

JMENTS

Storage

1974

LIBRARY
KANSAS STATE UNIVERSITY

HEARING

BEFORE THE

SUBCOMMITTEE ON MINES AND MINING

OF THE

COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS

HOUSE OF REPRESENTATIVES

NINETY-THIRD CONGRESS

SECOND SESSION

ON

H.R. 3177, H.R. 3178, and H.R. 7500

TO CONSIDER ESTABLISHING A MORATORIUM ON DRILLING
OPERATIONS AND A FEDERAL ECOLOGICAL PRESERVE IN A
PORTION OF THE OUTER CONTINENTAL SHELF IN THE SANTA
BARBARA CHANNEL

HEARING HELD FEBRUARY 19, 1974

Serial No. 93-36

Printed for the use of the
Committee on Interior and Insular Affairs



U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1974

30-306

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION

GPC

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

HOUSE OF REPRESENTATIVES

JAMES A. HALEY, Florida, *Chairman*

ROY A. TAYLOR, North Carolina
HAROLD T. JOHNSON, California
MORRIS K. UDALL, Arizona
PHILLIP BURTON, California
THOMAS S. FOLEY, Washington
ROBERT W. KASTENMEIER, Wisconsin
JAMES G. O'HARA, Michigan
PATSY T. MINK, Hawaii
LLOYD MEEDS, Washington
ABRAHAM KAZEN, Jr., Texas
ROBERT G. STEPHENS, Jr., Georgia
JOSEPH P. VIGORITO, Pennsylvania
JOHN MELCHER, Montana
TENO RONCALIO, Wyoming
JONATHAN B. BINGHAM, New York
JOHN F. SEIBERLING, Ohio
HAROLD RUNNELS, New Mexico
YVONNE BRATHWAITE BURKE,
California
ANTONIO BORJA WON PAT, Guam
WAYNE OWENS, Utah
RON DE LUGO, Virgin Islands
JAMES R. JONES, Oklahoma

CRAIG HOSMER, California, *Ranking
Minority Member*

JOE SKUBITZ, Kansas
SAM STEIGER, Arizona
DON H. CLAUSEN, California
PHILIP E. RUPPE, Michigan
JOHN N. HAPPY CAMP, Oklahoma
MANUEL LUJAN, Jr., New Mexico
JOHN DELLENBACK, Oregon
KEITH G. SEBELIUS, Kansas
RALPH S. REGULA, Ohio
ALAN STEELMAN, Texas
DAVID TOWELL, Nevada
JAMES G. MARTIN, North Carolina
WILLIAM M. KETCHUM, California
PAUL W. CRONIN, Massachusetts
DON YOUNG, Alaska
ROBERT E. BAUMAN, Maryland
STEVEN D. SYMMS, Idaho

SIDNEY L. MCFARLAND, *Staff Director and Chief Clerk*

LEE MCELVAIN, *Counsel*

WILLIAM L. SHAFER, *Professional Staff Consultant on Mines, Minerals, and Public Lands*

CHARLES LEPPERT, Jr., *Minority Counsel*

SUBCOMMITTEE ON MINES AND MINING

PATSY T. MINK, *Chairwoman*

MORRIS K. UDALL, Arizona
PHILLIP BURTON, California
THOMAS S. FOLEY, Washington
ROBERT W. KASTENMEIER, Wisconsin
JAMES G. O'HARA, Michigan
ABRAHAM KAZEN, Jr., Texas
JOSEPH P. VIGORITO, Pennsylvania
JOHN MELCHER, Montana
JOHN F. SEIBERLING, Ohio
HAROLD RUNNELS, New Mexico
WAYNE OWENS, Utah
JAMES R. JONES, Oklahoma

JOHN N. HAPPY CAMP, Oklahoma
CRAIG HOSMER, California
JOE SKUBITZ, Kansas
SAM STEIGER, Arizona
PHILIP E. RUPPE, Michigan
ALAN STEELMAN, Texas
JAMES G. MARTIN, North Carolina
WILLIAM M. KETCHUM, California
PAUL W. CRONIN, Massachusetts
DON YOUNG, Alaska
ROBERT E. BAUMAN, Maryland

