production of large size (100 MW and up) equipment appropriate for utility use. Once technology readiness is demonstrated, industry will be ready to go to full scale prototypes. The program is based on the previously demonstrated advanced air cooling technology of aircraft gas turbines, the water cooling technology demonstrated at the laboratory scale, and the use of high temperature materials which are in the process of proceeding from laboratory to industrial use.

DIRECT COMBUSTION

Q. You have a sizeable increase for direct combustion, and your revised plan speaks of commercially demonstrating fluidized-bed combustion in the near term. Is that goal realistic?

A. Fluidized-bed combustion has proved reliable at the laboratory and process development unit scale here and in the U. K. over the past decade. Several private organizations have built experimental fluidized-bed combustors, boilers and heaters on their own. Several commercial fluidized-bed incinerators for wastes have been operated. It is expected that it will take a while to progress in size to the large utility boilers; however, the technology is at hand to build shop-fabricated industrial boilers. To this goal ERDA has issued a Program Opportunity Notice and has received 13 proposals. It is expected that award decisions will be made very soon and that contracts will be negotiated in the latter months of FY 76 and the Transition Quarter. With these development and demonstration contracts in effect in CY 76 it is expected that by CY 79 prototype industrial units will be built and that they will operate in the CY 79 to CY 81 period. This will add to the equipment data base of the operation of the Rivesville 30 MW utility supplemental boiler which is being completed in the summer of 1976 and will begin operation as soon as practical thereafter. For these reasons we believe that the goal of near term commercialization of industrial sized fluidized-bed boilers is realistic.

Q. The OTA analysis argues that ERDA's program overemphasizes fluidized bed combustion and that your near term goals are unlikely because of technological barriers. What is your comment?

A. Pulverized fuel and stoker firing of furnaces are established industrial practices. There is little to be gained by trying to reduce costs or improve performance of such equipment. The only area requiring advancement

is the development of ways to burn high ash coals and lignites, particulary Western fuels. ERDA has such a program at its Grand Forks Energy Research Center. While research has made progress in the nature of mineral deposits, a practical solution to this problem is not yet in hand. The only other practical and economic way to burn coal and meet environmental emissions standards is by fluidized-bed combustion; hence, its large emphasis. The success of our Alexandria and Morgantown test units, that of several facilities in the U. K. and that of several independent American efforts leads us to believe that there are no substantial technological barriers to successful fluidized-bed combustor operation. We anticipate that there will be difficulties in operating the solids materials handling systems. However, once identified such problems are amenable to direct solution by modification of the equipment.

Q. You are cutting support and engineering studies for Direct Combustion. Why? Will this undermine needed work on environmental and energy generation problems?

A. The area of support studies includes additional programs. It is from this source that we performed studies and engineering evaluations which led to the industrial applications program and the coal-oil slurry program. As the number of candidate new programs diminishes, and the number of hardware programs increases, the funds needed in this category decrease. We still will use funds in this category in FY 1977 to study sorbent regeneration, utilization and disposal, and other technical issues which we expect to become programs in later years.

Q. What is the estimated cost of the prototype equipment development under the industrial applications program?

A. The entire industrial applications prototype equipment-engineering, development and demonstration are expected to cost approximately $80 million of which approximately $30 million is expected to be industry's share, and $50 million is expected to be the Federal share.

Q. At which energy center are you planning to locate the component test and integration facility that involves a $5 million increase?

A. The center located at Morgantown, West Virginia.

Q. Several increases and decreases in the Direct Combustion subprogram are not explained. Please do so for the record.

A. As requested, the attached table provides the information on increases and decreases for the major projects of the Direct Combustion subprogram in FY 1977.

FOSSIL ENERGY
DIRECT COMBUSTION
FY 1977 BUDGET ESTIMATE
SUMMARY OF MAJOR INCREASES/DECREASES
(In Thousands)

Major Projects	Budget Authority FY 1976 Approp.	Budget Authority FY 1977 Request	Increase or Decrease	Remarks
Atmospheric Fluidized-bed (FB) Boilers				
Fluidized-bed Boiler, 30 MW Rivesville, West Virginia	$ 8,600	$ 3,000	-$ 5,600	Construction of boiler is complete and auxiliary components should be complete by July of 1976. Tests are scheduled for the beginning of FY 1977.
Industrial Applications	1,000	10,000	+ 9,000	This project consists of feasibility study, boiler designs and equipment development. RFP replies are being evaluated and awards anticipated for Phase I ($5,600,000) will be obligated during first year.
Component Test and Integration Facility (CTIF) Morgantown ERC	4,000	9,000	+ 5,000	This CTIF will test FB systems and components and serve as back-up for 30 MW Boiler. Design of CTIF will take place in 1976 and field erection in FY 1977.
Pressurized Systems				
Fluidized-bed Combined Cycle Plant, 13 MW	1,000	6,500	+ 5,500	Contract awarded in March, with construction of facility to begin in FY 1977.
Pressurized FB CTIF Argonne National Laboratory	4,896	8,000	+ 3,104	FY 1976 funds will support preliminary design of 3X3' FB combustion facility, and other funds will be transferred to Argonne for construction of CTIF. FY 1977 funds will be applied to testing, detail design and necessary procurement.

FOSSIL ENERGY
DIRECT COMBUSTION
FY 1977 BUDGET ESTIMATES
SUMMARY OF MAJOR INCREASES/DECREASES
(In Thousands)

Major Projects (continued)	Budget Authority FY 1976 Approp.	Budget Authority FY 1977 Request	Increase or Decrease	Remarks
Support Studies				
Fluidized-bed Boiler, 200 MW	5,000	0	- 5,000	Testing on 30 MW atmospheric FB boiler at Rivesville, if on schedule, would have permitted design of this boiler in FY 1976. BA of $5,000,000 will be reprogrammed to support CDLF construction for MHD subprogram.
International Energy Agency Pressurized Combustor	300	7,000	+ 6,700	ERDA is cooperating with United Kingdom and West Germany to construct in 1976 a FB combustor. $7,000,000 is United States share of project.
Other projects and studies	13,300	8,916		
Direct Combustion Total	$ 38,096	$ 52,416		

ADVANCED RESEARCH AND SUPPORTING TECHNOLOGY SUBPROGRAM

Q. You are budgeting a $1.6 million increase for Advanced Research. What are some of the major accomplishments in terms of real energy benefits?

A. It has been found in laboratory experiments that methanol can be converted in high yields to a high octane gasoline employing a new catalyst technology. This new technology has in turn opened up a potential commercial route to gasoline from coal via synthesis gas in what may be considered to be a significantly improved Fischer-Tropsch process.

It has been found in laboratory experiments that lignite can be directly converted in significant yields to a benzene feedstock and substitute natural gas by a rapid, high temperature reaction with hydrogen. This finding has spurred the initiation of a development effort, that appears to have potential for ultimate commercialization, along two lines: 1) rapid rate hydrogasification of coal to substitute natural gas and aromatic feedstocks, and 2) flash hydropyrolysis of coal to high octane motor fuel and substitute natural gas.

Fireside ash fouling of boiler heat transfer surfaces is the most serious operating problem associated with the use of low-rank (especially Western) coals. Firm criteria for fouling potential of various coals have been developed, so that now plant designers can have knowledge of the fouling characteristics prior to plant construction. The result is a large saving of energy normally needed for construction and operation of remedial machinery (soot blowers, water-wall blowers). Besides the existing benefits of conservative boiler design, research is continuing toward finding a method which will actually reduce fouling.

Q. What was the cost of the synfuels commercialization draft environmental impact statement?

A. A rough estimate of the cost to prepare and publish the draft synfuels EIS is $250,000. This estimate includes the value of the time spent by the members of the government interagency environmental task force, as well as direct and indirect costs, including materials. Also included are the costs of contractor research and consultants, which amounted to approximately one-half of the total. These costs were not borne entirely by ERDA but were shared by the many governmental agencies that supported this effort. Not included are the costs of the other governmental groups which worked on the technical, economic and institutional aspects of the program.

Because of the close dialogue that existed between the environmental task force and the other working groups, substantial cost savings were made possible through the exchange of information and results. It should be noted that even in the absence of the NEPA requirement to publish an impact statement, environmental analyses and considerations would have been performed and the total costs would have been about the same.

MAGNETOHYDRODYNAMICS (MHD) SUBPROGRAM

Q. As noted earlier, your MHD budget is an increase of the 1976 program to date, but well below ERDA's original request. It appears the biggest cuts came in requests for the CDIF and the engineering test facility. Do you know why these items were reduced by OMB?

A. As a result of general fiscal constraints in connection with the President's FY 1977 Budget, the OMB allowance provided that the ERDA request for MHD of $49,350,000 in FY 1977 be reduced by $11,909,000. The OMB allowance for the MHD subprogram provided in part, "component development and testing activities will not be greatly accelerated, that plans for a second engineering test facility will be postponed indefinitely". As a result, funding for the CDIF was reduced and detail design for the ETF was deleted from the FY 1977 request. The effect of this reduction would prevent subsystem testing of MHD components until the CDIF could be constructed. In order to prevent this, ERDA proposed a reprogramming of $20,000,000 from other Fossil Energy subprograms to enable the CDIF to be constructed as originally scheduled, and in consonance with the necessary component development phase of the MHD program.

Q. What is ERDA's capabilities for moving forward with those two facilities?

A. Approximately $20 million of FY 1976 funds have been reprogrammed for CDIF construction. It is now possible to initiate construction of this facility and carry the basic CDIF construction effort forward to completion. The reprogramming essentially restores the original budget requested of OMB. With regard to the ETF, carryover monies are available to initiate the systems engineering effort required prior to initiation of ETF as a budget line item. Upon completion of the systems work the proper budget requests for the design and construction of the ETF will be made.

Q. The OTA analysis recommends continuous evaluation of MHD R&D progress because of major technical hurdles. What is your own assessment of the chances of bringing this technology into commercial demonstration by 1990, as targeted in your revised plan.

A. The target date of 1990 is realistic provided sufficient financial and manpower resources are committed. It is true that component efficiency and durability must be improved before commercial feasibility is demonstrated, but these technical hurdles, in our views can be handled with a properly structured technical development effort.

DEMONSTRATION PLANTS

Q. The $53 million request for demonstration plants under your operating account involves a big, $21 million increase. Most of the increase is for design and technical support. What is involved?

A. Design and technical support includes:

- o Conceptual designs of coal conversion processes for evalution and determination of which processes have the greatest potential for Demonstration Plant success.
- o Engineering support from the National Labs, Army Material Command, and the Corp of Engineers for assistance in evaluation of the engineering, procurement, and construction of the various Demonstration Plants now being designed.
- o Development of instrumentation for all Demonstration Plants.
- o Design, procurement and testing of protytype or test equipment for Demonstration Plants.

Q. How many proposed demonstration plants are in the conceptual design stage?

A. The following proposed Demonstration Plants will be in the conceptual design stage in FY 77:

- o Pipeline Gas Plant. As many as three contracts may be awarded in June 1976 for conceptual design; the best one of these will be selected for construction and operation.
- o Fuel Gas Plant. As many as four to six contracts may be awarded, late in 1976, for conceptual designs in the three categories of gas usage mentioned in ERDA's Request for Proposal. From these conceptual designs at least one of the designs will be selected for construction and operation.

Q. Who actually performs the conceptual design work?

A. Conceptual design is performed by the engineering firm reporting to the prime contractor selected from the successful responders to the RFP for the Demonstration Plant. The engineering firm is part of the team proposed by prime contractor for the Demonstration Plant and is approved by ERDA during the evaluation of the proposal.

Q. Your requests for gasification demonstration plants calls for continuing several alternate conceptual and plant designs. At the same time your construction budget provides for inception of detailed plant design. How is all this coordinated?

A. The ERDA Program Director monitors the conceptual designs for the alternative processes as they proceed. Near the completion of the conceptual designs, the various processes are technically and economically evaluated to determine which should be carried forward through the detailed design, procurement, and construction phase.

Q. How firm is your demonstration plant target for supplying data for design of commercial facilities in the 1979-83 period?

A. In the 1979-83 period, based on ERDA's FY 77 Budget Request, there will be three demonstration plant programs underway. All will have been under construction by calendar year 1978; operation of the Clean Boiler Fuel Plant is scheduled for 1980 and the Pipeline and Fuel Gas Plants a year later. Thus, hard data on process design, construction costs, environmental acceptability, plant management and operation, process efficiencies, etc. will accrue as the program progresses through this period; and will be available to industrial firms and utilities for their use in designing commercial facilities.

CONSTRUCTION

Q. Your fossil energy construction request leaps from $20 million to $52.3 million, mainly for the 3 demonstration plants you are initiating. What followup funding will this program require next year if program impetus is maintained? Through 1983?

A. The estimated FY 78 budgetary requirements for the three plants contained in the FY 77 request total about $151 million. Additional funding of about $431 million would be required through FY 83 for these plants. There are also plans for initiation of up to three or four additional projects in this same time period.

COALCON DEMONSTRATION PLANT

Q. Why is the $30 million request for the Coalcon plant "based on preliminary estimates"?

A. No detailed design studies upon which to base firm estimates were available at the time the FY 1977 Budget Request was prepared. The conceptual design phase will be completed in mid-1976 at which time the estimate for the Coalcon project will be updated.

Q. What are obligations to date for the Coalcon plant?

A. In FY 1975, upon signing the contract for the Clean Boiler Fuel Demonstration Plant, the Federal government obligated $4,750,000 for that plant's conceptual design. In an exchange of letters between the Secretaries of Interior and Defense, $10,000,000 was committed for procurement of long lead-time equipment by the Corps of Engineers, for this plant.

As of April 30, 1976, $700,000 has been obligated in FY 1976 for the Coalcon project. Additionally, procurement actions to provide basic engineering and cost estimates for construction of this project at a cost not to exceed $5,000,000 are underway.

Q. Your justification estimates $30 million Federal and $40 million shared by contractor in fiscal 1977 for the Coalcon project. How firm is this?

A. A firm estimate of construction costs is being prepared by the Coalcon company and is scheduled for completion by July. The estimate contained in the FY 77 Request was based on the best information available at the time it was prepared.

Q. What kind of construction do you expect to undertake in fiscal 1977 on this plant?

A. Plant site preparation and procurement will be carried out in that year, should a decision be reached to proceed with this project?

Q. You have a preliminary total estimate of the Clean Boiler Fuel plant at $166 million based on 1974 dollars. What is that estimate, adjusted for inflation and contingency?

A. Allowing for a 25% increase for contingencies and a "best estimate" of inflation indices the $166 million becomes $275 million in the year spent. However, it must be emphasized that an update of the total estimated cost for this facility will be made only after completion of the conceptual design phase in mid-1976.

Q. Your 1976 justification forecasts completion of Coalcon plant in late fiscal 1977. Is that scheduled holding up?

A. A revised schedule for completion of construction is due in July, along with the revised cost estimate. If appears that completion between the 4th Quarter of FY 1979 and beginning of 1980 would be more realistic.

Q. Total estimated Federal and private financing for the three demonstration plants now budgeted approaches $700,000,000. How many more are planned in the next decade?

A. The design and construction of six additional demonstration plants in the 1980's now appears to be justifiable.

PETROLEUM AND NATURAL GAS PROGRAM

Q. The request for the Petroleum and Natural Gas program is $36.9 million, a reduction of 6.3 million, or a 14 percent cut. We touched on this reduction earlier, but could you elaborate on the reasons for cutting back this promising near-term effort?

A. The President's budget for FY 1977 was prepared to provide essentially level funding for the petroleum and natural gas program. This action preceded the enactment of the FY 1976 appropriation which added $6.5 million to the program specifically to be used for Devonian shale projects. Therefore, the President's budget for FY 1977 is approximately $6.3 million less than the actual 1976 appropriation for this program.

As indicated to the Committee in testimony, most of the projects included in the program are fully funded in one year but the actual work may continue for several years. This funding arrangement provides a cumulative effect in many project areas and means that in reality a larger total program is underway because of the multiyear span of the contracts than is apparent from the budget request.

Q. ERDA's request to OMB for this program was virtually cut in half. Can you explain why?

A. The OMB allowance for FY 1977 provided for essentially level funding of this program. OMB indicated that the number of field tests required for this program had not been adequately evaluated. Accordingly, OMB requested the preparation of a Program Management Plan for these efforts, an action which is currently underway.

Q. How would you have utilized the funds disallowed by OMB?

A. The funds disallowed by OMB (reduction from $73.6 to $36.9 million) limit primarily the number of industry cost-shared field projects that could be started or expanded in FY 1977. The estimated number of new starts and expansions is reduced by eight (from 12 to 4) for enhanced oil recovery projects and nine (from 13 to 4) for enhanced gas recovery projects. A modest increase in in-house and contract support work also would have been implemented utilizing these funds.

Q. Your national plan forecasts 13.6 quads, 6.8 million barrels a day, in additional production by the year 2000. Is this goal being cut back in your 1976 revision?

What effect will the curtailed budget proposal have on your revised estimates?

What energy contribution are you expecting from the oil and gas recovery program by 1985?

A. As yet the national plan forecast of an additional 13.6 quad by the year 2000 has not been revised but is under review. The ultimate effort of the curtailed budget proposal , if similar curtailment is assumed in the future, would be a reduction in a revised estimate. The energy contribution from the application of enhanced oil and gas recovery techniques by 1985 should increase production flow rates by 500,000 barrels/day of oil (1.0 quad/year) and three billion cubic feet of natural gas (1.0 quad/year) to the domestic reserves.

OIL RECOVERY

Q. Your justification states that micellar polymer flooding is the most promising method of enhanced oil recovery, but the budget would take this down from $10.4 million to $7.5 million. Why?

A. The reduction in funding for micellar polymer flooding reflects a proportional decrease to maintain a balanced overall program and recognizes the effect in the budget year of multiyear contract funding of projects initiated as a result of FY 76 request for proposals.

Q. The reduction in fluid injection and non-nuclear fracturing will stretch out field tests, according to the justification. Why stretch them out?

A. Individual field tests will not be stretched out. What was meant is that the time required to conduct, say a hundred of these tests will be increased if the number per year is reduced because of funding limitations.

Q. Why are you not doing more in the primary recovery area? Your $2.4 million request for this work, including OCS technology, is a level program.

A. The oil extraction efforts emphasize the cost shared demonstration of existing and improved secondary and tertiary recovery techniques. A Federal role in enhanced recovery is required because of the commercial uncertainties and financial risks associated with improved technologies and the urgent need to accelerate progress beyond normal commercial capability. This is in direct contrast to the industry efforts in the primary recovery area which represents well demonstrated technology.

GAS RECOVERY

Q. You are apparently continuing the gas fracturing program at a reduced level and concentrating on eastern shales. How much is being expended this year for this work and how is it apportioned between western and eastern formations?

What is the budgeted program for gas recovery in these same areas?

A. The budget breakdown of the FY 1976 and FY 1977 enhanced gas recovery program is as follows:

	(In Millions) FY 76	FY 77
EAST	10.0	6.0
WEST	3.5	4.9

Q. Give us the FY 1976 - 1977 estimates for Devonian Shale work and tell us what has been achieved in this area?

A. Within the totals included in the budget for enhanced gas recovery is $10 million that will be devoted in FY 1976 to Devonian Shale efforts. In FY 1977 these efforts are planned for continuation at about the $6 million level.

Initial planning focused on a 5 year plan of activities leading to a resource assessment and the development of gas-stimulation technology. The resource evaluation portion of the program will utilize needed data and analyses by the USGS, universities, and State geological surveys in this geographic area.

Technology development work already in progress in the Appalachian area includes limited field projects on water and foam hydraulic fracturing, chemical explosive fracturing, and fracture studies both by field investigation and aerial photography. Laboratory work includes chemical, physical, elemental, and mineralogical studies, and fracture orientation determination on cores, statistical analyses of fracturing data, and cost effectiveness studies of fracturing techniques. This work will be augmented by field projects resulting from requests for proposals presently being issued on massive hydraulic fracturing and chemical explosive fracturing and from unsolicited proposals that are complementary to the technology development portion of the program.

Q. What is industry's role in this program, and what is the level of cost sharing?

A. Industry's role in this program is in stimulation technology development and demostration on a cost shared basis with ERDA. When technology is proven economical it then becomes industry's role to utilize the technology to produce the natural gas from the shale. Industry's part of cost sharing varies. For example, during preliminary development phases ERDA's participation may be 100%, decreasing as the technology gets closer to commercialization. For example, contracts currently being negotiated have the industry cost sharing at the following rates: deviated well, 25%, chemical explosive fracturing, 33%, and massive hydraulic fracturing, 50%.

Q. What is industry spending on its own for enhanced recovery? Do you have any reliable estimates?

A. At present there are no reliable estimates on industry RD&D spending. The Americal Petroleum Institute has been asked to provide this information.

Q. The OTA analysis indicates there is some uncertainty in ERDA over the proper federal role in secondary recovery. A "workable incentive plan" is suggested. Do you have any thoughts on that recommendation?

A. ERDA is currently conducting an intensive analytical effort to determine the role, scope and size of a Federal program necessary to increase the volume of oil produced by enhanced oil recovery techniques. Results of this effort will be available during the transition quarter and implemented beginning in FY 1977. Until this analysis is complete we feel that any comment would be premature.

IN SITU TECHNOLOGY PROGRAM

Q. You have a new activity called in situ technology which includes both oil shale and in situ coal gasification. The request is for $30.6 million, which is $9.5 million over the current year. That's a 45 percent increase, although outlays will go up about 9 percent.

Since we call this entire activty "in situ technology" does that mean ERDA is dropping all work involving aboveground retorting of oil shale?

A Included in the In Situ Technology Program is a subprogram entitled "Supporting Research", under which we are continuing a core program, at essentially level funding, that includes work generally supportive of both aboveground and in situ oil shale process development. Efforts include oil shale characterization studies that contribute to better definition of the resource, and various benchscale refining studies. Also under this category is a continuation of work to process data obtained under the Anvil Points observer program to prepare for publication our assessments of work conducted by Development Engineering, Incorporated, on the Paraho retorting process; and

bench-scale development of new processing technology that could form the basis for second-generation aboveground oil shale processes.

There has been very little DOI or ERDA research in aboveground retorting since 1956 although some of the basic research supports both aboveground retorting and in situ. The lack of involvement based on the fact that technology had been demonstrated and there was a large amount of private industry activity in implementing the technology. However, recent it has become clear that private industry is not moving forward and ERDA is reconsidering its role in aboveground retorting.

OIL SHALE PROGRAM

Q. Your justification comments that conventional mining and surface retorting of oil shale is believed "capable of early commercial application." What about the environmental problems?

A. The potential environmental problems associated with conventional mining and surface retorting of oil shale on a commercial scale have been the subject of considerable private industry and government studies and research.

To verify that all environmental requirements will be satisfied, several cooperative industry/government studies are underway. For example, ERDA plans to co-fund a university grant to evaluate oil shale residual contaminants in cooperation with NSF, EPA & FEA.

Of foremost importance is the fact that research to date indicates that the waste disposal of spent shale from aboveground processes is amendable to land reclamation and vegetation. At the present time a cooperative government/industry environmental research program is being conducted by the Bureau of Mines and Paraho at the ERDA Anvil Points, Colorado, demonstration plant which is under lease to the Paraho consortium. Paraho, based on oil shale process operations to date, claim that their process can meet all environmental standards by application of available technology.

Q. OTA thinks your oil shale program lacks a sense of urgency and that prospects for real production even in the mid-term are uncertain. How do you see it?

A. The present oil shale research program is primarily concerned with development of in situ technology to present viable second-generation alternatives to aboveground processing within the 1980's, although we anticipate that initial commercial plants will be based on the presently better developed surface processes. ERDA has expanded this program rapidly, the FY 1976 budget being approximately twice the FY 1975 level. The emphasis is presently on developing cost-shared contracts with industry to permit commercial-scale demonstration of several in situ processes in the early 1980's.

Q. From the budget presentation of other agencies involved in oil shale such as the Geological Survey and Bureau of Land Management, we get the distinct feeling that things are generally at a standstill with this resource. What headway are we making if any, and what are the real prospects for substantial oil production?

A. From the viewpoint of the Energy Research and Development Administration's (ERDA's) oil shale research and development program, substantial progress is being made toward early demonstration of several in situ technologies that could prove commercially viable in the 1980's. In response to a Program Opportunity Notice issued in FY 1976, that requested proposals from industry for cost-sharing projects to demonstrate five categories of in situ technologies, responses were received in all categories.

Several of the responses represented work that is already underway. Some of the proposed projects indicate the feasibility of commercial-module demonstration by 1980 if accelerated by Government funding. These proposals are presently being evaluated and several may be incrementally funded with the available FY 1976 and requested FY 1977 funds.

Above ground retorting technology has been available for some years and private industry was actively pursuing the establishment of oil shale plants. However, recently the activity has been greatly reduced. In the current environment of great uncertainty about oil prices and local, State and Federal support for an oil shale industry, private industry has been unwilling to build oil shale plants. It does not appear that this uncertainty will change soon unless there are incentives to do so. Unless this climate changes, the prospects for significant oil production from shale are dim. ERDA is continuing to assess how various incentives can be employed to stimulate the development and growth of a new shale oil industry.

Q. Your oil shale justification speaks of engineering and designing a larger in situ gasification test facility at Rock Springs, which is apparently responsible for a portion of the requested increase. How much do you anticipate spending on this facility in 1977 and what is the total estimated cost?

A. The in situ gasification test facility will be located at the Laramie Energy Research Center (LERC)--not at the Rock Springs field sites. The proposed budget for this project is $450K for FY 77 which is the same level of funding as FY 76.

The FY 77 proposed budget includes funds for detailed engineering design of a facility for simulating in situ conditions during gas production from western shale. A one-half ton pilot scale retort gasifier is currently being constructed to accumulate data for the design of a larger facility. Such tests are much cheaper and quicker than field tests. Consideration is being given to modifying the 10 ton or 150 ton LERC retorts for gasification experiments if small retort data proves feasibility, rather than constructing a larger facility.

Gas production from shale is not considered to be an alternative to oil production but rather is always a co-product. Gas production can be increased by converting residual carbon on retorted oil shale, giving an overall increase in energy efficiency. It is anticipated that gas production will not be dependent on the method of bed preparation and this option could be utilized on any oil shale development once the process parameters have been well defined.

Q. What has industry contributed to date to your oil shale program, and what is the estimated private support in FY 77?

A. Industry has not been involved in ERDA oil shale programs to date except at the Anvil Points, Colorado facility where the Paraho consortium has leased the facility from ERDA for research purposes. ERDA provides only observer personnel on that project and is not financially supporting the research.

Cost sharing contracts are currently being negotiated with industry for in-situ research, development, and demonstration projects. ERDA is soliciting up to 50 percent industry participation which could be as much as $18 million each for Government and industry during the combined years of FY 76 and FY 77.

Q. Please supply a more specific explanation of why increases are budgeted for the oil shale program.

A. A $7.364 million increase is budgeted for the Oil Shale subprogram in FY 1977. Additionally, a $0.045 million increase for oil shale research is budgeted under Supporting Research. Of the total $7.36 million increase under Oil Shale, $5.2 million is budgeted for incremental funding of cost-shared industry projects for field demonstration of western oil shale in situ technology to be initiated with FY 1976 funds, $0.5 million is for incremental funding of a Devonian shale cost-sharing field project, $0.2 million is for increased environmental research requirements in conjunction with the increased field in situ development efforts, and $1.46 million is budgeted to maintain normal progress in the in-house research programs ar the Laramie Energy Research Center and National Laboratories including the Los Alamos Scientific Laboratory.

The $0.045 million increase under Supporting Research is to maintain normal progrss in projects generally supportive of all oil shale development, both aboveground and in situ.

Q. When do you foresee any kind of commercial demonstration of oil shale production?

A. In our Demonstration Plant subprogram for FY 1977, we plan to look at the state of the art developments in the processing of oil shale and conduct conceptual commercial design studies. Any plan to proceed with an oil shale demonstration plant will hinge on the outcome of these studies and on whether the proposed Synthetic Fuels Commercial Demonstration Program is authorized by the Congress. Under this later program, ERDA proposes to support beginning in FY 1977 the demonstration commercial modules of oil shale processing plants.

IN SITU COAL GASIFICATION SUBPROGRAM

Q. You are going from a $6 million to $8 million level for in situ coal gasification, roughly. Is most of the increase for the proposed pilot plant?

A. No. FY 1976 obligations will total $7.5 million, including new funding and a previous year carryover. The $8.2 million request for FY 1977 is a $0.7 million increase which will fund an expanded test at Hanna, Wyoming, to develop pilot plant design data. No major pilot plant obligations should occur before FY 1978. The remaining projects in the FY 1977 program will either remain level or decrease.

Q. What kind of pilot plant are you planning, what will it cost and where will it be located?

A. If the current phase of the Hanna II test is successful, the first in situ pilot plant will use the Linked Vertical Well concept. Then an expanded field test in FY 1977 and 1978 would develop the necessary design data. An RFP would be used to select a bidder site.

The pilot plant would not include surface equipment for cleaning, enriching or utilizing the in situ product gas if such processes are being developed elsewhere in Fossil Energy. The focus will be on the underground process. With these restrictions, a rough estimate of the construction costs, including the initial field drilling, would range from $8 to $15 million, depending on the process design, size and site. Operating costs could be $4 to $6 million per year.

Presuming that a similar subbituminous coal resource would be used, the site would be located in the Rocky Mountain Region.

Q. How many field tests for in situ gasification have been conducted to date and how many are planned for FY 1977?

A. Field tests usually span more than one year and may include several phases. Two gasification tests of the Linked Vertical Well Process, Hanna I and Hanna II, will have been completed by the end of the FY 1976-1977 transition quarter. Hanna II will be run during FY 1977 and 1978. The first field test of the Packed Bed Process was started in the second quarter of FY 1976 with an explosive fracture. This test will continue through several phases to a gasification in FY 1977. The Longwall Generator field test was also started in the second quarter of FY 1976 with the drilling of a deviated well. This test will continue into FY 1977 and could include a gasification if earlier phases are satisfactory and funding is available. Thus, three gasifications could be possible in the total program for FY 1977.

Q. What role is industry playing in this technology?

A. Industry has been contracted to provide field services and to perform some supporting R&D studies. Two industrial contracts for analyses of the Packed Bed Process were executed at no cost to the Government. In FY 1977, if funds are adequate, the inclusion of industrial partners through competitive bids will be implemented. These partners would assist the in-house laboratories in executing the field tests. They would also provide an industry viewpoint to assure that the process development follows an optimum path toward commercialization. In addition, an RFP will be issued in FY 1977 for an industry-run project for the gasification of steeply dipping beds.

A major project outside of the ERDA program has been initiated by the Texas Utilities Systems, Incorporated (TUSI). TUSI has bought Soviet technology to gasify Texas lignite beds "in situ" for power generation. A first field test is being prepared.

IN SITU TECHNOLOGY PROGRAM
ENVIRONMENTAL EFFORTS

Q. From the technology breakdown for in situ technology supplied at the staff's request, it appears that little more than $1 million is being devoted to environmental research. Since all phases of environmental issues comprise a major hurdle in this area, is that sufficient?

A. The budget request of about one million dollars is for environmental research related solely to ERDA field in situ projects. These are in-house and university environmental studies, and are designed to examine only environmental aspects of in situ processing development.

Additional studies are planned to assure that all environmental aspects of in-situ and aboveground processing are investigated. Most of these additional studies will be funded outside of the in-situ program. Typical studies will include air emission analysis, water reclamation, waste utilization, and health and safety research.

SYNFUEL TECHNOLOGY POTENTIAL

Q. Under current technology and economic conditions, what would it cost to produce a barrel of oil equivalent by the various fossil fuel subprograms? (liquefaction gasification, etc).

A. For Gasification:

Current state-of-the-art technology can produce synthetic natural gas at $4.00 per million Btu. A barrel of oil contains 5.5 million Btu. Thus, the equivalent cost in caloric terms would be $22.00. Advanced technology should reduce this cost. Some low-Btu gasification systems now under development may produce gas at a cost of $2.00 to $2.50 per million Btu---resulting in an equivalent cost of $11.00 to $13.75 per barrel. These values are naturally dependent on cost of coal and many other factors.

For Liquefaction:

Coal liquefaction based on first-generation technologies could produce syncrudes in the range of $30 to $50 per barrel, which is equivalent to $5.50 to $9.00 per million Btu. Advanced technology is estimated to produce syncrudes between $13 to $19 per barrel, which is equivalent to $2.34 to $3.45 per million Btu. The lower costs of syncrudes from advancéd technology are expected to accrue from lower pressures, better hydrogen utilization, better catalysts, and process configurations that yield valuable co-products, such as industrial chemicals and pipeline gas. The estimated range of syncrude costs reflect coal costs, method of financing and the required return on investment.

Q. Provide for the record a list of all pilot and demonstration projects either, planned, under construction, or completed for each of the energy technologies with their location, costs expended to date, and total estimated costs for the projects

A. We will be happy to supply that information for you.

(The information follows:)

FOSSIL ENERGY DEVELOPMENT
PILOT PLANT AND DEMONSTRATION PLANT PROJECTS
(In Thousands of Dollars)

Technology/Project	Location	Obligations* To Date 4/30/76	T E C (Government) (Industry)
LIQUEFACTION			
Ebullated-bed (H-Coal) pilot plant	Cattletsburg, Ky.	$ 20,031	$165,190 (114,690) (49,500)
Solvent refined coal (SRC) pilot plant	Tacoma, Wash.	55,676	139,961**
Donor solvent extraction pilot plant	Baytown, Texas	0	240,000 (120,000) (120,000)
COED pilot plant	Princeton, N.J.	23,768	23,768**

Technology/Project	Location	Obligations* To Date 4/30/76	T E C (Government) (Industry)
Cresap test facility	Cresap, W.Va.	20,693	74,773 (72,773) (2,000)
Clean boiler fuel demonstration plant	New Athens, Ill.	9,750	166,000 (91,000) (75,000)
HIGH-BTU GASIFICATION			
HYGAS pilot plant	Chicago, Ill.	32,825	50,661 (38,511) (12,150)
CO_2 acceptor pilot plant	Rapid City, N.D.	30,865	49,800 (37,720) (12,080)
Bi-Gas pilot plant	Homer City, Pa.	43,465	133,797 (90,507) (43,290)
Self-agglomerating burner pilot plant	Columbus, Ohio	9,803	17,533 (16,964) (569)
Synthane pilot plant	Pittsburgh, Pa.	29,624	68,250**
Steam-iron pilot plant	Chicago, Ill.	$ 15,820	$ 58,585 (39,090) (19,495)
Synthetic pipeline gas demonstration plant	TBD	0	300,000 (160,000) (140,000)
LOW-BTU GASIFICATION			
Combined cycle test facility	Pekin, Ill.	0	104,900 (62,200) (42,700)
Fuel gas demonstration plant	TBD	0	350,000 (192,000) (158,000)
DIRECT COMBUSTION			
Atmospheric pressure fluidized-bed boiler, 30 MW, pilot	Rivesville, W.Va.	16,400	34,400**
Pressurized fluidized-bed combined cycle plant, 13 MW, pilot	Woodbridge, N.J.	1,500	31,000 (25,000) (6,000)
MAGNETOHYDRODYNAMICS			
Engineering test facility	Butte, Montana	2,700	***

* Government share only.
** Fully funded by Government.
*** TEC will be developed upon completion of the current systems engineering studies and conceptual design phase.

COMMERCIALIZATION

Q. We went into the proposed Synthetic Fuels Commercialization Program in some length at the last hearing. The need for strong government support was stressed at that time because of the high risk involved in commercial ventures.

However, a spokesman for the Institute of Gas Technology predicted that coal gasification and liquefaction might achieve commercialization. He based this on rising oil prices, overstated conservation estimates, declining domestic resources and growing economic advantages. What is your comment?

A. ERDA has ascertained, through industrial queries, that the commercialization of synthetic fuels would not occur during the next 10 years unless Federal incentives were offered to accelerate market acceptance. The proposed Synthetic Fuels Commercial Demonstration Program is designed to accomplish this goal. The accelerated introduction of Synthetic Fuel technologies is designed to reduce uncertainties regarding the economic, environmental, financial, marketing, etc., impacts of the Program. Reducing these uncertainties coupled with the introduction of second generation refinements are expected to have a positive effect upon synthetic fuels production costs. Thus, ERDA believes that without the program, during the 1990's as domestic oil and gas reserves begin to significantly decline, oil imports will have to raise to 10-12 million barrels per day to meet domestic energy demand, assuming a very modest rate of growth. With the program, ERDA has estimated that early commercialization efforts will result in a synthetic fuels industry with a productive capacity of approximately 5 million barrels per day on line by the mid 1990's on a competitive market basis.

CONSERVATION PRIORITY

Q. Although we have not had an opportunity yet to go into ERDA's revised National Plan in any great detail, we are aware that conservation is given heavy emphasis. Does this budget request adequately reflect that emphasis?

A. We believe that the President's FY 1977 budget request for Conservation does reflect a considerable emphasis for Conservation related activities. The total Conservation request for budget outlays in FY 1977 increased sixty-four percent over the FY 1976 level. This is a larger percentage increase than any other ERDA energy research, development and demonstration program with the exception of nuclear fuel cycle and safe guards.

Q. Does the conservation emphasis in the revised plan finally given us an ERDA priority? Does that mean conservation is No. 1 as far as a near-term effort?

A. In the National Plan for Energy Research, Development and Demonstration, ERDA 76-1, conservation technologies are specifically identified to receive increased attention and these conservation technologies will now be ranked with several supply technologies as being the highest priority for national action. The National Plan for Energy Research, Development and Demonstration also identifies a new planning horizon of 0 to 5 years which will be included in the annual Energy Research,

Development and Demonstration Plan. Opportunities in nuclear, fossil, solar, and other technical areas will be included in this new planning horizon, although the predominant opportunities will probably be in the Conservation programs. Therefore, it is apparent that the National Plan for Energy Research, Development and Demonstration does assign considerable priority to Conservation.

Q. Which conservation R&D do you consider the most promising for near-term payoffs?

A. The following areas have the best near-term potential:

a. Development of heating/cooling controls to allow more efficient local control in existing buildings.

b. Development of technology to reduce waste heat loss in industrial processes.

c. Development and implementation of new building performance standards.

d. Development of more efficient consumer appliances and lighting.

ERDA AND FEA ROLES IN CONSERVATION

Q. We touched on the problem of overlap earlier, and we know there has been some kind of memorandum of understanding between ERDA and FEA in this regard. Can you outline the terms of that agreement?

A. FEA and ERDA have mutually proposed the following division of responsibilities through a memorandum of understanding: FEA will be considered the leading agency respecting all questions of pricing, allocation, and general industry regulation; ERDA will be recognized as leading in matters relating to research and technology development. To translate this policy into specific actions, the Deputy Administrators of the agencies will serve as co-chairmen of an ERDA-FEA Steering Group. As required, Assistant Administrators and other may be appointed to the Steering Group. The Steering Group will meet as necessary, but at least quarterly, and will name working committees in specific areas.

Once each year, the Administrators of the agencies will meet to review the scope and progress of activities covered by this Memorandum of Understanding and associated Interagency Agreements.

The agencies agree to coordinate all new major policy actions and technical initiatives to ensure the fullest compatibility. Statements of broad goals and objectives, legislative proposals and Congressional testimony will be fully coordinated.

Data and analysis will be shared.

The agencies will provide mutual support for each other's programs and projects. The agreement applies to conservation programs as well as new energy resource development programs. A copy of the memorandum of understanding is attached.

MEMORANDUM OF UNDERSTANDING BETWEEN THE FEDERAL ENERGY ADMINISTRATION AND ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

INTRODUCTION

The Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93-577), the Energy Reorganization Act of 1974 (P.L. 93-48), the Energy Policy and Conservation Act (P.L. 94-163), and other energy statutes legislate general cooperation among Federal Agencies with respect to solving the National energy problem. This Memorandum of Understanding formalizes the corresponding working relationship between the Federal Energy Administration (FEA) and the Energy Research and Development Administration (ERDA) in all commercial and civilian energy activities, but does not pertain to ERDA's National security responsibilities or programs or to functions assigned specifically by law exclusively to FEA or ERDA.

I. Policy

Recognizing common energy goals and a very close relationship of the associated responsibilities of FEA and ERDA, it is agreed that the two Agencies will work together and in a mutually supporting way in the formulation and execution of Federal strategies, plans, and programs to develop and utilize new energy sources and to effect energy conservation. It will be the policy of the Agencies that this will be done in a way which recognizes the statutory responsibilities and missions of each Agency and utilizes the capabilities and facilities of each to the greatest possible extent, making these available to each other for the planning and execution of activities. In accordance with the provisions of applicable statutes, FEA will be recognized as having primary responsibility with respect to all matters of pricing, allocation, end-use, and general industry regulation, except where ERDA has statutory responsibility in the nuclear area. FEA will also be the primary Agency in developing a coordinated National policy combining incentives to increase production and the efficiency of energy use. ERDA will be recognized as having primary responsibility with respect to matters involving energy research and development of new technology.

II. Policy Management and Review

A. In order to provide Agency management review and guidance in translating the policy and guidelines of subsequent sections into specific action, the Deputy Administrators of the Agencies will serve as co-chairmen of an FEA-ERDA Steering Group. As required, Assistant Administrators, Regional Administrators and others may be appointed to the Steering Group. The Steering Group will meet as necessary, but at least quarterly, and will name working committees in specific areas. At their discretion, the Deputy Administrators may delegate the authorities relating to this understanding to the working committees.

B. It will be the responsibility of the Steering Group to define those programs and projects to be handled separately or jointly under provisions of Sections III.D and III.E below.

C. As specific planning and implementation actions are detailed and approved by the Steering Group, they will be documented in the form of Interagency Agreements which will supplement this Memorandum of Understanding. Such Interagency Agreements will also provide the means for definition of responsibilities in the areas of technical work, interpretation of policy, and commercialization programs

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D. As required but at least annually, the Administrators of the Agencies will meet to review the scope and progress of activities covered by this Memorandum of Understanding and associated Interagency Agreements.

E. Interagency personnel contact at the working level will be encouraged and the Steering Group will provide for maximum familiarity of the agreements among the staffs of both Agencies. The Steering Group will also encourage all program officers to raise suspected overlaps and gaps in complementary Agency programs to the Steering Group for resolution.