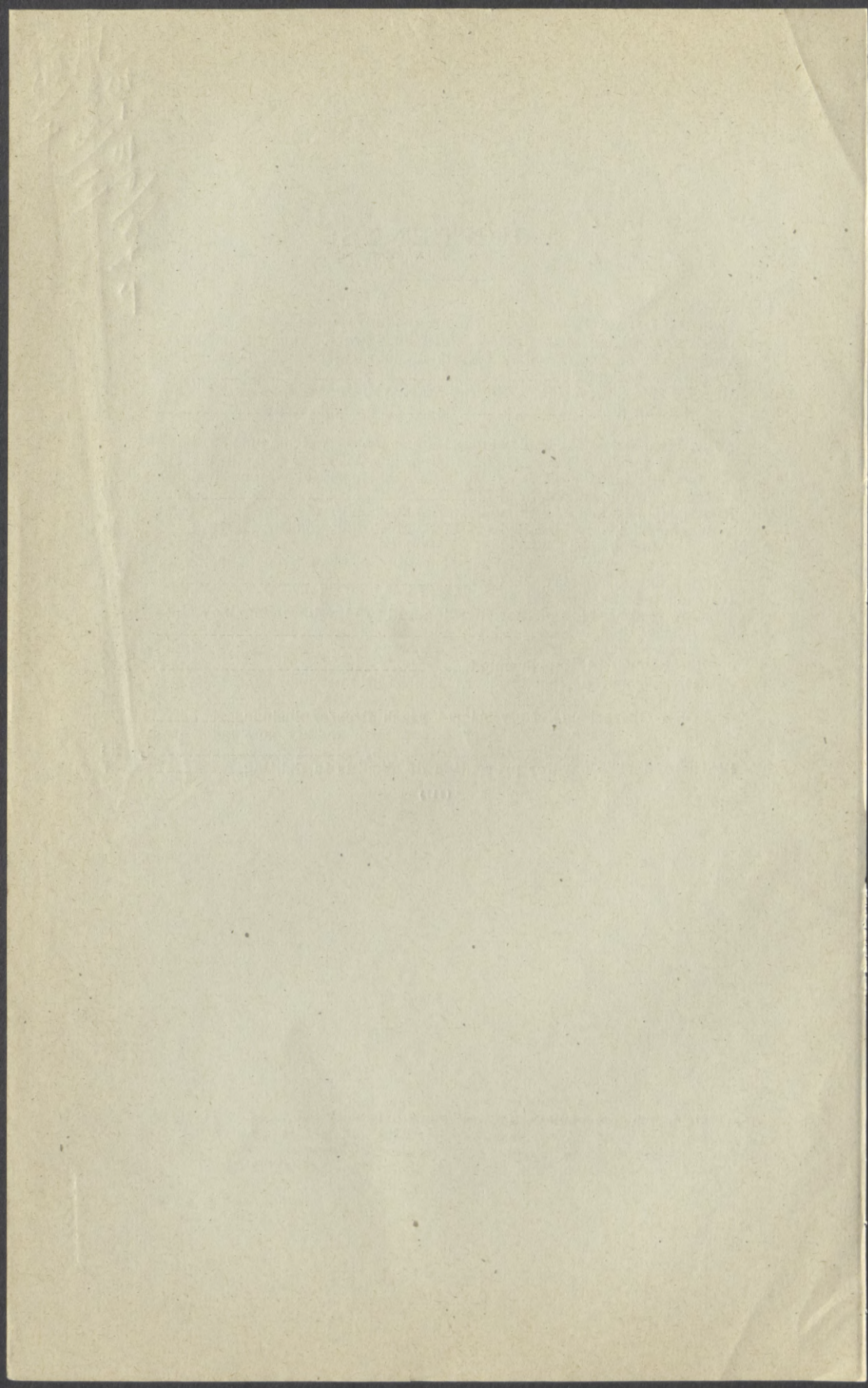
NORMAN WILLIAMS, *Consultant*

CHARLES LEPPERT, Jr., *Minority Consultant*

NOTE.—The chairman of the full committee is an ex officio voting member of this subcommittee. The first listed minority member is counterpart to the subcommittee chairman.

CONTENTS

	Page
Statements:	
Everitts, Donald J., manager of energy resources, State of California.....	36
Gladish, E. N., executive officer, California State Lands Commission.....	36
Vogely, Dr. William, Acting Deputy Assistant Secretary, Department of the Interior.....	3
Waldie, Hon. Jerome R., a Representative in Congress from the State of California.....	1
Letters:	
Mink, Hon. Patsy T., chairwoman, House Subcommittee on Mines and Mining, to Hon. Rogers C. R. Morton, dated February 6, 1974.....	6
Morton, Hon. Rogers C. B., Secretary of the Interior, to Hon. Henry S. Reuss, dated August 3, 1973.....	33
Reuss, Hon. Henry S., chairman, Conservation and Natural Resources Subcommittee, to Hon. Rogers C. B. Morton, dated July 3, 1973.....	30
Additional information:	
Answers to questions asked of Secretary Morton by Mrs. Mink in letter dated February 6, 1974.....	6
Information furnished by Dr. Vogely:	
Improvements in offshore drilling and production technology since May 1973.....	23
Implementation of OCS study recommendations.....	23
Technological improvements.....	25
Department of the Interior, Geological Survey, Gulf of Mexico Area.....	26
OCS Operations Safety Alert—Flash fires/explosions.....	27
OCS Operation Safety Alert—Barrels of deadly poisonous cya- nide adrift in the gulf.....	28
Status of technology for prevention of oilspills in drilling.....	7



OFFSHORE OIL DRILLING AT SANTA BARBARA

TUESDAY, FEBRUARY 19, 1974

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON MINES AND MINING OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:57 a.m., in room 1324, Longworth House Office Building, the Hon. Patsy T. Mink (chairwoman of the subcommittee), presiding.

Mrs. MINK. The meeting of the Subcommittee on Mines and Mining will come to order.

We are pleased to welcome to our hearings, this morning Dr. William Vogely, the Acting Deputy Assistant Secretary, Department of the Interior, who is accompanied by Dr. Vincent McKelvey, Director of the U.S. Geological Survey.

These hearings are a continuation of the ones conducted last November in Santa Barbara on bills that were offered by our late colleague, Mr. Teague, concerning the establishment of a moratorium on the drilling operations of the Outer Continental Shelf in Santa Barbara.

However, before you begin, we have a statement from our colleague, Congressman Jerome R. Waldie of California, that we would like to place at this point in the record. Hearing no objection, so ordered.

[The statement of Congressman Waldie follows:]

STATEMENT OF HON. JEROME R. WALDIE, A REPRESENTATIVE IN CONGRESS FROM THE
STATE OF CALIFORNIA

Madame Chairman and Members of the Committee. Thank you for that opportunity to testify on these bills which are extremely vital to the long-term future of the Santa Barbara Channel.

On many occasions in the past I have stated my total opposition to any type of resumption of oil drilling in this area. For the record, I would like to reiterate that opposition today. Despite many words of testimony which have been presented to this Committee and other governmental and quasi-public bodies, I find no enforcing argument which would compel either Federal or State authorities to allow private interests to continue operations for either oil exploration or commercial drilling in the channel. Rather, I believe that evidence documented since the February, 1969 blowout is quite convincing for the contrary argument that this area should be left alone for the long-term best interests of all concerned citizens.

As Members of the Committee are well aware, the 1969 disaster created environmental havoc on the Santa Barbara coastline and abutting areas which was of unprecedented intensity. It was not merely a token gesture by State and Federal authorities to place a drilling moratorium in the area at the time. It was all too clear that a continuation of drilling on even larger scales without adequate safeguards could create even more catastrophic accidents. I do not believe that any case has been made for even the slightest alteration of the moratorium decision.

During the fall Congressional recess last year, I had the opportunity to visit the Santa Barbara area and to walk on the beaches of the channel. I can assure

you, Madame Chairman and Members, that the scars of 1969 are still quite visibly evident. I can attest to this personally through a coating of oil scum on my boots which appeared after walking only a few hundred yards along the shoreline. To me it was appalling that such residue should be left in an area four years after the blowout and at a time when the oil interests appeared quite certain in their attitude that such an accident could never occur again.