III. General Guidelines

A. The Steering Group will provide for maximum coordination of all new policy actions and technical initiatives to ensure that research and development activities and supply and demand programs are compatible to the greatest possible extent. Both Agencies will continue to use the Energy Resources Council for coordination of broad goals, objectives, and major legislative actions. The Steering Group will use its authority to provide the maximum coordination of budget requests. In all cases of proposed legislation, the Steering Group will ensure full consultation in developing the positions of the two Agencies; to the extent practicable, all Congressional testimony will be similarly coordinated. This procedure will complement but not supplant existing procedures whereby legislative proposals are developed by the Executive Branch.

B. Recognizing the differences in planning requirements of the Agencies, it is agreed that each will conduct its planning and analysis efforts to include: (1) sharing of data, models, and techniques to the greatest possible extent; (2) the broadest exchange of information; and (3) sharing of results. Special attention will be given to the consistency of methodology in developing energy forecasts made by the Agencies. Both Agencies recognize as a goal the technical compatibility of all data bases maintained by each, and will work toward that end.

C. In recognition of the mutual interest of the two Agencies as stated in Section E below, it is agreed that the field efforts of both will be closely coordinated. This will be done in order to maximize the effectiveness of State and local liaisons, and to smooth the transition of technically oriented programs into general use. In order to facilitate this cooperation, the Agencies, when possible and to the extent authorized by law, will seek to make resources available to support each others programs.

FEA will provide assistance to ERDA, including administrative support, in the establishment of any Regional Offices which may be created in the ten Regional cities, to the extent authorized by law.

D. The Agencies recognize that certain programs and projects have been assigned by statute to one Agency or derive directly from such statutory assignments of responsibility.

1. For FEA statutory program and project responsibilities, it is agreed that:

   a. ERDA will provide technical support and assistance, when requested.

   b. In those areas where technical developments are required and to the extent that ERDA has the capability and is the best qualified organization for the specific task, FEA will assign, to the extent authorized by law, to ERDA the lead responsibility for the developments.

2. For ERDA statutory programs and projects, FEA will provide:

   a. Access to results of appropriate data, studies, and analyses of the energy industry and energy users, to the extent permitted by law.

b. Guidance with respect to matters of energy resource availability, pricing, allocation, and industry regulation.

c. Appropriate contributions to the annual revision of the comprehensive plan for energy research, development, and demonstration as required by P.L. 93-577.

3. In those areas where non-technical arrangements are prerequisite to widespread or large scale use of energy technology, FEA and ERDA will establish the lead responsibility for such arrangements unless such responsibility is otherwise provided by law.

4. Joint planning, as described in Section E below, will be undertaken as appropriate. Joint planning for the commercialization of energy technologies will be conducted concurrently with technical development.

E. The Agencies recognize that they will share an interest in many resource development and conservation programs, both long- and short-term, that require energy policy analysis, technical development, removal of institutional barriers, and/or application of incentives to achieve market penetration. In these programs of mutual interest, the Agencies agree to joint planning, leading to the definition and establishment of appropriate projects and assignment of responsibility. Toward these ends, the Agencies agree that:

1. They will jointly establish the scope, objectives, and relative priority of projects within each program, using mutually consistent criteria.

2. They will determine the contribution each Agency can make to the successful completion of each project, and will provide the necessary support to make that contribution.

3. They will jointly establish the lead Agency for each project. This determination will be based on factors including the origin and history of the project, the statutory authority and funding supporting the project, the skills and experience needed to manage the project, and the outside relationship needed for the project. Duplication and overlap will be avoided. Recognizing the capabilities of each Agency, it is intended that some programs will be worked on concurrently by both FEA and ERDA. It is also recognized that the development of responsibilities in a sequential manner may mean a shift in the lead Agency.

F. The Agencies agree to undertake joint or coordinated, as appropriate and authorized by law, public information and education programs for the activities in the sections above. This coordination will extend to programs of technology transfer and specialized education as well as general information transferred.

IV. Program Funding

The specific details of the levels of support to be furnished one Agency by the other with respect to funding will be developed in specific Interagency Agreements. In any event, FEA and ERDA will provide each other mutual support in budget justification and hearings before OMB and Congress with respect to programs on which the Agencies collaborate.

V. Management Arrangements

This Memorandum of Understanding envisages direct communication between FEA and ERDA program officials involved in managing the performance of cooperative work. Program or project plans with appropriate detail will serve as program or project documentation and will set forth the specific arrangements under which program implementation will take place in those instances of project work involving contractural participation by commercial contractors or other organizations

outside of FEA or ERDA. Such project plans will set forth necessary interface arrangements and procedures for handling various levels of Governmental decisions. Normally such management arrangements will clearly set forth the decision and delegation levels considered appropriate for each project and clearly describe the management and reporting coordination processes between FEA and ERDA.

VI. Procurement Policy

Program and project activities undertaken by FEA for ERDA or vice versa under the provisions of the Memorandum of Understanding may involve contractural arrangements with non-governmental entities, organizations, or institutions. When such arrangements are necessary, they shall be conducted in a manner consistent with the policy, regulations, statutory authority, and procedures of the contracting Agency.

VII. Public Information Coordination

Timely release of information to the public regarding projects and programs implemented under this Memorandum of Understanding will be by mutual agreement between FEA and ERDA Steering Group representatives.

VIII. Amendment and Termination

A. This Memorandum of Understanding may be modified or amended by written agreement between FEA and ERDA.

B. This Memorandum of Understanding may be terminated by mutual agreement of FEA and ERDA.

IX. Effective Date

This Memorandum of Understanding is effective when executed by the Administrator of each Agency.

RESIDENTIAL CONSERVATION

Q. The Committee recently received an ERDA press release announcing a joint project with a California utility and a development company to build two homes to demonstrate energy conservation. Apparantly this project does not involve any new technology.

Why is ERDA doing that kind of demonstration? FEA budgets for the same kind of residential energy efficiency.

Just where is the dividing line? That is the continuing problem. Isn't ERDA supposed to pursue the development and demonstration of new technology and leave the promotion of existing practices to FEA?

A. The press release emphasized the technology items which the largest segment of the population could relate to, and did not attempt, in such a short release to delve into the research-the primary aspects-of this project which is partially funded by ERDA.

The Mission Viejo project, jointly funded by ERDA ,the Southern California Gas Company and the Mission Viejo Company, is not directed at the demonstration of existing technology in the abstract, nor is that demonstration aspect the primary one of the project. The project rather, is directed at analyzing , evaluating and developing technical data concerned with the following:

a. Preparing and validating an equipment selection procedure and handbook, which can then be marketed by FEA, based on new criteria being developed as part of this project. The criteria are concerned with selecting and sizing equipment based on realistic high probability simulation of annual weather data, and to account for thermal lags of interior conditions due to exterior weather changes due to the natural 'fly-whell' effect for all buildings. At present for residential space, equipment is sized on single design temperature for heating or cooling and degree day techniques. These selection criteria tend to oversize equipment and thus result in energy inefficient operation. We believe the method being developed under this program will result in energy savings- and hence dollar savings for the consumer-and can be reduced to a handbook readily usable by builders and heating contractors. The technique will be validated in the course of the project.

b. Site design techniques will be established and evaluated which maintain the density of dwelling units initially planned for, yet allow for energy efficient orientations to be maximized for various styles of house and various equipment selections. Although styles vary throughout the country, the methodology will be docemented for use elsewhere.

c. Consumer preference in equipment as well as architectural design will be evaluated.

d. Undertake detailed evaluation of actual performance of technical options which are or could shortly be commercially available. These evaluations will allow builders, utilities and financial organizations, working together, to offer and finance such options which reduce energy consumption with minimum increases in the monthly cost of housing. A major part of the ERDA contribution to the project is for instrumentation, data collection and analysis. The equipment and energy conservation design features being evaluated include:

1. Value of 2x6 framing and increased wall insulation in a warm/dry climate. The data obtained will be compared with the existing "Arkansas House" built in Merriam County, Arkansas

(across the Mississippi River from Memphis, Tennessee), and one being built at the Brookhaven National Laboratory. The three projects will provide data for a spectrum of climatic conditions.

2. Value of adding mass to the roof.

3. Evaluation of technical efficiency and consumer preference for double glazing with Mediterranean style operable shutters between the panes of glass.

4. Evaluation of the savings and cost benefits which can be attributed to the economizer air conditioning cycle for single family homes.

5. Evaluate new techniques and ultimate performance, of applying exterior stucco over a membrane to reduce infiltration.

6. Evaluate energy savings and consumer preference for vertical ribbing to shade windows.

7. Evaluate the performance, energy and perceived indoor air quality, of selective appliance venting, i.e., vent outside during air conditioning season, inside during heating season.

8. Evaluate energy savings and cost benefits for solar assisted hot water heating, space heating and space cooling.

9. Evaluate cost benefits of heat recovery and storage.

10. Other features which will be evaluated in the context of a house as a system, include water flow controls, selective exterior paints, foundation insulation, etc.

Another important aspect of the project is the evaluation of the feasibility of resource conservation for building materials. For example, the demonstration houses have been dimensioned such that no trimming is required of standard lengths of lumber delivered to the job site, and that carpeting (generally petroleum based synthetic fibers) can be used in standard widths.

The buildings conservation groups in both agencies work as a single team to insure that there is no duplication of effort, that where appropriate projects are jointly funded, as necessary projects are referred to the appropriate agency for implementation, etc.

OTHER CONSERVATION ACTIVITIES

Q. We understand that ERDA should play a role in the transfer and application of new technologies in energy conservation, but why do you get into such areas as public information, training, promotion, acceptance of existing technologies, insulation and other efforts that do not involve developing new technologies?

A. ERDA, as an RD&D agency, can contribute important technical data in the dissemination of information about existing technologies. These technical inputs can be crucial in determining whether existing tenchnology is adequately utilized.

REQUIRED FUNDING

Q. OTA doesn't think the budget is adequate for conservation and apparently neither do the authorizing committee since I understand they are giving you a much higher ceiling. What is your assessment of the adequacy of the budget request?

A. The ERDA FY 1977 budget request for Conservation programs presents a balanced plan of action which is aggressive yet properly paced.

Q. OMB cut your funding request by more than $60 million in terms of new budget authority. Do you know why?

A. It is out understanding that OMB's objective was to present a balanced yet aggressive and properly paced research and development program in Conservation.

Q. How would you have spent that $60 million ? Please give us details for the record.

A. The following Conservation research and development activities would be included in the $60 million:

Industry Conservation - Efforts would be accelerated in unit operations and equipment efficiency, process analysis and modifications , and alternative fuels materials and processes.

Buildings Conservation- Activities would be advanced in performance standards, community energy systems development and urban waste utilization.

Transportation Energy Conservation- Highway development activities would be increased primarily in the Stirling and gas turbine engine programs. Also, several low-lead efforts in non-highway areas would be initiated.

Improved Conversion Efficiency- R&D efforts would be expanded in areas such as the Rankine waste heat recovery system for large diesel engines, combustion development technologies and fuel cell development and demonstration.

OBLIGATION OF FUNDS

Q. Does your experience to date in obligating the large funding increase for 1976 indicate you could effectively utilize $71.2 million? $122 million? $130 million?

A. The $71.2 million request represents the President's budget to Congress for the End-Use Conservation programs including Industry Conservation, Buildings Conservation, Transportation Energy Conservation and Improved Conversion Efficiency which we believe can be effectively utilized.

As Dr. Seamans testified before this Committee, we believe that the End-Use programs can effectively utilize a $68 million increment above the ERDA FY 1977 budget request to Congress of $71.2 million in budget authority which would result in the attainment of an effective utilization point at the $137 million case. Therefore , it is our opinion that we can effectively utilize the $122 million and $130 million cases.

Q. How many contracts do you have currently, and how many of them were awarded on a competitive basis?

A. The Assistant Administrator for Conservation has authorized a total of 188 new contracts during FY 76 to date. Of this number 35 are to be awarded on a competitive basis and 153 on a noncompetitive basis. Of these noncompetitive contracts, 80 were based upon acceptance of unsolicited proposals and 73 were based upon advance sole source determinations.

Q. Please explain the ratio.

A. It is evident from the above information that the ratio of FY 76 Conservation competitive/noncompetitive contracts is approximately 20/80. Excluding the unsolicited proposal contracts from the noncompetitive base would yield a more valid ratio of approximately 50/50. The ratio is indicative of the fact that Conservation programs are, to a great degree, new in nature, and in order to accomplish mandated objectives as soon as possible, it has been necessary to initiate contracts without being able to afford the large amount (4-8 months) of time necessary for a competitive contract action. In addition, much of the present Conservation program is based on research in new technological areas which will necessitate a larger than normal number of small-scale, parallel effort contracts to determine the optimum future direction of our R&D program.

OFFICE OF POLICY PLANNING AND ANALYSIS

Q. We understand $1 million of your proposed increase for industry conservation is for an office of policy planning and analysis. What are the responsibilities of this office and why is it needed ?

A. A number of fundemantal issues arise in the management of the Conservation programs-- more than in most programs because Conservation involves every facet of the economy. A partial list includes:

a. What are realistic expectations for energy conservation? To what extent do they depend on private initiative? Government regulation ? New Technology?

b. When is Federally funded RD&D an effective means of introducing new technology?

c. What is the appropriate Federal role in each end use sector; building, industry and transportation?

d. What are the potential payoffs in each area? How should RD&D effort be distributed?

Although FEA and DOC have active planning and policy offices they do not focus heavily on the special problems of RD&D and its contribution to the introduction of new technology. The ERDA Conservation program has often been criticized from

its lack of "overall strategy." Although this is quite understandable during the first year when opportunities are being evaluated and there is a heavy effort to get the more worthwhile projects started, sound management of the longer term programs requires planning and policy guidance.

Q. Isn't FEA and the Department of Commerce already well into this sort of thing?

A. The delineations of responsibilities amoung ERDA, FEA and Commerce with regard to industrial energy conservation are now extremely well defined. ERDA's responsibilities involve the research, development , and demonstration of new technologies and processes, while FEA is charged with the responsibility of implementing the use of existing technology. The Commerce role is one of documenting the case histories and relative advantages of existing technologies , for example EPIC.

With regard to ERDA's role as defined above it is essential that ERDA pursue those new technologies which will have the greatest impact on energy reduction and simultaneously be economically sound. To make such determination among the numerous ideas and proposals received it is necessary to analyse in depth the potential of each program. Hence, the Policy Planning and Analysis effort is justified .

RISK PROGRAMS

Q. Your justification states that the Industry Program will be directed mainly toward "intermediate or high risk programs." Please explain that approach

A. We will carefully avoid sponsoring programs which the private sector will conduct on its own without Federal assistance. These are the programs having intermediate to high return on investment and involving a low degree of risk. The ERDA role,therefore relates to programs having intermediate to high return on investment but with a higher degree of risk for example: intermediate to high risk involved. In belief, we feel the emphasis of the ERDA role in Industrial Energy Conservation should be directed at those energy-savings ventures which Industry on its own would not pursue ot at least would not accelerate due to the higher technical risks involved.

CONSERVATION MILESTONES

Q. It is also indicated that no important milestones are expected in Industry and Agriculture in 1976 and 1977. What milestones do you foresee in 1978?

A. If we may be permitted , we believe the wording is that most of the projects will not reach significant milestones in FY 1976 and likewise, FY 1977 will provide limited significant milestones. There will be some achievements ,of course, during those periods but the context of the question is quite correct. The major results of the earlier efforts will be in FY 1978. Some of the more significant milestones during FY 1978 are demonstrations of high temperature recuperators for high efficiency waste heat recovery in a variety of industrial waste streams; demonstrations of industrial heat pumps for upgrading low level waste heat to process level requirements; demonstration of a high efficiency

industrial boiler using catalytic combustion; demonstration of a paint curing systems utilizing paint vapors as a fuel source; demonstration of a cupola furnace requiring no incinerator; demonstration of coal in aluminum remelt instead of natural gas; demonstration of a new fertilizer process using heat from the chemical reaction for process drying and numerous other. FY 1978 will be a big industrial demonstration year which will kick off technology transfers and industrial implementation of a host of significant energy-saving programs.

URBAN WASTE UTILIZATION

Q. Why did you shift urban waste conversion into the buildings conservation activity, and why is that effort being reduced?

A. The entire Conservation R&D organization has evolved over the first year of the program to a new organization form which highlights end-use conservation. Specifically, administrative actions are under consideration to restructure the Office of Conservation along three end-use Divisions: Industrial Conservation, Transportation and a Division to be called Buildings and Community Systems and three technology support divisions: Electric Energy Systems, Conversion Technology and a Storage Division. The Urban Waste program had been administratively located within the Division of Interprogram Applications. All program areas formerly in that Division are being reassigned to the six Divisions in the new organization. Within the Division of Buildings and Community Systems is the Office of Building and Community Energy Systems. The RD&D activities concerning community activities such as the development and demonstration of the applicability of integrated systems; community planning for energy efficient utility supply, etc., fall under the purvue of that office.

Urban waste is a product of a community. In order to recover energy from this waste a user must be available for the energy to be recovered from the waste. This probably will be the community which generated the waste. It is therefore logical to include the urban waste program within the overall community systems activity so that the overall system design and technology development for community development can occur in a symbionic and synergistic mode.

As to the question of cost reduction, actually, the direct appropriation for this program in FY 1976 was for budget authority of $1.5 million. Within ERDA we transferred the Pompano Beach, Methane from Solid Wastes, project from the Solar Division to the Division of Interprogram Applications in the Office of Conservation along with $.25 million in FY 1976 budget authority for that project. Thus, in direct program appropriations the requested $1.65 million budget authority in FY 1977 represents a small program increase.

Q. Exactly what are you doing in urban waste conversion and what efforts are being conducted by other agencies?

A. ERDA initially obtained a study which defined the state of the art of waste to energy processes and the specific areas requiring further development. We have used the study to formulate our program which is getting underway with our initial appropriation in FY 76. We are supporting or planning a number of R&D efforts. We are in the design phase of a 50 to 100 ton per day advanced system experimental facility

at Pompano Beach, Florida. That facility will study the anaerobic digestion or biological conversion of urban waste and sewage sludge to produce methane rich gas. Other efforts in the area of bioconversion include mixing concepts for high solids content or thick liquids in a digester, which is supportive of the Pompano Beach Project, the use of enzymes to change cellulose to glucose, digestion of dilute wastes in a packed bed upflow column and investigation of two concepts for enhancement of methane production and reduction of reaction time. We are supporting the City of Seattle in feasibility and preliminary design activities for their urban solid waste to ammonia project. This will use pyrolysis to produce a fuel gas which will be synthesized to ammonia. We are also supporting developmental work on the use of pyrolysis gases as chemical feedstocks and fuels and a small effort on converting cellulosic waste to gasoline by pyrolysis. In the combustion area we are assessing European technology for its potential use in the United States and have documented the technical problems, their causes and their cures at the Nashville plant. We are also supporting investigation of the cofiring of urban waste with natural gas in a cement kiln. In the materials recovery area we are supporting efforts to recover materials in forms to meet specifications that will make them useful to industry. We are also supporting an effort to make sewer pipe from recovered glass.

We are supporting efforts on defining regionality of wastes and two efforts to recover energy from industrial wastes. We would like to expand these efforts in FY 77.

As far as other agencies are concerned, FEA has three or four small efforts on-going, all of which are oriented-toward identification and removal of institutional and financial barriers to implementation rather than technology development. EPA efforts include participation in two pyrolysis demonstrations and a project to burn refused derived fuel called RDF with oil, similar to their St. Louis project where they burned RDF with coal. They are participating with TVA and FEA in a feasibility study for fueling some of TVA's plants with wastes. EPA also has several studies and evaluations on-going or planned to characterize pollutants, do cost analyses and plant evaluations. That is a very general description of some of the EPA efforts but, while we work very closely with EPA in this area, I would certainly prefer that they provide you with a full description of their program rather than my thumbnail sketch.

Q. Your justification speaks of laying the groundwork for an urban waste demonstration, if required. Don't you think this is required?

A. Yes, demonstrations will be required in several areas to work out any scale-up problems, as well as, to show that the systems are technically and economically feasible. This is an essential part of stimulating implementation of the technologies and building confidence in the systems so that private financing will be available for commercialization. We believe that Federal funding of demonstrations should be limited and that industry and local governments should participate heavily, including financial participation. We believe loan guarantees as outlined in the Syn Fuels Bill, H.R. 12112, will be very helpful.

TRANSPORTATION ENERGY CONSERVATION

Q. OTA believes your Non-Highway transportation program is being neglected. Why isn't this area getting more attention in your budget?

A. The Non-Highway area is considered to warrant significantly greater attention in future years. The proportion of transportation energy consumed in this area is projected to grow from the current 25% figure to 40% by the year 2000. The program was not supported strongly initially due to the activities believed underway in other agencies. It is now established that the energy savings potential is significantly greater than can be realized through the current funding levels of other agencies. ERDA has now planned to reevaluate the transportation priorities in future funding requests in terms of placing greater emphasis on non-highway areas.

Q. What achievements can we expect in the near future from your automotive conservation programs?

ASSUMPTIONS: Answer assumes the "near future" is 1976-1980 time period. Answer assumes "achievements" are technological demonstrations rather than information relating to energy conservation.

A. In the 1976-1980 period the following technology demonstrations will be conducted:

Propulsion Systems

Gas turbine auto engine - CY 1976 initiation of testing of Chrysler auto with upgraded gas turbine engine.

Stirling auto engine - CY 1978 initiation of demonstration of a Stirling engine powered compact sized car.

Powertrain and Vehicular Systems

Accessory horsepower reduction - CY 1977 completion of demonstration of a system for reducing auto accessory horsepower needs.

Continuously variable transmission - CY 1977 completion of demonstration of continuously variable auto transmissions.

Truck systems - CY 1978 initiation of demonstration of combined technologies for improved truck fuel economy (e.g., Rankine bottoming cycle for diesel engine trucks.

Auto engine improvements - CY 1976-1978 demonstration of various engine efficiency options, e.g., stratified charge, variable displacement engine.

Alternative Fuels Utilization

Methanol fuel blends	- CY 1977 initiation of demonstration of fleet test of cars utilizing methanol-gasoline blends.
Synthetic fuels	- CY 1977 initiation of demonstration of fleet test of cars utilizing fuels derived from oil shale and coal.
Hydrogen fuels	- CY 1978 auto demonstration of the feasibility of storing hydrogen fuel in an economical, safe and efficient manner.

Q. Are we seeking and getting productive cooperation from the transportation industry?

A. Certainly ERDA is actively seeking and getting productive cooperation from the transportation industry in defining R/D needs, in the development of new technologies and with regard to the future commercialization of these technologies. Industry's cooperativeness is evidenced by its many initiatives taken to inform ERDA of its programs and interests and to respond to ERDA requests. Communications and rapport have been established between ERDA and many of the important Trade Associations and representatives of the key industries. The industry in all areas and transportation modes has participated freely in review and critique or in making recommendations on the ERDA programs and has indicated interest through proposals, letters, presentation and other communications in participating in that program. The key industries are currently participating under contract in all areas of the ERDA program. ERDA/Industry joint efforts and cost-sharing contracts are being undertaken or are in negotiation with the major industries in such areas as combustion research, Brayton and Stirling cycle engine and components development, and electric vehicle development. Also, joint Industry/ERDA efforts have been undertaken in sponsoring symposia and information dissemination.

CONSERVATION GOALS

Q. There has been criticism of your projections in that they are based on estimates of future energy demands that are too high. The agrument is made that the impact of price increases is not sufficiently considered. What is your comment?

A. Reducing energy consumption by a certain percentage in not our goal of Conservation. Rather, the goal is to foster new technology which will allow end use demands to be met with less energy and at lower cost.

Q. How much of you budget is directed toward reducing demand?

A. The ERDA program is directed toward developing new technology and stimulating the Nation's interest in being this into widespread use. There is no program within ERDA to modify consumer behavior, except through the dissemination of information to permit more informed judgements in purchase and use of energy saving technology.

Q. What is your estimate of barrels per day of oil equivalent savings that can be achieved through new technology applications for the 1985 and 2000 periods? Please supply estimates by program.

A. No attempt has been made to estimate potential savings by program for the period 1985 to 2000. There are just too many unknowns at the present time to make meaningful estimates

CONVERSION EFFICIENCY

Q. Your conversion efficiency program shows a substantial increase from $8.9 million to $15 million, but most of this increase is devoted to fuel cells. Why is the balance of this important program being neglected?

A. The conversion efficiency program addresses the technology necessary to make significant contributions in all the end use sectors of the economy. A number of promising projects were initiated in FY 76, including the fuel cell program. The FY 77 budget to Congress shows an increase of $6.3M for the fuel cell program and a decrease of $0.2M for the balance of the program, although the transfer of the wood waste project ($1.8M) to the Solar energy budget allows shifting of these funds into other conversion efficiency projects. In terms of percentages, the fuel cell effort was 41% of the conversion effort in FY 76 and will be 67% in FY 77.

The fuel cell program is an important high potential payoff ERDA program as evidenced by the memo sent from Dr. Seamans to OMB (submitted for the record on April 7, 1976) requesting $21M in funding for FY 77. The principal reason for the imbalance is the newness of the conversion efficiency program. Results from FY 76 studies were not available for justifying FY 77 budget requests and the impact of program transfers from the National Science Foundation (NSF) was not known. Many of the FY 76 studies are now complete including energy savings analyses and cost-benefit studies and the results justify a balanced program. In fact, it was the results of such a study which formed the justification for the Dr. Seamans memo to OMB on fuel cell funding increases. It is ERDA's intention to establish the necessary balance to the program in future budget requests, based on the potential energy payoffs in relation to other technologies and the resources available.

Q. The Committee would like to have the details of your original request for improved conversion efficiency by technology Please supply it for the record.

A. The original FY 1977 ERDA request to OMB for Improved Conversion Efficiency was $12.7 million in budget authority and $9.5 million in budget outlays. The request to OMB provided for expanded efforts such as research and development associated with the Rankine Waste Heat Recovery System for large diesel

to OMB also included technology development activities related to improved component efficiency, advanced cycles , and materials fabrication technology.

Q. Doesn't conversion efficiency have a high potential for energy contributions?

A. Yes. Recent studies have indicated a very high potential for oil savings from advanced conversion technology. These savings are achieved through systems implementation conducted by the end use sectors of transportation, electric utilities, industry and residential/commercial buildings. An independent assessment resulted in the following estimates for energy savings:

		Full Funding	Half Funding
Maximum Potential Savings (assumes 100% market penetration)	1985 (KBBL/D)	15,000	15,000
Estimated Savings (based on predicted market penetration)	1985 (KBBL/D)	760	150

Q. Tell us about plans for a fuel cell study at the Morgantown Energy Center involving applications of fuel cells to coal mine methane drainage. I am told this technique may hold great promise.

A. Preliminary information indicates that fuel cells may well be an economic way of utilizing much of the methane, trapped in coal, which is presently wasted. It is estimated that 300 trillion cubic feet of methane could be recovered. Methane from holes drilled into virgin coal and methane from holes into the "gob" after mining are the two sources where fuel cells (and, possibly, Stirling Engines) appear to apply. $50K of fuel cell funds has been sent to Morgantown Energy Research Center, and they will conduct a more detailed study of this application. The study results are expected in early fall.

DEVELOPMENT POLICY

Q. What is ERDA's policy with respect to the repayment of government funds used to develop a new technology?

A. ERDA has no written policy regarding the repayment of government funds used to develop new technology. At least three considerations are involved.

1. Requiring repayment of government funds would constitute a negative incentive to the early commercialization of new technology.

2. If the non-government participant is to receive substantial benefit from the RD&D conducted, a cost sharing contract would be preferable.

3. In any RD&D contract, ERDA receives the results of the research and development, and may where waivers are not appropriate acquire the rights to data and patents.

Q. What guidelines are used to determine whether loans or grants are made? What is the statutory authority governing this area?

A. At the present time ERDA is evaluating and formulating the appropriate procedure for considering application for loans under the authority givrn by the Non-Nuclear Energy Act.

ERDA grants are for basic and applied research to educational and nonprofit organizations. Special Research Support Agreement contracts, as distinguished from the regular research and development contracts, are used to procure research with ERDA direction and control, according to ERDA Procurement Regulation 9-16, 5002-8. A grant instrument is used where minimum monitoring and few controls are necessary, according to ERDA Grant Procedures set forth in the Federal Register, Vol. 41-No. 82; April 27, 1976; pages 17602-17605.

Statutory authority governing grants is found in:

P.L. , 93-438 , Energy Reorganization Act of 1974
P.L. , 93-577 , Federal Non-Nuclear Energy Research and Development Act of 1974
P.L. , 85-934 , Grants Act, and
P.L. , 83-703 , Atomic Energy Act of 1954, as amended

Q. Is ERDA authorized to issue licenses to private developers for technology developed with ERDA funds? If not, why?

A. ERDA is authorized to issue licenses under ERDA-owned patents to private developers under both the Atomic Energy Act and the Non-Nuclear Energy Act. Subsection 9(g) of the Non-Nuclear Energy Act gives the Administrator the authority to determine and promulgate regulations specifying terms and conditions. The Actalso sets forth authority to grant exclusive or partially exclusive licenses under certain circumstances and conditions.

ERDA has not yet issued licensing regulations pursuant to the statutory authority contained in the Non-Nuclear Energy Act however, patent licensing regulations embracing both domestic and foreign patents have been promulgated previously pursuant to the authority of the Atomic Energy Act. It is normally the policy of ERDA to issue nonexclusive licenses under its domestic patents. However, a limited exclusive license may be available under these regulations if it is likely to bring the invention to the point of practical application, and the desired practical application has not and is not likely to be achieved under the nonexclusive license. The regulations set forth criteria for selection of a limited exclusive licensee and minimum terms for such a license.

ERDA STAFFING

Q. How many employees did ERDA have when established and how many does it have today and planned for FY 1977? How many of these are assigned to the fossil fuel and energy conservation areas?

A. The table below shows the distribution of full-time permanent employment for ERDA in total and specifically for those organizations associated with fossil fuels and energy conservation. It should be noted that (a) the initial fossil energy employment in the Headquarters reflects adjustments for comparability with organizational changes effected since ERDA's establishment, and the authorized levels reflect the most current internal authorization, which differs from the budget by ten positions; (b) included in the totals for the Energy Research Centers are positions allocated to performing reimbursable work for other agencies and providing services for which funds are contributed by states and other sources; and (c) the Conservation levels are for the total organization, including the direction of those portions of the program funded in the Public Works appropriation. During FY 1975, FY 1976, and FY 1977, the reimbursable positions at the ERC's total 78, 65, and 65, respectively. The table follows:

	Empl. 1/19/75	Empl. 4/30/76	Auth. FY 1976	Budget FY 1977
Total ERDA	6,988	8,303	8,285	8,350
Fossil Energy				
Headquarters	170	276	320	330
Energy Res. Ctrs	755	819	824	824
Field	-	9	10	10
Total Fossil	925	1,104	1,154	1,164
Conservation	51	186	170	180

Q. Please provide a breakdown of staff positions by grade and title for the fossil fuel and energy conservation areas.

A. The requested breakdown of positions for the fossil fuel and energy conservation areas in the Headquarters is reflected in the attached tabulation.

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

AA For Fossil Energy

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/76
Asst. Admin. for Fossil Energy	Ex IV	1	1	1	1	1
Dep. Asst. Admin. For Fossil Energy	Ex V	1	1	1	1	1
Operations Research Scientist	GG-15	1	1	1	1	1
Staff Assistant	GG-14	1	-	-	-	-
Systems Reliability Engr.	GG-14	-	1	1	1	1
Mgmt. Systems Analyst	GG-12	1	1	1	1	1
Chemical Engr.	GG-12	-	1	-	-	-
Secretary	GG-10	2	2	2	2	2
Staff Asst.	GG- 9	-	1	1	1	1
Secretary	GG- 7	-	1	1	1	1
Secretary	GG- 6	2	2	2	2	2
Research Asst.	GG- 5	1	-	-	-	-
Secretary	GG- 5	1	-	-	-	-
Mail Clerk	GG- 4	1	-	-	-	-
Senior Staff						
Associate Director	GG-17	1	1	1	1	1
Senior Technical Advisor	GG-17	-	1	1	1	1
Secretary	GG- 8	1	1	1	1	1
Secretary	GG- 7	-	2	2	2	2
Clerk	GG- 6	1	-	-	-	-
Total Actual		15	17	16		
Total Authorized		*	17	17	17	17

* Total authorization for Fossil Energy of 270 not spread to individual organizations in detail in June 1975.

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Office of Planning and Analysis (Fossil Energy)

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Director	GG-18	—	1	1	1	1
Deputy Director	GG-16	—	—	1	1	1
Assistant Director for Evaluation Review	GG-16	1	1	1	1	1
Secretary	GG- 8	1	1	1	1	1
Secretary	GG- 7	1	-	-	-	-
Clerk-Typist	GG- 4	1	1	1	2	2
Clerk-Typist	GG- 3	1	-	-	-	-
Planning and Budget						
Assistant Director	GG-16	1	2	1	1	1
Budget Officer	GG-15	1	-	-	2	2
Physical Scientist	GG-15	1	1	1	1	1
Budget Analyst	GG-14	-	-	-	1	1
Budget Analyst	GG-13	2	2	2	2	2
Budget Analyst	GG-12	-	-	-	1	1
Budget Analyst	GG-11	2	2	2	2	2
Secretary	GG- 7	1	1	1	2	2
Administrative Management Assistant	GG- 5	1	1	1	1	1
Review and Analysis						
Assistant Director	GG-16	-	1	1	1	1
Senior Porgram Analyst	GG-15	1	1	1	1	1
Senior Process Design Engineer	GG-15	—	—	1	2	2
Process Economics Analyst	GG-15	—	—	1	2	2
Physical Scientist	GG-15	1	-	-	-	-
Physical Seientist	GG-14	2	2	1	2	2
Senior Porject Review Specialist	GG-14	—	—	1	3	3
Mechanical Engineer	GG-11	—	1	1	1	1
Mechanical Engineer	GG- 9	1	-	-	-	-
Secretary	GG- 7	—	-	1	1	1
Secretary	GG- 5	—	1	1	1	1
Clerk-Typist	GG- 3	—	1	1	1	1
Clerk-Typist	GG- 4	2	-	-	1	1

Office of Planning and Analysis (Fossil Energy) (con't.)

	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Environment and Safety						
Assistant Director	GG-16	-	1	1	1	1
Staff Assistant - Economics	GG-15	1	-	1	1	1
Physical Scientist	GG-15	1	1	1	2	2
Physical Scientist	GG-14	-	1	4	5	5
Physical Scientist	GG-13	1	-	-	2	2
Secretary	GG- 6	-	-	1	1	1
Clerk-Typist	GG- 5	2	-	1	2	2
Long-Range Strategy						
Assistant Director	GG-16	-	1	1	1	1
Staff Assistant	GG-15	1	-	-	-	-
Senior Economics Systems Analyst	GG-15	1	1	1	2	2
Senior Economic Analyst	GG-15	1	1	1	2	2
Policy and Program Analyst	GG-15	-	-	1	1	1
Economic and Systems Analyst	GG-12	-	1	1	1	1
Chemical Engineer	GG-12	-	-	1	1	1
Economic and Systems Analyst	GG-11	1	1	1	1	1
Secretary	GG- 7	-	-	1	1	1
Secretary	GG- 6	1	1	-	1	1
Program Analysis Branch **						
Program Analyst Officer	GG-15	1	-	-	-	-
Physical Scientist	GG-12	1	-	-	-	-
Clerk-Typist	GG- 4	2	-	-	-	-
TOTAL ACTUAL		35	29	40		
TOTAL AUTHORIZED			60	60	60	60

** Abolished after June 1975

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Office of Administration (Fossil)

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Director	GG-16	-	1	1	1	1
Secretary	GG- 7	-	-	-	1	1
Clerk-Typist	GG- 5	-	-	-	1	1
Administrative Services						
Assistant Director	GG-15	-	-	-	1	1
Executive Assistant	GG-15	1	1	1	-	-
Admin. Officer	GG-11	1	1	1	1	1
Admin. Mgmt. Asst.	GG- 9	1	1	1	1	1
Admin. Asst.	GG- 9	1	1	1	1	1
Correspondence Control Asst.	GG- 9	-	1	1	1	1
Personnel Asst.	GG- 7	1	-	-	-	-
General Services Specialist	GG- 7	1	-	-	-	-
Fiscal Liaison Officer	GG- 7	1	1	1	1	1
Mgmt. Asst.	GG- 7	1	1	1	1	1
Admin. Asst.	GG- 7	-	1	1	1	1
Secretary	GG- 6	1	1	1	1	1
Secretary	GG- 5	1	2	1	1	1
Mgmt. Asst.	GG- 5	1	1	1	1	1
File Clerk	GG- 5	1	1	1	1	1
Correspondence Control Clerk	GG- 5	-	1	1	1	1
Clerk-Typist	GG- 4	1	-	-	-	-
Mail and File Clerk	GG- 3	1	1	1	1	1
Program Services						
Director	GG-15	-	-	-	1	1
Information Systems Analyst	GG-14	-	-	-	1	1
Management Analyst	GG-14	-	-	-	1	1
Physical Scientist	GG-14	-	-	1	1	1
Procurement Liaision Officer	GG-14	-	-	-	1	1
Procurement Liaision Asst.	GG-13	-	-	-	2	2

	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Office of Administration (Fossil) (cdn't)						
Civil Engineer	GG-13	1	-	-	-	-
Reports Analyst	GG- 9	-	-	-	1	1
Program Asst.	GG- 9	1	-	-	-	-
Proposal Technician	GG- 7	1	-	-	-	-
Proposal Technician	GG- 6	1	1	1	1	1
Proposal Technician	GG- 5	-	1	-	1	1
Clerk-Typist	GG- 5	2	-	-	1	1
Control Clerk	GG- 4	-	1	1	1	1
Clerk	GG- 2	-	1	1	1	1
Total Actual		20	20	19		
Total Authorized			30	30	30	30

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Division of Magnetohydrodynamics

Positions

Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Director	GG-17	-	-	-	1	1
Staff Assistant	GG-13	-	-	1	1	1
Staff Assistant	GG-12	1	1	-	-	-
Administrative Assistant	GG- 9	-	1	1	1	1
Secretary	GG- 8	-	-	-	1	1
Technical and Program Staff						
	GG-16	-	-	-	1	1
	GG-15	1	5	7	8	8
	GG-14	1	1	1	2	2
	GG-13	1	2	2	3	3
	GG-12	-	-	-	-	-
	GG-11	-	-	-	-	-
	GG- 9	-	-	1	1	1
	GG- 8	-	-	-	-	-
	GG- 7	1	1	1	1	1
	GG- 6	-	2	2	2	2
	GG- 5	-	1	1	2	2
TOTAL ACTUAL		5	14	17		
TOTAL AUTHORIZED			24	24	24	24

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Division of Oil, Gas and Shale Technology

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Director	GG-17	-	-	-	1	1
Assistant Director	GG-17	1	1	1	1	1
Staff Assistant	GG-15	-	1	1	1	1
Secretary	GG- 8	1	1	-	-	-
Secretary	GG- 7	-	1	1	1	1
Secretary	GG- 5	1	-	1	1	1
Technical and Program Staff						
	GG-16	1	1	1	1	1
	GG-15	4	7	7	7	7
	GG-14	4	2	3	4	4
	GG-13	2	3	4	4	4
	GG-12	1	1	1	2	2
	GG-11	1	-	-	-	-
	GG- 8	1	-	-	-	-
	GG- 7	1	1	1	1	1
	GG- 6	2	4	5	5	5
	GG- 5	-	1	1	1	1
	GG- 4	1	-	-	-	-
Total Actual		21	24	27		
Total Authorized			30	30	30	30

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Division of Fossil Demonstration Plants

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Director	GG-17	-	1	1	1	1
Assistant Director	GG-16	1	1	1	1	1
Operations Analyst	GG-14	1	1	1	1	1
Project Control Engineer	GG-13	-	-	1	1	1
Secretary	GG- 8	1	1	1	1	1
Secretary	GG- 7	-	-	3	3	3
Technical and Program Staff						
	GG-15	-	1	3	5	5
	GG-14	7	7	8	10	12
	GG-13	2	2	1	5	6
	GG-12	2	1	2	4	4
	GG-11	-	1	1	2	2
	GG- 9	1	-	-	-	-
	GG- 7	-	1	2	4	5
	GG- 6	1	-	-	-	-
	GG- 5	3	-	-	-	-
TOTAL ACTUAL		19	17	25		
TOTAL AUTHORIZED			38	38	38	42

ERDA FULL-TIME PERMANENT STAFFING
FY 1975 - FY 1977

Division of Coal Conversion and Utilization

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 6/30/77
Director	GG-17	1	1	1	1	1
Deputy Director	GG-16	-	1	1	1	1
Physical Scientist	GG-15	-	1	1	1	1
Staff Assistant	GG-14	-	1	1	1	1
Program Analyst	GG-14	-	-	1	1	1
Admin. Officer	GG-10	-	1	1	1	1
Secretary	GG- 8	1	1	2	2	2
Administrative Aide	GG- 7	-	1	-	-	-
Secretary	GG- 6	-	-	1	1	1
Research Asst.	GG- 5	1	1	1	1	1
Secretary	GG- 5	-	1	-	-	-
Clerk-Steno	GG- 4	-	1	1	1	1
Clerk-Steno	GG- 3	1	-	1	1	1
Technical and Program Staff						
	GG-16	3	3	3	3	3
	GG-15	7	9	7	7	7
	GG-14	22	23	25	26	27
	GG-13	6	7	10	12	14
	GG-12	2	2	4	4	4
	GG-11	-	2	2	3	4
	GG- 8	3	3	2	2	2
	GG- 7	3	3	3	3	3
	GG- 6	4	3	2	2	4
	GG- 5	1	6	8	8	8
	GG- 4	4	2	2	2	2
	GG- 3	-	1	2	2	2
	GG- 2	1	-	-	-	-
Total Actual		60	74	82		
Total Authorized			86	86	86	92

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Division of Fossil Energy Research

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Director	GG-17	-	1	1	1	1
Director	GG-16	1	-	-	-	-
Senior Technical Advisor	GG-15	1	1	1	1	1
Secretary	GG- 8	1	1	1	1	1
Proposal Clerk	GG- 6	-	-	1	1	1
Secretary	GG- 6	-	1	-	-	-
Research Assistant	GG- 5	1	1	1	1	1
Technical and Program Staff						
	GG-16					
	GG-15	2	4	4	4	4
	GG-14	9	12	11	10	10
	GG-13	4	4	6	6	6
	GG-12	1	1	1	1	1
	GG-11	-	-	-	1	1
	GG- 8	1	1	1	1	1
	GG- 7	1	1	2	2	2
	GG- 6	1	2	2	2	2
	GG- 5	2	3	3	3	3
Total Actual		25	33	35		
Total Authorized			35	35	35	35

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Assistant Administrator for Conservation

Positions

Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Assistant Administrator	IV	-	1	1	1	1
Deputy Assistant Administrator	GG-18	1	-	-	-	-
Executive Assistant	GG-16	1	1	1	1	1
Environment and Safety Specialist	GG-15	1	1	1	1	1
Project Officer	GG-15	2	2	2	1	1
Program Coordinator	GG-15	1	-	-	-	-
Technical Assistant	GG-15	1	-	-	-	-
Engineer	GG-14	1	1	-	-	-
Engineer	GG-13	2	2	2	2	2
Engineer	GG-11	-	1	-	-	-
Secretary	GG-10	-	1	1	1	1
Secretary	GG- 9	1	-	1	1	1
Secretary	GG- 7	2	-	-	-	-
Secretary	GG- 6	2	2	2	2	2
Materials Specialist	AD	-	1	1	1	1
Office of Conservation Planning and Policy						
Director	GG-18	-	-	1	1	1
Assistant for Program Plans	GG-16	1	1	1	1	1
Secretary	GG- 8	1	1	1	1	1
Technical Planning Specialist	AD	1	-	-	-	-
Office of Program Administration						
Director	GG-16	-	-	-	-	-
Assistant for Program Administration	GG-16	-	-	1	1	1
Technical Assistant	GG-15	1	1	1	-	-
Secretary	GG- 7	1	1	1	1	1
Administrative Branch						
Chief, Administrative Branch	GG-15	1	1	1	1	1
Management Specialist	GG-14	-	-	1	1	1
Management Specialist	GG-13	-	-	1	1	1
Management Specialist	GG-12	1	1	-	-	-
Staff Assistant	GG- 9	-	1	1	1	1
Administrative Assistant	GG- 8	1	1	1	1	1
Secretary	GG- 6	1	-	1	1	1
Mail and Records Clerk	GG- 4	2	3	4	4	4

Assistant Administrator for Conservation (con't.)