We have learned, however, that it is not only quite possible but extremely likely that such accidents can happen at any time.

I was particularly taken by the testimony offered to Congress only last month by Mr. Russell W. Peterson of the Council on Environmental Quality during hearings on off-shore leasing for the Atlantic outer Continental shelf and the Gulf of Alaska. Mr. Peterson testified, in part:

"There have been significant improvements in the technology of oil and gas operations since the blowout at Santa Barbara. I believe very strongly that environmental concerns and public opinion have played a major role in advancing the level of technology, in imposing tougher controls and in sensitizing the industry to improve operating practices . . .

"However, there are several areas where further improvement is necessary. For example, the potential for human error is still high in spite of continued improvement of automated technologies. Therefore, the continuing search for better technology must build upon an improved understanding of the role of human factors in equipment design and must be coupled with thorough training of the equipment operators . . ."

This, I might add, is the summarized view of an established environmental study group four years after Santa Barbara at the time when oil interests want to expand drilling in the cause of a national energy emergency.

It is my strong personal view that Santa Barbara should no longer be considered the guinea pig for oil firms seeking to exploit off-shore reserves in a wanton manner which places no consideration whatsoever on environmental damage by human or other error.

There have been significant studies since 1969 which have shown the extreme extent to which oil damage to the environment can extend. One such study, recently released by the Scripps Institution of Oceanography in San Diego, produced evidence that the life cycle of reef fish in the area near Santa Barbara has been significantly lowered because of the ingestion of oil in the marine food chain.

It is clear to me, Madame Chairman and Members, that there is much more at stake here than an equitable exchange of lease rights for oil companies operating in the Santa Barbara channel. We are all too well aware that the oil industry has failed to adequately make a point in other Congressional hearings on the scope of our current energy emergency. Hysteria may be a proper tool to use if one interest cannot achieve something from another after other means have been exhausted. I am convinced that we should not let such energy hysteria force us to turn back the clock on environmental controls for Santa Barbara channel or any other areas where extensive off-shore drilling is being considered.

The need for the most sophisticated standards possible for off-shore oil operations is quite apparent. Yet such standards, according to the most reliable of government surveys, are not now on the books. I think it should be noted, too, that while the Santa Barbara question still remains unresolved the oil companies have been invited by the Interior Department to submit bid offers on an almost eight million acre area off the California coast between Ventura and San Clemente.

The area under consideration there would make the Santa Barbara leasing zone microscopic in comparison. Yet, the Administration seems willing to allow this additional and much more extensive leasing in an area only a few miles from Santa Barbara.

I strongly urge this Committee to go on record in opposition to resumption of drilling in Santa Barbara, and to encourage all other involved agencies to make the channel moratorium permanent. I thank you for this time.

Mrs. MINK. We are pleased to have you here this morning and we have copies of your statement, Dr. Vogely, which we will be happy to insert in the record at this point. You may proceed in any manner you wish.

STATEMENT OF DR. WILLIAM VOGELY, ACTING DEPUTY ASSISTANT SECRETARY, DEPARTMENT OF THE INTERIOR; ACCOMPANIED BY DR. VINCENT McKELVEY, DIRECTOR, U.S. GEOLOGICAL SURVEY; RUSSELL G. WAYLAND, CHIEF, CONSERVATION DIVISION; AND FREDERICK FERGUSON, ASSISTANT SOLICITOR, MINERALS

Dr. VOGELY. Would you like me to read the statement?

Mrs. MINK. Yes, if you would.

Dr. VOGELY. Madam Chairman, I am pleased to be here to discuss these bills. The Department's position is that none of them should be enacted at this time. Rather, we propose to undertake a thoroughgoing review of the Santa Barbara situation, including environmental impact statements on the ramifications of developing the oil and gas in the channel. This means that the administration is reconsidering one of its own proposals. Three developments occurring since that proposal was first formulated make such a review essential. First, is the energy crisis which this country is facing today; second, is the enhancement of the Department's capability for regulation of Outer Continental Shelf activities; third, is the improvements in offshore drilling and production technology since 1969 that have been developed by the oil industry.