	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Budget and Fiscal Management Branch						
Chief	GG-15	1	1	1	1	1
Program Analyst	GG-14	-	1	1	1	1
Program Analyst	GG-13	1	-	1	1	1
Budget Analyst	GG-12	-	1	1	1	1
Budget Analyst	GG-11	-	-	1	1	1
Budget Assistant	GG- 6	-	1	1	1	1
Secretary	GG- 6	-	-	1	1	1
Procurement Management and Industrial Appl. Branch						
Chief	GG-15	1	1	1	1	1
Contract Management Officer	GG-15	-	1	1	1	1
Senior Industrial Coordinator	GG-14	1	1	1	1	1
Contract Specialist	GG-12	-	-	1	1	1
Contract Specialist	GG-11	2	2	1	1	1
Contract Management Information Officer	GG- 7	-	1	1	1	1
Proposal Examiner	GG- 7	-	-	1	1	1
Secretary	GG- 6	-	-	1	1	1
Secretary	GG- 5	-	-	1	1	1
TOTAL ACTUAL		32	34	44		
TOTAL AUTHORIZED		22	42	42	42	42

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Division of Transportation Energy Conservation

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Office of Director						
Director	GG-17	-	-	-	1	1
Assistant to the Director	GG-16	1	1	1	-	-
Secretary	GG-15	1	1	1	1	1
	GG- 7	1	1	1	1	1
Technical & Program Mgmt. Staff						
	GG-16	-	1	1	1	1
	GG-15	2	5	5	5	5
	GG-14	7	9	10	9	9
	GG-13	5	5	4	4	4
	GG-12	1	-	1	1	1
	GG- 7	-	-	1	1	1
	GG- 6	1	3	5	5	5
	GG- 5	2	1	1	1	2
Total Actual		21	27	31		
Total Authorized		17	30	30	30	31

ERDA FULL-TIME PERMANENT STAFFING
FY 1975 - FY 1977

Division of Electric Energy Systems

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Office of Director						
Director	GG-17	-	-	-	1	1
Director	GG-16	1	1	1	-	-
Secretary	GG- 8	1	1	1	1	1
Technical & Program Mgmt. Staff						
	GG-15	5	5	6	5	5
	GG-14	2	4	6	5	5
	GG-13	3	3	7	6	7
	GG-12	-	1	-	-	-
	GG-11	-	-	1	1	2
	GG- 9	1	-	-	-	-
	GG- 7	1	1	1	1	1
	GG- 6	3	4	4	4	4
	GG- 5	1	1	1	1	1
	GG- 4	-	1	1	1	1
Total Actual		18	22	29		
Total Authorized		16	26	26	24	28

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Division of Buildings and Industry

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Office of Director						
Director	GG-17	1	1	1	1	1
Technical Assistant	GG-15	-	1	1	1	1
Secretary	GG- 7	1	1	1	1	1
Technical & Program Mgmt. Staff						
	GG-16	1	4	3	3	3
	GG-15	-	5	8	6	7
	GG-14	2	4	3	3	3
	GG-13	-	1	1	1	1
	GG-12	-	1	3	2	2
	GG-11	1	1	1	1	2
	GG- 9	-	-	2	2	2
	GG- 7	2	4	4	3	4
	GG- 6	-	3	4	4	4
	GG- 5	-	1	1	1	1
Total Actual		8	27	33		
Total Authorized		-	29	29	29	32

ERDA FULL-TIME PERMANENT STAFFING

FY 1975 - FY 1977

Division of Interprogram Applications

Positions Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Office of Director						
Director	GG-16	-	-	-	1	1
Technical Assistant	GG-15	1	1	1	1	1
Secretary	GG- 7	1	1	1	1	1
Technical & Program Mgmt. Staff						
	GG-16	-	1	1	-	-
	GG-15	2	3	4	3	3
	GG-14	1	1	3	2	2
	GG-13	1	3	3	3	3
	GG-12	-	1	1	1	1
	GG- 9	1	1	1	1	1
	GG- 7	-	2	2	2	2
	GG- 6	-	2	1	1	1
	GG- 5	-	1	1	1	2
	GG- 4	1	-	-	-	-
Total Actual		8	17	19		
Total Authorized		8	17	17	17	18

ERDA FULL-TIME PERMANENT STAFFING
FY 1975 - FY 1977

Division of Conservation Research and Technology

Positions

Title	Grade	Actual 6/30/75	Actual 12/31/75	Actual 2/29/76	Projected 6/30/76	Projected 9/30/77
Office of Director						
Director	GG-17	-	-	-	1	1
Technical Assistant	GG-15	1	-	-	-	-
Secretary	GG- 7	1	1	1	1	1
Technical & Program Mgmt. Staff						
	GG-16	-	2	2	1	1
	GG-15	4	5	6	5	5
	GG-14	-	5	8	6	6
	GG-13	-	1	1	1	1
	GG-12	-	1	2	2	2
	GG-11	-	1	-	-	-
	GG- 9	-	1	1	1	3
	GG- 7	-	-	2	2	2
	GG- 6	-	4	5	4	5
	GG- 5	-	-	2	2	2
Total Actual		6	21	30		
Total Authorized		-	26	26	26	29

Q. Is ERDA experiencing any difficulty in recruiting personnel? What was ERDA's turnover rate in the last 12 months?

A. ERDA is experiencing no difficulty in recruiting personnel. There have been ample applicants from which to fill vacancies in most occupational categories. In those few instances where shortages did exist (for example, chemical engineers), formal advertising proved fruitful and provided an adequate flow of qualified individuals. Currently, ERDA has thousands of applicants on file; and since most major programs have reached or are fast approaching their authorized levels, new applications are being accepted in only a limited number of occupational fields to augment those shortage areas where future employment prospects may develop.

ERDA's turnover rate for FY 1975 was 8.3% and thus far in FY 1976 has averaged 8.8%.

MAGNETOHYDRODYNAMICS

Q. If the $20 million additional funding need for MHD from the direct combustion and demonstration plant programs is approved, what will be the effect of reducing those programs for the balance of the year?

A. ERDA's alternate plan for shifting $20 million into the MHD subprogram as outlined in a letter to the Chairman of the House Committee on Science and Technology dated March 15, 1976, would have the following specific impacts:

Coal Liquefaction Subprogram

1. Solvent-Refined Coal (SRC) Pilot Plant Operation - $8,000,000

A reduction of $8 million will be made in the SRC pilot plant project, reducing the total available funds for this project in FY 1976 and the Transition Period to $13.5 million. This level of funding and the funds requested in the FY 1977 budget of $16.6 million will permit continued operation of the pilot plant through FY 1977. However, some loss in flexibility may be incurred during this period by limiting, (1) the number of coals that can be tested and (2) modificaitons to the plant as desired to test variations in the liquefaction process. These tests modifications, if required would be delayed until FY 1978.

Direct Combustion Subprogram

2. 200 MW atmospheric fluidized-bed boiler system - $5,000,000

This project would not be adversely affected by the reprogramming action since the conceptual design of a 200 MW fluidized-bed boiler system is planned under the Demonstration Plant subprogram.

3. Pressurized fluidized-bed combined cycle pilot plant- $3,000,000

The FY 1977 budget provided for multiple awards for the pressurized fluidized-bed combined cycle plant. The RFP issued for these efforts resulted in receipt of proposals for two basically different processes: (1) a coal-fired pressurized fluidized-bed boiler with a power-recovery turbine and (2) a coal-fired pressurized fluidized-bed air heater for a gas turbine with a heat-recovery boiler. Both systems could meet the program needs; however, a decision was made to proceed only with Item 2. In order to retain the option of later development of Item 1 and to proceed with the development of the best hot gas clean-up systems, it is believed to be appropriate to fund technology and system studies for both concepts. The reprogramming action will allow adequate funding of

support studies and engineering evaluations and permit plant definition studies and an analytical appraisal of hot gas clean-up technology. Testing of sub-scale alternative hot-gas clean-up systems will be at a reduced level.

4. Low-Btu Gas Demonstration Plant $4,000,000

In the Demonstration Plant Program there have been unanticipated delays in the release of the RFP for the Low-BTU Gas procurement and this had led to the conclusion that we would be unable to meet the commitment schedule originally budgeted for the early part of this project. The $4,000,000 reduction in the Demonstration Plant budget will have a minimal impact on that schedule.

Q. Is ERDA planning any additional budget requests either for 1976 or 1977 fiscal years to adjust for the reprogramming?

A. The specific impacts of shifting $20 million into the MHD subprogram have been assessed. ERDA views these impacts to be acceptable in view of the immediate need to move forward with the Component Development Integration Facility (CDIF), a key facility in determining the potential of MHD as a source of electricity. It is very difficult to predict R&D requirements with great certainty. We have further indicated that, if in the future, programmatic impacts resulting from the reprogramming action warrant, we would propose additional reprogramming or seek supplemental funding to accommodate specific project requirements.

Nevertheless, the funding shift will result in some stretching out and some curtailment of the liquefaction, direct combustion and demonstration subprograms, which have been of concern to the Committees with oversight over these programs.

Q. What funding would you require in the second supplemental bill to negate the shift in funds to MHD and keep your direct combustion and demonstration plants programs on schedule? Will you need to replace the $20 million in full or can you get by with less?

A. As we have indicated, there is a great amount of uncertainty associated with defining future specific resource requirements for large R&D projects such as those involved in our reprogramming action. This Agency carefully evaluated the effect of this action on specific subprograms and projects. While we judge that these impacts were minimal, none the less they are real. If supplemental funds are added to ERDA's budget to negate the shift in funds to MHD, we would suggest that flexibility be allowed the Agency in applying the funds to highest priority programs within the Fossil Energy area.

ERDA would of course, give first consideration to the restoration of funds to those projects which were curtailed due to the MHD reprogramming. However, in certain areas such as the Demonstration Plants subprogram, we may not be able to significantly alter the current timetable with increased funding. We therefore, would request an opportunity to submit a current plan on the use of such funds subsequent to their becoming available.

Q. One of ERDA's statements on the reprogramming indicated that taking $2 million from the demonstration plant program would not have any adverse effect because of program delays. Can that be accommodated within your 1977 budget?

A. In our February 19 reprogramming letter we provided a listing of projects and subprograms that would be affected by the reprogramming action. At that time we proposed shifting $2.0 million from the

Demonstration Plant subprogram. Subsequently, we reassessed the impact of the reprogramming action on the Fossil Energy programs and submitted an alternate plan for shifting the $20 million into the MHD subprogram. The alternate plan, which we prefer, calls for taking $4 million from the Demonstration Plant subprogram. Because of certain unavoidable delays involving the Low-Btu Gas project, this reduction in funds will have a minimal impact on the schedule for that plant. We are committed to move forward expeditiously on this project in FY 1977. As we have indicated to the Committees, if we determine the need for additional funds for this project, we will propose additional reprogramming or seek supplemental appropriations to satisfy the specific project requirements.

QUESTIONS SUBMITTED BY SENATOR ROBERT BRYD

GOVERNMENT OWNED CONTRACTOR OPERATED LIQUEFACTION PLANTS

Q. Dr. White, there appears to be one major omission in your Synfuels Commercialization Program -- the lack of a coal-to-liquids commercial plant in Phase I of the Synfuels Program.

Dr. McCormick stated earlier that "uncertainties must be resolved by the mid-1980's. Thus, lead times involved requires the construction and operation over the next 5-10 years of a representative mix of synfuels plants to obtain all the necessary information required for a major industrial expansion." Therefore , can you explain why a coal-to-liquids commercialization demonstration plant is not included as part of Phase I of the Synfuels Program?

A. The Synthetic Fuels Commercial Demonstration Program is designed to initiate a synthetic fuels industry so that by the 1990's synthetic fuel production can substitute for declining domestic production of oil and gas. The program will share the financial and other risks associated with investments in first-of-a-kind commercial-scale synthetic fuel plants.

The program is proposed in a two phase effort. The first phase is designed primarily to gain information on the environmental, economic, institutional and other factors affecting the initiation of a synthetic fuels industry. Approximately 12 to 17 plants have been proposed in four synthetic fuels areas. The synthetic fuel technologies chosen for this first effort were those deemed ready for commercialization, meeting both technical and economic feasibility criteria. The Interagency Task Force on Synthetic Fuels recommended that coal -to-liquids technologies not be included in the first phase effort since the economics and technology associated with this type of conversion is still uncertain in relation to some other synthetic fuels processess. Coal-to-liquids processes will continue to be evaluated in our research and demonstration programs. In the expectation that ERDA supported coal-to-liquids R&D efforts would be successful in the next several years, the possible second phase of the proposed program includes support for up to two commercial demonstration coal-to-liquids plants at approximately 50,000 barrels per day scale each. Both of these proposed plants are projected to be operational in the late '80's.

Q. Dr. McCormick also stated that a decision on Phase II of the Synfuels Program would not be made until FY 1980. Thus, a commercial-size coal-to-liquids plants is not planned prior to the mid-to-late 1980s. This plan seems totally inconsistent with the R&D plans assigned to ERDA to its coal research program. Specifically, ERDA has requested in FY 1976 and '77 over $200 million for liquefaction research.

How do you plan to have the required information available for a commercial-size demonstration plant by the early-to-mid 1980s so that the liquefaction research results can be orderly implemented by industry?

A. The ERDA Fossil Energy strategy is based on the assumption that for the private sector to eventually make widespread use of newer, lower cost synthetic fuels technology, they must participate with ERDA in their development. The ERDA liquefaction research program is keyed to producing concepts, processes and equipment that will meet the needs of the private sector. The information generated from this program will form the basis for future anticipated commercial demostration of coal-to-liquid processes.

Concurrently the Synthetic Fuels Commercialization Program would compliment the liquefaction research program by:

- Investigating and acquiring information on environmental, economic, institutional , technical , and other potential problems.

- Gathering and reviewing information on the private sector's experience in the sythetic fuels field

Q. Dr. McCormick stated that liquids from coal, based on current technology, cost between $30 to $40 per barrel. Therefore, large price supports would be required to make a commercial plant feasible. I do not understand the difference between price supports for liquids produced from coal as opposed to oil produced from shale. Dr. McCormick's statement reflects a total of $4.5 billion requested for price guaranty. How do you account for the fact that price supports are required for commercial development of oil shale, but are not considered essential for commercial development of liquids from coal?

A. When the Interagency Task Force on Synthetic Fuels prepared their recommendations for the Energy Resources Council, coal-to-liquids was not recommended as part of the commercial demonstration program because the technologies involved were not sufficiently developed. It is expected that ERDA supported R&D efforts will make this process technically and economically feasible in the time frame of the proposed second phase of the program.

If coal-to-liquid technologies are included in the proposed second phase commercialization efforts, proper incentives, including price supports would be requested , if appropriate at that time.

Q. Dr. White, you earlier submitted a program summary for the different coal research technologies. That program summary for liquefaction states, "The general objective of the coal liquefaction subprogram is to provide technology which is economically attractive and environmentally satisfactory to convert coal to a clean liquid for electric power generation or for industrial and residential heating.

Based on the approximately $300 million of funding through FY'77 for liquefaction, and the fact that the only funded fossil energy demo plant is to produce liquids from coal, wouldn't it be consistent with ERDA's R&D objectives to construct one or more commercialization demonstration coal-to-liquids plants?

A. Fossil Energy's coal-to-liquids (Clean Boiler Fuel) demonstration plant will be semi commercial in size, that is, it will comprise a single module whose design, construction and operation will be representative of a larger commercial-scale module. While the

current status of second generation technology suggests this conservative low-risk approach, the state-of-the-art is evolving under the impetus of ERDA's R&D program. We therefore expect to include a second demonstration plant for coal liquefaction in a future funding request. We anticipate that this second plant will be designed to include a commercial-scale module using the best technology available at that time in order to accelerate technology transfer to the commercial sector.

Q. It appears from your earlier testimony that the primary reason a commercialization demo plant for coal liquefaction was not recommended in Phase I of the Synfuels Program is the cost of the product cannot compete in the market place; and such a plant would require large expenditures for price supports. Since ERDA has testified that it is essential to get some commercial-size demonstration plants started as soon as possible to obtain critically needed data, would not it be consistent to build a GOCO coal liquefaction plant to provide a basis for an orderly transition of research from ERDA to the commercial market place?

A. The Synthetic Fuels Commercialization Demonstration Program as currently proposed does not contain financial assistance for construction of any coal-to-liquids plants because the technologies were not sufficiently developed. ERDA supported R&D efforts for further development are expected to bring this technology to the commercial stage in the next several years and at that time depending on the decision on a possible second phase of the Commercial Demonstration Program, coal-to-liquids process could receive financial assistance.

Some form of cost or risk sharing for commercial demonstration may be appropriate ; however, ERDA does not recommend GOCO, defined as 100% government owned and contractor operated, as a workable mechanism for the synthetic fuel processes that will be commercially demonstrated in Phase I of the program since:

- One purpose of the ERDA Commercial Demonstration Program is to diffuse information and thus resolve uncertainties regarding synthetic fuel production , for example to commercialize the technology rather than to produce what is a modest amount of synthetic fuel. Government ownership, GOCO, of the plants will produce the fuel but would not necessarily foster commercialization of the technology.

- Cost information generated by GOCO operations would not be directly transferrable to commercial operations because it would not be generated in a commercial environment.

- A GOCO operation will not provide information regarding private sector financing of synthetic fuel projects.

Q. Based on ERDA's projected price of first-generation coal liquefaction products, can not the Government construct a commercial-size demo plant cheaper than financing a plant through loan guarantees and price supports? In fact, didn't the OMB Synfuels Commercialization Task Force indicate that the cheapest method of building and operating synfuel plants was through GOCO operations? Why doesn't ERDA review the need for commercialization-size liquefaction demo plants and propose to Congress GOCO plants to meet the critical needs of the Nation in providing alternate liquid fuels for the 1990's?

A. Coal-to-liquid technologies were, in the determination of the Synthetic Fuels Commercialization Task Force, not yet ready for commercial demonstration on both technical and economic grounds. ERDA supported

R&D efforts should bring this process to the commercialization stage in the next five years. If the second phase of the proposed commercial demonstration program is initiated in that period coal-to-liquid plants could be supported.

While the Synthetic Fuels Commercialization Task Force did indicate that the cheapest method of building and operating coal-to-liquid plants was through GOCO operations, several factors should be kept in mind on the overall value of GOCO operations to commercialization of the synthetic fuels process that will be supported by the government in the first phase effort.

- Government ownership imposes the entire cost of the plants on the Government at the outset. Although these costs may be recovered at a later date upon sale of the plants, funding them will require substantial public financing. Furthermore, financing these GOCO plants will place all the risk on the public.

- If the plants are financed by GOCO they will represent a loan on the short-tem debt market, since the cost of such financing will show up as an increase in the Government deficit which, in turn, is financed through the issuance of Treasury bills and notes.

- Although a guaranteed loan and price support program puts much of the ultimate risk on public dollars, it does so on a contingent basis, and a so provides for private sector funds to be at risk.

- Most state-of-the-art technology for synthetic fuels now exists in industry and it is more attractive to processors of that technology to build for their own account then to build for the Government for a fee, provided some element of risk sharing for these first-of-a-kind technologies is undertaken between the private and public sectors.

- Another purpose of the ERDA program is the diffusion of information which is facilitated by direct industrial contribution to the program.

- A GOCO operation will not provide information regarding conventional private sector financing of synthetic fuel projects.

Q. The OMB Synthetic Fuels Commercialization Program Task Force concluded in Vol. III that for unregulated industrial applications, Government-owned, contractor-operated plants are the lowest, long-term cost to the Government. The only exception is if there were a termination during construction or in the early years of operation of the plant, since the Government has the full investment in the plant. Since a coal liquefaction commercial demo plant is essential to providing critical data prior to the commercial implementation of second-and-third generation technology being developed by ERDA; why has ERDA been unwilling to recommend such plants to Congress for approval?

A. As indicated before, coal-to-liquid technologies were, in the determination of the Synthetic Fuels Commercialization Task Force, not yet ready for commercial demonstration on both technical and economic grounds. ERDA supported R&D efforts should bring coal liquefaction processes to the commercialization-ready stage within the next five years. If the second phase of the proposed commercial

demonstration program is initiated in that time period, coal-to-liquid plants could be supported.

Q. A March 29, 1976, Library of Congress report entitled, "Government Ownership of Synthetic Fuels Plants" concluded that in certain situations not only have GOCO plants been highly successful but they also have actually encouraged wide private participation and development of a new industry in the industrial sector. Examples cited were synthetic rubber, catalytic cracking plants, and uranium enrichment plants, all of which were GOCO operations. The study concludes, "because there are no precedents and becuase there are problems, information certainly is needed on the production of synfuels."

Government activity may also be needed and the GOCO plant is an option to be taken seriously. Based on this study and the OMB Synfuel Task Force study which indicates that GOCO plants were potentially the cheapest for unregulated synfuels, it would appear that ERDA should seriouslystudy this option for the production of liquids from coal. What are your comments?

A. GOCO may or may not be a viable option for subsequent commercial demonstration of ERDA developed energy technologies. We will continue to study this option for specific applications,however, for the Phase I effort as defined:

- o A GOCO operation involves direct and immediate expenditure of Government funds. For example, the total investment cost to the Federal Government for the synthetic rubber program from 1941 to 1955 was approximately $700 million. Due solely to inflationary factors, a similar program in 1975 might cost approximately $4 billion. However, neither the $700 million nor the $4 billion figure reflects the costs of complying with environmental regulations.

- o The proposed ERDA guaranteed loan program imposes no immediate front end costs to the Government other than certain socioeconomic impact assistance. Unless there is plant failure, the Government will not bear any other costs in connection with the guaranteed loan, since the fees which will be charged for the guarantee will be at least sufficient to offset the administrative costs of the program.

- o A GOCO operation places all the risk on the public. Financing these plants through Government ownership will place all the risk on the public. Although the proposed ERDA guaranteed loan puts much of the ultimate risk on public dollars, it does so on a contingent basis, and also provides for private sector to be at risk.

- o If the plants are financed by GOCO, they will represent a load on the short-term debt market since the cost of such financing will show up as an increase in the Government deficit which, in turn , is financed through the issurance of T-bills and notes.

- o Cost information generated by GOCO operations would not be directly transferrable to commercial operations because it would not be generated in a commercial environment.

In conclusion, the intention of the ERDA commercial demonstration program is to gain information ; economic and environment feasibility, socioeconomic impact , resource requirements , capital cost and financing and regulatory constraints , from commercial scale operations in producing synthetic fuels. The program

will be administered in such a manner as to gain the greatest benefit for the Nation in terms of the lowest cost technology, the greatest plant efficiency , and a minimum level of Federal financial commitment.

Q. Dr. White, in view of the interest which has developed in achieving speedier construction and operation of demonstration plants in order to gain the operating technology we need to insure success of commercialization plants. I request that you carefully review this alternative and provide the Committee with a breakdown of the first year funding which would be required to initiate up to three GOCO plants, and the construction and operating costs which would be required in future years.

A. The Table below sets out, in 1976 dollars, the estimated cost broken down by years for one, two, or three 50,000 bbl/day GOCO coal liquefaction plants. These estimates are based on the use of the Fischer-Tropsch process which is the only presently available technology for coal liquefaction.

The estimated operating costs including contractor fee, with feedstock at $17 per ton and after byproduct credits, will approximate $110 million per year, or about $6.50 per barrel.

GOCO LIQUEFACTION PLANTS (50,000 BBL/DAY)

COST FOR PLANNING, CONSTRUCTION AND STARTUP (MILLIONS-1976 DOLLARS)

Year	1	2	3	4	5	6	7	Estimated Total Cost
1 Plant	52	103	168	259	389	259	130	1360
2 Plants	104	206	336	518	778	518	260	2720
3 Plants	156	309	504	777	1167	777	390	4080

QUESTIONS SUBMITTED BY SENATOR McGEE

Q. It appears that there is a jurisdictional and administrative overlap between ERDA, FEA , and EPA. Programs and missions seem to be duplicated , and in general there is a lack of coordination between these agencies in pursuing the national goals of energy self-sufficiency. How is ERDA responding to this administrative problem?

A. To improve the coordination and cooperation between ERDA, FEA and EPA, an effort has been underway to execute a Memorandum of Understanding with each of these two agencies. These memoranda will provide the mechanism and guidelines for close working relationships and joint efforts between the two agencies. Generally, they provide for an annual review of joint or related efforts by the Administrators and for Steering Committees at the Deputy and Assistant Administrator level to meet on a monthly basis to provide direction and guidance to Working Committees. The memoranda spell out joint or collaborative planning, joint establishnet of new projects and setting of priorities, assistance in areas of expertise to projects of the other agency, and for the assignment of lead responsibility to one agency or the other in the case of joint projects.

The Memorandum of Understanding between ERDA and FEA was signed by Dr. Seamans and Mr. Zarb on April 30. A Memorandum of Understanding between ERDA and EPA is in preliminary draft form; final drafting and signing is hoped for June. In the interim, a very specific agreement between ERDA and EPA regarding projects in

municipal and other solid waste has been completed, approved, and will be signed by the Administrators by May 12.

ERDA has signed Memoranda of Understanding with NASA, DOT, and NBS. Discussions and drafting are underway on other agreements (DOD, HUD, HEW, VA, etc.).

Q. As an example , ERDA is requesting $2 billion in loan guarantee authority in the fiscal 1976 Supplemental. Yet, the Administration is requesting $100 billion in similar funding under the Energy Independence Authority. How will these two programs not be duplications of the same effort?

A. The EIA is intended to provide Federal financial assistance for a board range of energy initiatives including both emerging technologies and existing technologies where private resources of the necessary magnitudes are not immediately available. The EIA when enacted by Congress would administer the synthetic fuels incentive program. However, the Administration believes it essential to initiate the synthetic fuels incentive program as soon as possible. Thus, the President has provided for $2 billion in loan guaranty authority as a supplemental FY 1976 request. Because the scope of the synthetic fuels program is narrow compared with the EIA and because the synthetic fuels legislation was considered by the Congress last year, it is likely it could be enacted earlier than the proposed EIA.

LARAMIE ENERGY RESEARCH CENTER

Q. In the fiscal 1977 appropriations request, there is $30 million earmarked for in-situ technology. How much of this funding will be applied to Wyoming projects through the Laramie Energy Research Center?

A. For the oil shale subprogram $4.1 million is allocated to the Laramie Energy Research Center (LERC) for laboratory and field research on in situ oil shale processing. The field test site is at Rock Springs, Wyoming. A minimum of $1.5 million is planned for LERC's continued development of the Linked Vertical Well process for in situ coal gasification. An additional $0.8 million is tentatively planned for field support of the test at Hanna, Wyoming, either through service contracts with industry or with industrial partner, but the funds will be primarily controlled by LERC.

Under the supporting research category, $1.3 million is planned for LERC to support projects devoted to characterization of oil shales and laboratory studies devoted to processing of shale oils to products. In summary, of the $30 million proposed budget, $7.7 is allocated for potential obligation in Wyoming.

Q. Please provide a complete statement as to how ERDA intends to support the Laramie Energy Research Center in fiscal 1977. The schematic presentation in Dr. Seaman's statement should be buttressed by additional information.

A. The total estimated programs to be conducted or supervised by Laramie ERC for the Division of Oil, Gas, and In Situ Technology in FY 1977 are:

Petroleum and Natural Gas

Oil and Gas Extraction	1.4
Supporting Research	.3
Total	1.7

In Situ Technology

Oil Shale	4.1
In Situ Coal Gasification	2.3
Supporting Research	1.3
Total	7.7

BUFFALO,WYOMING COAL GASIFICATION PLANT

Q. Please explain in detail, the status of your negotiations with Texaco, Incorporated to build and operate a coal gasification plant near Buffalo, Wyoming. Specifically, what is ERDA doing to mitigate socio-economic, and environmental impacts which will occur as a result of this plant's being operational?

A. ERDA is still in the process of proposal evaluation and plans to announce a selection of the successful offeror(s) early in the month of June. Following selection, contract negotations will be initiated. Environmental and socio-economic impacts are factors which will be carefully evaluated and resolved in all demonstration plant projects. The Environmental Impact Statements will be submitted and any questions resolved before proceeding with the construction of the facilities.

Q. I am in receipt of your interim report to me on this gasification project. Please provide any up-date of the timetable or significant changes in this program.

A. There has been no significant change in our timetable for the Pipeline Gas Program. The target for the award to the successful bidders is still June 30, 1976.

STATEMENT AND QUESTIONS BY SENATOR HOLLINGS

Senator BYRD. We have also received comments and questions from Senator Hollings on the ERDA conservation budget. We will insert the comments in the record at this point and ask that you respond to the questions for the record.

Mr. HELLER. Certainly, Senator. We would be happy to do so.

[The statement and questions and answers follow:]

COMMENTS BY SENATOR ERNEST F. HOLLINGS ON THE ERDA CONSERVATION BUDGET FOR FISCAL YEAR 1977

Earlier this year I had the opportunity to chair the ERDA Conservation oversight hearings for the Senate Commerce Committee. I also chaired other Commerce Committee hearings on proposed energy conservation legislation, and would like to share with you my very strong feelings on this subject, as well as the Commerce Committee's recommendations with respect to ERDA's FY 1977 conservation budget.

A copy of these recommendations is being submitted for the record. These recommendations take into account the critical national need for a meaningful conservation program, what the private sector is likely to do on its own, and the ability of ERDA to effectively administer such a program. They also draw upon the Commerce Committee's special interest in, and long experience with, energy conservation matters.

You will note that the largest recommended increases are in the areas of transportation and conversion efficiency. The Commerce Committee's familiarity with transportation energy conservation is based on eleven days of hearings over the past three years, many of which I chaired, and which resulted in Senate passage of two bills, S. 2176 in the 93d Congress, and S. 1883 in the 94th Congress. The Committee has also carefully reviewed several public and private studies which explored the need for a strong federal role in the development of advanced automotive technology. These include studies by the Federal Energy Administration, the former U.S. Atomic Energy Commission, the Jet Propulsion Laboratory of the California Institute of Technology, and the Advisory Committee of the Advanced Automotive Power Systems Program. All four reports strongly endorse the concept of a strong federal role in auto R & D, and the FY 1977 transportation program budget recommendation made by the Commerce Committee is entirely consistent with their recommendations.

The Commerce Committee was also very sensitive to the fact that most of our fossil fuel energy is supplied via combustion processes, and that the potential for energy savings from increased conversion efficiency is very great. In this area alone, ERDA has estimated savings of nearly one million barrels per day of oil equivalent by 1985 as a result of its conversion program activities.

ERDA Conservation's FY 1977 budget authorization request to OMB, after two levels of internal budget review, was for $235.3 million. In what can only be described as a failure to understand the role conservation must play in our national energy program, OMB slashed this request almost in half, to $119.9 million. By so doing, OMB also seriously damaged efforts designed to reduce our increasing political and economic vulnerability as a nation.

It is sad to note that the Administration has not provided the leadership required to make energy conservation an essential part of our national energy policy. Great emphasis has been placed on developing new energy supplies, but inadequate attention has been paid to tapping the vast potential for cost-effective energy conservation. Conservation is so vital to this nation's short and long-term interests that we must have leadership in this critical area, and it seems clear that this leadership will have to come from the Congress.

As we consider specific budget appropriation figures for the ERDA conservation program, let us keep in mind that Americans waste more fossil fuel each year than two thirds of the world consumes. We should also remember that Sweden, West Germany, and Switzerland each have about the same per capita gross national product as the United States, but only about 60 percent as much per capita energy consumption.

This is understandable when one considers that the United States underwent its most significant economic growth during a period of cheap and abundant energy supply. Efficiency of energy use was just not a significant fact in the design and operation of our homes, our shops, our buildings, our factories, and our transportation system.

Today, however, the situation has changed. The United States is engaged in a long and often heated debate on national energy policy triggered by the Arab oil embargo of 1973, and more than two years later we are still struggling to adjust to the new realities so dramatically and painfully imposed on the American people.

It, therefore, behooves us to recognize that if energy waste in the past has been great, so is the potential for energy conservation in the future. This fact has been documented by essentially every study that has taken a broad look at our national energy posture. These include studies by the Federal Energy Administration, the Energy Research and Development Administration, the Ford Foundation Energy Policy Project, the American Institute of Architects, the Sheet Metal Workers International Association, the Worldwatch Institute, and by numerous other public and private organizations. The situation was best summarized by Dennis Hayes of the Worldwatch Institute who stated:

> "Energy obtained through conservation is the largest source of new energy currently available to the United States."

It is also true that conservation is the lowest cost, and most environmentally attractive "new" energy source currently available, and perhaps the only energy option that can achieve substantial results in the next few years. Dr. George Hatsopolous, the very knowledgeable President of Thermo-Electron Corporation, has testified before the Commerce Committee that:

> ". . . to produce or supply as much energy as we could save in the next decade, we would need to spend over $50 billion for increased supplies *whereas the capital investments to accomplish these savings would be less than half*." (emphasis added)

Roger Sant, FEA Assistant Administrator for Energy Conservation and Environment, has also testified before the Commerce Committee that:

> ". . . conservation is the cheapest source of energy we have."

Finally, let me bring to your attention some recent comments by Dr. Charles Berg, former Chief Engineer for the Federal Power Commission, and currently a private energy consultant. In a statement to the Commerce Committee he refers to the national program to develop new sources of energy supply, and the fact that the ultimate price of energy from these sources is sure to be high. He concludes that the real need for conservation

> ". . . is the need to accommodate to use of the more costly energy resources upon which we will soon depend. As such, *conservation is fundamental to the economic integrity of the U.S.A.*" (emphasis added)

The body of evidence is clear that current and proposed amounts budgeted by ERDA for conservation research, development, and demonstration are inconsistent with the opportunity that exists.* The ERDA conservation budget must be increased so that the economic and political vulnerability facing our nation now and in the future can be significantly reduced.

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* To be of help to this subcommittee, I would like to make available a copy of the Commerce Committee hearing record on ERDA conservation programs.

SENATE COMMERCE COMMITTEE RECOMMENDATIONS

FY 1977 ERDA Conservation Budget Authority

Program	ERDA Request to OMB	President's Request to Congress	Recommended Change	Recommended Budget Authority
1. Transportation Energy Conservation	$35.0 m	$23.5 m	+ $28.0 m	$51.5 m
2. Improved Conversion Efficiency	14.4	15.5	+ 26.0	41.5
3. Energy Storage	48.5	22.3	+ 11.0	33.3
4. Industry Conservation	31.8	12.3	+ 11.0	23.3
5. Buildings Conservation	65.6	21.8	+ 6.5	28.3
6. Electric Energy Systems	40.0	24.5	+ 14.0	38.5
Total:	$235.3 m	$119.9 m	+ $96.5 m	$216.4 m

QUESTIONS SUBMITTED BY SENATOR ERNEST F. HOLLINGS RE:

THE ERDA FY 1977 CONSERVATION BUDGET

1. ERDA's FY 1977 Conservation Budget authorization request to OMB was for $235.3 million. The President's subsequent request to Congress was for only $119.9 million. Please indicate how the OMB recommended cut of $115.4 million would be distributed, and the effect such a cut would have on Conservation Program activities in the following areas. Also, please estimate the likely impacts in terms of reduced energy savings:

   a. Transportation Energy Conservation:

      1. High temperature gas turbine development
      2. Stirling engine development
      3. Electric/hybrid vehicle development
      4. Alternative fuels utilization

5. Non-highway transport systems
6. Other

b. Improved Conversion Efficiency:

1. Combustion research center
2. Waste heat recovery systems for gas turbines and industrial diesels
3. Fuel cell technology for application to electric utilities
4. Total energy systems technology, including appplication of fuel cells and Stirling engines
5. Combustion technology for application to diesel and gas turbine engines
6. High-temperature materials for application to diesel and gas turbine engines
7. Advanced fuel cell technology
8. High grade heat utilization
9. Heat exchangers and heat pipes
10. Advanced components development (compressors, heat pumps)
11. Other

c. Energy Storage:

1. Lithium/metal sulfide batteries for utility load leveling and electric vehicle applications
2. Thermal storage technology for application to solar energy systems
3. Sodium sulfur, sodium chloride, and other advanced battery technology
4. Compressed air storage for utility load leveling
5. Improved electrolysis technology for hydrogen production
6. Improved chemical storage technology
7. Other

d. Industry Conservation:

1. Computer modeling of unit processes
2. High temperature heat pumps
3. High temperature recuperators
4. Catalytic combustion technology
5. Demonstration of topping and bottoming cycles
6. Steam catalysis and calcination of cement
7. Aluminum electrolytic smelters
8. Acetylene production from coal
9. Inert gas paint curing system
10. Still bottom cleaning demonstration
11. Grinding energy reduction
12. Demonstration of low Btu coal gasifiers
13. Improved energy efficiency in the fertilizer, irrigation, animal production, and the food processing industries
14. Other

e. Buildings Conservation:

1. Performance standards
2. Total energy community systems
3. Energy extension service
4. Utilization of urban wastes
5. Commercial building demonstration projects
6. Other

f. Electric Energy Systems:

1. Load management
2. Electric field effects of high-voltage transmission lines
3. Low loss materials for transformer applications
4. High-voltage DC transmission
5. Gas insulated components for high-voltage transmission
6. Advanced cable technology
7. Superconducting generators and materials

8. Waste heat utilization for power generation
9. Hydroelectric reclamation
10. Battery storage for utility load leveling
11. Compressed air and underground pumped hydroelectric storage
12. Load analysis and forecasting
13. Distribution network stability and control
14. Other

Senator Hollings' Question 1

ERDA's FY 1977 Conservation Budget authorization request to OMB was for $235.3 million. The President's subsequent request to Congress was for only $119.9 million. Please indicate how the OMB recommended cut of $115.4 million would be distributed, and the effects such a cut would have on Conservation Program activities. Also, please estimate the likely impacts in terms of reduced energy savings.

Answer

The following outlines the differences between Conservation's budget submission to OMB versus the FY 1977 President's Budget.

The estimates of energy savings or supplies form new technologies are very uncertain due to the variety of assumptions which must be made about RD&D funding in the future years, results of RD&D programs, growth in energy use, energy prices, and private sector implementation rates for new technologies. ERDA is developing methodologies to evaluate theses factors on a systemic basis but does not yet have the system in place. In the meantime, some gross estimates have been developed for use in the budget approval process. These are subject to change as data improves.

a. Transportation Energy Conservation

Reduction in Energy Savings from Cut in ERDA Request 92-98 Million Barrels Cumulative through 1985*	FY 1977 COST EST. (Millions) ERDA Request	President's Budget
	$26.2	$20.2

Transportation Energy Conservation

Projects included in the ERDA request whose schedule was affected at the President's budget level include non-highway transport program

*Transportation Energy Conservation energy savings are expressed in oil barrels and not barrels equivalent. This area of energy conserving R&D is primarily directed at petroleum as the energy source.

(aircraft, ship or rail transport, and pipelines), Stirling engine development, High Temperature Gas Turbine Development, technology development for vehicular systems and power train improvements, and the methanol fleet demonstration project.

b. Improved Conversion Efficiency

Increase in Energy Savings based on increase in Budget Authority	FY 1977 B/O (Millions) ERDA Request	President's Budget
3.8 - 4.0 Million Barrels Cumulative through 1985 **	$9.5	$4.3

** Improved Conversion efficiency energy savings are expressed in oil barrels and not barrels equivalent. This area of energy conserving R&D is primarily directed ar petroleum as the energy source.

The President's FY 1977 Budget represents a reduction in the Improved Conversion Efficiency Program form the FY 1976 level. The ERDA request provided for expanded efforts associated with the Rankine waste heat recovery system for large diesel engines, combustion technology development activities, and fuel cell development and demonstration. At the President's budget level, many projects will be either be reduced or in some cases eliminated. In the fuel cell program the level of funding would remain about the same as in FY 1976.

c. Energy Storage

Reduction in Energy Savings from cut in ERDA Request	FY 1977 B/O (Million) ERDA Request	President's Budget
103 - 110 Million BBL/E Cumulative through 1985*	$35.0	$17.9

* includes impact of cut in construction request

The President's budget request results in modest growth to electrochemical systems (advanced batteries), chemical, thermal , mechanical and magnetic storage technology development.

The ERDA request provided for further acceleration of development efforts associated with the lithium/sulfur battery. The additional funds would have accelerated achievement of its three energy storage goals: electric utility load-leveling, solar power system leveling, and electric vehicle propulsion.