I would like first to touch upon the considerations that went into this Department's earlier thinking on the Santa Barbara situation and then to explain the subsequent developments which have led us to reevaluate the problem.

The January 1969 blowout on one of the Federal leases in the Santa Barbara Channel was a traumatic event, both for an administration that had just taken office and for a Nation whose environmental consciousness was beginning to awaken. It was a time for decisive action. Immediately after the blowout the Secretary of the Interior took two major steps to forestall further accidents. First, he initiated a sweeping review of the Department's management policies in the channel, as well as an intensive study of the geology and environment of the channel itself. Second, he converted a 2-mile, unleased "buffer zone," opposite an area of the channel which the State of California had set aside as a State oil sanctuary, into a permanent Federal ecological preserve.

The outcome of the Department's review of the situation was the decision that a careful balance must be struck between oil development and preservation of environmental values in the Santa Barbara Channel. To that end, we submitted a proposal to the 91st Congress which would have terminated certain leases in the channel and created a national energy reserve out of the area which they covered. We revised this proposal in the 92d Congress by adding more leases to the total which would be terminated. We revised it again slightly for this Congress. Operations on the leases recommended for termination have been suspended during the last two Congresses.

The basic rationale for the administration's approach to Santa Barbara oil development has been to complement environmental

decisions made by the State of California. That State has concluded that a certain portion of the channel is of paramount environmental value and has set it aside as a sanctuary. We considered the proper Federal role in this case to be to accommodate ourselves to that conclusion and to place the areas seaward of the State sanctuary and shoreward of the scenic channel islands into a Federal reserve.

We are not repudiating that decision at this time. It may remain to this moment the correct one. We believe, however, that there are factors, not present when the decision was first made, which call it into question. It is on the basis of these factors that we intend to take another hard look at the Administration proposal, and I would like to discuss them in some detail.

The first new factor that has emerged since the Santa Barbara proposal was first formulated is the energy shortage which was already building to substantial proportions even before the Arab-nation cut-offs. These interruptions add a new dimension to the basic problem. While a mild winter and a concerted national conservation effort have prevented much hardship, the evidence of worsening shortages can be seen at service stations throughout the country. Even if normal trade relations are resumed, oil will remain in scarce supply and will be available only at prices that are multiples of those prevailing until October 1973. This action has caused the evaporation of whatever lead-time we may have had in solving our energy problems. Moreover, it is likely that the embargo will set a precedent, that we will have to cope with the ever-present threat of oil shortages caused by purely political considerations.

The plight of California is particularly serious. It has been hard hit by gas curtailments, and even before the Arab actions in October there was an estimated deficiency of 55,000 barrels a day of crude oil in the San Joaquin Valley and Los Angeles Basin areas. The Arab embargo has substantially increased this shortage, thus intensifying an already serious problem in California.

Thus, we have a very different backdrop for a Santa Barbara decision today from the one we had in 1969 or even last fall, before war in the Middle East further disrupted our patterns of energy supply.

It is worth pointing out that one of the steps the administration has taken to attempt to meet the energy crisis relates to our Santa Barbara proposal. On November 7, 1973, the President transmitted to the Congress a proposed joint resolution which would find that there is a national defense emergency and approve production of 160,000 barrels of oil per day from Naval Petroleum Reserve No. 1. We strongly support quick enactment of this legislation as passed by the Senate, which would also provide for exploration of Naval Petroleum Reserves Nos. 1 and 4. We shall therefore give particular attention in our reconsideration of H.R. 7500 to that provision which would pay for terminated leases out of funds derived from development of Naval Petroleum Reserve No. 1.

The other new factors that have entered into the picture since 1969 are improved procedures and technology governing oil production in Outer Continental Shelf lands. The offshore regulations of the Geological Survey have been extensively revised to define more clearly the responsibility of lessees and the authority of the Survey's Area

Oil and Gas Supervisor over Outer Continental Shelf operations and to require equipment fully adequate for the safe conduct of operations. Much stress has been placed on the development of redundancy or "fail-safe" devices and procedures that provide for safety when another device or procedure has failed.