In addition, efforts associated with thermal storage and compressed ait storage systems were reduced from the ERDA requested level.

d. Industry Conservation

Reduction in Energy Savings from cut in ERDA Request	FY 1977 B/O (Million) ERDA Request	President's Budget
1.5 - 1.7 Billion BBL/E Cumulative through 1985	$20.5	$9.5

The President's FY 1977 budget request has reductions from the ERDA request in the area of Unit Operation and Equipment Efficiency, Process Analysis and Modification and Alternative Fuels Materials and Processes. Examples of projects deleted from the program at the President's budget level include:

a. Computer Modelling of Unit Processes: Development of a computer model which simulates unit operations and process steps was proposed for funding. This model would be used to optimize industrial processes for minimum energy consumption and examine the relative cost effectiveness of alternative conservation processes.

b. In-Plant Electrical Generation: The performance and output of an old plant operating at low pressure, and economy, can be improved by superimposing a topping bottoming cycle system on the existing plant. Projects to test these concepts were included in the ERDA request but can not be accomodated within the President's Budget.

c. Inert Gas Paint Curing System: A system has been developed which burns the solvent vapors of paint as most of the energy for curing paint in the finishing operation. The equipment is unproven and expensive and implementation by industry may be encouraged by demonstration. Additional funds would permit this demonstration about one year earlier than originally proposed.

e. Buildings Conservation

Reduction in Energy Savings from Cut in ERDA Request	FY 1977 B/O (Million) ERDA Request	President's Budget
860 - 921 Million BBL/E Cumulative through 1985	$33.6*	$18.4*

*Includes urban waste

The President's FY 1977 budget request has reductions from ERDA's request in the area of performance standards, community systems, and urban waste.

The Performance Standards Program authorized by H.R. 8650 will proceed more slowly than originally proposed.

The Community Systems Program reduction may affect the schedule for the ongoing Grid-Connected Total Energy System project, of which 25 percent of the cost is projected to be Federal. In addition, projects for the investigation of mechanisms to provide tools for state and local governments to assist them in planning as it relates to energy matters, and activities related to financing and managing Integrated Utility Systems, and the Engineered Heat Pumps for District Heating will be slowed down.

The Urban Waste program reduction has affected the schedule for technology development and process development activities.

f. Electric Energy Systems

Reduction in Energy Savings from cut in ERDA Request	FY 1977 B/O (Millions) ERDA Request	President's Budget
250 - 300 Million BBL/E through 1985 *	$23.4	$17.9

The ERDA request included three major superconducting transmission projects - the development of both rigid and flexible alternating current superconducting transmission systems amd the development of a direct current superconducting system. The President's Budget maintains these projects, but at a slower pace.

Two major transformer projects were included in the ERDA request. One- the gas-insulated transformer- is important to the commercialization of 1200 kv transmission. Also included is the "low loss steel for transformers" research, with the potential of reduction in the losses associated with the transformation process. Both of these projects will proceed at a slower pace at the President's budget level.

Research will be slower on the environmental aspects of electric fields associated with high voltage overhead lines.

* includes impact of cut in construction request

Senator Holling's Question 2

For each of the Conservation Program activities identified in question one, what do you consider the optimum funding level for FY 1977? Please take into account new energy conservation opportunities that have come to ERDA's attention since last August, when its budget request to OMB was submitted, and the ability of the ERDA Conservation Program to effectively administer a program with increased budget authority.

Answer

The original ERDA budget request to OMB, plus the additional funding recently requested for the fuel cells program, represents an effective and aggressive level of activity that would be within the capabilities of our present organization.

Although the budget to OMB was prepared several months ago, it still represents the most accurate estimate of the work to be accomplished and the resources required. The only significant additional activity would be, as Dr. Seamans has testified, an expansion of the fuel cells program. This would require an additional $11 million in budget authority and $11 million in budget outlays to fund both the base program and the demonstration programs.

The ERDA Conservation Program has grown very rapidly since its inception in January 1975. ERDA's budget request to OMB was a balance between our desire to maximize the potential benefits from increased conservation, and our ability to utilize the funds effectively, without considering the impact on overall federal expenditure levels.

SUBCOMMITTEE RECESS

Senator BYRD. All right. Thank you, Dr. Seamans. Thank you, gentlemen. We will be in recess until 10 a.m. tomorrow, when we will hear congressional witnesses.

[Whereupon, at 3:50 p.m., Wednesday, April 7, the subcommittee was recessed, to reconvene at 10 a.m., Thursday, April 8.]

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1977

THURSDAY, APRIL 8, 1976

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

The subcommittee met at 10 a.m., in room 1318, Everett McKinley Dirksen Office Building, Hon. Robert C. Byrd (chairman) presiding.

Present: Senator Byrd.

CONGRESSIONAL WITNESSES

STATEMENT OF ANTONIO B. WON PAT, DELEGATE FROM GUAM

OPENING STATEMENT OF SENATOR BYRD

Senator BYRD. The subcommittee will come to order.

Today we are taking testimony from various Members of the House of Representatives and the Senate in regard to various and sundry projects and programs funded in the appropriations bill for the Department of the Interior and related agencies.

The first witness will be Delegate Antonio B. Won Pat of Guam. If you will take your place at the table there, we are very glad to have you speak.

GUAM ECONOMIC DEVELOPMENT FUND

Mr. WON PAT. Thank you very much, Mr. Chairman. I have a very short statement that I would like to read.

Senator BYRD. Go right ahead. We will be glad to have you read it.

GUAM ECONOMIC DEVELOPMENT ACT

Mr. WON PAT. Mr. Chairman, I appreciate this opportunity to address the need for the Congress to appropriate the entire $2 million remaining in the Guam Economic Development Act—Public Law 90-601—rather than the $1 million which the administration is currently requesting.

As you may recall, Mr. Chairman, I made a similar appeal last year to the House and Senate Appropriations Committees. Although the House concurred in part with my request by calling for $2 million to be appropriated, this subcommittee did not. I believe that our inability to convince you and your colleagues of our urgent need

for additional development funding stemmed from an inadequate presentation of our requirements and I trust that today's comments will rectify this problem.

Before I proceed, allow me to first express my gratitude for the assistance you have provided Guam in past years under the GEDA Act. These funds, amounting to $3 millon to date, have greatly assisted in the stimulation of private industry.

Development funds have been chronically lacking in Guam because stateside bankers are reluctant to support business ventures so far from their traditional areas of investment. Thus, the GEDA program is often the sole source of low-interest money on Guam for revenue-producing enterprises. As a result of the GEDA program, local employment opportunities have been generated beyond the traditionally narrow range of military-related jobs on Guam. Additional income tax receipts have also been generated by the successes of GEDA-sponsored businesses. Moreover, of equal importance is the fact that the overall goal of a strong local private enterprise economy has been promoted.

The path toward economic stability for Guam still has a long, hard way to go, however. Despite the welcome assistance of Public Law 90–601, Guam's economy has suffered staggering blows in recent years. Our developing tourism program has suffered a sharp downward turn. Fifteen percent fewer visitors came to Guam during 1975 than during the preceding year. The occupancy rate in hotels is currently only 37 percent. Construction is down 47 percent and hotel expansion has completely ceased.

Our small garment industry is on the verge of extinction. Government revenues are down, causing many programs to be slashed to the bone. And that bellweather of any economy, unemployment, is up to 14 percent and climbing. This is a particularly depressing situation for the jobless on Guam as we do not have unemployment compensation or alternative sources of work for these people.

Military activity, the bulwark of Guam's economy has also declined. A decision by the U.S. Navy to homeport a destroyer squadron in Guam was suddenly withdrawn. Last year, the Navy layed off 360 employees at the Guam Naval Ship Repair Facility.

Several weeks ago, the Navy announced plans to reduce this vital facility by another 330 employees or possibly even close it entirely. If they are successful, Guam's unemployment will jump to 16 percent and perhaps even higher.

I am now working hard as a member of the House Armed Services Committee to stop this action which I believe would not only damage the island's economy for years to come, but would additionally force America to be totally reliant on foreign shipyards for overhaul work.

However difficult times may be, we on Guam do not intend to sit idly by and watch our economy stagnate. GovGuam officials are tightening their belts in an effort to save money. And GEDA officials are busy reviewing new applications for business loans which we hope will lead to increased activity on the domestic front.

Current loan applications pending with GEDA total $2½ million. However, cash on hand is only $900,000, far short of the amount needed to meet current, let alone, future demands.

For this reason, I ask that the GEDA appropriation be increased to $2 million—the maximum amount available. The administration has called for only $1 million in its budget request, but I believe that Guam would greatly benefit from the larger amount in this fiscal year. Your support will strengthen Guam's efforts to combat a slumping economy.

GUAM DEVELOPMENT FUND ACT

At this time, I would like to include for the record additional supporting data from the government of Guam for my request. These materials which I have in hand provide and detail the justifications for this money. Thank you.

Senator BYRD. Very well, Congressman. The committee will be glad to have those.

[The information follows:]

GUAM DEVELOPMENT FUND ACT

Guam Development Fund Act: Fiscal year 1976, $1 million; fiscal year 1977, $2 million; increase $1 million. The increase consists of:

Explanation	Increase ( ) or decrease (—) Amount	Positions	Total program	Total positions
Additional funding for promoting economic development	$1,000,000	.....	$2,000,000	.....

Public Law 90-601, "Guam Development Fund Act of 1968" was passed for the purpose of promoting economic development within the Territory of Guam. Through fiscal year 1976—$1 million was received 8 months later during fiscal year 1976—a total of $3 million has been appropriated and made available to the citizens of Guam for this purpose. This request of $2 million is to amend and increase by $1 million the Department of the Interior original request which makes the fifth and final increment of the $5 million which was authorized by the act.

All funds to be appropriated under the terms of this act is being requested to be appropriated in lump sum giving the flexibility to the Board of Directors of Guam Economic Development Authority to entertain and approve loan applications relevant to needs and submission of projects. There is a great shortage of local capital available for investment on Guam especially at this time of economic downturn. At the present time outside investors still dominate the market. The Guam Development Fund Act was enacted specifically to enable local residents to launch into competitive business enterprises, and to develop aspects of the economy at present needs.

On October, 1975 pursuant to section 6 of Public Law 90-601, the annual report was submitted to the Secretary of the Interior. This report was forwarded to the President of the Senate and the Speaker of the House of Representatives. As of June 30, 1975, of the $2 million then appropriated, total disbursements $1,903,748 and loan commitments totaled $189,548. Pending applications totaled $1,352,105 which does not include projects contemplated to be received by the agency between now and throughout fiscal year 1977. See breakdown attached.

Guam Development Fund Act, Cash Flow Projection as of Feb. 29, 1976

		Amount
(a)	Total approved loans	$2,193,296
(b)	Total disbursements	1,974,614
(c)	Total undisbursed loans	218,682
(a)	Total appropriation to date	3,000,000
	Add total revenue from interest on notes and time certificates of deposit and service charge	353,347
		3,353,347
	Less—	
	Accrued interests and service charge receivables	159,973
	Disbursed loans	1,974,614
	Undisbursed loans	218,682
	Reserved for sinking fund	95,713
	Total	2,448,982
(b)	Projected cash flow ending Feb. 29, 1976	904,365
(a)	Total pending loan applications:	
	a. Agriculture	526,470
	b. Fishing	45,000
	c. Tourism	700,000
	d. Commercial/industrial/supportive facilities	985,000
		2,256,470

(*b*) Less projected cash flow ending Feb. 29, 1976	904, 365
(*c*) Balance pending loans requiring funds	1, 352, 105

GUAM DEVELOPMENT FUND ACT

Fiscal year and category	Loan amount	As of Feb. 29, 1977 amount disbursed	Balance undisbursed
1973	$277, 696	$248, 696. 77	$28, 999. 23
A. Agriculture: Egg production	120, 000	120, 000. 00	0
B. Commercial/industrial: Poultry processing	142, 696	113, 696. 77	28, 999. 23
C. Tourism: Tourist facilities	15, 000	15, 000. 00	0
1974	320, 600	306, 060. 93	14, 539. 07
A. Agriculture: Cash crop	70, 600	56, 060. 93	14, 539. 07
B. Commercial/industrial: Computer assembly	250, 000	250, 000. 00	0
1975	1, 495, 000	1, 391, 445. 73	103, 554. 27
A. Agriculture:			
(1) Cash crop	50, 000	42, 221. 48	7, 778. 52
(2) Egg production	125, 000	124, 662. 48	337. 52
B. Commercial/industrial:			
(1) Air transportation	300, 000	205, 693. 09	94, 306. 91
(2) Synthetic marble production	20, 000	18, 868. 68	1, 131. 32
(3) Hospital facilities	500, 000	500, 000. 00	0
(4) Cement quarry	500, 000	50, 0000. 00	0
1976	100, 000		
A. Fishing: Fish/shrimp pond	100, 000	28, 410. 57	71, 589. 43
Total	2, 193, 296	1, 974, 614. 00	218, 682. 00

Guam Development Fund Act, Proposed Utilization of funds on Pending Proposals

	Amount
(*A*) Agriculture:	
1. Swine production	$ 271, 520
2. Cash crop farming	10, 000
3. Fruit orchard	59, 950
4. Cash crop/fish pond	185, 000
Total	526, 470
(*B*) Fishing:	
1. Salt water shrimp	25, 000
2. Deep sea fishing	20, 000
Total	45, 000
(*C*) Tourism:	
1. Marina/charter boat services	500, 000
2. Photo processing plant	200, 000
Total	700, 000
(*D*) Commercial/industrial/back-up supportive facilities:	
1. Boat manufacturing	250, 000
2. Kimchee factory	125, 000
3. Slaughterhouse (beef and pork)	500, 000
4. Chamorro sausage/jewelry factories	110, 000
	985, 000
Total	2, 256, 470

NOTE.—The above proposed pending loan amounts does not include prospect of projects contemplated to be received between now and through fiscal year 1977.

Pending Applications Brief Description

	Amount
Agriculture	$ 526,470
1. Swine production (*a*) construction of hog pens, (*b*) purchase of breeding stocks, (*c*) feeds and other supplies, and (*d*) working capital To increase the applicant's current production to help meet the current demand for pork.	107,470
2. Swine production (*a*) construct hog pen, (*b*) purchase breeding stock, (*c*) purchase feeds and supplies, and (*d*) purchase equipment To increase the applicant's current production to help meet the market demand for pork.	44,050
3. Swine production (*a*) construct hog pen, (*b*) purchase breeding stock, (*c*) purchase feed, (*d*) purchase equipment, and (*e*) working capital To increase the applicant's current production to help meet the market demand for pork.	120,000
4. Cash crop production (*a*) purchase irrigation equipment, and (*b*) purchase farm supplies such as seeds, fertilizers, pesticides, etc	10,000
5. Fruit orchard (*a*) purchase farm equipment, (*b*) purchase farm supplies such as seedlings and chemicals, and, (*c*) working capital The project is for the production of tropical fruits to help reduce imports.	59,950
6. Crop production and fish pond (*a*) construct fish pond, (*b*) purchase farm equipment, (*c*) purchase farm supplies such as seeds and chemicals, and (*d*) working capital The project is to cultivate a large area of land for crops and freshwater fish and shrimp.	$185,000
Fishing	45,000
1. Deep-sea fishing (*a*) complete construction of boat, (*b*) purchase fishing equipment, and (*c*) working capital To complete and equip fishing boat for deep-sea fishing around Guam.	20,000
2. Ocean shrimp trapping (*a*) boat modification, (*b*) purchase of shrimp traps, (*c*) purchase of equipment, and (*d*) working capital The project is to trap saltwater shrimp found around Guam.	25,000
Tourism	700,000
1. Tourist facilities (*a*) drainage and construct a boat marina, (*b*) construct tourist shop, and (*c*) working capital The project supports boat, tourist, and fishing industries.	500,000
2. Tourist facilities (*a*) modify building, (*b*) purchase equipment, and (*c*) working capital The project is a photoprocessing plant which caters to the tourist.	200,000
Commercial/industrial/backup facilities	985,000
1. Boat building (*a*) construct shop for boatbuilding, (*b*) purchase materials and tools, and (*c*) working capital To build boats locally to support tourism and fishing.	250,000
2. Food processing, Kim Chee factory (*a*) purchase processing equipment, (*b*) building modification, and (*c*) working capital To process vegetable into a delicacy introduced from Korea. The project supports agricultural production.	125,000
3. Swine and beef slaughterhouse (*a*) construct building, (*b*) purchase of livestock from farmers The project is a combination slaughterhouse and is in support of livestock production.	500,000

Pending Applications Brief Description—Continued

	Amount
4. Jewelry manufacturing and food processing (*a*) modify building, (*b*) purchase of raw materials, and (*c*) working capital	110,000
The project is a combination of jewelry manufacturing and processing sausage. The jewelry supports the tourist industry and the sausage processing supports agriculture.	

STATEMENT OF DAVID D. L. FLORES, ADMINISTRATOR OF GUAM ECONOMIC DEVELOPMENT AUTHORITY, GOVERNMENT OF GUAM

Mr. Chairman: I, David D. L. Flores, Administrator of Guam Economic Development Authority, government of Guam, present my statement in support of additional appropriation for the Guam Development Fund Act authorized under Public Law 90-601. Under this act, Guam is authorized to receive $5 million in development capital to be utilized in stimulating and broadening Guam's economic base. To date, Guam has received a total of $3 million, the last appropriation of $1 million having been received on February 18, 1976.

Following the boom of the early seventy's as the economy started its downward trend, the island began to be subjected to the effects of a receding economy. Drop in revenue, increase in unemployment, uncontrolled inflation plus the non-availability of ready capital to inject into both private and public sector took their toll.

Governor Bordallo ordered a 25 percent cut on budget expenditures, froze vacancies, and curtailed off-island travel in an effort to halt further government deficit spending.

In this kind of atmosphere, both bank and investor showed reluctance in financing development ventures, thus further weakening an already troubled economy. Gross receipts which is Guam's GNP showed a decline from $620,810,000 in fiscal year 1974 to $607,704,000 in fiscal year 1975. The latest data from the Labor Department, Government of Guam, showed total employment was down by 3,700 or 10.3 percent. Of this employment decline, 1,500 occurred between September and December 1975.

Now, more than at any other time, capital is needed to bolster the island's sagging economy. The recently appropriated amount of $1 million is already under pressure since it is only able to cover 50 percent of the applications on hand. In addition, a good number of would-be applicants have approached GEDA in connection with projects in agriculture, tourism, industry, and fishing. Appropriating the total balance of $2 million of the fund will enable us to not only meet requirements of current applications but new applications as well.

It is with great anticipation that we look forward to your favorable consideration in appropriating the funds so that we can begin to move in the direction of establishing a sound economic base toward the goal of self-sufficiency. Thank you.

STATEMENT OF RICARDO J. BORDALLO, GOVERNOR OF GUAM

Mr. Chairman: I, Ricardo, J. Bordallo, Governor of the Territory of Guam, present a statement on behalf of Guam's request for an appropriation of $2 million from the Guam Development Fund enacted by Public Law 90-601. Guam, under this law, is authorized to receive $5 million in loan funds to be utilized in stimulating and broadening the island's economic base. To date, Guam has received a total of $3 million of the $5 million authorized, all of which has either been disbursed or committed by the Guam Economic Development Authority, administrator for this program.

The Guam economy is presently in a state of economic recession. High inflation, diminishing government revenues, and a decrease in employment have hit the island. The lack of unemployment insurance has added to the social and moral obligations of our island. Adding to this economic distress is the curtailment of U.S. military activities in the Far East which has had a direct and detrimental impact on the local economy. Guam has been heavily dependent upon military spending on the island.

It is the objective of my administration that Guam shift from a consumptive to a productive society. Thus today, more than ever, Guam needs to render assistance and stimulate private enterprises in order to become self-sufficient.

It is apparent that shortage of local capital available for investment, coupled with the economic recession, signify the needs for this Fund. Revenues in the Guam treasury have not been sufficient to enable Guam to cope with the continued task of reconstruction and expansion of its infrastructure. Small develop-

ing areas lacking natural resources, as Guam does, require a substantial infusion of capital for economic development.

The Guam Economic Development Authority, administrator for this program, indicates that of the $3 million authorized for disbursement covering the fiscal years 1973–1976, $1,974,614 has been disbursed, and total committed funds amounted to $218,682. Applications for loans are still pending totaling a sum of $2,256,470. Requested for agriculture is $526,470, $45,000 for fishing, and $700,000 for tourism. Guam's current economic constraints suggest a rather bleak picture for the next 2 years. There exists an urgent need for Guam to broaden its limited economic base.

In conclusion, Guam does not have sufficient capital to independently finance its present fragile tourist and light industry and to develop its agricultural resources. Besides facing working capital shortages, the lack of basic legal authority has impeded the ability to secure adequate financing and controls that would fully compliment the island's development requirements. For these and other reasons, the entire populace of Guam and I request your favorable action on the $2 million request for the Guam Development Fund. Thank you.

UNOBLIGATED BALANCE

Senator BYRD. Now, what is the unobligated balance at this time? Do you know?

Mr. WON PAT. Yes, sir. It is only $900,000, I think. The unobligated that has been appropriated is $900,000.

Senator BYRD. $900,000 unobligated.

Mr. WON PAT. Yes, sir.

Senator BYRD. Can the extra $1 million be obligated in fiscal year 1977? Do you know?

Mr. WON PAT. Yes, sir. We had a hearing on the House side. The administration concurred with my request because of the prevailing conditions on the island today.

Senator BYRD. So the additional money could be obligated?

Mr. WON PAT. Oh yes, sir.

Senator BYRD. All right, Congressman. Thank you for your statement. We will certainly consider the item.

Mr. WON PAT. Thank you very much, sir.

FUEL CELL PROGRAM

STATEMENT OF HON. JOHN GLENN, U.S. SENATOR FROM OHIO

Senator BYRD. It is my intention to call on witnesses as they arrive. I believe, following this procedure Mr. Taft would be next, then Mr. Glenn and then Mr. Bentsen.

Senator TAFT. One of the other Congressmen is going to join me. He is not here yet.

Senator BYRD. Then I guess, Senator Glenn, you are the next witness.

Senator GLENN. Fine. Thank you very much, Mr. Chairman and subcommittee members. It is a pleasure to appear today before the subcommittee on the topic of appropriations for the Nation's fuel cell program.

As you know, I feel strongly that the fuel cell technology can make a sizable impact on the Nation's energy picture before 1985. Because the fuel cell technology is relatively mature it is one of the few advanced systems which can make contributions in the near term. However, it is imperative to make modest improvements in the longevity of the fuel cell and its capital cost per kilowatt, so that commercial penetration will become a reality.

The turning point in ERDA's support for the fuel cell can be traced to a technology assessment conducted under its supervision that was finished last October. ERDA now states that "development of fuel cell technology through commercialization is estimated to save 275,000 barrels of oil per day by 1985 and save the taxpayers over $1 billion per year in lower electric costs, beginning in the early 1980's."

CONTRIBUTIONS OF PROGRAM

I would like to discuss briefly why various professional groups feel fuel cells can make a contribution to the solution of our energy problems in the near term.

In simple terms, a fuel cell could be defined as an electrochemical device which converts hydrocarbon fuels or hydrogen to electricity at the bussbar. The fuel cell generator consists of three basic segments: A fuel processor, a fuel cell stack and a DC to AC power inverter. It is a generator which does not rotate. Present operating systems operate at 40 percent efficiency and because the power is generated onsite, rather than at centralized locations, it is possible to utilize the waste heat for some industrial processes or for heating water or buildings.

The Nation's electrical utilities exhaust about 16 percent of the Nation's energy over the course of any given year which is essentially the same amount of energy which is needed to heat our Nation's homes and buildings throughout the winter. This is a notable fact.

I would like to expand on this just a little bit, Mr. Chairman. Ideally, we would like to have our heat sources for power generation located near where the exhaust heat could be used. I am not about to suggest that nuclear plants be placed right in the middle of our cities, but looking at it from strictly an energy use standpoint, that would be ideal. Obviously, for safety reasons we are not proposing that, but it is true that the tremendous amounts of heat that we now exhaust into water or air from our powerplants is wasted. However, the fuel cells develop heat onsite in their production of electricity, and thus the waste heat can be used. No one questions the safety and the reliability of the fuel cells. They are not an incipient danger and they can be located right in the middle of cities so that the heat output can be used to heat buildings or hot water or the heat can be used for industrial purposes.

The use of fuel cells also saves the long-distance transmission of electricity which costs this Nation considerable energy and money.

These well known facts within the power industry have stimulated the National Rural Electric Cooperative Association to pass a resolution in support of the fuel cell program.

We have copies of that for the staff. I will provide that for the record and not go into the detailed quotes. Mr. Chairman, in their testimony before the Interior Committee the rural cooperatives had this to say:

"Many rural electric systems which cover sprawling, often low-density areas, could benefit substantially from independent generation dispersed throughout their service areas which could enhance reliability and also reduce costs by reducing transmission losses and minimizing this need for additional lines."

Urban areas in New England, southern California and elsewhere are also interested in the noncentralized, high efficiency—over 75 percent of its peak load—relatively pollution-free aspects of the fuel cell.

The 75 percent figure means that the fuel cell operates at its top efficiency over the upper 75 percent of its rated load. This is not true for our base-loaded electrical generating plants which have to be operated at their full capacity.

Stong words of testimony in support of fuel cells also have been delivered before the Interior Committee by the Electric Power Research Institute—EPRI—and by the America Public Power Association—APPA—and I would like to include their statements along with that of the rural cooperatives in the hearings record.

PREPARED STATEMENTS

Senator BYRD. Those statements will be included in the record.

Senator GLENN. Thank you, sir.

[The statements follow:]

AGA American Gas Association

1515 Wilson Boulevard, Arlington, Va. 22209
Telephone (703) 524 2000

Dear Senator Glenn:

As the Senate Subcommittee on Energy Research and Water Resources completes markup on the FY 1977 ERDA authorization, the American Gas Association wants to reaffirm the importance of providing adequate funding for fuel cell development in the Office of Conservation. The fuel cell authorization that A.G.A. stongly recommends for FY 1977 is described in a recent letter to James T. Lynn, Director of OMB, from Robert Seamans, Jr., Administrator of ERDA. Dr. Seamans is recommending, and we concur with, the following budget authorization:

40 Kilowatt Module Program-----	$ 3 million
4.8 Megawatt Program----------	$ 14 million
Technology-Based Program------	$ 4 million
Total	$ 21 million

A.G.A. hopes that this essential $21 million FY 1977 authorization will be integrated into ERDA's budget by amendment in the Subcommittee on Energy and Water Resources, the Committee on Interior and Insular Affairs, and by vote of the Senate. The Committees and their staffs already have been briefed on the many advantages of fuel cells, so I will not review them here. ERDA's report 76-54 entitled, "National Benefits Associated with Fuel Cell Powerplants" predicts that total energy savings through use of fuel cells could be between one and two million barrels per day of oil equivalent. This report summarized the situation very well stating: "The potential benefits associated with commercial use of fuel cell powerplants include fuel conservation, energy cost savings, reduction of pollution damage, capital investment reduction, and improvement in balance payments.

The gas industry is especially interested in the 40 kilowatt fuel cell program. During the past 9 years $60 million has been spent by a consortium of gas companies and United Technologies Corporation to develop and test small on-site fuel cells in a program called TARGET (Team to Advance Research for Gas Energy Transformation). In CY 1976 the consortium will spend about $4 million to continue the development, demonstration and testing of the 40 KW PC-18 Powercell. New emphasis will be placed on recovery and use of waste heat from the fuel cell to maximize thermal efficiency. This year the American Gas Association contributed $600,000 to TARGET to help the program stay on schedule.

A.G.A. hopes that ERDA will receive the necessary budget authorization from Congress over the next several years to complete field testing of numerous 40 kilowatt fuel cells at apartments, commercial buildings, etc., and to complete the essential production engineering and design work for commercialization. The gas companies in TARGET are finding it more difficult to continue funding this expensive pre-commercialization phase of the on-site fuel cell program because of their large financial commitments to gas supply projects.

Your help in obtaining additional FY 1977 authorization to support the entire $21 million fuel program would be appreciated by the 300 A.G.A. member companies and the overall public interest they are dedicated to serving.

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Electric Power Research Institute

Fuel Cells

The ERDA program recognizes the key importance of the first-generation technology and its demonstration on the 4.8 MW full module level; the need to develop subsequent generations of technology and a broader industrial base are also recognized. Because ERDA has recently expanded its fuel cell R&D efforts, the plan is not yet sufficiently defined to permit a detailed critique. However, we are concerned that the ERDA funding request for only $10 million of budget authority in FY77 is inadequate to continue the 4.8 Mwe demonstration on schedule. EPRI is prepared to commit $11 million to the program through the test phase. We estimate that $10 million in ERDA outlay is necessary in FY77 for that project in order to expeditiously bring the first generation technology to an early demonstration. These funds do not include additional monies needed for R&D on advanced fuel cells. It is recommended that the authorization be increased to provide these funds.

Further, it is recommended that ERDA establish, in close cooperation with interested industrial organizations (users and developers) a national fuel cell program that provides for:

- ERDA support (both R&D and other forms) on a level that will insure a good chance for successful commercialization of the first generation technology,

- rapid establishment of the 2-3 most promising second generation technologies with the potential to couple with coal derived fuels, identification of industrial developers having the needed technology and manufacturing base, and funding of these developers on an adequate basis through the mid-1980's,

- identification and continued funding of R&D on pacing problems and new (3rd generation) concepts in qualified industrial organizations and selected government laboratories.

STATEMENT OF

THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION ON

ERDA AUTHORIZATION LEGISLATION FOR FY 1977

Mr. Chairman and Members of the Committee:

My name is Lowell J. Endahl, Coordinator of Research and Technological Development for the National Rural Electric Cooperative Association (NRECA).

NRECA is the national service organization which represents nearly 1,000 non-profit consumer-owned rural electric systems which deliver power to approximately 25 million people in the rural and sparsely populated agricultural areas of 46 states, and in 2,600 of the nation's 3,100 counties.

We appreciate the opportunity to submit this statement concerning authorizations for the U.S. Energy Research and Development Administration.

It is our purpose in this statement to bring to your attention some of the specific and perhaps unique requirements of rural electric cooperatives and to urge that provisions be made to assure substantial research efforts in these areas. The NRECA member rural electric systems at their recent annual meeting, unanimously adopted a series of research resolutions which we would like to submit for the record.

The first resolution recognizes the fact that the entire electric utility industry (including electric cooperatives), even with its extensive voluntary support of the Electric Power Research Institute, cannot begin to carry out the kind of massive research program required to resolve our energy problems. We fully support and encourage the joint planning efforts of EPRI

FUEL CELL COMMERCIALIZATION

One very promising technology that is very near the commercial stage of development and which would have a quick payback in terms of R&D investment is the fuel cell. By 1980, we believe the first commercial fuel cells could

be in operation by utilities--if prompt and adequate financial support is provided by the Federal Government.

The fuel cell has unique characteristics which could help satisfy some of the unique power supply requirements of rural electric cooperatives, and we are anxious that work go forward as rapidly as possible.

NRECA member systems at their annual meeting earlier this month adopted a resolution (attached) urging accelerated development, demonstration and commercialization of the fuel cell electric generator which can be sized to fit the needs and growth requirements of these smaller systems. Specifically that resolution urged that a minimum of $15 million be authorized for fiscal year 1977 for work directly related to development and demonstration of the 26 MW fuel cell generating system currently under development. The resolution further requests that ERDA future plans include the demonstration of one or more fuel cell power plants in cooperation with rural electric systems, and that a study be made to determine the optimum-design characteristics of a fuel cell generator to meet the needs of rural electric systems.

Many rural electric systems which cover sprawling, often low density areas, could benefit substantially from independent generation dispersed throughout their service areas which could enhance reliability and also reduce costs by reducing transmission losses and minimizing need for additional lines. Because the loads include a large number of rural residential, and farm consumers, with very few industries for balance, the load factors are usually low and the costs of purchasing necessary peak power are very high. This situation calls for a certain amount of efficient, load following, independent generating equipment supplementing purchased or owned base load power. In addition to the possibility of reducing the cost of power, dispersed generation with fuel cell plants has the potential for improving system balance, stability and security.

The fuel cell is the only new technology which offers very efficient, modular electric generation in sizes that could be used by these small rural utilities and in the load following modes required. Furthermore, the fuel cell operates very efficiently at part load and is completely acceptable

environmentally. For these reasons it can be located close to loads (in substations or at load centers or at end of line), reducing transmission, environmental problems, waste and cost.

Initial development of a first generation 26 megawatt fuel cell power plant is already underway by one fuel cell manufacturer--United Technologies Power Systems Division with the financial support of a few gas and electric utilities. It is, however, an absolute certainty that financing from these industry groups alone will not be sufficient to carry out the kind of development and demonstration program necessary to bring a commercial fuel cell power plant into commercial service by the end of this decade. But, we are confident that with proper government support it can be done. The fuel cell power plant can be one of ERDA's few opportunities to develop and implement a new energy conservation technology by 1980 with a relatively small investment.

The Electric Power Research Institute, which rural electric cooperatives support, is also urging rapid development of the fuel cell technology and has approved a plan to provide up to $11 million through 1979 for development and demonstration of a 4.8 MW FCG-1 fuel cell power plant module of the full sized 26 MW unit. EPRI's funding of the program, however, is contingent upon the commitment of $34 million in support from ERDA. It would indeed be unfortunate if this industry support is lost for a technology which has come so far and is so near commercialization.

RESEARCH RESOLUTIONS ADOPTED BY

NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

AT THE NRECA ANNUAL MEETING

ANAHEIM, CALIFORNIA, FEBRUARY 5, 1976

SUPPORT FOR FEDERALLY FINANCED RESEARCH

Recognizing the limitations of voluntary contributions and the need for a massive federally funded effort to accomplish necessary research to solve long-range energy supply problems, we urge that the President and the Congress give immediate and full commitment of sufficient Federal funds to implement such multi-billion dollar research development and demonstration program. We respectfully urge additional emphasis on, and funding for research, development and demonstration work, on solar and geothermal energy, the fuel cell, fusion and for basic research to improve the efficiency with which coal is utilized through the development of magnetohydrodynamics, coal gasification and coal liquefaction, and such other energy resources as might help to enhance overall energy availability of the future.

FUNDING FOR FUEL-CELL ELECTRIC POWER DEMONSTRATION

Rural electric systems urge the Federal Government, through the Energy Research and Development Administration (ERDA) to accelerate the development, demonstration and commercialization of fuel-cell electric generators suitable for use by rural electric systems.

Highly efficient and environmentally acceptable fuel-cell generators have the potential to be uniquely adaptable for use by rural electric systems as a valuable generating option heretofore unavailable.

Specifically, we urge immediate and continuing ERDA funding and support for the 26-megawatt, fuel-cell generating system currently under development with that full support continuing through the demonstration and commercial implementation phases to insure availability of equipment at the earliest possible date, preferably by 1980. It is essential that a minimum of $15 million be provided for this work in Fiscal Year 1977. It is also essential that long-term commitments of at least $200 million for research, development and demonstration, and $100 million for assistance in introducing it into service, be available over the next few years to bring the fuel cell to commercial stage of development. ERDA plans should include demonstration of one or more fuel-cell power plants in cooperation with rural electric systems.

We also urge that ERDA implement a study by a qualified architect-enginser to define the optimum-design characteristics of a fuel-cell generator to meet the needs of rural electric systems.

STATEMENT OF ROBERT MAURO, TECHNICAL ASSOCIATE
AMERICAN PUBLIC POWER ASSOCIATION

The fuel cell, which uses hydrogen and oxygen to produce electricity, is not a "heat engine" and its efficiency is not constrained by the Carnot cycle. It has potential for significantly increasing effective use of fuels. In addition, advantages of fuel cells to electric utilities include the facts that:

. They could be mass produced and factory-tested with a short time from order to delivery.

. They can be built in "building block" modules linked together to provide power plants of varying size.

. They are capable of performing a variety of generating functions ranging from baseload generation through cycling operations to peaking service.

. They permit reduction of transmission facilities and decentralization of generating facilities.

. They promise simple operation and maintenance.

. They provide multi-fuel capability including opportunity for efficient use of gasified coal.

Current plans call for United Technologies to build and operate a 1 Mw fuel cell demonstrator in 1977. Then in 1979, a 4.8 Mw fuel cell will be placed on a utility system. This work is to be funded by ERDA, UTC and the Electric Power Research Institute. Work is also needed on second generation fuel cells capable of operating on gasified coal.

The Office of Management and Budget has authorized budget outlays of $1.3 million in fiscal year 1977 for the fuel cell program. To maintain a viable fuel cell program and meet its commitment on the 4.8 Mw fuel cell, ERDA needs at least $14 million in fiscal year 1977.

FUNDING REQUIREMENTS

Senator GLENN. The central theme which emerges from all of these various groups is that the very substantial funds that have been and are projected to be contributed by various organizations such as EPRI, $6 million over the past 3 years and $11 million over the next 3 years; nine major private utilities which make up the Fuel Cell Generation-1 Committee, $50 million over the past 5 years; and United Technology Corp., around $10 million last year and $100 million over the past several years; may well terminate if ERDA does not become a significantly large contributor.

As yesterday's testimony of Dr. Seamans' indicated, ERDA has submitted an amended budget request to OMB for $11 million of additional funding for fiscal year 77 for a total of $21 million. In my view, the entire $21 million will be needed to carry out: (1) a 4.8 megawatt demonstration project jointly supported by EPRI, United Technologies, and ERDA; (2) a cooperative program with the gas utilities on 40 kw units; and (3) an R. & D. program which will foster competition within the industry.

Of course, none of this funding will be effective until the beginning of the next fiscal year in October. Despite my earlier support for increased funding for fiscal year 1976, I am not requesting that you provide additional funds in the coming supplemental appropriations bill.

The failure to provide funding in the last supplemental delayed the signature date of the contract to construct the 4.8 megawatt demonstration unit by perhaps 6 months. Under the proposed contract, however, which is expected to be signed in June, amounts on hand will be sufficient to cover all payments required prior to October 1.

Mr. Chairman, it is my sincere hope that the committee will act favorably on the above requests for the new fiscal year.

ERDA BUDGET HEARINGS

Senator BYRD. Thank you, Senator Glenn.

This committee conducted a hearing on ERDA's fossil energy and conservation programs just yesterday, as you have pointed out.

Senator GLENN. Yes, sir.

Senator BYRD. I submitted your questions to Dr. Seamans by asking them myself and attributing them to you, of course, rather than submit them to him for responses in writing. I read them to him and he extensively responded on the fuel cell program. He was very high on the potential of the fuel cell research effort. It was his belief, just as it is yours, that additional funding could be used effectively.

He mentioned, though, a request for additional monies had been submitted to the Office of Management and Budget. Last year you made a very fine case on behalf of this item. It so happened, at the time, the people at ERDA had not done their homework very well and, as a result of your effort and your proding, they have done their homework this time and they have, I think, made a very good case in support of this request.

I am going to do everything I possibly can in the mark-up of this bill to support your request. I share your hope that the OMB

will take prompt and favorable action on ERDA's request. And you may be sure, Senator Glenn, that this committee will do everything it can with this request. And, as far as I am concerned, I will support the request.

I am impressed by the testimony that was given yesterday by Dr. Seamans and I have been very favorably impressed with your testimony, also.

I certainly thank you for your statement.

Senator GLENN. Thank you, Mr. Chairman.

Senator BYRD. Did you have anything else, Senator Glenn, that you wanted to talk about before the committee?

Senator GLENN. Not at this time, Mr. Chairman. We are in the process now in the Interior Committee of marking up the ERDA authorization for the coming fiscal year.We are considering several different projects where we feel there might be a lack of adequate funding There are no other things I would bring up at this time.

We in the Interior Committee are just now in the middle of the first runthrough of the budget.

Senator BYRD. Yes. All right. Thank you, Senator Glenn.

Senator GLENN. Thank you.

Senator BYRD. Senator Bentsen?

Senator TAFT. I believe Congressman Ashley is here now.

Senator BYRD. All right. Senator Taft and Congressman Ashley.

CEDAR POINT WILDLIFE REFUGE, OHIO

STATEMENTS OF:

HON. ROBERT TAFT, JR., U.S. SENATOR FROM OHIO

HON. THOMAS L. ASHLEY, U.S. REPRESENTATIVE FROM OHIO

Senator TAFT. Mr. Chairman. Thank you very much for allowing us to come here this morning and present the case of Cedar Point Wildlife Refuge in northwest Ohio.

My colleague from the House, Tom Ashley, has been active in this now for a couple of years trying to bring about a solution to this problem. I have gotten into it with him and have had a number of discussions with the Secretary of Interior and also with the Office of Management and Budget on it.

Mr. Ashley is going to make a joint statement on behalf of both of us in the interest of brevity at this time.

Senator BYRD. All right.

Congressman ASHLEY. Mr. Chairman.

Senator BYRD. Congressman Ashley, go right ahead.

Congressman ASHLEY. Thank you, sir. I do appreciate the opportunity to appear this morning on behalf of Senator Taft and myself.

Senator BYRD. Incidentally, when did you come to the House of Representatives?

Congressman ASHLEY. When did I come to the House of Representatives? In the year of our Lord, 1955.

Senator BYRD. I knew that we served together there. I just wondered.

Congressman ASHLEY. For some time, as a matter of fact, Senator. I am in my 11th term now. We overlap by, I should judge, 2 or 3 terms. When did you come to the Senate? That would pinpoint it.

Senator BYRD. I came to the House in the 83d Congress which preceeded you by 2 years. I thought you came in at the same time I did.

Congressman ASHLEY. No. Your distinguished class was one ahead of mine.

Senator BYRD. All right. Go right ahead.

Congressman ASHLEY. We are here in behalf of—to present the basis for our request for a supplemental appropriation of $1,605,000, Senator. The need for these funds arises from severe damage to Interior Department dike facilities near Toledo, Ohio, which poses a threat to the water supply of more than a half million residents of the cities of Toledo and Oregon.

This is really the basis of concern that is shared by Senator Taft and myself.

Very quickly—In December of 1964, the Department of the Interior accepted a gift of 2,245 acres of land from the North American Wildlife Foundation some 10 miles east of Toledo. The Department used this land to establish the Cedar Point National Wildlife Refuge. The boundaries of the refuge are formed by a system of 10 miles of lakefront and interior dikes, and some 5 miles of the refuge front directly on Lake Erie.

Because of continuous wave and wind-caused erosion, the Fish and Wildlife Service undertook a major reconstruction of these dikes in 1967 and 1968. A series of destructive storms have hit the southwest shore of Lake Erie since then.

Two of these storms, in 1972 and 1974, washed away whole portions of the dikes, caused flooding of the refuge and—of greatest concern—created an ever increasing threat to the water pumping stations of Toledo and Oregon which are situated adjacent to the refuge.

There is no dispute over the reality of this threat. Four jurisdictions—the city of Toledo, the city of Oregon, Lucas County, and Jerusalem Township—have adopted resolutions calling for urgent attention to the need for repair of the dikes. The gravity of the situation was brought to the attention of the Interior Department as early as 1974.

A response in October 1974, from their regional supervisor for the Division of Land Management acknowledged that ". . . eight-tenths of a mile of lake front dike between the city of Toledo water plant and the city of Oregon water plant requires replacement of embankment and a protective layer of filter blanket and rip-rap to prevent the dike from being breached during future storms."

He also pointed out that the entire dike is now exposed to direct action of the lake and that ". . . the loss of this dike jeopardizes approximately 150 acres of marsh and ultimately the Toledo pumping plant and the Oregon pumping plant as well as private lands south of the refuge."

On February 4, 1976, when the authorization for the National Wildlife Refuge System was approved by the Senate, Senator Taft questioned the chairman, Senator Frank Moss, regarding approval of funds for Cedar Point.

At that time the chairman stated: "I would agree that this is an obligation that needs to be filled. . . . I would be glad to support a supplemental appropriation to get over this problem that we have with Fish and Wildlife at this point."

In a more recent letter from Secretary Kleppe dated March 19, 1976, the Interior Department again acknowledged that " . . . the loss of the Cedar Point dikes would jeopardize the Toledo and Oregon pumping plants" and estimated the cost of repairing the dikes at $1,605,000.

Secretary Kleppe suggested that funds be made available promptly by reprogramming money already appropriated for six other departmental construction projects. However, the House Interior Appropriations Subcommittee on March 25 declined that recommendation. Instead, recognizing the urgent need for reconstruction of the dikes, the House subcommittee approved a supplemental appropriation of $1,605,000 for the project for fiscal 1976.

On behalf of Senator Taft and myself, the two of us having spearheaded this effort—as well as half a million residents of northwest Ohio—we urge your approval of this supplemental appropriation. There is clearly a Federal responsibility here that is not being met. As a consequence, we are confronted with a disaster of no small magnitude as the disintegration of these protective dikes is allowed to continue.

The Department of the Interior fully recognizes the gravity of the threat to these vital water pumping stations. Consequently, we feel certain that the reconstruction of the dikes can be undertaken in the very near future if funds are made available. Any further delay could have tragic results.

Senator BYRD. Thank you, Mr. Ashley and Mr. Taft. Do you wish to add anything to Mr. Ashley's statement?

Senator TAFT. I don't really feel that I have anything to add to the joint statement, Mr. Chairman, except to say that we did explore very, very fully with the Department of Interior the matter of trying to find funds in the Department, in the Fish and Wildlife fund for this purpose.

I am convinced that they do not have funds that can be turned to this purpose. The reallocation they suggested came from items that had been added to the budget by the committee on the House side. It is perfectly obvious, I think, that having added the items that they were not going to go along with the reprogramming which is why we thought we ought to go the supplemental route.

PROTECTION OF CITY WATER SYSTEMS

Senator BYRD. I have noted that the Fish and Wildlife Service has indicated that the proposed $1.6 million in repairs would provide the complete protection for the Toledo and Oregon city water system.

Do you agree with that statement?

Congressman ASHLEY. Yes. We have both been on the site a number of times, Mr. Chairman. I think that is a realistic figure. It has been recently updated, as a matter of fact. There was a lower figure relating to a later time when the damage was being estimated.

URGENCY OF REQUEST

Senator BYRD. Of course. As you have indicated, you do feel that these repairs are of sufficient urgency to warrant the Senate appropriations at this time?

Congressman ASHLEY. Let me say this. If we get a bad wind off of the lake, which is entirely possible, it happens with some regularity, those pumping stations are going to be taken out for a given period of time and there will be a lot more than $1,600,000 of Federal funds that come into the city of Toledo and the city of Oregon.

So, it is really very foolish to not address the problem before hand, rather than after the fact.

Senator TAFT. The job would be immense. It would be at least 2 weeks, we estimate, and most major employers would be put out of business during that time.

CORPS OF ENGINEERS STUDY

Senator BYRD. The Fish and Wildlife Service says it does not have sufficient information about a Corps of Engineers' study on stabilizing the lake level and how it might effect the Cedar Point budget.

Are you familiar with that study? Either of you?

Congressman ASHLEY. Yes. They have been talking about stabilizing the lake level through runoff down the Mississippi and so forth. Somewhere around the turn of the next century that may become a reality, but in the meantime we are going to have varying lake levels with attendant damage when the lake levels are high, as they are at the present time.

Senator TAFT. My observation of that—I am no engineer—but my observation would be that even if the lake level were lowered a couple of feet which would be a remarkable feat and is not being planned by anything now that the engineers are presently planning—even if that happened, if these dikes remain in the condition, deteriorated condition they are in, a storm is going to wreak havoc with the pumping plants.

Senator BYRD. So there are no plans by the Corps of Engineers at this time to stabilize that? This is just a study.

Senator TAFT. They took a couple of steps. They opened one canal a couple of years ago which did provide some runoff, but the effect on the lake was absolutely minimal.

Senator BYRD. All right. Thank you very much, Senator Taft and Mr. Ashley.

Congressman ASHLEY. Thank you very much, Mr. Chairman.

Senator TAFT. Thank you, Mr. Chairman.

PREPARED STATEMENT

Senator BYRD. Your prepared statement will be placed in the record at this point.

[The statement follows:]

JOINT STATEMENT OF REP. THOMAS L. ASHLEY AND SEN. ROBERT TAFT,JR.

Mr. Chairman, I appreciate the opportunity to appear before your subcommittee on behalf of Senator Taft and myself to request a supplemental appropriation of $1,605,000. The need for these funds arises from severe damage to Interior Department dike facilities near Toledo, Ohio, which poses a threat to the water supply of more than a half million residents of the cities of Toledo and Oregon.

In December of 1964, the Department of the Interior accepted a gift of 2,245 acres of land from the North American Wildlife Foundation some ten miles east of Toledo. The department used this land to establish the Cedar Point National Wildlife Refuge. The boundaries of the refuge are formed by a system of ten miles of lakefront and interior dikes, and some five miles of the refuge front directly on Lake Erie.

Because of continuous wave and wind-caused erosion, the Fish and Wildlife Service undertook a major reconstruction of these dikes in 1967 and 1968. A series of destructive storms have hit the southwest shore of Lake Erie since then. Two of these storms, in 1972 and 1974, washed away whole portions of the dikes, caused flooding of the refuge, and - of greatest concern - created an ever increasing threat to the water pumping stations of Toledo and Oregon which are situated adjacent to the refuge.

There is no dispute over the reality of this threat. Four jurisdictions - the City of Toledo, the City of Oregon, Lucas County, and Jerusalem Township - have adopted resolutions calling for urgent attention to the need for repair of the dikes. The gravity of the situation was brought to the attention of the Interior Department as early as 1974. A response in October, 1974, from their regional supervisor for the Division of Land Management acknowledged that "...eight-tenths of a mile of lake front dike between the City of Toledo Water Plant and the City of Oregon Water Plant requires replacement of embankment and a protective layer of filter blanket and rip-rap to prevent the dike from being breached during future storms." He also pointed out that the entire dike is now exposed to direct action of the Lake and that "...the loss of this dike jeopardizes approximately 150

acres of marsh and ultimately the Toledo Pumping Plant and the Oregon Pumping Plant as well as private lands south of the refuge."

On February 4, 1976, when the authorization for the National Wildlife Refuge System was approved by the Senate, Senator Taft questioned the chairman, Senator Frank Moss, regarding approval of funds for Cedar Point. At that time the Chairman stated: "I would agree that this is an obligation that needs to be filled....I would be glad to support a supplemental appropriation to get over this problem that we have with Fish and Wildlife at this point."

In a more recent letter from Secretary Kleppe dated March 19, 1976, the Interior Department again acknowledged that "...the loss of the Cedar Point dikes would jeopardize the Toledo and Orgeon pumping plants" and estimated the cost of repairing the dikes at $1,605,000. Secretary Kleppe suggested that funds be made available promptly by reprogramming money already appropriated for six other departmental construction projects. However, the House Interior Appropriations Subcommittee on March 25 declined that recommendation. Instead, recognizing the urgent need for reconstruction of the dikes, the subcommittee approved a supplemental appropriation of $1,605,000 for the project for fiscal 1976.

On behalf of Senator Taft and myself, who have spearheaded this effort -as well a half a million residents of northwest Ohio - we urge your approval of this supplemental appropriation. There is clearly a Federal responsibility here that is not being met. As a consequence, we are confronted with a disaster of no small magnitude as the disintegration of these protective dikes is allowed to continue.

The Department of the Interior fully recognizes the gravity of the threat to these vital water pumping stations. Consequently, we feel certain that the reconstruction of the dikes can be undertaken in the very near future if funds are made available. Any further delay could have tragic results.

BIG THICKET NATIONAL PARK, TEXAS

STATEMENT OF HON. LLOYD BENTSEN, U.S. SENATOR FROM TEXAS

Senator BYRD. Senator Bentsen.

Senator BENTSEN. Thank you very much, Mr. Chairman. I appreciate being able to appear before the committee this morning to talk about the Big Thicket National Park in Texas.

Mr. Chairman, the Big Thicket National Park is legislation that I sponsored and passed through the Senate. It was passed through the entire Congress for the protection of the very valuable and fragile beauty that we want to preserve for Texas and for the Nation.

What we have seen happen and what is causing us great concern is that since January 1, 1974, we have lost over 4,093 acres to timber cutting. We now know that there are another 4,216 acres scheduled for cutting in the coming months. That is almost 10 percent of the preserve; 10 percent of an area that Congress has designated for protection.

Mr. Chairman, we now know which areas are slated for cutting. Now we can do something about it. Last fall I asked the Secretary of Interior to use his authority to administratively establish a declaration of taking to save these areas.

At first, my request was denied.

But recently I have had Assistant Secretary Reed, of the National Park Service, answer questions of mine now that they have gone back and made an on-site inspection of the preserve. They have had the chance to see why we must immediately move to purchase and save specific areas of that preserve. So in that hearing last week, Assistant Secretary Reed gave me assurance that the Park Service could act before the end of the year to honor our request and administratively take the threatened areas.

The only constraint is a minimum of paper work to be done and the need for an appropriation of $3.8 million. I would like to make the point, Mr. Chairman, that only 2 weeks ago, this subcommittee's counterpart on the House side approved that amount and I respectfully request that this subcommittee take the same appropriate step.

NEED FOR SUPPLEMENTAL

Senator BYRD. Are you talking about the supplemental appropriation?

Senator BENTSEN. That is right. $3.8 million.

Mr. Chairman, while we delay in purchasing that part of the Big Thicket that is effected, it continues to disappear. A large part of our priceless natural heritage for Texas and the Nation is continuing to fall to the ax and to the bulldozer. With the recent favorable decision from the Department of the Interior, that kind of a loss can be prevented. And thus my request, Mr. Chairman, that this subcommittee approve the amount of $3.8 million in the supplemental 1976 budget for land purchases within the Big Thicket National Preserve.

Mr. Chairman, this funding, I believe, is vitally necessary for fiscal year 1976, but we must continue to look ahead. For 1977, the

President has budgeted $9.3 million, which is necessary to keep the project on its legislatively set schedule. I ask that, at the appropriate time, this subcommittee give favorable consideration to this budgeted $9.3 million.

Thank you, Mr. Chairman.

MERIT OF REQUEST

Senator BYRD. Senator Bentsen, you certainly have made a very convincing case in support of the supplemental appropriation which is in the amount of $3.8 million.

I want to say that I have known for a long time through personal conversations and otherwise of your great interest in this preserve. As you have correctly pointed out, the President has asked for $9.3 million in the regular budget in fiscal year 1977.

But you are appearing here today not only in support of that request, but you are also appearing in support of the need for $3.8 million in the supplemental. I want to assure you that based on your testimony and your private assurances to me determining the need for this item, I, in person, will support your request and I am sure the committee will carefully consider it and hopefully favorably consider it.

Senator BENTSEN. I appreciate very much the Chairman's support of this particular request. The Assistant Secretary has promised us he could use it before year end and purchase those affected areas where we know that more timber cutting is scheduled.

Senator BYRD. You think that the $3.8 million will be sufficient and you think that that can be effectively used?

Senator BENTSEN. I certainly do think it will, can, and very much should be.

Senator BYRD. And it is urgent in your judgment?

Senator BENTSEN. That is correct.

Thank you, Mr. Chairman.

PREPARED STATEMENT

Senator BYRD. Your prepared statement will be placed in the record at this point.

[The statement follows:]

STATEMENT OF SENATOR LLOYD BENTSEN

Mr. Chairman, I appreciate this opportunity to appear this morning to discuss the Big Thicket National Preserve. The Big Thicket is a source of pride for the state of Texas and for the Nation. However, Mr. Chairman, I am very concerned over the status of the Big Thicket National Preserve. Since January 1, 1974, we have lost over 4,093 acres to timber cutting, and there are 4,216 acres scheduled for cutting in the coming months. That is approaching 10% of the Preserve; 10% of an area that the Congress has designated for protection.

We are steadily losing the fragile beauty of the Big Thicket area, despite our legislative efforts to save it.

Mr. Chairman, we know which areas are slated for cutting. For that reason, I asked last fall that the Secretary of Interior use his authority to administratively establish a "declaration of taking" to save those areas.

At first, my request was denied.

However, since that time the National Park Service has completed an on-site inspection of the Preserve, and now agrees that we must move immediately to purchase and save several specific areas of the Preserve. In a hearing last week before the

Senate Interior Committee, Assistant Secretary Nat Reed gave me an assurance that the Park Service could act before the end of the year to honor our request and administratively "take" the threatened areas. The only constraint is a minimum of paperwork to be done and the need for an appropriation of $3.8 million. Only two weeks ago, this Subcommittee's counter-part in the House of Representatives approved this amount, and I respectfully request that this Subcommittee take the same appropriate step.

Mr. Chairman, while we delay in purchasing the Big Thicket, it continues to disappear. A large part of our priceless natural heritage for Texas and the Nation is continuing to fall to the ax and the bulldozer. With the recent favorable decision from the Department of Interior, this loss can be prevented. And thus my request, Mr. Chairman, that this Subcommittee approve the amount of $3.8 million in the supplemental 1976 budget for land purchases within the Big Thicket National Preserve.

Mr. Chairman, this funding is vitally necessary for fiscal year 1976, but we must continue to look ahead. For 1977, the President has budgeted $9.3 million, which is necessary to keep the project on its legislatively set schedule. I ask that, at the appropriate time, this Subcommittee give favorable consideration to that budgeted $9.3 million.

Thank you, Mr. Chairman.

Letter and Prepared Statement of Hon. John Tower, U.S. Senator From Texas

Senator Byrd. At this point in the record there will be inserted a letter from Senator John Tower addressed to me on the date of April 8, 1976. The letter is in support of a supplemental appropriation of $3.8 million for the Big Thicket acquisition on which Senator Bentsen appeared just earlier.

This letter together with Senator Tower's statement in support of the appropriation will be included in the record.

[The letter and statement follow:]

United States Senate
WASHINGTON, D.C. 20510

April 8, 1976

Honorable Robert C. Byrd
Chairman
Subcommittee on the Interior
Committee on Appropriations
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

I sincerely regret that I will be unable to testify today before your Committee as I had planned. The Armed Services Committee, unfortunately, has scheduled markup of the Defense Procurement bill at the same hour, and as a member of that Committee my presence is required at that time.

I would appreciate it if you would make a copy of the testimony I had prepared a part of the record. I feel the need for a supplemental appropriation of $3.8 million for Big Thicket acquisition, and for subsequent funding of at least $20 million for Fiscal Years 1977 through completion of the acquisition process,is a need which cannot be ignored in view of threatened destruction of Big Thicket. My testimony supported this need, and I would hope that it will be of value to your Committee during deliberations later this month.

Let me say that I appreciate greatly all your help in preserving the ecological integrity of the Big Thicket through adequate appropriations, and I look forward to hearing from you in this regard.

Warmest regards.

Sincerely,

John Tower

John Tower

STATEMENT OF SENATOR TOWER

Thank you, Mr. Chairman, for this opportunity to appear before your committee concerning appropriations for the Department of Interior. Although the committee will consider a plethora of programs during its deliberations, there is one area which is of overriding importance to the State of Texas. I shall confine my remarks to this subject, that of funding for acquisition within the Big Thicket National Preserve, in order to save the committee's time and to focus on the need for prompt Congressional action.

President Ford signed into law authorizing legislation for Big Thicket on October 11, 1974. Public Law 93-439 set aside 84,550 acres of the most sensitive ecological units in East Texas to protect numerous species of plants and animals which are found there. The importance of the Big Thicket is that, for many of these species, the Big Thicket is the last remaining habitat within the United States. Thus, the Thicket takes on an importance not only to the state, but to the nation.

Texans had worked for years to establish a domain in which the pristine quality of the land would remain unaltered. They have been joined by thousands of others throughout the state and the nation who have come to recognize --and take pride in--this valuable natural resource.

However, Congressional action was sought, because private action was insufficient to do the job alone. Dealing with an area that at one time encompassed almost 200,000 acres is a task that was beyond the resources of private citizens.

Following enactment of the legislation authorizing Big Thicket, there was a belief that the threat to this richly varied resource had been overcome. The law set forth a five-year schedule of acquisition, and voluntary moratoriums on cutting within the Thicket were agreed to by major timber companies which owned some 67 per cent of the total acreage within the boundaries of the Big Thicket.

However, I must say regretfully that these hopes were not realized, and a continuing threat to the Big Thicket exists at this very moment. And I must say, Mr. Chairman, that unless we Texans can prevail on this committee to come to our aid, our worst fears will be realized within the very near future.

More than 3,500 acres within the Big Thicket have been destroyed since the enactment of Public Law 93-439. The Department of Interior, after extensive on-site surveys, and with the help of the Big Thicket Association, has identified another 4,237 acres which will be destroyed before the year's end unless that land is acquired by the National Park Service.

First and foremost is the threat of timber companies exercising contracts which have been purchased. Although the major companies have cooperated in allowing these rights to lapse, at financial loss to the company, the threat remains that smaller companies and individual landowners will destroy the forests within Big Thicket.

We cannot assume that we will be fortunate enough in the future for companies such as Temple-Eastex and Louisiana-Pacific to give up their rights to cut this timber at a loss. Such public-spirited action reinforces public confidence in the timber industry, but we cannot reasonably expect this pattern to continue forever. We must remember that while we believe that the resource known as Big Thicket is of greater value as an ecological landmark, others may look upon these very tracts as a marketable resource. It is vital that Congress appropriate the funds necessary to purchase the land to remove this danger. I think it is only right that if the federal government seeks to remove resources to the public domain, that it do so with dispatch, and pay for the property removed.

The threat from subdivision development, oil exploration, and clearing for farming operations is equally great in terms of impact, if not more so, for such intrusions into the Big Thicket seek not just to remove a resource, but to substitute therein an alternative land use of a permanent nature. The scars of clearcutting which already mark the Big Thicket will someday heal. We cannot expect that the trailer parks and oil rigs will as quickly disappear through nature's healing process.

These two threats--from timber cutting for profit, and from "development" of alternative land uses not intended by Congress--account for some 3000 acres of potential destruction, some five per cent of the total Big Thicket.

Additionally, a third threat exists from state and private efforts to respond to intrusion of the southern pine bark beetle in large areas of the Big Thicket. The proponents of the clearcut method of removing trees infected by the pine bark beetle speak of "controlling" the beetle. As a matter of fact, Mr. Chairman, there is no method known to man which successfully can eliminate this pest. Rather, the cutting of timber is used primarily to recoup some of the loss caused by infestation, providing the owner can get to the trees within a month of infestation. This does not "control" the beetle but simply salvages the timber.

Although the Park Service has told me that in some very limited cases cutting operations may be beneficial in responding to the beetle infestation, there is no environmental justification for the widespead clearing undertaken at the present time. Mr. Chairman, economic justification might be acceptable if we were not talking about an area already designated by Congress as a National Preserve. However, this is not the case. Only immediate acquisition will protect the Big Thicket from the cut-and-sell mentality that governs present beetle-control efforts.

I would like to quote from a report of Dr. Richard C. Curry of the National Park Service which was made following his inspection of the Big Thicket on February 17 and 19 of this year. Dr. Curry's report details not only the potential damage ot the Big Thicket from pine beetle control cutting, but addresses the issue of what advantage will be gained from Park Service control once these areas are acquired.

"The presently known potential loss of trees due to the cutting of infested timber amounts to 2100 acres. At least 800 acres were cut in the Beech Creek unit alone....Although Parks are forever and eventually the scars will heal, and the decay rate is quite rapid, in my opinion, the operation was very poorly managed.

"Since there are no forest practice rules in Texas, there appears at present to be no way to enforce a set of good harvesting procedures.

"Were title to be vested in the Federal Government, a different underlying set of assumptions that are part and parcel of National Park Service management objectives would provide the land manager with a broader range of options....the likelihood of a repeat of the Beech Creek unit procedures would be extremely remote."

In testimony before the Senate Interior Committee's Subcommittee on Parks and Recreation on April 1, 1976, Assistant Secretary Nat Reed assured the committee that the clearcutting operations carried out under the guise of "beetle control" would not occur under Park Service domain. Although there was some concern that the Interior Department might have condoned a recurrence of such practices at some time in the past, we now have Secretary Reed's assurances, and I, for one, intend to hold the Department to his statement last Thursday.

On December 5, 1975, the Big Thicket Association submitted to the Department of the Interior a Request for Authority for Declaration of Taking on Threatened Acres within the Big Thicket. That request specified the tracts which had been identified at that time as being imminently threatened with destruction. On January 5, 1976, Secretary Reed responded to the Association, and concurred in the need for a Declaration of Taking in order to bring these tracts into the public domain.

In that response, a copy of which is attached, Secretary Reed pointed out that " it is necessary that the funds be available to cover the estimated value of the land being acquired by declarations of taking and be deposited with the court at the time the action is filed.... (S)uch action will require an additional appropriation of funds..." In his testimony last Thursday, Secretary Reed supported the need for a $3.8 million supplemental appropriation for FY 1976.

With these funds, combined with the small amount of funding remaining in FY 76 and the transition quarter, Secretary Reed stated that the National Park Service could--and would--acquire all the threatened tracts before September 1, 1976. Extensive conversations between my staff and the Park Service confirmed this, and I am confident that the Park Service will use the funds in the most constructive way.

Mr. Chairman, this background is sufficient to lay the foundation for my request to the committee on behalf of the State of Texas and for all those persons who have supported the designation and protection of the Big Thicket.

In plain and simple terms, we need $3.8 million dollars as soon as possible for obligation during FY 1976 and the T-Quarter, in order to meet the short-range needs of Big Thicket preservation.

Additionally, we need a minimum of $20 million during each of the Fiscal Years 1977, 1978, and 1979 to proceed with the timetable of acquisition mandated by PL 93-439. At this point in time, I would urge the Committee to give its most serious consideration to the supplemental appropriation and the appropriation for FY 1977.

Mr. Chairman, I take pride in my fifteen years in the Senate as a spokesman for fiscal responsibility. That spokesmanship is consistent with my appearance here today on behalf of increased funding for Big Thicket. Last December, I intervened with the President to quash a reckless effort on the part of OMB to cut out all funding from the Land and Water Conservation Fund in FY 1977. I felt then, as I do now, that funding for a program below the minimum effective level is being penny-wise and pound-foolish.

We could take 20 years to fund Big Thicket, and by doing so we will pay two or three times what we could pay now for the same acreage.

We could take two decades to acquire this resource and by so doing we would sit by and watch the destruction of the purpose for which Congress designated the Big Thicket as a National Preserve.

The Department of Interior now is toying with the idea of taking eight years instead of six to acquire Big Thicket. I think putting off until tomorrow a job we can do today is risking a great deal, both in what we must eventually pay, and in the potential damage which would be suffered.

Fiscal responsibility does not mean being meager with resources when resources are necessary. It does not mean being a penny-pincher when penny-pinching in counterproductive. The concept of fiscal responsibility to me, Mr. Chairman, is placing your assets where they will do the most good, of following through on a program which has merit, so that--as my good friend Senator Dole says--the taxpayer gets the most bang for the buck.

By granting this request for $3.8 million in 1976, and for $20 million in FY 1977, this Committee can guarantee that the taxpayer gets that result.

I would most strongly urge the Committee to act favorably on this request so that the urgent needs of environmental protection can be adequately met.

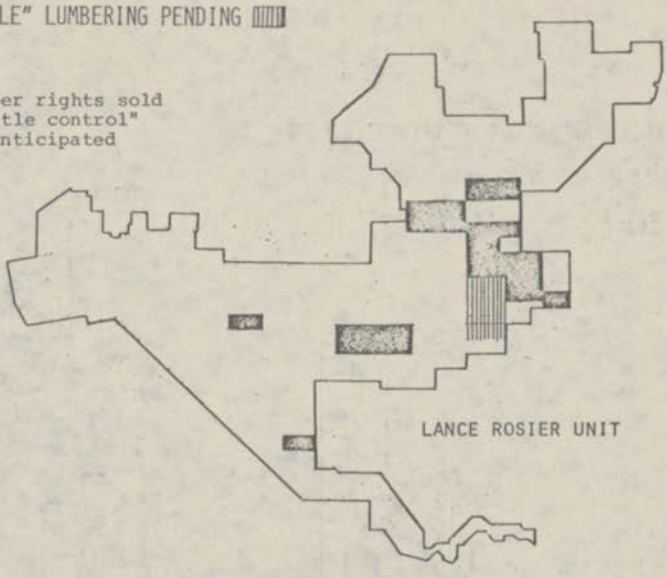
In closing, may I thank the Chairman and members of the Committee for your time and consideration. It is a pleasure being here on behalf of such a worthwhile cause.

KNOWN TIMBER RIGHTS SOLD

KNOWN "PINE BEETLE" LUMBERING PENDING

JANUARY, 1976

3,047 acres timber rights sold
1,190 acres "beetle control"
cutting anticipated



KNOWN "PINE BEETLE" LUMBERING PENDING

JANUARY, 1976

LOBLOLLY UNIT



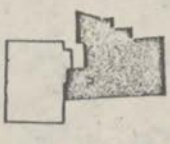
BIG THICKET NATIONAL PRESERVE

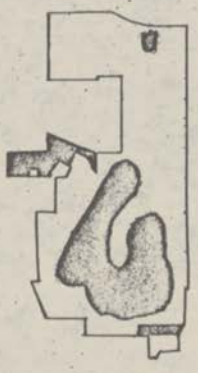
KNOWN AREAS CUT OR CLEARED

JANUARY, 1976 (since Jan. 1, 1974)

2,333 acres cut/developed
1,760 acres cut for "beetle control"

HICKORY CREEK SAVANNAH UNIT





BEECH CREEK UNIT



BIG SANDY CREEK UNIT

Big Thicket Report

Introduction:
On February 17 and 19, 1976, I traveled to the Big Thicket Area in East Texas to participate in an interagency meeting on the Southern Pine Beetle (SPB) situation. In addition, I had the opportunity to discuss, with the Preserve and Regional personnel, the Big Thicket situation in general. The Southern Pine Beetle (SPB) infestation is real and extensive, but it is a symptom of a much more fundamental issue.

Stated simply, it is the problem of adverse alteration of park resources after an area has been authorized, but prior to actual acquisition by the government. It is a spectre that hangs over several of our recently authorized areas and, in my opinion, it constitutes one of the major consequences of prolonged delays in funding the land acquisition program.

Background:
The ink was barely dry on the Act establishing the Big Thicket National Preserve (P.L. 93-439) October 11, 1974, when the issue of resource protection was raised. Approximately 67% of the 84,500 acres proposed for acquisition is held by 6 major timber companies who, in turn, have adopted a voluntary cutting moratorium on those tracts identified for National Park Service acquisition. However, this very significant cooperative gesture may be rendered meaningless by the Southern Pine Beetle (SPB) infestation.

According to the Texas State Forest Service, an estimated 635,750 trees were lost to SPB infestation in East Texas during 1975. The same source also indicated that in the proposed Beech Creek unit alone 1,473 acres were infected. To date, there is no known method of eliminating the Southern Pine Beetle and consequently, the most economical approach is to salvage cut the infested timber as soon as possible so as to realize as much merchantable material as possible.

In order to avoid massive areas of concentrated beetle activity and in areas where prompt salvage is not feasible, the Texas Forest Service has advocated the cut and leave method. This is a local surgery approach in which the active trees (containing beetle broods or attacking adults) and a buffer of uninfected trees are felled. The objective is to force the dispersal of the beetles and thereby prevent the growth of the spot.

Our Southwest Regional Office estimates that the presently known potential loss of trees due to the cutting of infested timber amounts to 2,100 acres. At least 800 acres were cut in the Beech Creek unit alone. We had the opportunity to visit the Beech Creek unit on the ground. One particular tract was clearcut ostensibly because there were no hardwoods present. We also examined some extensive cutting nearby which was adjacent to a small stream. Although Parks are forever and eventually the scars will heal, and the decay rate is quite rapid, in my opinion, the operation was very poorly managed. A considerable amount of merchantable material was

unaccountably wasted, high enough concentrations of debris were left so as to pose a very serious fire hazard, and inexcusably, trees were felled across the stream and left there.

Since there are no forest practice rules in Texas, there appears at present to be no way to enforce a set of good harvesting procedures.

Were title to be vested in the Federal Government, a different underlying set of assumptions that are part and parcel of National Park Service management objectives would provide the land manager with a broader range of options. Even if it should become necessary to attempt a control action, the likelihood of a repeat of the Beech Creek unit practice would be extremely remote.

Another critical activity has been the outright cutting of timber or acreage that will be acquired for the preserve. Already, the acres have been cut for timber and the Region has identified an additional 2,902 acres which could be cut if existing contracts are executed.

The third readily identifiable threat is the cutting of these trees and the alteration of the land associated with anticipated development such as that which we observed in the Hickory Creek unit (approximately 169 acres). An additional 100 acres has been identified in the Big Sandy unit.

Although in the two days we observed the area, we were not able to verify the precise acreage involved, the extent of the damage already realized is considerable. Moreover we have no reason to challenge the integrity of any of the sources which have identified these problems. Consequently, the National Park Service must move aggressively to protect these resources which have been authorized for acquisition.

Options for future action:
Publication of the boundaries was a major accomplishment. It eliminated most elements of uncertainty and will facilitate future observation and enforcement. Continuation of the pre-acquisition work, particularly the boundary surveys must be concluded as rapidly as possible. A re-examination and possible realignment of priorities for acquisition should be undertaken. For example, I would recommend that we refrain from purchasing those acreages already salvaged. In addition, a management policy regarding SPB infestations should be developed.

It was clearly evident to this observer that some form of additional authority is desperately needed. Those options appear to be as follows:

1. Amendment of the Act to immediately vest title in the United States. (Legislative taking as proposed in H.R. 8832).

2. Amendment of the Act to permit the Secretary to regulate land use on those lands not acquired but authorized for eventual inclusion in the Preserve.

3. Increased funding for FY '76 and/or the transition period.

4. Utilization of outside support such as the Nature Conservancy.

The legislative taking alternative has never been attempted in a situation involving so many landowners which are estimated to be between 2300-2500.

The interim regulatory authority approach has merit and the Congress should address this fundamental question. The language of Section 11 of S. 2371 provides an innovative approach to the exercise of specifically applied regulatory authority combined with the assurance of protecting the private property owners against a taking without due process.

Immediate handling of the threat requires the rapid infusion of at least 3.8 million dollars. This figure is based on field analysis by the on-site land acquisition staff and should be sufficient to acquire the problem areas cited above. Of the initial appropriation of 2.2 million for fiscal year 1976, 1.050 was obligated as of December 31st, 1975. An additional 1.21 million will be available for the transition period. The 3.8 million is necessary in addition to the above. These funds and the use of Declarations of Taking, if necessary, should enable us to control hardship situations and instances of deleterious actions based on spite.

Utilization of the Nature Conservancy is being explored but there is some question as to whether they have the capability to take action in this case.

BIG THICKET NATIONAL PRESERVE, TEXAS

Request for Authority for Declaration of Taking
on Threatened Acres

The National Park Service and its real estate agent, the U. S. Corps of Engineers, need the authority to exercise "declarations of taking" for acres threatened by cutting within the boundaries of the Big Thicket National Preserve.

This authority should cover 6,216 acres, as described below. Funds required in Fiscal Year 1976 or Fiscal Year 1976 (T) are estimated to be $3,800,000.

The Interior and Insular Affairs Committees in the U. S. House of Representatives and in the U. S. Senate are urgently petitioned to grant this authority.

Legal Background

The Committee on Interior and Insular Affairs of the Senate set forth their views regarding land acquisition through condemnation by the National Park Service in Senate Report No. 1597, 90th Congress. The Committee directed the Department of Interior to refrain from any declarations of taking in the Biscane National Monument and that if any condemnation proceedings are entered into, the Government should not take title until the amount of the value of the land has been finally determined. If the appropriate Government officials feel that a particular parcel of land has been valued too highly in judgment, or if the ceiling passed by Congress should be exceeded, than an opportunity would be presented for the Government to back off from this particular position. This is known as "straight condemnation" proceedings, and would afford some flexibility to the Government to exercise an alternative it does not have under the declaration-of-taking procedure - namely, the option of declining to proceed further with the acquisition if the price is deemed to be unreasonable.

This mandate has been interpreted by the National Park Service to apply to their land acquisition activities at other projects, including the Big Thicket National Preserve.

The Committee went on to say that if the Park Service, at some point in its land acquisition program, finds this course unsatisfactory and is compelled to request an order of taking, then consultation with the Committees should occur immediately. In some isolated instances, it may be necessary to depart from the guidelines set forth by the Committee, but the Committee wished to make absolutely clear its position that declaration of taking should be the exception and no longer the rule.

Present Emergency

The Big Thicket Association is of the opinion that a situation has developed in several units of the Big Thicket National Preserve that warrant consideration as exceptions to the expressed mandate of the Committee. Several tracts of land within the authorized limits of the Preserve are now threatened by cutting. A number of alternatives have been explored in an effort to save the timber on these tracts, none of which have proved workable. Authority for the National Park Service/Corps of Engineers to file declarations of taking, along with the necessary funds to accomplish this goal, remains the most practical approach to preserving the timber on these lands. We also feel certain that there will be other tracts threatened of which we are not aware at this time.

Tracts Included in This Request

We are petitioning the Committee to grant the National Park Service, and their real estate agent, the U. S. Army Corps of Engineers, the authority to acquire the following listed tracts of land, as well as a contingency to cover threatened tracts which have not become known to us at this time, by filing declarations of taking in condemnation in the event that negotiations with the respective landowners are unsuccessful and acquisition by civil action is requested by the

Secretary of Interior. This request is lent additional credence by the fact that the acreage in each unit was established by Congress (PL 93-439) and a detailed description of the boundaries of each unit of the Preserve were published in the Federal Register (March 17, 1975) pursuant to Section 1 (b) of PL 93-439, thereby assuring that all lands within the authorized limits of the Preserve will be acquired, either by deed through negotiations with the respective landowners or by civil action proceedings. Thus, the option of not acquiring a particular tract of land if the value has been set too highly in judgment, is not open to the Government on this project as was the case at Biscane National Monument and other national parks which permit and contemplate the existence of inholdings within the park boundaries.

The specific tracts of land for which we are requesting the Committee to grant authority to the National Park Service and the Corps of Engineers to acquire through filing of declaration of taking in the event civil action proceedings are deemed necessary are as follows:

a. Loblolly Unit — Estimated Acreage Involved: 552

The Loblolly Unit, located in the C. Eigeneaur Survey, A-186, Liberty County, Texas, and now owned by Raymond H. McDavid, et al is presently heavily infested by pine beetles, and it is feared that the Texas Forest Service will initiate cutting to control the beetle problem. Experience in the Beech Creek Unit with control cutting proves that commercial logging operations without guidelines and supervision have resulted in serious damages to Big Thicket ecosystems, with over one-fifth of the Unit decimated. Under National Park Service administration, control measures would be less destructive. This situation also obtains in the Rosier Unit (refer to b.(6) below).

b. Lance Rosier Unit

(1) William Wingate Survey — Estimated Acreage Involved: 410

Tract of land located in the William Wingate Survey, A-486, Hardin County, Texas, and now owned by Robert Hooks, et al, O.S. Parker Estate and Oswald P. Ross, et al: this tract is under a timber contract for pine and hardwood to Temple-Eastex, Inc., which expires on January 25, 1976.

(2) T. & N. O. R. R. Survey — Estimated Acreage Involved: 496

Tract of land located in the T. & N. O. R. R. Survey, A-479, Hardin County, Texas, and now owned by PICA Investment Venture: this tract is under a timber contract for pine and hardwood to Louisiana-Pacific Corporation, which expires on December 12, 1976.

(3) Mary Smith & James Blythe Surveys — Estimated Acreage Involved: 230

Tracts of land located in the Mary Smith, A-445, and the James Blythe, A-8 Surveys, Hardin County, Texas, and now owned by James Puckett, et al: owner is in financial bind and intends to sell timber on these tracts.

(4) B. B. B. & C. R. R. Survey — Estimated Acreage Involved: 350

Tracts of land located in the B. B. B. & C. R. R. Survey, A-108, Hardin County, Texas, now owned by George P. Kirkpatrick: this tract is under a timber contract for hardwood to James Puckett, which expires November 14, 1977.

(5) M. W. Stanley & W. C. R. R. Surveys-Estimated Acreage Involved: 960

Tracts of land located in the Minnie W. Stanley, A-741 and the W. C. R. R., A-521 Surveys, Hardin County, Texas, and now owned by Russell Wiggins: the owner intends to sell the timber on these tracts.

(6) Bryan, Pelitiah & Brewster Surveys Estimated Acreage Involved: 640

Tracts of land located in the Luke Bryan, A-91 and Pelitiah Brewster, A-84, surveys are now owned by Champion International Corporation, Irene Tate, et al, and Temple-Eastex, Inc.: these tracts have a heavy beetle infestation and the Texas Forest Service has or soon will request the owners to take remedial action. See (a) Loblolly Unit above.

c. Little Pine Island - Pine Island Bayou Corridor Unit.

(1) Michael Peveto Survey Estimated Acreage Involved: 23

Tract of land located in the Michael Peveto Survey, A-419, Hardin County, Texas, and now owned by the Keith heirs: this tract is under a timber contract for pine to Louisiana-Pacific Corporation, which expires on December 29, 1975.

(2) Hooks, Choate, & Other Surveys Estimated Acreage Involved: 420

Tracts of land located in the Hooks and Keith, A-782, Edmund Choate, A-148, Edmund Choate, A-136, W. T. Evans, A-548, Isaac Bridges, A-133, and S. H. Huston, A-694 Surveys, Hardin County, Texas, and now owned by PICA Investment Venture: these tracts are under a timber contract to Louisiana-Pacific Corporation, which expires December 12, 1976.

d. Beaumont Unit

Chandler & Little Surveys Estimated Acreage Involved: 135

Tract of land located in the David Chandler, A-175, and J. L. Little, A-904, Surveys, Hardin County, Texas, and now owned by PICA Investment Venture: this tract has a gravel pit operation adjacent to the Preserve which the owner plans to extend into the limits of the Preserve.

e. Contingency request Estimated acreage involved: 2,000

Emergencies will continue to arise on tracts presently not identified. A contingency allowance is urgently needed to allow prompt action.

Funds Required

Prior to acquiring title and possession of these endangered tracts, through either purchase by deed or by civil action through the filing of a declaration of taking, the necessary funds must be appropriated for payment to the owner in the instance of the filing of a declaration of taking.

The funds necessary to accomplish the foregoing program in Fiscal Year 1976 or Fiscal Year 1976 (T) are estimated to be $3,800,000.00.

December 5, 1975

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer To:
L1425-ML

JAN 3 1975

Miss Maxine Johnston
Legislative Committee Chairman
Big Thicket Association
Box 198
Saratoga, Texas 77585

Dear Miss Johnston:

Thank you for your letter concerning the preservation of the Big Thicket National Preserve in Texas. As we are sure you know, this is an objective to which we are both fully dedicated.

As indicated in your report on Big Thicket entitled "Request for Authority for Declaration of Taking on Threatened Acres," it is necessary that the House and Senate Committees on Interior and Insular Affairs grant permission before we can file a declaration of taking on land being acquired by the National Park Service. This permission does not need to come in the form of legislation but merely an action by the appropriate Committees. As further indicated in your report, it is necessary that the funds be available to cover the estimated value of the land being acquired by declarations of taking and be deposited with the court at the time the action is filed.

Within the context of the above statements, I fully support your action. However, such action will require an additional appropriation of funds which must be considered in light of the Administration's fiscal program and other priorities.

I shall be pleased to suggest to Representative Sidney R. Yates that he and his staff accept your kind invitation to visit Big Thicket.

Sincerely yours,

Assistant Secretary of the Interior

STATEMENT OF HON. JAMES ABOUREZK, U.S. SENATOR FROM SOUTH DAKOTA

Senator BYRD. Senator Abourezk?

Senator ABOUREZK. Thank you, Mr. Chairman. I have a longer statement which I have submitted for the record. I just wanted to, if I might, emphasize some of the programs that I am advocating at these hearings today.

Senator BYRD. Senator Abourezk, do you have additional copies of your statement?

Senator ABOUREZK. I think they are up at the table there.

Senator BYRD. Could you delay just a moment? I'm sorry. Go right ahead. Senator Abourezk's statement will appear in the record in its entirety. You may read it verbatim, or you may just highlight it, whichever way you wish to proceed.

Senator ABOUREZK. Mr. Chairman, I just want to take a couple of minutes to highlight just the programs themselves that I am advocating and I will leave the statement for the committee to read subsequent to the hearings.

Senator BYRD. Very well.

Senator ABOUREZK. Mr. Chairman, as chairman of the Indian Affairs Subcommittee of the Interior Committee I am called upon to request support and support myself various programs that I think are worthwhile for the Indian community in the country. And all of those items are included in the longer statement, but I just want to be a bit specific with regard to the Indian Health Service program.

They are seriously deficient. The Office of Management and Budget will not allow them to ask for very much each year. I would say that every year they are in desperate need of some $30 to $40 million to even catch up and get up to a par with the Indian health care nationwide.