To make sure that these regulations and orders are fully observed, we have developed a comprehensive review system. All work plans and proposed activities must be reviewed in advance and approved before work proceeds. Each operator is also required to develop and file a satisfactory pollution contingency plan. And as part of the review process, proposed actions that may have a significant effect on the environment are carefully assessed. If it is determined that such an action may have a significant effect, an environmental statement is prepared following procedures under the National Environmental Policy Act.

We have also instituted a field inspection system which not only helps to ensure compliance with regulations and orders but provides information useful in identifying points of weakness in equipment or procedures and in the development of corrective measures.

During the last 2 years we have had three studies undertaken on our behalf—one by analysts from the National Aeronautics and Space Administration, another by a panel of the Marine Board of the National Academy of Engineering, and one by a systems analysis team of the Geological Survey—to identify additional means of improving the safety of offshore operations. As a result of the recommendations of these groups, we are now in the process of developing a failure reporting and corrective action system, an information exchange system, a means to assure better training of personnel, a better identification of research and development needs, and several other procedures and programs that will add to our collective ability to conduct safe offshore operations.

In addition, a review committee on safety of Outer Continental Shelf petroleum operations has been established to advise the Director of the Geological Survey on policies and procedures related to safety, pollution control, and environmental protection. This group has been established under the auspices of the Marine Board of the National Academy of Engineering and is composed of experts in various engineering and scientific fields. Finally, in November the American Petroleum Institute published Specifications and Recommended Practices for the Subsurface Safety Valve (storm choke) to assure manufacturing standards and proper sizing procedures for certain well conditions. We envision that incorporation of these and additional standards into our own regulations.

The early results of these more stringent requirements and advances in technology are encouraging: the amount of oil spilled during routine production operation in the Gulf of Mexico has been already reduced by a third.

Having considered these factors, we have determined that our Santa Barbara proposal should be reevaluated. One of the vehicles for doing this will be the National Environmental Policy Act. Signed into law by President Nixon on January 1, 1970, this act established carefully throughout procedures and policies which have governed all subsequent Federal decisionmaking having environmental ramifications.

When the results of our study process are in, we will reexamine our proposal and communicate our decision to the Congress. Given the energy shortage that is now upon us, we believe that such a reexamination is strongly in the national interest.

Accordingly, we recommend that no Santa Barbara bill be enacted until our reevaluation has been completed. For that reason I have not included in this statement a full discussion of the bills before us today. Certainly, however, the approaches of all the bills to the Santa Barbara situation will be fully considered in our reexamination.

Madam Chairman, this concludes my prepared statement.

We do have answers to the questions that you raised in your February 6th letter to the Secretary if you would like those to be submitted for the record.

Mrs. MINK. Yes, I would. If you will please submit those they will be incorporated in the record at this point.

[The letter and answers referred to follows:]

FEBRUARY 6, 1974.

Hon. ROGERS C. B. MORTON,

Secretary, Department of Interior, Interior Building, Washington, D.C.

DEAR MR. SECRETARY: As you may know, the Subcommittee on Mines and Mining held a field hearing in Santa Barbara on November 17, 1973, regarding offshore oil drilling in the Santa Barbara Channel. On Tuesday, February 19, 1974, beginning at 10:00 a.m., a similar hearing will be held in Room 1324, Longworth House Office Building, to consider three bills: H.R. 3177 (Teague), H.R. 3178 (Teague) and H.R. 7500 (Saylor).

The Subcommittee would be pleased to hear your testimony and that of Dr. Vincent McKelvey, Director, U.S. Geological Survey, regarding the following:

1. The current Administration position on the pending legislation.
2. The current Administration position regarding oil and gas production from the Santa Ynez Unit in the Santa Barbara Channel.
3. A progress report on the environmental studies mentioned by Assistant Secretary, Stephen Wakefield, in his November 13, 1973, appearance before Senate Subcommittee on Minerals, Materials and Fuels.
4. The current Administration position regarding development of the outer channel area.
5. The status of technology for the prevention of oil spills in offshore drilling operations.

Please advise me as to your availability to testify.

Very truly yours,

PATSY T. MINK,
*Chairman, House Subcommittee
on Mines and Mining.*

ANSWERS TO QUESTIONS IN CHAIRMAN'S LETTER OF FEBRUARY 6, 1974

1. The current Administration position on the pending legislation. Covered in witness statement.
2. The current Administration position regarding oil and gas production from the Santa Ynez Unit in the Santa Barbara Channel.

The Geological Survey is currently revising the Draft Environmental Impact Statement (EIS) for the Santa Ynez Unit based upon oral and written comments received at public hearings and during the review period. Publication of the Final EIS is expected in the spring of 1974. Some time after the necessary 3-day waiting period following publication of the Final EIS the Secretary will decide, based upon input from the EIS and other sources, whether to approve the plan of development as submitted by Exxon Company-U.S.A., to approve the plan with modifications, to postpone approval of the plan, or to deny approval of it. Should the plan of development be approved as submitted or in some other form, Exxon, the unit operator, will be required to seek permits from the Geological Survey and other Federal and State agencies with jurisdiction over various components of the plan prior to placing any platforms, pipelines, terminals or other facilities on location.

3. A progress report on the environmental studies mentioned by Assistant Secretary, Stephen Wakefield, in his November 13, 1973, appearance before Senate Subcommittee on Minerals, Materials and Fuels.

The Geological Survey appointed a task force on January 3, 1974, to begin evaluating existing materials and data and to assemble material needed to prepare an environmental impact statement on oil and gas development in the OCS of the entire Santa Barbara Channel. An earlier *exploratory* drilling environmental impact statement, prepared and issued by the Geological Survey in August 1971, covers existing Federal leases on the OCS of the entire Santa Barbara Channel.

The present schedule for the preparation of the development impact statement calls for the issuance of a draft statement on or about September 1, 1974. It is tentatively planned that public hearings may be held in October 1974. Presently, a final environmental impact statement is not expected to be filed with the Counsel on Environmental Quality prior to January 1975.

4. The current Administration position regarding development of the outer channel area.

The Bureau of Land Management on January 2, 1974, issued a call for nominations for tracts for possible leasing on the outer Continental Shelf off southern California covering mapped areas in the San Pedro Channel southward and eastward from Ventura and southward and westward from the Channel Islands. This does not include any area within the Santa Barbara Channel. In addition, BLM on February 8, 1974, in the *Federal Register* requested comments from all interested members of the public on environmental, technological, and socio-economic aspects of leasing and development within that geographic area which may receive impacts from oil and gas operations off southern California. Following receipt of nominations and comments on areas of environmental concern the Department will follow its customary procedures for preparation of draft and final environmental impact statements including public hearings before making a decision whether to hold a sale in this area off southern California.

5. The status of technology for the prevention of oil spills in offshore drilling operations.

See attached statement.

STATUS OF TECHNOLOGY FOR PREVENTION OF OIL SPILLS IN DRILLING

Blowouts are the most dreaded and the most publicized of the drilling and production accidents leading to large-scale spills and sometimes spectacular fires. Technology in all areas of operations, including improved equipment design and use, a better understanding of the problems, thorough education in prevention and control, and teeth in Government regulations has helped to lessen (but not eliminate) damaging blowouts. The most notable of these advancements are summarized as follows:

1. High resolution seismic surveys are being used more and more on closer grid patterns to locate those areas of shallow gas in the Gulf of Mexico which may cause early drilling problems. Other seismic developments are proving helpful in approximating the depth of deeper high pressure zones in wildcat areas.

2. Drilling rigs are now being equipped with up-to-date blowout detection devices, some of which are penetration rate recorders, drilling mud monitors (for pit levels and in-and-out rates), and remote blowout preventer controls. The mud monitors are varied and numerous, but all are equipped with alarms to warn the driller of slight volume changes when reservoir fluids commence moving into the well bore. Faster bit penetration, immediately apparent to the driller, is reflected by a recorder; thus indicating a sand section and high pressure possibilities when drilling through deeper shale deposits. The remote blowout preventer controls, now commonplace, permit the driller or tool pusher to close the blowout preventer rams around the drill pipe in the event a blowout is underway and the usual controls are obstructed or damaged.

3. Drilling crews, tool pushers, and field superintendents are now periodically sent to short-term schools to develop an understanding of blowout development and to practice using engineered control procedures under simulated conditions. Also, frequent drills are held while drilling to maintain control alertness and prevention know-how.