This year they are asking for $5 million, and I would hope the committee would fulfill at least that request, and a special appropriation for the Sisseton Tribe health facility of $50,000 is included in that.

If the chairman will recall, on the floor last year he and Senator Stevens talked about the self-determination legislation that we have passed that needs to be funded before it has any meaning. And if the chairman recalls, we discussed at length on the floor. That request is in this supplemental as the committee agreed to on the floor at that time, that they would push this through the supplemental.

That amount is now $38 million that we are asking for.

There is a law enforcement request of $10 million for Indian law enforcement nationwide. I want to emphasize to the chairman that specifically in South Dakota they have had to spend a great deal of extra money because of the militancy of the American Indian movement that is centered somehow in my State.

A great deal of that will have to be spent up there this year, especially 1976 when the militants have virtually promised disruptions during the bicentennial. That is a badly needed program.

EROS DATA CENTER

The EROS program, we are seriously requesting $1.3 million to complete the construction of the antenna facility in South Dakota. As you know, the EROS data center in Sioux Falls, S. Dak., is the only data collection in the world for EROS staff. However, the antenna now sits at Greenbelt, Md.

After all of that sophisticated equipment is utilized to collect data from the EROS satellite it is mailed by ordinary mail through the Postal Service out to South Dakota. I don't have to remind the chairman what kind—how slow that can be. EROS is going ahead with a program to build an antenna there so that the data can be collected right on the spot, and it will be available in 1 or 2 days instead of 1 or 2 months as it is now.

FOREST SERVICE AND NATIONAL PARK SERVICE NEEDS

Two other general items. The Forest Service is in need of money for insect and disease control. We have had a bark beetle infestation in the Black Hills National Forest. In addition, $130,000 is requested for the Forest Service research lab and the Rocky Mountain Forest Service research lab. And for the Park Service in South Dakota we have five separate requests that deal with Wind Cave, Jewel Cave, Pactola Visitor Center, and the Black Hills supervisor's office in general.

We would strongly urge the committee to act on these requests. I want to express my thanks to the chairman for his consideration.

Senator BYRD. I certainly knew about your strong support for these programs, Senator Abourezk. As you correctly stated, you made a very fine presentation on the floor of the Senate at this time last year when we had the bill before the Senate. We had $2 million for EROS last year. We would certainly consider your additional request, and we will also keep in mind your statement and the various other items that you expressed interest in today.

We share your concern over the adequacy of the Indian health fund and other Indian programs.

Senator ABOUREZK. Thank you. I might just add one further thing on the EROS, Mr. Chairman. If the money for EROS is not appropriated in this request this year, the amount last year would have been wasted because it is for completion of the antenna project and the data processing that goes with it.

So it is one of those programs where it is pennywise and pound foolish.

Senator BYRD. Thank you, Senator Abourezk, for your fine statement. We will certainly keep in mind your admonitions and your urgings and your interest in all these items.

PREPARED STATEMENT

We will place your prepared statement at this point in the record.

Senator ABOUREZK. Thank you, Mr. Chairman.

[The statement follows:]

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Mr. Chairman, I want to thank you for allowing me this opportunity to appear before the committee today. The distinguished Chairman and members of this Committee are to be commended for the exemplary work in attempting to balance the needs of this country with a responsible level of federal spending. With this in mind, I would like to address myself to a number of important matters which deserve the attention of this Committee.

EROS

First and foremost, I want to underscore the immense importance of the need for the EROS program again this year.

No one could be more appreciative than I for the support shown by this Committee last year for the EROS program. The additional funds provided the program virtually saved it from its budgetary demise and guaranteed its existence for another year. It is certainly fair to say that because of the tremendous foresight by the Chairman of this committee, along with Senators Hruska, Young, Stevens and others, this invaluable program continues today.

Unfortunately, the Administration prefers to see the EROS program as some sort of orphan, or at best, a child of Congress. Every year the budget battle resumes. The Office of Management and Budget cuts the program back to unworkable levels and the Congress is forced to restore that level back again.

This year, however, OMB did some budgetary maneuvering which under any sense of the word goes against the intent of this Committee and the Congress in its action last year.

As the Committee is aware, the FY'76 budget for EROS was $8.4 million. The Committee, recognizing the need for improved equipment, including a "quick-look" antenna, added an additional $2 million. The total appropriations for EROS in FY 1976, therefore, was approximately $10.4 million dollars.

OMB, however, prefers to look at the matter quite differently. They are using the money approved by the Congress as part of the FY'77 budget -- telling the Geological Survey that the additional amount was merely for special equipment which ought to be considered in the next fiscal year budget total. In essence, EROS is being forced to absorb the additional amount appropriated by the Congress.

The budget for FY'77 is therefore a mere $8,395,000 -- the same as FY'75. Yet, since 1975 the cost of living has increased a whopping 18.5%. Just keeping up with inflation, the EROS budget should be $10 million. Yet, the Congress authorized EROS to do more than merely keep up with inflation last year when it appropriated the necessary funds to give the EROS Data Center the capability to produce higher quality photographic and digital products from LandSat data.

As a direct answer to a question which I posed to Mr. V.E. McKelvey, the Director of the Geological Survey, in a letter dated January 20, 1976, I was informed that as a result of this

cutback in appropriations for FY'77, "We will not be able to implement a quick-look reception capability within the FY'77 budget."

Yet, the Interior Appropriations Subcommittee Report is very clear. It states that "the additional capability is essential to the effective application of this system to the nation's resource and environmental problems."

It is for these reasons, Mr. Chairman, that I am compelled to appear before you again this year. The budget presently allocated to the Earth Resource Observation System is simply not practical or acceptable if the intent of the Congress with regard to this project is to be carried out.

The agency needs an additional $1.3 million to supplement the Administration request, if they are to function in the way in which Congress and the American people have come to expect. The $1.3 million will allow the EROS Data Center to receive and process quick-look data within 72 hours after acquisition by the satellite.

In times past, the Geological Survey has been forced to rely on the Canadian station at Prince Albert, Saskatchewan. One of the most recent cases occured in 1975 following Hurrican Eloise. An urgent need for data showing the flooding in the Susquehanna River Valley required that we go to the Canadians for the information from our own satellite.

The problem with relying on the import of data from our own satellite is that Canadian stations cannot cover parts of the United States. In addition, according to the letter from the Geological Survey, "large scale purchases of quick-look data from Canada would tend to endorse the capabilities of Canadian industry over those of the United States in competing for contracts to construct foreign LandSat receiving stations."

Mr. Chairman, I could go on and on about the need to protect and endorse the EROS program. However, I have provided this Committee with the lists of those reasons in previous years. More importantly, there are a number of members of this Committee who know the value of this program far better than I.

I sincerely hope, therefore, that the Committee will favorably consider the addition of $1.3 million to the EROS budget for FY'77.

FOREST INSECT AND DISEASE CONTROL & FOREST LAND MANAGEMENT

The items I next wish to address are the Forest Insect and Disease Control & Forest Land Management programs.

Mr. Chairman, these are the most important Forest Service programs serving my State of South Dakota and, in many ways, the entire nation. The President's budget calls for a severe cutback in the Insect and Disease Control program for the Black Hills National Forest. The estimated expenditure for last year is $450,000. The FY'77 request is a clearly inadequate $183,000.

Furthermore, although the proposed budget for the Forest Land Management program for South Dakota is increased over that

of FY'76, the increase is simply not sufficient to prevent the spread of the Mountain Pine Beetle. More program funds are needed for vital thinning operations. This program needs at least an additional $500,000 in FY'77.

Since the latter part of the 1960's, the Black Hills region of my state has been plagued by the infestation of the Mountain Pine Beetle. More than 2 million dollars worth of timber has been lost to this pest. This represents 15 million dollars worth of finished commercial products.

In FY'74, 560,000 trees were destroyed by the beetle. In FY'76, it is estimated that 675,000 trees will be destroyed. To further illustrate the problem, 117,000 cares of the 1.2 million acres contained within the boundaries of the Black Hills National Forest are presently considered susceptible to destruction by the beetle. Beetle infestation has reached near epidemic proportions in the area around Lead, Deadwood and south of Spearfish. In this area, for every one infested tree last year, there are now four infested trees.

The Forest Insect and Disease Control Program, and the Forest Land Management Program, if adequately funded, are very effective ways to control the beetle. These programs which include contracting with private cutters to harvest infected trees, and to thin endangered stands have resulted in a saving of more than 90 million board feet of the 160 million board feet attacked by the beetle in the years 1974-76. But additional tens of millions of board feet of commercial timber will be lost if the Administration's budget requests are not increased.

Mr. Chairman, the gravity of the situation is obvious. I strongly urge your committee to fund the Insect & Disease Control Program at least at last year's level -- $450,000, and to appropriate $500,000 additional dollars for the Forest Land Management Program.

FOREST RESEARCH AT BLACK HILLS NATIONAL FOREST

Another related program I wish to address is the Forest Service's Research Program at the Rocky Mountain Forest and Range Experiment Station at Rapid City, South Dakota. This program is authorized by the Forest and Rangeland Renewable Resources Planning Act.

The research conducted at this experiment station is particularly important because of the highly productive nature of timber and other resources. In addition, the Black Hills distance from the Rocky Mountains allows the area to be studied as a whole without complicating influences of other adjacent areas.

This research effort will provide an opportunity to study methods of increasing production of forest and forest-related products, as well as, methods to manage and control procedures to reduce the problem of the mountain pine beetle. This research program could have economic benefits, including 350 new jobs for local forest industries which should generate an additional $3,500,000 in wages.

Mr. Chairman, I urge the Committee to appropriate an additional $130,000 for the Rocky Mountain Experiment Station in Rapid City. $100,000 of these funds will be used to study means of thinning stands of mature ponderosa pine, in order to retard the spread of the beetle. $30,000 will be used to study the habitats of wildlife, range, and fish, including the black-footed ferret.

PARKS IN SOUTH DAKOTA

Like many other states in the West, a major economic activity in South Dakota is tourism. Each year, especially during the summer months, thousands of visitors enter the state to enjoy its varied recreational attractions. The Black Hills region, in particular, is an important tourist area, with a number of National Park Service areas in the vicinity. It is important to both the people of South Dakota and to the thousands of tourists that visit South Dakota each year that the facilities in the National Parks provide adequate recreational activities. I would like to briefly address myself to four items of either the Park Service or the Forest Service.

1.) WIND CAVE

Wind Cave National Park is anticipating 177,000 visitors during this Bicentennial year. The visitor center at Wind Cave is not up to the standards that people have come expect from the National Park Service. It is in need of rehabilitation and expansion. The estimated cost of this project is $1,076,000 for constuction, with an additional $99,000 for associated road construction work. This project is very much needed since the current building dates back to the 1930's and is clearly inadequate for present, much less future, needs.

In addition to the needed improvement of the Visitor Center at Wind Cave, a new lighting system within the cave itself is badly needed. The present system has been in use for more than twenty years, and is becoming increasingly more difficult to repair. The new system would be similar to the indirect lighting system that is used at Jewel Cave. The estimated cost is $183,000, which I feel is a small price to pay for the safety and well being of the thousands of visitors that Wind Cave attracts each year.

2.) JEWEL CAVE HOUSING

The second item I wish to call your attention to is the housing situation at Jewel Cave National Monument. Jewel Cave is in need of (15) additional housing units for permanent and seasonal employees. At the present time, the only available housing for the permanent employees at Jewel Cave is in trailers and "transa-houses." Not only is this unfair to the permanent employees, but it makes it difficult to recruit the necessary seasonal employees that must be employed each summer. Preliminary planning for this project was done a year ago with an estimated cost of $719,000.

3.) PACTOLA VISITOR CENTER

Another subject of interest to South Dakota is the Pactola Visitor Center. The Visitor Center in the Black Hills National Forest has been under construction for a number of years, and is finally approaching the final stages before completion. To finsih this project, $127,000 is needed for the sewer systems and $87,700 for exhibit construction, installation and related equipment. The total cost of this work is estimated to be $215,000.

4.) BLACK HILLS NATIONAL FOREST SUPERVISOR'S OFFICE (CUSTER)

The final construction project I wish to address is the Supervisor's Office at the Black Hills National Forest. This supervisor's office is very much in need of a new building. At present, the supervisory offices of the National Forest are divided among a number of office buildings in Custer, South Dakota; some of which are more than a mile apart.

More than 78 employees are affected by this mile separation of facilities. The cost in lost efficiency and travel is estimated at $20,000 per year. In addition, the cost of leasing office space from a commercial realtor is $45,000. The total cost to the taxpayer for the lack of proper office facilities is $65,000 annually. In addition visitors must often travel back and forth from one building to another in order to transact their business with the supervisor's office.

Land was purchased a number of years ago on the north side of Custer for use as a site for Forest Service offices. An estimated $2,100,000 is required to completely fund the construction of these facilities. It seems apparent that the construction of permanent offices is in the best interest of both the Forest Service and the taxpayer.

YOUTH CONSERVATION CORPS

Although I know the Committee shares my high regard for the good work done by the Youth Conservation Corps, I do want to repeat in this testimony my support for continued enlargement of this program. The number of unemployed teenagers and the need for conservation work both call for an increased appropriation for the successful and worthwhile YCC projects.

SISSETON HEALTH FACILITY

I am requesting the Committee's consideration of inclusion of $50,000 in the FY'77 budget of the Indian Health Service. This money will provide for the completion of the cost planning and architectural design for the construction of a new facility to provide in-patient and out-patient services for the 2,300 people served by the Indian Health Service on the Sisseton Reservation in South Dakota.

A 1974 study by the Indian Health Service determined that the existing Sisseton facility which is a partial frame structure

constructed in 1936 is "antiquated and functionally inadequate" to meet health care needs of the Sisseton people. Just this past week the boiler for the heating system in the existing facility exploded leaving the hospital without heat until temporary repairs could be made.

The funds I am requesting will be utilized to finalize cost planning and to complete an architectural design for the new facility. The Indian Health Service supports this request.

SIOUX INDIAN MUSEUM AND CULTURAL CENTER, RAPID CITY, SD

Last year, Senator McGovern and I requested that the Committee permit obligation of $278,000 already appropriated but which could not be spent under the conditions stipulated. I again emphasize that need. The money was intended for expansion and renovation of the existing Sioux Indian Museum, currently housed in a city-owned building in Halley Park, Rapid City, South Dakota.

After the money was appropriated, the city changed its plans for the park and decided against further building for the Indian museum on city land. Recently, however, the Winona Club of Rapid City, and Indian women's civic group, received approval from the Department of Interior to construct an ambitious museum and cultural center on land which reverted to Indian ownership, near the Indian Health facility (Sioux Sanitorium) in Rapid City.

I urge the Committee to consider allowing the $278,000 already appropriated to be used for planning and other initial costs related to building a permanent home for the unrivaled collection of Sioux art and artifacts in Rapid City.

INDIAN ACT PROGRAM

Finally, Mr. Chairman, as the Chairman of the Senate Indian Affairs Sub-Committee, there are a number of programs, the importance of which I'd like to underscore through the request for consideration of additional funding. As the Committee is aware, the Indian Action Program is designed to provide the tribes, through a contracts mechanism, a tribally-operated and managed resources development capability on their reservations and in Indian Communities. The Indian Action Program of the Bureau of Indian Affairs has had a tremendous positive impact on the improvement of reservation housing. Hundreds of school and housing access roads have been built through the heavy equipment training components of the Indian Action Program. Tribal construction and enterprise entities assisted through the program have developed to the point of contracting for the construction of roads, housing and community facilities on reservations. The experience acquired by the tribes in operating the Indian Action Program has resulted in tribal initiatives in proposed contracting for the operation of additional programs which serve their people. The expansion and successful continuation of the program is vital and would greatly enhance tribal capabilities to implement P.L. 93-638 and the practical goals of self-determination.

Mr. Chairman, I urge you and the members of the Committee to consider an additional $24 million in this much needed program bringing the total level to $38 million for FY'77. This level of funding would permit the extension of existing programs to cover over 200 tribes and would also provide for the expansion of the Indian Action Program to the additional 60-plus tribes which have requested participation in FY 1977.

Even to maintain the current level of programs there is a need of at least $5,000,000 more than the $14,127,000 funding level the Bureau of Indian Affairs has requested. Therefore, $19,127,000 is the very least amount needed to fund the existing 61 contracts through FY 1977.

The tribes have expressed a great interest and substantial support of the Indian Action Program. The Bureau of Indian Affairs, however, has not kept pace with the tribal interests, and has not supported these programs adequately in their budget request.

I sincerely hope that the Committee will favorably consider the additional funding level requested for the Indian Action Program.

LAW ENFORCEMENT

Law enforcement in Indian communities is in great need of improvement. The Bureau of Indian Affairs itself stated that the total Indian Criminal Justice System was the subject of an extensive study which has been recently completed. In spite of the study recommendation that there be an upgrading of the operating elements of the Criminal Justice System, the Bureau requested $24,320,000 for FY 1977 which is a decrease in funding from this fiscal year. Mr. Chairman, the Bureau's stated policy that the Criminal Justice System will operate at a "minimum adequate level" is going to cause severe problems in Indian communities.

If we are going to accomplish the badly needed improvement of the Criminal Justice System in Indian communities there has to be an increase of $10,000,000 in the amount requested by the Bureau of Indian Affairs. This increased amount would go to such things as, improvement of police services to Indian communities, the development of parole and probation programs, implementation of such federal laws as the 1968 Civil Rights Act with the requirements of that Act to such things as right to counsel, tribal prosecutors, the 1972 Act where the federal government imposed a requirement that juveniles be detained in a separate facility than adults. These are some of the essential programs that need funding.

INDIAN HEALTH SERVICE - CONTRACT HEALTH CARE

Indian Health Service has requested $59,732,000 for contract health care for FY 1977. This request represents an increase of $8,622,000 over the FY 1976 available level, yet the Indian Health Service has a $20,000,000 backlog in contract health care

services. There are 14,000 cases of middle ear infection, (middle ear infection leads to deafness), 3,000 cases of gall bladder infections, and 2,600 cases of cataracts of the eyes, which leads to blindness. And this backlog of health cases is escalating.

Mr. Chairman, I am therefore requesting an increase of $5,000,000 for Indian health care contracting services, which will eliminate aproximately one-fourth of the backlog of cases.

I am convinced that an additional $5,000,000 this year, bringing the budget to a total of 64,732,000, would go a long way in eliminating part of this discouraging health situation.

Mr. Chairman, I want to thank you and the members of this Committee for your consideration of these matters. Naturally, I would be happy to provide the Committee with any additional information as may be necessary.

HASKELL JUNIOR COLLEGE

STATEMENT OF HON. JAMES B. PEARSON, U.S. SENATOR FROM KANSAS

Senator BYRD. Senator Pearson, would you please take a seat?

Senator PEARSON. Mr. Chairman, I have a couple of copies of this statement. I apologize for not having more. I present those to the chairman. I will be very brief.

I address the committee on behalf of an add on for Haskell Junior College. Haskell Junior College, Mr. Chairman, is the only junior college for American Indians in this country that is directly funded by the BIA. It is a combination of a trade school and a junior college.

There are about 1,200 Indian young people attending there from 33 States and 110 tribes. The real meat of what I am talking about, Mr. Chairman, is on the second page of my prepared statement. It is a request for $1.6 million to construct two dormitory facilities. I will not go into the arithmetic of it, but we are short that amount.

Because of a reprogramming, and recent inflationary pressure, we can only go ahead with one dormitory although two are desperately needed. I say "we" because I have visited there many times.

Adequate funds for this project were not included in the budget for fiscal year 1977. Therefore, I have written the President, Secretary of the Interior, and OMB and requested an amendment to the President's budget.

I have visited the school, Mr. Chairman, on a number of occasions. Before we went to a junior college status in 1970, the students there were living in very bad conditions. Some of them were living in rooms below the football stadium.

I believe this request is justifiable. I say that as a Senator who has made speeches about cutting the budget. Now, I am coming before you and sincerely asking you to consider this particular item.

Senator BYRD. And the item is in the amount of $1.6 million?

Senator PEARSON. Yes, sir.

Senator BYRD. Now your statement will appear in the record, Senator Pearson, in its entirety. We have been aware for some time of your interest in this junior college. We will keep this interest in mind as we mark up the bill.

Do you know why the BIA will not submit a request on this item?

Senator PEARSON. I believe a request would be included in a future budget. BIA is now subject to OMB restrictions, just as all other agencies are.

They are going ahead with one dormitory. Actually the funds provided for both dormitories amounted to to about $2.85 million. I went to Haskell to look at the bids; the low bid was about $1 million more than the allocation of $2.85 million. I do not know how to respond to your question except to say that I think it is due to OMB restrictions on the total budget.

Senator BYRD. I take it that you are addressing your request to the regular bill and not the supplemental?

Senator PEARSON. That is correct. It is the regular bill.

PREPARED STATEMENT

Senator BYRD. All right, Senator. We certainly appreciate your appearing, and your request will be very carefully considered. And I hope it will be looked upon favorably. You made a very fine statement. We will insert the prepared statement in the record at this point.

Senator PEARSON. Thank you.

[The statement follows:]

Mr. Chairman, I appreciate the opportunity of addressing this Committee in regard to construction funds for Haskell Indian Junior College.

As I am sure the Committee is aware, Haskell is a unique institution. Enrolled at Haskell are 1200 Indians from 33 states and 110 tribes. At this time, it is the only fully accredited junior college designed to serve native American Indian. Founded in 1892, Haskell has evolved from an off-reservation boarding school for elementary students, into a high school, a combination high school and vocational school, and finally into a junior college. Through its long history of service to American Indians, Haskell has provided educational and vocational opportunities to thousands of students who otherwise would have remained outside the mainstream of American life. Today, as educational and technical requirements for employment opportunities increase, Haskell is more necessary than ever.

Creation of a two-year institution of higher education in 1970 substantially expanded educational opportunities; students may now choose to pursue a trade or technical skill, a junior college degree, or a combination of both. However, since the early 1960's when the BIA first planned to make Haskell a junior college, adequate facilities have simply not kept pace with the increased number of students and educational activities.

As the Committee may recall, Congress appropriated $5.7 million in FY 1973 for the construction of a Kitchen-Dining Hall, Student Union, and Learning Resources Center at Haskell. In FY 1974, Congress reprogrammed $1.9 million of this original $5.7 million appropriation. This was justified on the basis of construction delays and the fact that Haskell would not be able to fully obligate the funds in FY 1974. In response to Congress' action, the Secretary of the Interior wrote to me in September 1973 stating that the Bureau of Indian Affairs did not want this money reprogrammed, and "the BIA will include these funds [$1.9 million] in a future budget request."

On April 10, 1974, I addressed the Committee to urge that Haskell receive a minimum of $4.75 million in construction funds for FY 1975. This would have replaced the $1.9 million that was reprogrammed and would have provided an additional $2.85 million for new dormitories in order to relieve serious student housing problems. The BIA's budget request for FY 1975, however, was only $2.85 million; this was just adequate to cover their architectural engineer's estimate for construction of two new dormitories. In effect, Haskell was given the choice of using $1.9 million of the $2.85 million for the construction of the Student Union and the remainder for a dormitory, or using the full amount for two dormitories. Because of the desperate need for dormitories, Haskell had no real choice and requested the full $2.85 million for living space improvements. My fear at that time -- and it has since been realized -- was that this amount was totally inadequate.

When bids for the dormitories were opened on December 8, 1975, the low bid was $3.78 million. It was therefore only possible to award a contract for one dormitory. The BIA now estimates that higher costs because of inflation, and separate construction of the second dormitory, will require an additional $1.6 million in order to complete this project.

Today, Haskell needs facilities for married students housing, a health center, gymnasium, student union, and dormitory. While the needs of Haskell are many, my wishes are modest. Although it will take millions of dollars to provide Haskell with the basic facilities of a junior college, I now ask only that Congress provide sufficient funds to enable Haskell students to live in respectable housing facilities.

Mr. Chairman, Haskell faces a critical need for improvement in the living conditions of its students. Unlike many colleges, there is no reasonable alternative to campus housing. Students simply do not have the financial resources to seek housing elsewhere. During a recent visit, I was dismayed by the condition of the existing dormitory facilities. To see the living conditions of the students is to understand the

immediate need for improvements. There is no question that additional dormitory facilities are vitally needed at Haskell. This summer Haskell will not be able to hold a summer session because of inadequate dormitories without air conditioning. Currently, four students are living in rooms designed for two and students are living in barracks and temporary rooms under the football stadium.

On February 23, 1976, I wrote President Ford, Secretary Kleppe, and Director Lynn urging that the President's recommended budget for FY 1977 include an amendment for a BIA budget request for construction of the second dormitory at Haskell. As the Administration has not requested such an amendment, I would hope that the Committee would give serious consideration to providing for the $1.6 million so urgently needed by Haskell.

I realize that, more than ever, Congress is faced with the problem of limited resources for unlimited demands. I am fully aware of the constraints under which we are operating this year and am supportive of moves to hold the rein on government spending and to carefully review each and every Federal expenditure. Nonetheless, certain priorities must be recognized by Congress and I do not believe that I am overstating the case to say that the provision of adequate facilities for Haskell is one of these priorities.

If the funds for Haskell were to benefit a small segment of our population, I would not ask for a Congressional "add-on". Or, if this were not essential to the school, I would not ask for the additional funds. I strongly believe, however, that such an "add-on" would benefit the Indian population of the nation as a whole, and is justified by a unique set of circumstances.

Mr. Chairman, $1.6 million is a small amount of money compared to the needs of the students at Haskell. I am hopeful that the Committee will be responsive to their needs and urge your careful consideration so that our only American Indian College can have adequate student housing facilities.

Prepared Statement of Hon. Howard H. Baker, Jr., U.S. Senator From Tennessee

Senator Byrd. Senator Baker was to have been here, but he is home sick with the flu and his statement will be included in the record.

He is submitting testimony in support of additional funding on the roads account of the National Park Service. His remarks are focused on the need for funding the Natchez Trace and the Foothills Parkways in Tennessee.

We are sorry to hear about Senator Baker's illness. His statement will be included in the record in its entirety.

[The statement follows:]

Mr. Chairman, I am honored to have this opportunity to testify before your distinguished Subcommittee to urge additional funding in the roads account of the National Park Service. My remarks are focused on the needs for funding of the Natchez Trace and the Foothills Parkways in Tennessee.

First, I am concerned over the major reductions that have been made recently in the park roads program, particularly the cuts proposed in the fiscal year 1977 Budget. The authorizations for the past three fiscal years for park roads and trails and the parkways programs, which are combined under a single "roads" category in the Budget, total $300,000,000. For the past three fiscal years, actual obligations by the Park Service have been less than a third of the authorization. This disregard of the annual program level seems particularly acute in fiscal year 1977.

Recognizing the need for fiscal restraints, the Public Works Committee of the Senate and our Conference Committee with the House worked effectively to hold down the authorization levels for the entire highway program in the pending highway legislation. We have achieved this restraint in part by paring funds from the Park Service roads program, reducing it to a more realistic level. We set the fiscal year 1977 authorization for parks roads and trails at $30,000,000, plus $45,000,000 for Parkways, a total that is $30,000,000 less than the 1976 levels.

But what is requested in the Budget? The Budget for fiscal 1977 requests a combined total of only $10,000,000 for both programs, down from some $46 million that was available for obligation in the present fiscal year. Of that 1977 figure, only $6 million will go for construction.

None of the fiscal year 1977 money is scheduled for construction in Tennessee, the location of two of the nation's four incompleted Parkways. I recognize that the Park Service plans to complete an Environmental Impact Statement on the remaining unbuilt sections of the Natchez Trace Parkway in Mississippi, Alabama, and Tennessee before undertaking any new construction. But that must not be used as an excuse for delay in planning. That environmental review is scheduled to be completed by the end of fiscal year 1977, so that construction funds can be released in fiscal year 1978. I believe that the Park Service must be in a position to assure that a major construction effort can be made in fiscal 1978.

The Park Service has identified $32,358,000 in construction work on the Trace Parkway that can be accomplished once the Parkway environmental impact statement is completed. I would hope that this subcommittee will direct the Park Service to make the completion of the Natchez Trace a high priority item, and that the fiscal 1977 period be utilized to continue engineering so that there will be a variety of projects in various states that are ready to go. I would, therefore, recommend that the Committee direct the National Park Service to spend $495,000 in fiscal 1977 for planning on Section 1–C in Tennessee. The right of way on that section, which extends from Williamsport 12.2 miles to a point north of Santa Fe, has been fully acquired.

Appropriations on the Natchez Trace Parkway started nearly 40 years ago, with work on the Tennessee portion begun before World War II. But, Mr. Chairman, there has been no construction work in Tennessee for about a decade. In my testimony to this Subcommittee a year ago, I urged that money be appropriated to initiate engineering on both Sections 1–D and 1–C of the Trace Parkway in Tennessee. Under your leadership, $369,000 will become available in the Transition Quarter for the engineering work on the 1–D section. I now renew my suggestion that money be made available for engineering on Section 1–C.

In a letter to me from the State of Tennesee, the State recommends "that Section 1–D be constructed as a logical extension of the Parkway north to the terminus . . . It's completion will be a significant contribution to the development of a historical tourist attraction." I agree. But I would note that the engineering on Section 1–D, now funded, is unlikely to be completed in time so that a construction contract can be let in fiscal year 1977, according to the Federal Highway Administrator. Instead, I recommend that funds be allocated for engineering on Section 1–C.

Mr. Chairman, in addition, I would point out the fact that there has been no activity in this decade on the Foothills Parkway in eastern Tennessee. The Foodhills Parkway was authorized more than a quarter century ago. Twenty-two miles of it is open to traffic. Another six miles have been finished, but has been allowed by the Park Service to fall into disrepair and is now closed to traffic. While the Environmental Impact Statement still must be prepared, the initiation of planning on some of the necessary work will not conflict with the preparation of that statement. The right of way has been acquired and general alignment has been determined. And work must be renewed so that this investment can become fully usable to the public.

The first priority of the Park Service is tunnel lighting on the Gatlinburg spur, on which the planning cost $20,000, with development to cost $197,000.

The next item of priority lies at the eastern-most end of the Parkway. Section 8A has been graded, constructed with a light surface, and open to the public because of its great value in bringing traffic off Interstate 40 into Cosby, Tennessee. An appropriation of $80,000 is needed to complete the design on this 5.5-mile segment so that a new surface and proper guardrails can be installed. I would note that the present road requires heavy maintenance, so that improving this road must be a major priority.

There is also a stub end as the western end of the parkway, a stub that is closed to the public. To give this existing road value, there is a need to eventually extend it as far as McCookeville at U.S. Route 441, linking the stub end with the major road into Gatlinburg and over the mountains. This would serve as a major addition, relieving the congestion that often occurs in the area.

This will require completion of another 18 miles of parkway: a portion of section 8F, plus all of Sections 8E and 8D. I would recommend that the Committee approve an appropriation of $80,000 for engineering on Section 8F, upgrading the stub end so that it can be opened to traffic. There will also be a need at a later date to spend $2,850,000 to engineer the road from the stub end to U.S. Route 441. While I believe this is important, I recognize that the Committee may wish to hold off to await the completion of the Parkway's Environmental Impact Statement.

In summary, Mr. Chairman, I urge the Subcommittee to approve $495,000 on Section 1C of the Natchez Trace, plus $180,000 for work on the tunnel lighting, as well as Sections 8A and 8F of the Foothills Parkway. All the money would go for engineering.

Mr. Chairman, I thank you and the Subcommittee for this opportunity to present this information and to urge you once again to support this important program.

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

April 6, 1976
SERO/AB

FOOTHILLS PARKWAY, TENNESSEE

General Statement

The Foothills Parkway when completed will be a highly scenic 72-mile road traversing the Tennessee side of Great Smoky Mountains National Park.

There are approximately 28 miles of road completed of which 22.4 miles are open to traffic; Section 8A (5.6 miles) from its eastern terminous at Interstate 40 westward to Cosby, and Sections 8G and H (16.8 miles) from the parkway entrance at Chilhowee northeastward to Tennessee Highway 73. Section 8F (5.6 miles) from Highway 73 eastward to the Carr Creek crossing has been closed to traffic because of damage from frequent slides. Construction on this section began in the summer of 1966, but because of subsequent funding contraints the National Park Service has been unable to continue construction to an exit location, the cost of which has been estimated at $5.1 million.

Future development of the Foothills Parkway is being considered as a portion of the environmental assessment alternatives related to the Great Smoky Mountains National Park general management plan. An environmental review of this assessment is planned for the summer of 1976. If an environmental statement is deemed necessary following this review, it has been estimated that it will take one to two years before construction of the Foothills Parkway can be resumed.

The following projects, which do not require an environmental statement, can be obligated during the fiscal year in which funds are made available.

Priority	Section	Project Planning	Development	Total
A.	Gatlinburg Spur, Tunnel Lighting	$20,000	$197,000	$217,000
B.	8A2 - Final Surfacing and Guardrail, 5.5 miles	80,000	1,310,000	1,390,000
C.	8F - Final Surfacing and Slide Damage Repair, 6.5 miles	80,000	1,310,000	1,390,000
	Total	180,000	2,817,000	2,997,000

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The following priorities which reflect new mileage construction cannot be undertaken until required environmental documentation has cleared: (Costs are preliminary estimates.)

Priority	Section	Project Planning	Development	Total
1.	8E2, F3- Grade, Base Surface, Carr Creek to Caylor Gap, 3.6 miles	$525,000	$4,585,000	$5,110,000
2.	8E1 - Caylor Gap to Wear Valley Road, 6.4 miles	975,000	8,515,000	9,490,000
3.	8D - Wear Valley Road to U.S. 441, 8.7 miles	1,350,000	11,790,000	13,140,000
4.	8B1 - Bridge over Tennessee 32 and Cosby Creek and Interchange; Roadway to Station 3B4+75, 1.5 miles	126,000	2,358,000	2,484,000
5.	8B2 - Station 3B4+75 to near Black Gum Road, 3.6 miles	450,000	3,930,000	4,380,000
6.	8B3 - Near Black Gum Road to Secondary Route 2421 at Pittman Center, 7.5 miles	1,500,000	13,100,000	14,600,000
7.	8C - Pittman Center Secondary Route 2421 to U.S. 441 at McCookville, 9.6 miles	1,650,000	14,410,000	16,060,000
	Total	6,576,000	58,688,000	65,264,000

PREPARED JOINT STATEMENT OF SENATOR JACOB JAVITS, SENATOR BUCKLEY, SENATOR LEAHY, AND SENATOR STAFFORD

Senator BYRD. Senator Stafford has requested that a statement on behalf of himself and Senators Javits, Buckley, and Leahy will be included in the record as well, and that will be done.

That statement supports the request for a modest sum of money for an increased level for Lake Champlain. Their statements will be included in the record together with a letter addressed to Mr. Stewart Fonda, Adviser, Joint Commission by Howard Larsen, Chairman, U.S. Section, International Champlain-Richelieu Board.

[The statement follows:]

We appreciate this opportunity to bring to your attention a request for a modest additional sum to complete the study of lake levels of Lake Champlain. We assure this distinguished Subcommittee that this will be the last such request, as funding of $100,000 will complete the study. Just yesterday, April 7, the Fish and Wildlife Service, which is the lead agency on the study, made a periodic report to the International Joint Commission on its progress, noting this additional need for funds.

We value highly the cooperative attitude that this Subcommittee has taken on this important study in the past. It is vital that this money be available so that the report can be completed on schedule and submitted in October 1977 to the International Joint Commission.

You will recall, Mr. Chairman, that this issue arose because the Canadian Government has sought to go forward with flood control projects on the Richelieu River that would have altered the level of Lake Champlain.

In a cooperative effort to determine what impact this work would cause on the lake's wetlands, the Canadians agreed to withhold action pending a full and expeditious environmental review.

To meet that need, this Subcommittee appropriated $350,000 as a fiscal year 1975 item as a supplemental to begin the study. An additional $400,000 was appropriated for the present fiscal year, plus $135,000 for the Transition Quarter.

But, that total of $885,000 is $100,000 short of all that is needed, we are informed.

The spending is as follows:

$250,000 has been spent on the topographic mapping. That includes the aerial surveys and the actual construction of the detailed maps. That work is fully funded and will be completed in July of this year.

$350,000 is allocated to environmental studies, with nearly all of this covered by appropriations to date. For instance, this involves a $35,000 contract with the University of Massachusetts for vegetative studies. There are two major contracts, totaling $185,000, with the states of New York and Vermont to study fisheries, fur-bearing animals, and water fowl. These studies were begun this spring with fiscal 1976 money, and they must be verified next spring. Another $100,000 goes to the Geological Survey for a nutrient study of the lake.

$200,000 is allocated to the net benefit study, analyzing the benefits of regulation on lakeside homes and public structures. This work is being coordinated by the Corps of Engineers, under direction of the Fish and Wildlife people. $50,000 of the fiscal 1975 money, plus all of the Transition Quarter money has been budgeted toward this, leaving a shortage of $15,000.

$50,000, none of which is yet available from appropriation, is scheduled to be spent on the so-called physical aspects study—to hire independent engineers to see if the installations proposed in Canada will actually have the effects stated. This $50,000 must still be raised.

And $35,000 is still needed for contingencies, such as the cost of slight overruns in the cost of contracts on the vegetative study. In addition, $100,000 has been allocated to administrative overhead: salaries, travel, the operation of the International Champlain Richelieu Board. This money has been appropriated.

Mr. Chairman, we would also note that this is not just a U.S. effort. The Canadian government is making simultaneous studies on its side of the border on the exact same questions, with a report to the IJC. Thus, the IJC will receive a completed picture of the environment and the effects of lake-level regulation.

And the states of Vermont and New York have delegated staff scientists and others to work on the project at state expense.

Mr. Chairman, we believe this request is justified, and we urge that this Subcommittee include this additional $100,000 in the fiscal 1977 bill.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Post Office and Courthouse Building
Boston, Massachusetts 02109

February 26,

Mr. Stewart Fonda
Engineering Advisor
International Joint Commission
1717 "H" Street, N. W., Suite 203
Washington, D.C. 20440

Dear Mr. Fonda:

The Plan of Study for the Champlain-Richelieu program prepared by the International Champlain-Richelieu Board has been accepted by the International Joint Commission with the understanding that the United States will share in the funding of the activities of the Physical Aspects Committee. We now can make an estimate of United States funding needs for the overall Champlain-Richelieu study program as follows:

Topographic Mapping	$250,000
Environmental Studies	$350,000
Net Benefits Studies	$200,000
Physical Aspects	$ 50,000
Administrative Overhead-ICRB	$100,000
Contingency	$ 35,000
Total	$985,000

Congressional approval for funding is:

FY75	$350,000
FY76	$400,000
T.Q.	$135,000
Total	$885,000

The above figures show that an additional $100,000 will be required during FY77 to complete our approved Study Plan. We respectfully request that the International Joint Commission take what action they deem appropriate so that the State Department is aware of this need.

Sincerely yours,

Howard N. Larsen
Chairman, U. S. Section
International Champlain-Richelieu Board

ADDITIONAL PREPARED STATEMENTS

Senator BYRD. The record will remain open for the submission of statements of various House Members and Members of the Senate in support of items. The subcommittee will hear outside witnesses on Monday, Tuesday, and Wednesday of next week.

[The statements follow:]

STATEMENT OF SENATOR JOSEPH M. MONTOYA

Mr. Chairman--My suggestions for changes in the Administration--proposed budget for the Department of Interior and Related Agencies concern several program areas, although they primarily rest in the area of Indian programs. I wish very much that I did not continually have to come before the Committee to request additional appropriations but I feel compelled to do so by twin-forces. On the one hand are the clearly visible, very real needs of my constituents, and contrasted with these is the Administration budget which never has and never seems likely to come close to meeting those needs. Although my requests add up to several millions of dollars, I feel justified because I believe that this branch of government must live up to our obligations to Native Americans even if the Administration is unwilling to do so.

I would also point out that in approving these or similar amendments the Committee would be acting, in a general way, in concert with the spending priorities laid down by the Congress in First Concurrent Resolution in the Budget S. Con. Res. 109. Each of the items detailed below falls into category 300 "Natural Resources, Environment and Energy." Within this category, the President has proposed $9.7 billion in budget authority and $13.8 billion in outlays while the Congress has approved $17.0 billion in budget authority and $15.7 billion in outlays, an increase of $7.3 billion in budget authority and $1.9 billion in outlays.

Fortunately, because of the wisdom and persistence of this Committee, construction is beginning on much needed Indian Hospitals, despite attempts at delay instigated by OMB. This Committee, however, must continue the fight since the Administration, in an attempted rejection of the phased construction concept has presented a budget request for Indian Health Facility construction which does not carry through the mandate of the Congress. As you can see from my individual requests, I am proposing that this Committee reaffirm its commitment to the health needs of the Indian people by returning to the phased program adopted last year.

INDIAN HEALTH

This Committee recognized last year that the critical need for Indian hospitals had to be met and in order to begin the Committee adopted a phased construction plan which allowed for work to begin on several facilities including new hospitals at Acoma-Laguna and Santa Fe.

The Administration, however, in a rather convoluted document, proposed to undo the carefully developed phased plan approved by the Congress. Through a program of budget deferrals and recessions the Administration planned to complete construction of the Acoma-Laguna hospital by utilizing $2.6 million of the $4.6 million approved for Phase I at Santa Fe. The Congress

wisely rejected this plan and thus an adjustment is required in FY'77 to provide adequate Phase II money for both Santa Fe and Acoma-Laguna.

Also, last year this Committee, in recognizing the very real needs of the Indian people in the Cuba-Checkerboard area, provided funds for the continuation of medical services in the area. In its FY'77 budget, the Administration failed to request funds for this program, as it failed to request continuation funds for any programs added by this Committee last year.

ACOMA-LAGUNA AND SANTA FE HOSPITALS
PHASE II, CONSTRUCTION FUNDS

As I noted earlier, this Committee in FY'76 provided funds for Phase I construction at both Acoma-Laguna, Canoncito Hospital and at Santa Fe. In FY'76, the total funding approved for these two hospitals was $7,500,000. And the anticipated need for Phase II funding in FY'77 was $8,500.000.

Anticipating a Congressionally approved deferral of Phase I money at Santa Fe, coupled with FY'76 completion at Acoma-Laguna and an accelerated Phase II program at Santa Fe, the Administration has requested $7,900,000 for FY'77 construction and equipment needs at the two New Mexico hospitals. Of course, the Congress did not accept the proposal made by the Administration and in order to continue the phased program initiated last year, the Congress must appropriate an additional $600,000.

The breakdown between the two facilities would be $5.4 million to complete Phase II at Santa Fe and $3.1 million for the second phase at Acoma-Laguna, Canoncito. By continuing along this schedule, construction would be complete at both facilities in FY'77, leaving equipment to be purchased for both hospitals in FY'78.

Also, the Committee may want to consider adding to the FY'77 appropriation funds for equipment for both facilities and thus complete both projects in FY'77. I understand that equipment for the Acoma-Laguna, Canoncito facility would cost $1,110,000 and that equipment needs at Santa Fe would total $2,100,000. If we appropriate the additional amount for equipment at both facilities, the way would be clear to begin the phased construction of other facilities.

CUBA CHECKERBOARD AREA HEALTH SYSTEM

As the Committee is aware, since February, 1972, Presbyterian Medical Services (PMS) has been providing complete health services to 7,000 Navajo people in northwestern New Mexico. Since March 1, 1975, this care has been provided pursuant to a contract with the United States Indian Health Service.

Before the establishment of the Checkerboard Area Health System, Navajos in the area had to travel up to 120 miles over poor, often impassable, dirt roads to the nearest Indian Health Service facility. The Navajo people are extremely fearful that this excellent health care system is about to collapse and health care will revert back to the old ways.

On March 1, 1975, the Indian Health Service founded this medical care contract with certain surplus fiscal year 1975 monies. The entire Indian Health Service's administration, including Dr. Marlene Haffner, the Director of the Navajo Area Office, and Dr. Emery Johnson, the Director of the United States Indian Health Service, have enthusiastically supported and worked hard to maintain this important program and praised the work of PMS.

Last year this Committee reaffirmed its commitment to quality health care for the Navajo people by providing $750,000 to carry on the CHECKERBOARD AREA HEALTH SYSTEM, however, the Administration has again failed to request funding for this program. The Committee will recall the strong endorsement of the Checkerboard System Dr. Emery Johnson gave during our hearings on the Administration FY'77 Budget.

In order that the Checkerboard System can continue to meet the critical health care needs of those within the area, I am again coming to the Committee with a request that additional funds be appropriated. I am requesting that this Committee provide in FY'77 funds in the amount of $1,201,000.00. This amount will allow for the continuation of existing programs, taking inflation into account, and increase funds for out-of-area referrals, dental care, the Huerfano Clinic, increased inpatient medical services at PMS's Cuba Health Center.

This request assumes, in line with IHS estimates, a 13% inflation rate along with $353,000.00 for expanded services. It is my sincere hope that the Committee can grant the full request for this vital program.

CROWNPOINT AND OTHER HOSPITALS

I also request that the Committee give serious consideration to funding a replacement facility for the Crownpoint hospital. Crownpoint is a 56 bed, 11 bassinet facility which was constructed by the Bureau of Indian Affairs in 1939. Since its erection, the building has been remodeled many times in attempts to keep pace with the greatly increased patient load and with medical advances that have occurred during that period. By now, however, the hospital is in a run-down condition and clearly needs to be replaced. I understand that approximately $9 million are needed to undertake this work. In order that the Committee can consider a phased construction program for this hospital in the next fiscal year, I am requesting that planning funds of approximately $800,000 be appropriated this year.

Also, as this Committee is aware, design plans for modernizing and expanding the facility at Shiprock, New Mexico are now complete. As I understand it, the total cost for the proposed facility is approximately $18,538,000, with $9.5 million needed for Phase I construction. I feel that this Committee should give consideration to initiating construction of this facility in FY'77.

EDUCATION SCHOOL CONSTRUCTION
Ramah

This Committee is very familiar with the operation at Ramah. This school, the first and the most successful Indian contract school in the country, has received a good deal of well deserved attention. It may interest the Committee to know that I made personal visits to Ramah last year and was very favorably impressed. The Ramah Navajo School Board has assembled an extremely competent team of educators who, from all indications, are running a splendid school. The faculty is sharp, the students are interested and enthusiastic, and the cultural traditions of the Navajo are being nurtured and preserved by means of creative curriculum which reaches parents and community members as well as students. This school represents local education at its very finest. I also observed that construction of the new school is proceeding well and staying within cost and on schedule.

I am very grateful to the Committee for the support which it has shown to me and to this school over the past few years. In 1972, you provided $950,000 to drill the wells the school would need. In 1973, you accepted the administration request of $2.7 million to initiate construction. In 1974, you provided an additional $800,000. Last year the Congress provided $2,290,000.00 for construction of a clinic, Kindergarten, garages for school buses, shops, additional high school classrooms, site work and a one-time payment to the local electric cooperative.

I now come before you with a request which will essentially complete the central educational plant at Ramah. This year, I am asking that the Committee appropriate $5,224,000 for construction of an Instructional Media Center to house the library and teacher work areas and a media center; staff housing necessary to attract professional personnel (55 units); and a cafeteria which will allow classrooms to be returned to their intended use.

While this may seem like a great deal of money for a school, one should bear several points in mind. First, this school is forced, due to its remote location and to the fact that it will also serve as a community center for Ramah, to have features such as staff housing, a clinic and dormitories not usually found in non-Indian schools. This, of course, inflates the cost. Second, the school, when completed, will have cost less than the original Bureau proposal, which stood at $16 million several years ago. Over the space of the intervening four or five years, inflation surely would have boosted the BIA estimate to over $20 million. Finally, it is important that we provide additional funds this year so that Phase II construction can merge smoothly with the completion of Phase II. Otherwise, the equipment and the work crews at this remote school site will have to be removed and a great and unnecessary expense will be incurred when they finally do do back to work.

LAGUNA MIDDLE SCHOOL

The Pueblo of Laguna is fortunate in having its students attending classes on the reservation, but it faces different and perhaps more serious problems. On one hand, the school is seriously overcrowded (it was designed to house 350 students but now houses 600), and on the other, it is a public school which is controlled by a non-Indian school board which has not always enjoyed good relations with and has not been responsive to the wishes of Indian parents. For example, unlike the situation found in most Indian schools, there are no bilingual/bicultural programs at Laguna. As another example, the severe overcrowding last year limited participation in a special education program to 18 children even though there are 38 other children at Laguna who need special educational services and would qualify for them if facilities were available.

After much study, the Pueblo found that the design of a Middle School (Grades 6-8) would better meet the needs of the Laguna people. The Pueblo has proposed the construction of a facilty of approximately 48,000 square feet with construction costs totaling $3,610,425.00. This project could be constructed in two phases. Phase I would consist of the Academic Facilities (26,000 square feet) at a cost of $1,965,925. Phase II would consist of Physical Education and Field Facilities, consisting of 22,000 square feet and costing $1,644,500.

Although this facility has not been listed in a high position on the Bureau's national priority list, it is critically needed by the people of Laguna to alleviate severe overcrowding at existing facilities. Design is now complete at this facility and I urge that this Committee appropriate the full $3,610,425 needed for construction at Laguna.

COCHITI LAKE ROAD
(REPLACEMENT ROAD FOR U.P. 90)

In November of 1974, the Pueblo of Santo Domingo, in a dispute with a neighboring tribe, closed a portion of State Road 22 (United Pueblo Road 90). This road provided vital access to the Cochiti Dam site and the town of Cochiti Lake. In addition, the road in question is the shortest and most direct access road to the Lake-Dam area. The highway stretches from U.S. 85 about 25 miles south of New Mexico's capital city of Santa Fe and winds its way through both the pueblos of Santo Domingo and Cochiti. Without this road, persons traveling southward of U.S. 85 have to drive an additional 20 miles round trip. The closure of the road also poses problems for law enforcement officers who routinely patrol the road.

Officials of all the governments involved in this matter, with the exception of the Santo Domingo Pueblo, have been exploring various alternatives so that the much needed access can be provided for the affected citizens. The State of New Mexico, through the State Highway Department, has proposed and designed alternate routes for the closed road. The most feasible of these routes is a 4.17 mile alternate permanent road estimated to cost $1,540,000. The State has also indicated its desire to take any necessary steps to facilitate the eligibility of the proposed replacement road for the appropriate Federal program.

The Committee should note that the alternate route would run on Forest Service land and thus aquisition of the necessary right-of-way would provide no pratical problems.

I would propose that this Committee appropriate an additional $1,540,000 for the Forest Development Roads and Trails program to provide for the construction of the alternate access road.

SAN FELIPE

One of the central ideas behind the Ramah school is to return Indian school children, now spread all over the country, to their homes. The same idea also underlies the desire, which I fully support, of San Felipe Pueblo to build a new day school for 580 pupils in grades K-8. At present, the majority of San Felipe students in grades K-9 attend one of three different schools. The youngest children, some 218 in number who are in K-3, already attend school at the BIA's San Felipe parents are understandably concerned that their children grow up in a school which emphasizes San Felipe--rather than Santo Domingo or non-Indian--values and tradition.

I am happy to report that in this case the wishes of San Felipe coincide with the position of the BIA. The Bureau advised me last year that construction of the San Felipe school is number one on the school construction priority list of the Albuquerque area and that it is a high-priority project when considered from a national point of view as well. In FY 72, we approved $25,000 for advance planning at San Felipe and a year later provided $240,000 for architect/engineering work. I propose that we now appropriate the $4.4 million needed to convert this project from a high priority into a reality.

LAGUNA PUEBLO-SEAMA RESEVOIR

The Pueblo of Laguna has long been a leader in the area of comprehensive planning for the future development of the people. Laguna has been the leader in developing programs which would enhance the economic and social progress of the Laguna people. The Pueblo Council has indicated the importance of the Project to the Pueblo by authorizing the expenditure of $100,000 for the project which is expected to total $510,000.

This reservoir is vitally needed by the Laguna people to provide a constant water supply for the agricultural and community needs of the six villages which make up the Pueblo of Laguna. The proposed Seama Dam will be horseshoe shaped with the crest placed at an elevation of 6,005 feet, a width of 12 feet, and a length of 3,120 feet. The maximum height of the dam will be approximately 24 feet. The embankment will have a 3:5:1 upstream side slope and a 3:1 downstream slope.

The Albuquerque Area Office has assisted the Southern Pueblos Agency and the Pueblo of Laguna in the development and design of the dam. I urge in the strongest possible terms that this Committee appropriate the $410,000.00 needed to match the $100,000.00 to be supplied by the Pueblo so that construction can begin on this project.

ROSWELL DESALINIZATION PLANT

This Committee is extremely familiar with the work which has been so successfully undertaken at the Roswell Test Facility, now under the jurisdiction of the Office of Water Research and Technology. The facility has operated under authority provided by Congress in 1958. Although the Administration has indicated in the past that Roswell no longer had a role to play in saline water research, the Congress has made the determination that valuable research could still be performed at the Roswell plant. Most recently, the FY'76 Supplemental Congress mandated the continuation of the effort at Roswell.

Also, earlier this year testimony was presented to the House Interior Committee, which I inserted in the hearing record of this Committee, suggesting that a great deal of work remained for the Roswell facility. The testimony urged that the Congress continue to operate the facility so that the efficiency of the membrane process could be improved. This Committee will recall that when the membrane test facility was first opened, an efficiency rate of 90% was predicted but to date the rate of efficiency has only reached 70%.

I urge that this Committee direct the Office of Water Research and Technology to keep the Roswell facility in operation and appropriate sufficient funds to operate the facility through FY'77.

INDIAN EDUCATION - 1974 AMENDMENTS

I also recommend that we provide funding for the first time for the program in graduate fellowship in engineering, medicine, law, business, forestry and related fields authorized by Title VI, Part B, Section 631 of PL 93-380, signed August 21, 1974. Section 631 amends the Indian Education Act by adding two new sections, one of which (Section 423) accomplishes the purposes outlined above.

The need is growing rapidly to provide fellowship assistance to college-educated Indian students seeking technical or professional training at the graduate level. This need arises from several causes. One is the rapidly increasing number of college-educated Indians; as more earn a B.A. or a B.S., the number realizing their capability to earn a technical or professional degree also increases. Another cause is the increased responsibility which Indians are taking for their own affairs. The enunciation of the self-determination policy, the recent Mancari decision giving Indians preference in hiring and promotion on Federal programs primarily affecting Indians, and the approaching completion of projects such as the Navajo Irrigation Project are all creating a demand for Indians possessing sophisticated technical or professional skills.

One program which I know of personally was begun recently by the Department of Engineering at the University of New Mexico to train Indian students in mechanical, chemical, nuclear, civil and water engineering. The program is seemingly catching on very quickly. In only a few months, 80 applications have been received for 40 available places, all from Indian people who, because of religious beliefs, have very rarely

entered engineering in the past. This is a sign of the times, and I believe we would do well to recognize it and other signs by appropriating the $2 million which the Office of Indian Education estimates will be required for the 200 authorized fellowships.

BILINGUAL EDUCATION

In 1968 the Bilingual Education Act, Title VII ESEA, was enacted. The opportunity for BIA Indian schools and contract Indian schools to participate in this federally supported bilingual/bicultural education program was used with success in many cases. Several of the programs for Indian children have been outstanding examples of bilingual and bicultural education development. In the Education Amendments of 1974, Congress attempted to encourage use of this federal program for Indian children by providing that a nonprofit institution or organization of the Indian tribe concerned could be considered a local education agency for the purposes of applying for grants under Title VII. Congress also mandated that the Secretary of the Interior prepare a report annually to detail the needs of Indian children with respect to bilingual education.

Unfortunately, Indian schools are at a disadvantage under the current bilingual education law as it has been interpreted by the Administration. Because Title VII is seen as a demonstration program, with a limit on the number of years a school may participate, programs under this title for Indian children are being discontinued in some cases on the basis of demonstrated success of the program concerned. Although the intent of Congress has not been to limit funding to a demonstration program, the limited funding of the Title VII program in relation to the widespread need for the development and encouragement of bilingual programs for language minority children has encouraged the shifting of federal support from successful programs to new programs. This situation has caused hardship for many schools, but for Indian schools which cannot turn to local or state funding sources when federal participation ends, the situation is extremely serious. The Committee should urge in its report that the Bureau's Education Office develop a program for FY 78 which would allow the Bureau to pick up Indian Bilingual Education programs when Title VII participation ends. I will submit for the Committee's consideration draft language which I feel will be appropriate to correct this problem.

LETTER AND STATEMENT FROM SENATOR PEARSON

April 8, 1976

Dear Mr. Chairman:

Would you please make the attached statements by Congressman Skubitz and myself, requesting an appropriation for further construction at the Fort Scott Historical Site, part of the hearing record.

Very truly yours,

James B. Pearson

James B. Pearson
United States Senator

I ask the consent of this Committee to place in the Record the attached statement by Congressman Joe Skubitz of the Fifth District of Kansas, urging an appropriation of $618,942 for construction at the Fort Scott Historical Site. This project is in Mr. Skubitz' District and probably more than any other person, he knows and appreciates the historical significance of this project, not only to Kansas, but the Nation as well.

Rather than be repetitious, may I simply state that I am in full accord with Mr. Skubitz' statement and urge this Committee to provide $618,942 in order that this project can move forward and become a part of the history of the frontier of the border wars in the West. Your favorable consideration of this request is most appreciated.

STATEMENT
BEFORE THE
APPROPRIATIONS COMMITTEE OF THE
SENATE
BY
CONGRESSMAN JOE SKUBITZ

Mr. Chairman:

Eleven long years ago the Congress authorized and approved the establishment of twelve national areas and the Fort Scott Historic Site was one of them. The following year funds were provided for all of them, except one, Fort Scott.

Each year since, I have asked for funds or for funds beyond that requested by the Bureau of the Budget, and each year your Committee has been very sympathetic and helpful.

The project has dawdled along, and because of it, inflation has made it nearly impossible to accomplish much. We are talking about a project that will cost not $30 million, but less than $2.5 million, to be located in a state whose role in the making of the west and whose role during the border wars which preceded the Civil War cannot be questioned. The location and the remaining structures of Old Fort Scott tell the story of the history of the American f rontier.

From its origin in 1842 as a military outpost, through the period following the passage of the Kansas-Nebraska bill in 1854, through the grim days of the Civil War and the Civil War itself, Fort Scott has played an important role as a border outpost. It kept the peace on the border as thousands of settlers moved westward through the Indian country. It guarded the military road, the main artery of trade from western Missouri to the South and West. When the Indian menace diminished, the Old Fort became the nucleus around which a peaceful town began to grow. But the Kansas-Nebraska bill changed all that.

From 1854 to 1861, Fort Scott symbolized the furious struggle between the pro-slavery forces of the South and the free slaves

of the North, over the issue whether Kansas should be free or slave. It took seven years of border warfare and bloodshed to decide that issue. Any wonder that Kansas was referred to as "Bleeding Kansas."

Senator Charles Sumner saw the importance of the struggle, and in his famous speech "The Crime Against Kansas" said:

> "The fight over Kansas spreading from the western plain to the Senate Chamber -- would go to the nationwide stage where every citizen will be -- not only spectator -- but actor."

It was at Fort Scott that Charles Hamilton plotted the Marais des Cygnes massacre that caused John Greenleaf Whittier to write one of the most famous anti-slavery poems in which he said:

> "On the lintels of Kansas -- that blood shall not dry."

And what did he mean -- "On the lintels of Kansas that blood shall not dry?"

Dr. Dudley Cornish, Connecticut Yankee, Professor of American History at Kansas State College -- explained it much better than I, when he said:

> "What Whittier meant was clear: A passover was beginning out on the Kansas-Missouri border and that other blood would be required before the slavery question could be answered."

During the Civil War, Fort Scott became the funneling point through which supplies flowed to the Union forces in the upper trans-Mississippi west. In November, 1862, Major Herring reported $2 million worth of stores were at Fort Scott. Fort Scott became the center of recruiting where troops were trained and mustered into the Federal service. Here the first negro troops were organized. Fort Scott was the key to the the defense of the middle border. Without it, the war on the border would have been another story.

No wonder that Confederate General Sterling Price's military ambition was to reach and capture Fort Scott. Every Ameri-

can school boy and girl has read and remembered Abraham Lincoln's famous Gettysburg Address:

> "That we here highly resolve that these dead shall not have died in vain....."

My guess is that if you ask the question, where was the first National Military Cemetery established, the answer would be Gettysburg or Arlington. Right? Wrong! On July 17, 1862, more than one year before those words were spoken at Gettysburg, President Lincoln authorized the establishment of Fort Scott National Cemetery Number 1.

MR. CHAIRMAN, I have given you a brief outline of the historical significance of Fort Scott, that you might understand that I am dead earnest in my request to see this project completed. It is my hope and prayer to see it completed by 1978. The total cost of the project is around $2.5 million. There remains $618,942 in authorized but unappropriated funds. Fort Scott gave property valued at $295,000.

I urge this Committee to appropriate the balance of the funds, $618,942.

I am advised by the Regional Office that $377,500 would be needed to complete the Master Plan, but that the balance of the funding will make it possible to complete the interiors of a number of buildings that under the Master Plan could not be completed because of a lack of funds.

STATEMENT OF SENATOR FRANK E. MOSS

Mr. Chairman, I am appearing today before the Committee to ask that an appropriation of $700,000 be made to the Forest Service for exclusive use in solving the problems associated with the Manti Land slide in Manti Canyon, Utah. The emergency situation which exists in Manti requires immediate attention from the Forest Service. They have neglected for too long this massive landslide which is two miles long, and some 2,000 feet wide at the toe and suspected to be at least 300 feet deep and which began moving at the average rate of 2 feet per day in June 1974. During the high runoff period, downward movement of the slide toward the city of Manti has reached 8 feet per day. An estimated 26 million cubic yards of earth moved 340 feet in the three month high runoff period in 1975. Eventually, this slide will completely impound Manti Creek. Already the creek channel has been raised 90 feet in some places. The impoundment of the Manti Creek channel will create a tremendous flood danger to say nothing of the adverse affect it will have on the major economic base of Manti, namely agricultural because of an increase in sedimentation in the irrigation waters which all have as their source Manti Creek.

The landslide which is wholly on Forest Service land, earlier destroyed the city's culinary water and power pipeline and created tremendous hardships for the people of Manti. The Forest Service has repeatedly been urged for the past two years to do something about the slide with its great potential danger to the lives and property below. But their action has been inaction.

In August of 1975, the Governor set up a committee in an effort to resolve the problem which this slide poses. This committee made several recommendations for mitigating the potential danger. Some of those recommendations were first common sense measures such as cleaning the flood catch basins of Manti Creek and rerouting natural springs above the slide, the waters of which first serve to lubricate the slide. These recommendations were first ignored and people were powerless because of the cost of such a project. This is a small, poor town and the slide is completely on Federal land. In a last resort, the people and officials of Manti came to me and asked that I do something.

In November 1975, I presented the problem facing Manti to this Subcommittee. In response to my request, this committee directed the Forest Service "to begin immediately a comprehensive investigation" of the Manti landslide "with the goal of initiating measures" to help solve the problem.

The Forest Service compiled a report, in response to the directive given by this committee, asking that additional funds be made available for further investigation of mitigating measures in Manti Creek. I am asking today for an appropriation of $700,000 for the Forest Service and that they be directed to begin immediately the following actions:

1. Prepare a stability analysis of the north side of the canyon opposite the slide;

2. Initiate emergency action to keep the channel open and the debris basins clear, on and off Forest Service land;

3. Prepare Environmental Assessment Review, Benefit and Cost analysis and feasibility analysis, and;

4. Prepare engineering surveys, plans, and estimates for a pipeline diversion structure.

The Forest Service has asked for $1,050,000 for these four measures, but in talking with them, I find that it can perform these measures for the lesser amount. This lesser amount of $700,000 is already written into the House bill and report of March 24, 1976.

I am also asking that the Forest Service be directed to accomplish these measures by May 31, 1976. Delay has already been very costly to thepeople of Manti and any further delay may bring tremendous destruction to property and threat to lives. In addition, the Forest Service must be given specific authority to use the appropriated funds on or off Forest Service lands in the Manti slide area.

I am indebted to this committee for its help in the past and for very graciously allowing me to appear before it today.

Thank you very much.

STATEMENT OF SENATOR JOHN C. STENNIS

Mr. Chairman and members of the Subcommittee, I appreciate the opportunity to present a statement on the construction program for the Natchez Trace Parkway, in connection with appropriations for fiscal year 1977.

The Natchez Trace Parkway, in Mississippi, Alabama, and Tennessee, has been under construction for the almost unbelievable period of 39 years. It has reached a state where it would be a sound investment for the Govemment to complete it in a timely way and start

to realize the benefits to the citizens of that three-state region and to the many other citizens who as tourists visit that area in increasing numbers each year.

I believe that it is not sensible to prolong this project year after year, leaving it as a facility that is useable only in intermittent stretches. The citizens who attempt to use this Parkway for the intended purposes must inevitably receive a very unsatisfactory impression of the consistency of Federal policies.

As has regularly been the case for a number of years, the President's budget does not contemplate the continuation of construction of this Parkway at a pace that will provide reasonable progress.

I am informed that a Parkway environmental impact statement is under preparation and will be completed during fiscal year 1977. Because the construction season will be next summer and early fall, completion of the environmental impact statement by spring, as expected, will permit the timely obligation of construction appropriations. The environmental impact statement need not, of course, affect the obligation of planning money.

The National Park Service advises me that the following are the established priorities under which money appropriated for construction would be applied:

Construction

Priority 1:	Tupelo Subdistrict, Mississippi, Section 3-C, 1.4 miles, $2,882,000
Priority 2:	Cherokee Subdistrict, Alabama, Section 2-D-1, 6.9 miles, $11,266,000
Priority 3:	Cherokee Subdistrict, Alabama, Section 2-D-2, 4.6 miles, $5,764,000

For project planning funds, the following are the Park Service priorities:

Planning

Priority 1: Tupelo Subdistrict, Mississippi, Section 3-B, 6.5 miles, $465,000

Priority 2: Cherokee Subdistrict, Mississippi, Sections 3-A-2 and 3, 10.1 miles, $480,000

I wish to urge the Subcommittee to give all possible consideration to appropriating the money to carry on the construction and planning of the Natchez Trace, in accordance with the above priorities, and to the degree that can be afforded under the fiscal constraints that have been established.

Mr. Chairman and members of the Subcommittee, I commend this worthy and long delayed project to your favorable consideration.

I thank you for the opportunity to present this statement.

LETTER AND STATEMENT FROM SENATORS METCALF AND MANSFIELD

United States Senate
Office of the Majority Leader
Washington, D.C. 20510

12 April 1976

Honorable Robert C. Byrd
Chairman, Subcommittee on Interior
and Related Agencies
Senate Appropriations Committee
Washington, D. C. 20510

Dear Mr. Chairman:

Enclosed is a statement supporting our amendments to the President's Budget for Fiscal 1977. We ask your careful consideration of these items that have been selected from a much larger number called to our attention and individually reduced to minimum amounts for reasons of economy.

Represented in the enclosure are additions to the budget for which there is an accumulated, urgent need that will remain urgent and unmet unless Congress acts. Many of them, including the requests for research for magnetohydrodynamics and for Indian school construction are within the legislative committee's budget recommendations.

We urge the Committee's approval of our requests.

Very truly yours,

Lee Metcalf, U.S.S.

Mike Mansfield, U.S.S.

MR. CHAIRMAN:

We appreciate this opportunity to present our annual requests for appropriations for the State of Montana and the Nation in the fields of energy and natural resources. Senator Mansfield, my senior colleague, has read the following statement and wishes to be associated with it.

ENERGY

We strongly support maximum funding for all research, development and demonstration programs aimed at conserving the Nation's energy and providing for self-sufficiency in the near future. In particular, we emphasize the need to continue development of coal technology, especially in the area of handling and processing and we support scientific and technological work in the Nation's universities which must produce the badly-needed, qualified technical people to work in the coal area.

In the energy development field, we are particularly interested in the funding requirements for the Energy Research and Development Administration's magnetohydrodynamics (MHD) program in Fiscal Year 1977. ERDA's request for FY 1977 funding of the MHD program is $37.4 million. Of this amount $5 million will be used to complete the $31.5 million estimated cost of the Component Development and Integration Facility construction package. $32.4 million will remain to continue the national MHD research and development work.

Mr. Chairman, $37.4 million is the bare minimum needed for continuation of the national MHD program in FY 1977. This figure will maintain a barebones operation and not allow for backup technology development in the event of first-run technology failures. Recognizing the constraints on the FY 1977 budget and assuming ERDA's requested $20 million MHD reprogramming request is approved, we urge this Subcommittee to consider appropriating the maximum amount authorized for MHD in the FY 1977 ERDA Authorization Bill. The Subcommittee's efforts, to date, in the development of the MHD technology are greatly appreciated, and we urge your careful consideration of the funding requirements for MHD in FY 1977.

Mr. Chairman, we would also like to indicate our support for Senator Glenn's efforts in behalf of the fuel cell technology. Fuel cells have great potential for application in rural and remote areas of the Nation, particularly in a State like Montana. Although ERDA has been slow in organizing its fuel cell program, it is our understanding that Dr. Seamans and ERDA intend a major effort towards developing this technology. We urge the Subcommittee to give consideration to approving the $21 million requested in FY 1977 for the fuel cell program.

Additionally, Montana and the Northern-Tier States are greatly concerned over the impending Canadian cut-off of natural gas and the shortage of crude oil for our land-locked refineries. We urge the Committee to consider the problem of transporting Alaskan oil and natural gas to the Northern-Tier States and support any efforts to find a solution to this situation. We would ask the Subcommittee to provide ERDA with whatever funds are necessary to expand and accelerate its coal gasification program and other efforts designed to provide snythetic fuels to alleviate the short term energy problems faced by the Northern-Tier States.

NATURAL RESOURCES

Mr. Chairman, we are greatly distressed by the continuing lack of concern by the Administration for proper management of our forests, soils, wildlife, water and other renewable natural resources. The President's budget message, to put it charitably, is deliberately distorting the facts in boasting that from 1969 to 1977, the most rapid growth in non-defense and non-human resource Federal expenditures was "in areas of new, but sustained, national interest -- natural resources, environment, and energy . . ." A review of the proposed fiscal 1977 budget reveals that the Natural Resources, Environment and Energy function would allot substantial increases to energy and pollution abatement and a slight increase to water resources and power, but a reduction in funding for "conservation and land management" -- a category which includes most renewable resource management provided by the U.S. Forest Service, the Bureau of Land Management, and Agriculture conservation programs. The Administration seeks a cut of $229 million in this category.

In listing its 10 "program highlights" within the Natural Resources, Environment and Energy function, the Administration names six energy-related projects, two dealing with sewage treatment, and two involving recreation. One recreation proposal would add an inadequate 400 people to man the national parks during the Bicentennial Year (nothing is provided for improving resources within the parks). The other provides for $300 million for recreation land purchases and development. This money actually refers to Land and Water Conservation Fund money collected from offshore oil leases, motor boat fuel taxes and recreation area entrance fee receipts which are earmarked and cannot be used for anything else.

We ask that the Subcommittee, at the very minimum, restore the cuts across the board. We refer to the Administration's attempts to reduce the Department of Agriculture's conservation program by $100 million, to eliminate the Water Bank Program and Forest Incentives Program, to cut the Great Plains Conservation Program by $10 million, and so on. Our comments on specific agency budgets are as follows:

FOREST SERVICE

In 1974, the Congress enacted PL 93-378, the Forest and Rangeland Renewable Resources Planning Act of 1974. The Act committed the Congress and the executive branch to work within both short-range and long-range plans for the improved management of our natural resources. The Forest Service has already submitted its initial assessment of resources and has projected management goals through 1980. A second assessment, due in 1979, will serve as guide for the years 1980 to 1990. The Congress must now review the presentations of the Forest Service and set forth a Statement of Policy to be used as a guide for framing future budgets. Every policy and spending decision taken by this Subcommittee will have great bearing on the ultimate success of this ambitious effort to rehabilitate the Nation's forests and rangelands. We urge you to insist that the Administration honor the intent of renewable resource program already submitted by the Forest Service under the Resources Planning Act. The agency is, after all, as much a part of the Administration as is the Office of Management and Budget, and it certainly has more expertise to speak on national needs in renewable resources than does the OMB. The Administration should not be permitted to speak out of both sides of its mouth.

Forest Resource Assessment

The Resources Planning Act mandates a 10-year assessment by the Forest Service, encompassing 1.5 billion acres. The Administration is requesting only $6.2 million for this purpose;

at least $5 million more is needed. The additional funds would accelerate the process, provide for development and testing of techniques for inventorying and assessing non-timber renewable resources and reduce the timber inventory cycle. It is especially critical for the Rocky Mountain area where field work is under way in Utah and New Mexico and planned for Montana.

Endangered and Threatened Animals Research

The Endangered Species Act of 1973 requires the Forest Service to insure the protection of certain species of animals on its lands. As of January 1976, 113 animals were classified as endangered or threatened. Two important ones are the grizzly bear and the Northern Rocky Mountain wolf. The Intermountain Forest and Range Experiment Station, in cooperation with states and universities, is studying these two elusive animals in Montana and neighboring states. We request that $150,000 be appropriated to maintain this important research.

Access to Public Lands

Mr. Chairman, we have brought this to the attention of the Subcommittee in previous years. It is a serious problem which is getting worse. Speculators, dude ranchers, absentee owners and others purchase lands on the boundaries of national forests, post their property and seal off access to public lands. In many cases, the Forest Service removes gates and other obstacles only to have them replaced and posted again after the ranger leaves.

The problem is especially acute in Montana in those national forests on the eastern slope of the Rocky Mountaisn where lower timber production has not produced a network of timber access roads. An example of the seriousness of the problem -- and the magnitude of its correction -- is the Gallatin National Forest. Supervisor Lewis Hawkes has said that "about 35 per cent of the forest cannot be reached at all by the public, and some places have as much as 30,000 acres closed off." We are informed that it would require a 13-year effort and $9 million to correct this for the Gallatin alone and the total for the six national forests lying on the eastern slope in Montana would require $56 million over the same time period.

Much is being said about enhancing recreational opportunities for Americans during the Bicentennial Year. We urge the Subcommittee to help matters along by opening up available public land. We request that you direct the Forest Service to conduct a pilot program on the Gallatin National Forest in Montana and that you allot sufficient funds to carry it through to completion. Money would be used in the first year for planning, in the second for field work, and in the third for the beginning of appraisals. Purchases would be completed by the eighth year, and construction and reconstruction of access roads would be completed by the 13th year.

Mr. Chairman, it is not right for an individual to have to drive tens of miles to enter a national forest when he can see it a few yards away beyond posted private property. A way must be devised to return effective ownership of the public lands to the public. The Gallatin pilot program would be a good beginning. It is strategically located north of Yellowstone National Park, receives millions of visitors each year and could accommodate many more.

Goodrich Property

We have already communicated by letter with the Subcommittee on the need to provide to the Forest Service $950,000 for the purchase of the James Goodrich Ranch in the upper Gallatin. Purchase of the ranch from The Nature Conservancy will permit the

agency to consolidate its holdings, provide for better management and preclude potentially destructive land speculation and development in a fragile ecosystem. The public interest will be greatly served by acquisition of the property.

Forest Roads and Trails

When the Senate Public Works Committee in 1964 authorized limited construction of forest roads by timber purchasers, many of us objected on the grounds that the practice would spread, thereby damaging the economies of the forest communities and counties. Agriculture Department spokesmen, quoted in the Committee Report (No. 1174) which accompanied legislation leading to PL 88-657, said:

> "We believe this can be worded to make it clear that the rights of timber purchasers to construct maximum economy roads could not have the effect of reducing the 25 per cent of national forest receipts paid annually to the States to be expended for roads and schools for the benefit of counties in which national forests are located."

Our fears have been well-founded. What was envisioned by the Congress as a limited program has been converted by the Nixon-Ford Administrations into practically the sole source of funding. An incredible 95 per cent of our timber roads are constructed today by timber purchasers. As a result, tax receipts to counties have fallen off drastically. Equally important, the Forest Service is being deprived of a critical management tool: the right and responsibility of laying out a road network for future multiple-use purposes. Finally, roads funded from purchaser credits are of poorer quality and contribute much to the erosion now taking place in the national forests.

The President's budget calls for $370 million for timber roads -- $200 million for timber purchase authority and $170 million in liquidation of contract authority. We feel that the total should be raised to $420 million, and that funding sources be of a different mix. We suggest that the timber purchase portion be reduced by $50 million to $150 million and that the remaining $270 million be appropriated from the Treasury. An increase of $100 million in direct appropriations would still leave $106 million in unfunded authorization. This step would go a long way toward restoring Congressional and Forest Service control over road policy in the national forests, and it would put some badly needed money back into forest communities.

Repair and Construction of Montana Roads

Two forest roads in Montana, carrying heavy recreational traffic, are in particular need of repair. Both are in the Lewis and Clark National Forest. One is the six-mile road south of Lewistown leading to Crystal Lake; the other is the 8.36-mile North Fork Teton Road from the forest boundary to the rapidly growing Teton Pass Ski Area. Safety is the principal consideration. The Crystal Lake road would require $599,200 to widen, place guard rails, improve drainage and resurface. The Teton Road needs to be widened to two lanes, complete with a bridge and would require $1.3 million.

Forest Fire Prevention

The Administration is seeking to phase out the Clarke-McNary, Section 2, Cooperative Forest Fire Program and the Title IV, Rural Community Fire Program. The Clarke-McNary Program has helped Montana provide satisfactory fire protection for 16 million acres of forest, range and crop lands. The Title IV, RCF Program is a

valuable pilot program scheduled for only one more year of operation. Past use of both programs in Montana has benefited forest landowners holding some 8-1/3 million acres of forest lands and directly assisted some 34 rural fire districts in 19 counties. At present, Montana lacks adequate levels of protection for over 30 million acres of State and private land. We ask the Subcommittee to restore the Administration's cut of some $11 million to the Clarke-McNary Program and to keep the Title IV effort alive through appropriations.

Reforestation

The Administration has been accused of following a policy of timber "mining" -- a one-shot removal of the resource. The charge is denied, of course, but a look at the reforestation record gives it validity. By the Forest Service's own estimates, we are nearly 4 million acres behind in reforestation. Yet once again, only a token amount is being requested by the Administration to meet the backlog. The President's budget message lists as "examples of recent accomplishments" the reforestation of 124,706 acres in 1975 with appropriated funds and 221,163 acres with Knutson-Vanderberg funds. It proposes to plant some 199,624 acres in 1977 with appropriated funds and an unspecified amount with K-V funds. Although the Forest Service claims it is "on schedule" with its proposed 10-year effort to catch up, we feel the effort is entirely too weak. We urge that sufficient funds be appropriated in 1977 to reforest 300,000 acres, and that the agency be directed to furnish the Subcommittee with data leading to an accelerated reforestation schedule for the years ahead.

U. S. FISH AND WILDLIFE SERVICE

Western Game Ranges

As a result of Public Law 94-223, signed on 27 February, 1976, the Fish and Wildlife Service received sole jurisdiction over the Kofa, Charles Sheldon and Charles M. Russell game ranges in Arizona, Nevada and Oregon, and Montana, respectively. The agency must replace the funding and manpower formerly provided by the Bureau of Land Management. The Charles M. Russell National Wildlife Range covers roughly one million acres, contains a wide variety of animal, bird and fish species, provides recreational opportunities for over 300,000 people a year and furnishes grazing for the herds of many nearby ranchers. In order to meet its mandate, the Fish and Wildlife Service needs an annual budget of $520,000 and 25 permanent full-time employees to administer the range and restore its wildlife-bearing capacity. In addition, the agency estimates a need of $200,000 a year over a four-year period for facilities relating to grazing management -- primarily fencing. In short, the agency finds itself with a short-fall of $150,000 for general administration, $200,000 for grazing-related activities and 15 full-time positions if it is to reach full strength. We support appropriations in these amounts for Russell, and we support corresponding increases for the Kofa and Sheldon Ranges.

Miles City Fish Hatchery

The Congress, with the assistance of your Subcommittee, appropriated $41,000 last year to repair this facility which supplies warm water fish to federal agencies, state governments and Indian agencies in seven states. It now develops that an additional $20,000 is needed to develop a plan for obtaining future water supplies from the Yellowstone River. We hope this small sum can be provided.

BUREAU OF LAND MANAGEMENT

Mr. Chairman, we shall not ask for specific dollar figures for this agency, but we do request you to assure that its new energy mission does not so overshadow its traditional range-rehabilitation goal that the latter is permitted to die. We have witnessed within the last year a "reorganization plan" in Montana which shifted BLM personnel to accommodate new energy demands. In the process, the economies of two small communities were badly damaged. Despite assurances that care of the land will not suffer, we simply do not believe it. Your Subcommittee already has a document from the agency showing its poor record in land care. We urge you to (1) halt the trend away from land care, and (2) specify that a higher portion (perhaps as much as one-half) of grazing receipts be returned to the agency for rehabilitating the land.

BUREAU OF INDIAN AFFAIRS AND INDIAN HEALTH SERVICE

Indian Health and Education

We urge your careful consideration in deliberations on the 1977 Appropriations bill of the following desperately needed sums for Indian health projects in Montana.

First, the Indian Health Service Hospital on the Ft. Belknap Reservation has lost its accreditation. The facility is so dilapidated that repair to bring it up to fire protection building code and hospital standards would exceed the cost of a new hospital. We are informed that planning is sufficiently advanced to permit construction to begin in 1977 if funds are supplied. We therefore ask for $2,221,000 to cover the first year of a proposed two-year, phased construction that will require a total of $5,830,000 to complete, plus $800,000 for equipment.

Second, we ask $2,650,000 for construction of a Community Health Center at Poplar, Montana, on the Ft. Peck Reservation. The sum would provide for 14 units of quarters as well as a health center of 25,000 square feet. The existing facility -- a former hospital, built 63 years ago -- is a relic of 8,055 square feet, housing waiting room, laboratory, X-ray, health records, pharmacy, nurse's workroom, janitor's closet, five examining rooms, emergency room -- and offices for the Service Unit Director, the administrative officer and five administrative clerks. There is a partial basement that accommodates maintenance personnel, a field engineer and space for conferences and storage, all under a 7-foot ceiling featuring exposed pipes.

It would be no exaggeration to say that this small wooden shack is so bad it actually impedes the delivery of proper health care to the 4,500 Assiniboine and Sioux Indians it is purported to serve. It should be abandoned and replaced as soon as possible.

Third, we hope that the Committee will include $396,000 for operating costs and funds for 19 positions for the outpatient clinic at Rocky Boy's Reservation. The Committee will recall that the Chippewa Cree Indians last year testified in behalf of their plan and the Committee appropriated $434,000 for construction of staff housing to complement a clinic to be built with funds borrowed by the Tribe. Because of the President's request for rescissions and deferrals, including that appropriation, there was no budget request for operating costs and personnel for the clinic. We hope the Committee will agree to provide for both.

Fourth and last, it is our understanding that the Indian Health Service has under study at this time the IHS Hospital on the Blackfeet Reservation at Browning, Montana. We ask for an appropriation of $550,000 to plan remodeling.

In addition to the foregoing health facilities, we urgently request the Subcommittee to appropriate funds to support construction of Indian schools authorized in PL 93-638.

Mr. Chairman, your Subcommittee last year generously appropriated $3 million in the Supplemental Appropriations bill for 1975, and $15.9 million in the Interior bill (later reduced by action of the Conference Committee to $7.8 million) for this purpose. Your Subcommittee recommended rejection of the deferral of these expenditures and the Senate adopted S. Res. 388 on 9 March 1976.

Contrary to the assertions in the deferral message that there are "multiple" alternative sources of funds for such construction, the Subcommittee has seen that there is one, Public Law 815, and it is routinely under-funded. The Administration's request for FY 1977 is $10 million, of which approximately one-half may be allocated for Indian schools. If Congress were to appropriate the full amount authorized under PL 93-638 to supplement the budget request for PL 815, there would be about $33 million to meet an accumulated need of over $200 million.

We cannot exaggerate the need which Congress recognized in approval of the new authorizing legislation (the Indian Self Determination and Education Assistance Act), nor can we overstate the deplorable conditions under which many Indian children go to school. It is the correction of these conditions that will not occur unless the funds are provided. Nationwide, there is a total of over $225 million in applications for this assistance at this time. Of the $35 million annual authorization, approximately $28 million may be spent for public school construction.

We request $35 million for FY 1977 to permit construction of the most urgently needed schools, according to the list maintained by the Office of Education.

STATEMENT OF SENATOR STROM THURMOND

MR. CHAIRMAN:

I am pleased to have this opportunity to appear before the Senate Appropriations Subcommittee on the Interior in support of an adequate level of funding in fiscal year 1977 for a variety of projects that are in the public interest and of special importance to the people of South Carolina.

This Subcommittee has jurisdiction over the appropriations for many programs which enhance the wise management of this Nation's natural, historic, and cultural resources. In most instances, I think the President's Budget for FY 1977 does a commendable job of balancing the need for adequately funding resource programs with the need for fiscal restraint at a time when the budget deficit is far too high. I strongly support the President's goal of returning fiscal responsibility to the Federal Government, although I do not always precisely agree with the funding level proposed for individual programs. Accordingly, I urge the Committee to exercise its usual care and frugality in determining budget priorities, giving particular attention to the following program areas of special concern to South Carolina and the Nation.

U.S. FISH AND WILDLIFE SERVICE WARM-WATER FISH HATCHERY PROGRAMS

Mr. Chairman, for over forty years the U.S. Fish and Wildlife Service has operated warm-water fish hatcheries in a number of States, including South Carolina. These hatcheries typically produce fish fingerlings and provide technical assistance for stocking public lakes and streams. In cooperation with the Soil Conservation Service, the Fish and Wildlife Service Hatcheries have also operated a very beneficial farm pond fish stocking program.

Within the last several years, the Fish and Wildlife Service made a policy decision to phase out production of fish for stocking farm ponds, on the basis that this was a lower priority program which had largely served its purpose and mainly benefitted private land owners.

I understand these concerns, but feel the Fish and Wildlife Service has failed to fully consider the soil and water conservation, recreational, and food benefits of farm ponds. The fish stocking program has served as an incentive to pond construction and thereby helped to conserve soil and water resources. Additionally, it is known that a good fish pond can easily produce over 100 pounds of fish per acre per year. This is a quantity of high protein food which should not be dismissed lightly at a time of concerns about high food prices and world food shortages. Furthermore, the vast majority of farm pond owners do open their ponds to the public, or at least share them with several additional families. In many cases, users of farm ponds do not have an opportunity to travel to larger public waters, and if they were forced to in order to enjoy fishing, the pressure on public lake resources would greatly increase. Finally, compared with other hatchery operations, the cost of the farm pondstocking program is very modest, requiring less than $700,000 per year on a National basis. For these reasons, I believe it is wise to provide the relatively small amount of funds necessary to insure continuation of the very beneficial and highly popular farm pond fish stocking program.

Mr. Chairman, I am particularly interested in seeing that sufficient funds are provided in FY 1977 for proper operation and maintenance of the National Warm-Water Fish Hatcheries at Cheraw and Orangeburg, South Carolina. In addition to the fish production and stocking programs, including the farm pond stocking program described above, these Hatcheries together serve all of South Carolina and parts of adjoining States in the following ways:

-Technical assistance in management of farm ponds.
-Technical assistance in management of public waters.
-Technical assistance with sustaining area water table.
-Cooperation with civic and school organizations in encouraging conservation of our natural resources and arranging field trips to the hatcheries.
-Shelter and protection of migratory birds that winter and summer at the Cheraw hatchery - approximately 500 Canadian Geese and large numbers of endangered species such as the Wood Duck seek refuge at the Cheraw facility yearly.
-Operation of modern aquarium facilities for various species of fresh water fish.

For the Cheraw Hatchery, the Administration has requested $60,000 in FY 1977. However, I am advised that an additional $30,000 is needed to insure normal fish production and maintenance operations at the facility, as well as to reopen the educational aquarium closed several years ago due to budget cutbacks. The Committee should be advised that the $60,000 funding level requested for the Cheraw hatchery is the same amount asked for in the last two fiscal years, and $13,000 less than was provided in FY 1972. Since that time, there has been an increase in the demand for Hatchery services and a considerable inflation in operating costs and wages. As a result, the Hatchery has been forced to defer normal maintenance and close the aquarium. I do not think it wise to abandon this valuable facility by attrition, and, therefore, urge the Committee to provide $90,000 to continue the Cheraw Hatchery operations at a reasonable level.

In regard to the Orangeburg Hatchery, which is somewhat larger in the scope of its operations than the one at Cheraw, the Administration has requested $98,000 for FY 1977. Again, this is approximately the same amount of funds requested for the last two fiscal years, with no allowance for inflation and increased program needs. In order to insure continuation of the farm pond stocking program, provide much-needed equipment, and properly operate and maintain the Orangeburg National Hatchery, I urge the Committee to recommend a minimum funding level of $114,000.

Mr. Chairman, for the benefit of the Committee Members and staff, I ask unanimous consent that a Concurrent Resolution of the South Carolina General Assembly and additional documents supporting the farm pond stocking program and warm-water hatchery operations be included in the RECORD following my remarks (see Exhibits 1 thru 4).

FORESTRY PROGRAMS

Mr. Chairman, I would like to call to the Committee's attention, and ask unanimous consent to have placed in the RECORD, correspondence received from the South Carolina State Commission of Forestry in support of reasonable FY 1977 funding for forest fire protection assistance to the States under Section II of the Clarke-McNary Act of 1924 (see Exhibit 5). The Administration apparently proposes to reduce these fire protection grant funds by one-half, and I hope the Committee will carefully examine the wisdom of this particular budget cut. Our forests are one of the most productive and valuable renewable resources with which our Country is blessed, and I believe it behooves us to do all we can to reasonably protect them from their greatest enemy--fire.

This Subcommittee also has jurisdiction over important forestry research programs, which deserve careful attention and adequate funding. Recently it has come to my attention that an outbreak of Pitch Canker is threatening slash pine forests in the Southeast. I understand that the U.S. Forest Service has asked for an additional $100,000 to fund research on damaging pests in forest seed orchards and pine plantations, including this Pitch Canker. Little is presently known about the innoculum of this pathogen or its means of dissemination. Thus, immediate research is needed to supply answers to these

questions and enable foresters to control this disease before it devastates slash pine forests throughout the Southeast. This appears to be a very worthy funding area, and I hope the Committee will see fit to provide a reasonable amount of support for these research efforts.

Mr. Chairman, I would also like to ask the Committee to give full consideration to a request by the Southeastern Forest Experiment Station for adequate funding of a program of research on two endangered bird species inhabiting forest areas, the red-cockaded woodpecker and the Bachman's warbler. Dr. William H. Davis McGregor, Dean of the College of Forest and Recreation Resources at Clemson University, has written Senator Robert Byrd regarding this matter, and I ask unanimous consent that his letter be placed in the RECORD and studiously considered (see Exhibit 6).

HISTORIC PRESERVATION FUNDS

Having a deep appreciation for America's historic past, I am disappointed that the President has proposed to reduce by about 50 percent the funds available to local communities under the Historic Preservation Grant Program.

Since passage of the National Historic Preservation Act of 1966, South Carolina and other States have been extremely successful in more than matching available Federal funds to be used in renovating and preserving historic sites and structures. The need for these funds is never fully met, and State officials have advised me that preservation efforts will severely suffer if the amount of Federal funds is curtailed as proposed. I realize there are numerous competing demands for Federal tax revenues, but hope the Committee will be able to provide sufficient funds to continue the Historic Preservation matching grant program at a viable level.

Mr. Chairman, I request unanimous consent that relevant correspondence to me from Dr. Charles E. Lee, South Carolina State Historic Preservation Officer, be included in the RECORD following my remarks (see Exhibit 7).

I appreciate the Committee's attention to these several important matters and hope that they will be fully and thoughtfully considered.

H. 2551
Introduced by the Agriculture and Natural Resources Committee.

A CONCURRENT RESOLUTION

MEMORIALIZING THE SECRETARY OF THE UNITED STATES DEPARTMENT OF THE INTERIOR AND THE DEPUTY ASSISTANT SECRETARY FOR UNITED STATES FISH AND WILDLIFE SERVICE TO REEVALUATE THE FARM POND STOCKING SERVICE PROVIDED BY THE UNITED STATES FISH AND WILDLIFE SERVICE AND TAKE ALL NECESSARY ACTION TO CONTINUE THIS VALUABLE SERVICE AT ITS PRESENT LEVEL.

WHEREAS, the farm pond stocking program of the United States Fish and Wildlife Service has proved its worth over the past forty years; and

WHEREAS, as an incentive to pond construction the program has been successful throughout the United States; and

WHEREAS, the development of farm ponds has provided the necessary means to control soil and moisture losses on prime agricultural lands; and

WHEREAS, these ponds furnish a wealth of resources in high protein food and much needed recreation; and

WHEREAS, the need to ensure these essential benefits for the generations to come is a responsibility which must be seriously considered.

NOW, THEREFORE,

BE IT RESOLVED by the House of Representatives, the Senate concurring:

THAT by this resolution the Secretary of the United States Department of the Interior and the Deputy Assistant Secretary for United States Fish and Wildlife Service be, and hereby are, memorialized to reevaluate the farm pond stocking program and take necessary action to continue this valuable service at its present level.

BE IT FURTHER RESOLVED that copies of this resolution be forwarded to the Secretary of the Department of the Interior, the Deputy

Assistant Secretary for United States Fish and Wildlife Service and members of the South Carolina Congressional Delegation in Washington, D. C.

State of South Carolina
In the House of Representatives
Columbia, South Carolina
May 16, 1975

We hereby certify that the foregoing is a true and correct copy of a Resolution passed in the House of Representatives and concurred in by the Senate.

Rex L. Carter
Speaker

Sylvia W. Orange
Clerk of the House

LETTER FROM LARRY W. PATRICK

October 30, 1974

Senator Strom Thurmond
Senate Office Building
Washington, D. C.

Dear Senator Thurmond:

On behalf of the South Carolina Association of Conservation Districts, I would like to ask your help with a serious problem which has come to our attention. We have received information that the United States Department of Interior, Fish and Wildlife Service plans to discontinue the operation of their hatcheries for producing fish fingerlings for farm pond stocking. This has been a vital conservation program for many years.

We feel that to discontinue such a useful service will have a tremendous adverse effect on the farm pond program in South Carolina. During the past three decades, the reliable and orderly supply of fingerlings has encouraged land owners to construct ponds, thus contributing to the national conservation effort.

There are no commercial hatcheries for sport fish species in South Carolina, therefore, it would take several years, if ever, before commercial sources would be available.

I am sure that you are aware of the value of the farm pond program and its role in the conservation and recreation programs of our state. We are urging you to support the maintenance of the farm pond stocking program of the USDI, Fish and Wildlife Service in its present form so that farm ponds will continue to be a major portion of the total conservation effort in South Carolina.

Sincerely,

Larry W. Patrick

Larry W. Patrick
President

EXHIBIT 2

SOUTH CAROLINA FARM BUREAU

November 7, 1974

Senator J. Strom Thurmond
Senate Office Building
Washington, D. C.

Dear Senator Thurmond:

We have received information that the U. S. Fish and Wildlife Service has proposed the phasing out of providing fingerlings for farm pond stocking.

As a result of this information, the South Carolina Farm Bureau State Board of Directors passed a resolution on October 29, 1974, instructing me to contact the Department of Interior and object to this change in policy. This I have done, and now solicit your assistance in the matter.

We feel that such a change would be tremendously adverse to the farm pond program in South Carolina, which for many years has served as an important source of recreation .... as well as soil and water conservation.

It is doubtful that a pond stocking function could be as adequately conducted by a state game and fish department as by the federal Fish and Wildlife Service. Furthermore, there are no commercial hatcheries for sport fish species in South Carolina from which to secure fingerlings. Our farmers cannot understand why the federal government should abandon this program, when it seems the most feasible and economical means of meeting this great need.

Farm ponds have become a way of life in rural South Carolina, and the construction of these ponds represent a major investment. Therefore, we feel that the important factor as to whether there will be fish for stocking cannot be left to chance.

Your immediate attention to this problem will be deeply appreciated.

Sincerely,

Harry S. Bell
President

EXHIBIT 3

EXHIBIT 4

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/FH
FSF 3395

DEC 6 1974

Dear Senator Thurmond:

This responds to your October 29 letter on behalf of your constituents requesting a report on the farm pond stocking program of the U.S. Fish and Wildlife Service (FWS).

The policy decision of the FWS to phase out production of fish for stocking farm ponds is based on the following considerations:

(1) The original purpose of the program--to create an incentive to pond construction--has been largely served. In the 1930's, when the program began, the Federal Government was actively encouraging development of these ponds as one means to overcome soil and moisture losses and to furnish high protein food and provide recreation. Today, soil and moisture control is an established concept and common practice, and food and recreation can be better provided by alternative means. The need for the stocking incentive, in our view, no longer applies. We have discussed our decision with the Department of Agriculture, under whose sponsorship most of the ponds we stock are constructed. That Department has concurred in our decision.

(2) The program involves stocking of fish in waters on private lands, with benefits accruing largely to the individual landowner. We believe, therefore, that any governmental interest may rest appropriately at the State rather than the Federal level. A task force of outside fisheries experts has recently completed an in-depth study, commissioned by the FWS, of nationwide fisheries programs to help define more precisely the respective responsibilities and roles of the Federal and State governments. One of the task force recommendations is that the FWS continue to implement its farm pond decision. A majority of the States view farm pond stocking as the responsibility of the pond owner.

(3) During the past several years, the FWS has made a determined effort to align its capabilities more closely with the priorities and principal objectives of Federal fish and wildlife programs and responsibilities. This was essential in view of a serious imbalance between growing assignments and available resources. A number of on-going functions have been and are being cut back in this process. The affected functions, as in the case of farm pond stocking, are not unimportant, but rather of lower priority within the context of total Federal program responsibilities. We have, of course, kept the appropriations subcommittees informed of our reallocation and reprogramming proposals.

In Fiscal Year 1975, about $650,000 will be expended for production and distribution of fish for farm ponds. As the program is phased out, these resources will be applied to other major program responsibilities where a Federal role is required. In the fisheries programs, this would include the research, technical assistance, and fish production processes needed to meet objectives related to the support of recreational fisheries in coastal waters, the Great Lakes and in waters primarily on federally owned lands.

We recognize that as the farm pond stocking program is phased out, it is necessary to work closely with the States to avoid adverse impacts on their programs and the farm pond fishery. Some States now manage the entire program. Others have varying degrees of capability and interest. We have contacted the States to determine the extent of assistance each will require in order to develop a flexible approach to the phase out. We believe this will enable the States to maintain the program at the levels they deem appropriate with minimum disruption. We also believe that private industry will be able to provide many of the fish needed for private ponds.

In some cases, our action regarding stocking priorities will result in surplus production capability within the Federal hatchery system. We are prepared, therefore, to negotiate the lease of some hatcheries to the States where a mutual benefit would result. The hatcheries would be used to meet State fishery management priorities, possibly including farm pond stocking. With the concurrence of the appropriation subcommittees and the concerned congressional delegations, we have recently completed agreements with the States of Alabama, Iowa, and Mississippi for lease of hatchery facilities.

We appreciate your interest in this matter. If you have additional questions, please let us know.

Sincerely yours,

Deputy Assistant Secretary for Fish and Wildlife and Parks

EXHIBIT 5

South Carolina State Commission of Forestry

JOHN R. TILLER, STATE FORESTER P. O. BOX 21707 COLUMBIA, S. C. 29221

February 20, 1976

Dear Senator Thurmond:

I, and all State Foresters in the Nation, could be in serious trouble, and I am appealing to you for help.

The President's Budget for 1977 proposes to cut appropriation of grant-in-aid funds for forest fire protection assistance to the States (Clarke-McNary Law, Section 2) from $22.596 million (1976) to $11.712 million. The Administration has taken the position, in its narrative justification, that this funding will be phased out over a two-year period. We do not need less help or no help -- we need more help, and will urge the House and Senate Appropriation Committees to increase this funding to $25 million in 1977 as the Congress funded it in 1974.

I do understand the general concern for reduced Federal spending. I do also understand the nation's need for wood products now and in the future, and I understand the national concern for the protection of our forests -- this great renewable natural resource which contributes timber, water, wildlife, recreation, clean air, and natural beauty to all of our Nation's citizens.

Adequate protection of our forests has been a national goal for many years. The national interest is no new concept but goes all the way back to passage of the Weeks Law by the Congress in March, 1911, which further led to the passage of the Clarke-McNary Act of 1924. I submit that the intent of Congress in enacting Section 2 of the Clarke-McNary Act was to provide for the Federal interest in the protection of non-federally owned forest and watershed lands from destructive forest fires. The Federal interest in the protection of non-federally owned timber lands, too, has been clearly stated in the Agriculture Act of 1956, as follows: "The Congress finds and declares that building up and maintaining (an adequate) level of timber growing stock....is essential to the public welfare and security; that....protecting....non-federal....lands for this purpose would....bring increased public benefits from other values associated with forest cover." The Federal interest in protecting non-federally owned watersheds is expressed with equal clarity in the Watershed Protection and Flood Prevention Act (PL 566), as follows: "...damages in the watersheds of the rivers and streams of the United States...constitute a menace to the national welfare." The Clarke-McNary Act was designed by the Congress to protect a Federal interest and redeem a Federal responsibility.

How now, can the Federal Government, if it faces up to future needs for timber and all other products of the forests, afford to diminish its interest in the most basic of all forest practices, the protection of these vital resources from the ravages of wildfire? I do not consider that reduction of the national interest in the protection of our forests or in environmental enhancement is in the best interest of the people of this Nation.

The reduction in the forest fire protection funding would have a terrific financial impact on the South Carolina Forestry Commission. Our current allotment of CM-2 funds, some $600,000, could not possibly be made up by the State. Loss of these funds would seriously undermine the ability of this organization to protect our vital forest resources from damage and destruction by wildfires.

I most respectfully urge that you advise your Appropriation Subcommittee (Interior) and your Budget Committee of your support for our urgently needed Clarke-McNary, Section 2, appropriation request for 1977 of $25 million.

With kindest personal regards.

Very truly yours,

John R. Tiller
State Forester

EXHIBIT 6

College of Forest and Recreation Resources
OFFICE OF THE DEAN

April 6, 1976

Dear Senator Byrd:

The Endangered Species Act of 1973 requires the U. S. Forest Service to ensure that their actions do not jeopardize endangered or threatened species or their critical habitat. As of January, 1976, 113 animals are classified as endangered or threatened; about 2,000 species of plants are proposed for such classification. A national research program is being proposed by the Forest Service.

In fiscal year 1976, the President's budget included $300,000 for the Southeastern Forest Experiment Station for a planned program of research on two endangered bird species inhabiting forest areas, the red-cockaded woodpecker and the Bachman's warbler. Only $170,000 of these funds were appropriated for the programs. This cut of $130,000 disrupts orderly research progress toward determining the structure and distributions of existing populations of these birds, and gaining on understanding of their critical habitat needs. The funding should be restored.

Although endangered animals have received the initial research thrust, there is a growing interest in the numerous species of less commonly occurring plants which inhabit our southeastern forests. Currently there is little endangered plant species research under way in the region. An additional program increase of $70,000 has been requested and is needed to broaden the research to include plants. Research efforts will be concentrated on developing information on critical habitats and on studying the relationship of forest management practices to these habitats.

I urge the Interior and Related Agencies Subcommittee, and the full Senate Committee on Appropriations, to include the restoration of the $130,000 cut and of the $70,000 increase in the Forest Service budget.

Sincerely yours,

Wm. H. Davis McGregor
Dean

EXHIBIT 7

South Carolina Department of Archives and History
1430 Senate Street

Dear Senator Thurmond:

May I call to your attention the crucial situation in which the nationwide Historic Preservation Program finds itself and, in particular, the dismaying situation of the South Carolina program.

Nationwide for Fiscal Year 1977, President Ford has recommended a budget cut for Historic Preservation funds from $20-million to $10-million. This amount would be divided among state historic preservation programs in 55 states and territories (which have a matching capability of $214-million!) and the National Trust for Historic Preservation. Such funding would amount to killing a program which is based on highly commendable state-federal cooperation and which, though inadequately financed from the start, has been extremely successful in involving grass-roots participation, in stimulating local matching monies, and in accomplishing many good things in every state of the nation.

The states have nursed this program from its beginning, following passage of the National Historic Preservation Act of 1966. It is inconceivable that a program of such importance to our people should be relegated to the bottom ranks, while similar quality-of-life programs, like the national endowments for the Arts and the Humanities, are funded at such high levels. There are a great many people in South Carolina and elsewhere who seriously question this ordering of priorities.

As for South Carolina, despite our need and matching capability in the millions of dollars, we are in the unhappy situation of having our federal preservation grant for FY 1976 reduced, by more than half, from what we received in FY 1975. For the 1975 12-month fiscal year we showed need and matching capability of $6,288,827; we received $662,432. For the 1976 15-month fiscal year we showed need and matching capability of $5,311,913; we are allocated $380,033.

Helped by the support and concern of South Carolinians in every region of this state, we have worked long and hard since 1969 to build a comprehensive and vital historic preservation program, and we are proud that it is recognized nationally as one of the best. From letters which you receive asking your help, you know how important a program this is to your constituents. This year, however, we are unable to respond to most of their needs. And looking ahead to the 1977 fiscal year, South Carolina will be lucky to receive as much as $100,000 for our statewide historic preservation program if the President's recommendation of $10,000,000 is followed.

Even more unhappily, the entire National Historic Preservation program will lapse unless Congress passes a reauthorization bill before May 15. A suitable reauthorization bill (S. 327), sponsored by Senator Jackson, passed the Senate on October 29, 1975. An equally suitable bill, HR 12234, sponsored by Representative Roy Taylor of North Carolina and many others, is pending in the House.

Your support of either of these two bills would, I feel, be consistent with the needs of the State and the Nation.

For your information, I am enclosing a copy of South Carolina's grant requests to the Department of the Interior for FY 1976, all of which have documented match. This helps show the great need in our state, and how far short we fall in meeting it.

Sincerely,

Charles E. Lee

STATEMENT OF CONGRESSMAN TED RISENHOOVER

Mr. Chairman. You, members of this committee and your staff have shown great sensitivity and care as you review and rearrange the spending priorities of our nation's natural resource and Indian programs. As I understand the Administration's budget--it is lacking in many respects.

There are four major deficiencies as relate to the Second Congressional District of Oklahoma and the Indian Health Service program.

In summary, I most respectfully ask this committee to add-on monies for the following:

---Planning funds for the Tahlequah Service Unit where $800,000 is needed to design a teaching hospital to replace outmoded Hastings Hospital.

---At the Claremore Comprehensive Health Facility, the President's budget is short $1,686,000 and is needed so that the hospital can open on schedule with needed personnel.

---A new health center planned at Miami--mandated through the wisdom of this committee and sorely needed--has no operational money in this budget and $650,000 is needed for Fiscal 1977.

---There is great need for a health center at Pawhuska, Oklahoma to serve the people of the Osage Nation who now must travel fifty miles for care. This would cost $994,000 next year.

Now, Mr. Chairman, I would like to describe each of these in more detail.

TAHLEQUAH COMPREHENSIVE HEALTH FACILITY

TAHLEQUAH, OKLAHOMA

60-80 BEDS

The Tahlequah Service Unit is composed of five counties in the Northeastern Oklahoma area, namely, Adair, Cherokee, McIntosh, Muskogee and Sequoyah Counties. Combined, these counties form a 4,309 square mile area bounded on the east by Arkansas and stretching westward for some 100 miles through east central Oklahoma. The existing facility, which currently provides services to about 17,500 people, is an old, inadequately designed structure which has been placed high on the priority list for replacement. The existing facility is deficient in quality, quantity and type of space required to carry out a modern, comprehensive health program.

The Tahlequah Health Facility will be the location of major comprehensive curative and preventive health care programs planned to meet the total health needs of the Tahlequah Service Unit

population. This new facility will provide general medical-surgical and obstetric care as well as providing for a full range of outpatient and specialty clinics to a projected 1990 population of about 25,000 people. The project will be programmed, designed, and constructed with the full participation of the Indian people it serves.

Planning funds in the amount of $800,000 would be required in FY 1977 in order to move forward with this project. Indian Health Service FY 1977 program contains no funds for this project.

In addition to serving as the health care center, the Tahlequah Health Facility will also serve as an Indian health careers training center in affiliation with Northeastern State University. The new facility will be built adjacent to the campus of the University which has a strong basic science curriculum and is ideally located to serve the large Indian student population in Oklahoma.

CLAREMORE COMPREHENSIVE HEALTH FACILITY

CLAREMORE, OKLAHOMA

The Claremore Comprehensive Health Facility will be the location of major comprehensive curative and preventive health care programs planned to meet the total health needs of the Claremore Service Unit. The new facility will replace the existing hospital and will provide general medical, surgical and obstetric care as well as providing for a full range of outpatient and specialty clinics.

The project will consist initially of a 60-bed inpatient complement consisting of 14 surgical, 18 general medical, 11 pediatric, 11 obstetrical, and 6 intensive care beds. In addition, a 20-bed multi-purpose unit will be provided to complete the total 80-bed capability.

Planning has been completed and a construction contract was signed on January 23, 1975. The anticipated completion date for the construction activities is November 1976 and the facility is expected to be in full operation by February 1977.

Additional funding will be required in FY 1977 for staffing and operating costs. The FY 1977 President's Budget does not include the 130 additional positions and $1,686,000 required for staffing and operations in FY 1977.

MIAMI, OKLAHOMA
LEASED SPACE HEALTH CENTER

A new health center is planned to provide the full range of ambulatory health care to an estimated Indian population of 2,900 persons in a 20-mile radius of Wyandotte, Oklahoma. Major existing problems include an inadequate, outmoded facility, inadequate staff to carry out an effective health program and inadequate funding for training, contract health services and general operations to support a modern, comprehensive health program.

Design for the facility is substantially complete with construction to begin shortly. Funds in the amount of $360,000 were appropriated in FY 1976 to initiate this project. Additional funds required in FY 1977 based on a full year operation will be $650,000 for the Miami Health Center.

PAWHUSKA, OKLAHOMA
LEASED SPACE HEALTH CENTER

This Pawhuska Health Center will provide care to the total Indian population of the Pawhuska service area, Osage County, Oklahoma.

Presently, this population must travel to the Pawnee Hospital for adequate full-time health care which is 50 miles away. There is presently a health station at Pawhuska which is open one day a week with staff being provided out of Pawnee. Both the present staff and the facility are completely inadequate to provide good medical care.

This planned facility would permit good quality of ambulatory care to the total Indian population when they need it within a reasonable driving distance.

No funds for this purpose are available to Indian Health Service in FY 1977. Funds in the amount of $994,000 will be required in FY 1977 to provide for staffing, equipment, operational and contract health care costs for the Pawhuska Health Center. Annual operating cost thereafter will be $1,071,000. These figures are based on 34 additional staff required to meet the total personnel needs for the full-time health aides.

STATEMENT OF CONGRESSMAN SILVIO O. CONTE

Mr. Chairman and Members of the Subcommittee, I appreciate the opportunity to appear before you today in support of funding requests for two very important programs: The Wetlands Acquisition Program and the Atlantic Salmon Restoration Program on the Connecticut River.

Present funding for these programs in the Department of Interior Budget, now pending before you, are inadequate. I should like to urge the Subcommittee to take the following actions:

1. Add $15 million for the Wetlands Acquisition program.
2. Add $1.342 million to construct the second phase of the White River National Fish Hatchery in Bethel, Vermont.

I serve as a member of the Migratory Bird Commission and naturally am very concerned over the future of the Wetlands Acquistion Program. I was pleased to see the Wetlands Loan Act which was recently extended to 1983 increasing the Appropriations Authorization level to $200 million and revising the land acquisition goal to 3.8 million acres. To date, slightly more than 1.8 million acres have been purchased. Gentlemen, we have a long way to go. The cost of the Acreage has been increasing three and four fold. I should like to place a table in the record at this point to show the escalating costs of land purchased under the program through FY 1975:

The Effect of Inflation On Average

Price Paid Per Acre

Fiscal Year	Refuges	Waterfowl Production Areas	
		Fee	Easement
1962	$120.99	$ 30.88	$ 6.15
1967	232.36	66.36	12.87
1972	283.65	117.20	24.06
1975	393.99	243.13	46.16

In order to carry out the program as set forth in the Authorization, it is important to step up our acquisition program. Unfortunately, this year, as in the past three, the Administration is supporting the program only to the extent of funds realized from the sale of duck stamps. This is most inadequate . I commend this Subcommittee for inserting $1 million in the FY 1976 bill for this unbudgeted item. That particular section of the bill was increased on the House floor by the Dingell amendment to $10 million -- this, incidentally, was the same figure I suggested this Subcommittee support in my testimony last year.

The programs are most important and delayed funding can only result in acquiring lands at unnecessarily inflated prices. The programs in the Dakotas and Minnesota are considered priority programs by the U.S. Fish and Wildlife Service. These programs alone usurp the receipts from Duck Stamps leaving the rest of the national program at a virtual standstill -- Gentlemen, this must not be. The Migratory Bird Commission is concerned with the massive destruction of waterfowl wintering areas. Flooded bottomlands in the Mississippi River Delta, for instance, are being drained and cleared at the rate of 200,000 acres a year. Major

coastal wintering areas are being destroyed or degraded at a rate of 300,000 acres a year. So a major goal of the Migratory Bird Commission will be the preservation of those key waterfowl wintering habitats and breeding areas that are threatened. Also ranking high on the Commission's priorities is the acquistion of habitat for the black duck along the Atlantic Coast. Without the support for the program in this appropriations bill, the hands of the Commission are tied.

Mr. Chairman, in reviewing the Administration's budget recommendations, once again we find that no funds have been requested for construction of the White River National Fish Hatchery in Bethel, Vermont.

In addition to the construction of fish passage facilities around major dams in the Connecticut river system, it has been determined that propagation and stocking of hatchery reared salmon is essential to the establishment and maintenance of this fishery. To develop a run of approximately40,000 adult fish, 1,000,000 hatchery reared smolts will be required annually for at least the first decade of the program.

Present facilities which are suitable for rearing salmon are operating at or near cpapcity and cannot be expanded to meet the needs of the Connecticut River program. It is believed that any large-scale production of Atlantic Salmon for stocking the Connecticut river should be accomplished within the confines of the River system.

Basic criteria for an Atlantic Salmon Hatchery on the Connecticut River wer drawn up and furnished by Connecticut, Massachusetts, new Hampshire and Vermont. Each state has asked to propose and recommend sites which were suitable. Twelve potential sites were considered: six in New Hampshire, three in Vermont, two in Connecticut, and one in Massachusetts.

After considering all factors, a site on the White River about two miles west of the town of Bethel in Windsor County, Vermont, was judged superior to the others. The white river is a major tributary of the Connecticut whith an ample flow of high quality water of the type in which the salmon thrive. It is also relatively free of pollution.

To date a total of $2,548,000 has been appropriated for planning, design and initial construction of this facility. Acquistion of land, drilling of wells, and the design and specifications of the Hatchery are virtually complete. Bids have been solicited and contracts awarded for construction of the river water infiltration gallery, the development of three wells and other related appurtenances. Construction of the Hatchery building and other items for which funds have been appropriated are expected to be underway by September of this year. To keep this construction program on schedule $1.342 million is required for FY 1977. This will double the capacity of the facility.

At this point, I should like to provide a table for the record detailing the funds needed to complete the facility by the end of the FY 1978. As you can see the construction slated for FY 1977 would enable the fish hatchery to begin propagation of the salmon even before the facility

When no funds were requested by the Administration in the FY 1976 Interior Budget, the House Subcommittee inserted $500,000 for construction of the Bethel, Vermont Facility. Unfortunately, our Senate counterparts did not respond to this important program as the House did and the final bill included only $300,000 for the facility. I should like to advise that I have the assurances of members of the Senate from New England and specifically Vermont that they will do all they can to support this $1.342 million necessary funding level to put the facility back on its original construction schedule.

I should like the committee to recall that $2.548 million has already been appropriated for this program. The longer the period required for construction, the more costly the facility will be. Last year, at this time, construction of the rearing pools and covers was priced at $700,000, today cost has escalated to 750,000. Delaying construction of this important facility will only result in grossly inflated final construction costs and serious injury to the complete Atlantic Salmon Restoration Program on the Connecticut River. All the money spent on Fish passages, planning, construction, etc. will be worthless without the young salmon to stock the Connecticut River with.

It was once possible to catch more than 3,000 salmon in one haul from the Connecticut Reiver. By 1814, the Atlantic Salmon runs had all but vanished. today there is an increasing demand for sport fishing, and restoration

programs is completed at the end of FY 1978. The information follows:

Funds needed for White River NFH, Bethel, Vermont

Fiscal Year 1977		
Fish Production Facilities		
Rearing pools 20,000 sq. ft.	300,000	
Pool covers	450,000	
Buildings		
Utility Building	200,000	
Other Physical Facilities		
Effluent treatment facilities	250,000	
Roads - entrance and service and other paved areas	92,000	
Equipment	50,000	$1,342,000
Fiscal Year 1978		
Buildings		
Mechanical buildings, water heating and cooling units, aeration, UV unit, fire suppression system, fuel storage, electric sub-station and filtration system	850,000	
Other Physical Facilities		
Residences (2) w/garages	90,000	
Domestic water and sewage	30,000	
Utilities	15,000	
Fencing, lighting, landscaping	65,000	
Finish grading and rip-rap	35,000	
Complete effluent treatment	200,000	
Complete service roads	50,000	
Equipment	50,000	$1,385,000
Estimated Total Funds Needed to Complete		$2,727,000
Total Estimated Cost of Program		$5,275,000

can provide exceptional opportunities to expand our fisheries resources.

With our limited recreation opportunities in the Northeast, it is most essential that these salmon be returned to this mighty river that runs through four of the six New England states.

It is my fervent hope that the Committee will rise to meet the needs of these two important programs that I have outlined for you this morning.

Thank you, Mr. Chairman and members of the Subcommittee.

STATEMENT OF CONGRESSWOMAN PATRICIA SCHROEDER

I am pleased to be here to offer my statement to the subcommittee. My comments are directed at the Federal Energy Administration. I urge your subcommittee to consider an alternative to the FEA budget request. Assuming the Federal Energy Administration Act of 1974, which expires June 30, 1976, is not renewed by either the House or the Senate, Sections 9 and 10 of the Act permit a reversion of FEA functions back to the executive departments and agencies from whence they came.

Since there is a good possibility that the FEA law will not be renewed--an effort to that end is already underway in the House--I think the subcommittee should seriously consider funding only those FEA functions that were detailed over from other departments and agencies back in 1974 and which will revert back should the FEA expire on June 30.

And even these functions should be scrutinized. Some perhaps can be eliminated altogether. Others, while still needed, may be overstaffed and overbudgeted by FEA, and should be trimmed. The FEA is not known for its conservation of tax dollars.

Only the House Subcommittee on Energy and Power of the House Interstate and Foreign Commerce Committee has held hearings on the FEA renewal. These hearings have not been completed--with the dead line for reporting the authorization bill under the Budget Act so close at hand, the expiration of the FEA is a real possibility. I also believe it is the only possibility which deserves serious consideration.

I am of the opinion that the FEA should go when the present law runs out this June. I am doing all I can to that end, including making my views known to this subcommittee and others in the House and Senate who have to deal with the FEA.

I think that ending the FEA will make a great bicentennial gift to the taxpayers of this nation.

There is a great fear that some terrible disaster will befall the nation without the FEA--that our energy policy will fall apart. But such is not the case.

Congress in its wisdom placed reverter clauses in the original FEA authorizing legislation and in all subsequent FEA legislation which would redelegate FEA duties and functions back to the departments and agencies from whence they came. The FEA's top-heavy, bloated administrative and public relations functions would be eliminated entirely.

You really wouldn't know that the FEA could revert if you listened to the Administration and the FEA. Faced with a June 30 expiration date and mandatory language in the FEA act stating that he must submit a report to Congress on whether or not he wants FEA renewed, as well as what he plans to do if it isn't renewed, the President sent to Congress on February 16, 1976, a month an a half late, a brief one page letter saying it seemed to him it should be renewed. This is a far cry from what the law requests. I have written to the President regarding this action and would like my correspondence included at the end of my statement.

Faced with a June 30 cut-off of his job, FEA Administrator Frank G. Zarb talks in his budget submission to your subcommittee of "the next decade" at the FEA, and that "FEA's fundamental mission now and in the future will be to formulate energy policies that will most effectively solve..." the problems of America's energy shortage. This is a far cry from the short term intention of Congress.

The FEA began in 1974 as a group of employees transferred from other agencies. Section 6 of Public Law 93-275 made the primary transfers: from the Department of the Interior, the Office of Petroleum Allocation, the Office of Energy Conservation, the Office of Energy Data and Analysis, and the Office of Oil and Gas. The Energy Division was transferred over from the Cost of Living Council--an agency I need remind no one, which has already vanished from the scene.

Let me list the current set-up at FEA:

1. Executive direction and administration
2. Energy Policy and analysis
3. Regulatory programs
4. Energy conservation and environment
5. Energy resource development
6. International energy affairs
7. Strategic planning and storage

Mr. Chairman, the President and the FEA themselves apparently have not faced the question of where these various operations would go. But I have: the following proposal would do the trick.

First, the Department of the Interior can take back the functions it previously held--these would be energy resource development and energy policy and analysis. As Interior already has its Bureau of Mines and its USGS energy data gathering functions, (and does a better job at them than the FEA can do, even though FEA's data is often borrowed from them), I think Interior can continue these functions with ease.

Second, the Department of the Interior should have the new strategic reserve office, as they have long administered public lands and reserves.

Now we are left with the FEA's international office. The FEA act mandates international participation. If there is any reason it needs to be continued, I believe that this small office would also work quite well in the Department of Interior, as its primary function is to offer counsel so that the State Department follows the right course in international affairs affecting energy.

Third, I believe that the Energy Research and Development Administration (ERDA) will, in the long run, be the best location for the FEA's energy conservation and environmental functions. ERDA's technical and scientific stance could easily be broadened to include readily available conservation methods, and the agency is already mandated to perform environmental studies. Right now, FEA's dual mandate--increasing both energy production and energy conservation--is contradictory. FEA is working at odds with itself.

Fourth, Regulatory programs in the FEA are orphans. The Cost of Living Council is dead. But the Department of the Treasury is experienced in regulation. In fact, the FEA's regulatory functions were set up by Treasury personnel transferred in for that purpose. There is no reason why regulatory programs cannot be sent over to Treasury.

Fifth, The so-called Executive Direction and Administrative functions, some $31 million and 1000 employees, should disappear. Too much time, money, and personnel at FEA are invested in self-promotion.

I recognize that the departments and agencies to which I suggest transfer of FEA's function have not been know as the most consumer-oriented. The Department of the Interior is often accused of being in bed with the major oil companies The Department of the Treasury is well known for its kowtowing to the major oil companies on the foreign tax credit agreement. The ERDA is thought to be too nuclear-oriented.

But, for whatever draw-backs my proposal might have, I firmly believe it will, in the long run, prove far more effective than the FEA. It's not often that the American Petroleum Institute, the Ralph Nader groups, and the environmentalists all gang up on one agency. But indeed, the FEA has been subjected to such criticism. Given more life, the FEA would become the worst ogre we have ever created.

Even if the subcommittee does not agree on the need to abolish the FEA, it ought to seriously scrutinize the FEA's budget requests by function so that we will have better data for our debate on the agency's future.

LETTER FROM PATRICIA SCHROEDER

Dear Mr. President:

I am writing to you in regard to your letter of February 16, 1976, to the Speaker of the House in which you made recommendations for the fut. of the Federal Energy Administration (FEA).

I have strong doubts that your letter meets the requirements which Congress set up in Section 15(a) of the Federal Energy Administration Act of 1974.

Not only does Section 15(a) require, as your letter notes, your recommendations for the future of the FEA, but Section 15(a) also requires a full report on the disposition of the FEA's functions upon terminati a full report on continuation of the FEA in its present form, a full report on reorganization of the FEA, and a full report on the organization of the Federal Government for the management of energy and natural resources policies and programs.

Congress is going to have to vote prior to July 1, 1976, when the prese authorizing legislation expires, on whether it wants the FEA to stay alive. Congress can only make such a decision with full knowledge of what would happen to the functions of the FEA should it allow the agenc to expire, and how national energy policy would be affected by renewing or not renewing the FEA.

Since Sections 9 and 10 of the Federal Energy Administration Act give the Executive branch the power to redistribute the FEA's functions with in the government should the FEA expire, I think it is only fair that you tell Congress what your plans are in case such an event occurs.

With kind regards,

Sincerely,

Patricia Schroeder
Congresswoman

EXTENSION OF THE FEDERAL ENERGY ADMINISTRATION

COMMUNICATION

FROM

THE PRESIDENT OF THE UNITED STATES

TRANSMITTING

HIS RECOMMENDATION THAT THE FEDERAL ENERGY ADMINISTRATION BE EXTENDED TO SEPTEMBER 30, 1979, PURSUANT TO SECTION 15(a) OF PUBLIC LAW 93-275

FEBRUARY 17, 1976.—Referred to the Committee on Interstate and Foreign Commerce and ordered to be printed

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THE WHITE HOUSE,
Washington, February 16, 1976.

The Honorable THE SPEAKER,
U.S. House of Representatives,
Washington, D.C.

DEAR MR. SPEAKER: The Federal Energy Administration Act of 1974, section 15(a), required that I submit to the Congress six months before the expiration of this Act my recommendations for the future of the Federal Energy Administration.

In view of my recent signing of the Energy Policy and Conservation Act of 1975, I have determined that the management of energy policies and programs can best be served by the extension of the Federal Energy Administration until September 30, 1979—thirty-nine months beyond its current termination date of June 30, 1976. This will allow an orderly phasing out of price and allocation controls on domestic oil production over a period of forty months and implementation of other programs called for in that Act.

I have directed Federal Energy Administrator Zarb to seek the authority required to carry out this proposal.

Sincerely,

GERALD R. FORD.

1762

THE WHITE HOUSE

WASHINGTON

March 23, 1976

Dear Mrs. Schroeder:

This will acknowledge receipt and thank you for your March 19 letter to the President commenting on his recommendation with respect to the Federal Energy Administration.

Please be assured your letter will be called to the attention of the President and the appropriate members of the staff at the earliest opportunity.

With kind regards,

Sincerely,

Charlie Leppert

Charles Leppert, Jr.
Special Assistant for
Legislative Affairs

The Honorable Patricia Schroeder
House of Representatives
Washington, D.C. 20515

SUBCOMMITTEE RECESS

Senator BYRD. If there is no further testimony, the subcommittee will now stand in recess until Monday, April 12, at 10 a.m., at which time it will convene in room 1114 of the Dirksen Senate Office Building to hear nongovernmental witnesses.

[Whereupon, at 10:55 a.m. Thursday, April 8, the subcommittee was recessed, to reconvene at 10 am., Monday, April 12.]

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