4. Government regulations make blowout preventers in size and number a requirement in accordance with the area and the casing program. Casing sizes and depths must be approved as well as cementing practices. In the completion phase, all wellhead and tubular equipment must meet certain pressure and re-

sistance criteria and particular safety valves designed and sized for the job must be installed below the mudline and at the surface. Frequent inspections while drilling help to enforce these requirements through observation of drilling plans, work procedures, and equipment usage, and to make sure sumps and drip pans are installed and working to avoid minor spills.

In recent years, only two platforms have been damaged and lost by hurricane forces and this attributed to Mississippi River noncompacted sediments causing mud slides. Platforms are now being installed in 300-400 feet waters and designs are believed safe for 1000 feet waters. All natural forces including those from predictable earthquakes, and slides, are now impressed into platform design with acceptable safety factors.

For exploratory drilling in deeper waters, blowout preventers are mounted on the ocean floor and operated hydraulically from the drill vessel. The installation of a riser from the blowout preventers up to the vessel makes possible mud circulation, respective mud weight and volume measurements, and otherwise full drilling control. Such techniques have been perfected and practiced extensively in deep waters offshore California without an accident or a significant oil spill.

Production equipment continues to be the source of minor spills but equipment improvements, operational overview, and inspection enforcement are minimizing these occurrences. High and low liquid level and/or pressure sensors on all vessels are able to detect level or pressure extremes and to activate shut-in controls. Other redundant safety mechanisms such as pressure relief valves, automatic fail-safe valves, check valves, and emergency shut-down stations, are required and are working. Flare scrubbers and sump systems, the final means of controlling any low-pressure oil which has overflowed or escaped from other systems, are preventing minor spills every day. Also, gas detectors at enclosed stations, firefighting equipment and fusible control lines, and strict electrical standards are serving vital safety needs.

Overall the technology to control wells and contain production is considerably advanced over past years. The experience of concentrating on oil spill prevention during the 70's has been rewarding.

Mrs. MINK. Mr. Camp, do you have any questions?

Mr. CAMP. Dr. Vogely, just for my own information, what is your background so far as the oil industry is concerned?

Dr. VOGELY. Mr. Camp, I have been in the area of natural resources planning for the past 20 years, since 1954. I was with the U.S. Bureau of Mines for the period 1967 to 1970 as Assistant Director for Mineral Resource Evaluation where we were deeply involved in the evaluation of our energy as well as our minerals area. For the past 3 years I have been on the Secretary's staff primarily involved, among other things, with the Alaska pipeline. I am not a technologist. I am an economist.

Mr. CAMP. Have you had any direct knowledge or association with the new processes today in the drilling for oil over what processes they were using, and safety measures, back in the period of 1969 we are talking about in Santa Barbara?

Dr. VOGELY. No, sir. But Dr. McKelvey, Director of the U.S. Geological Survey, has had direct involvement in that.

Mr. CAMP. I wonder if the gentleman would like to comment on that.

Dr. McKELVEY. There have been significant advances, Mr. Camp, in the offshore petroleum technology in recent years. I think many of these have significant bearing on improved capability for environmental safety. I might point out a few of them.

One is the subsurface safety valve and the new specifications. As Mr. Vogely mentioned in his testimony, have been developed and are in the process of implementation on a very wide basis.

The safety valves constructed under these specifications are in use and are coming into much wider use. They permit shutoff of down-

hole safety valves by surface activation, not depending on conditions of flow within the well.

There is a developing technology already in use for the subsurface completion of wells, and, in the area of geophysics, a considerable advance in the development of techniques for the identification of the character of shallow bottom sediments, such that it is possible to determine unsafe conditions or conditions that need special attention in the location of platforms and special precautions in the drilling of wells.

Along the same line are substantial improvements in the regulations and in the supervisory and enforcement capability of the Geological Survey. Dr. Vogely touched on this a little in his testimony. We have a substantially different and much tighter, much more specific and more stringent body of regulations than was in existence prior to 1969, and we also have a much strengthened capability for seeing that those regulations are observed. Not only do we have an inspection capability that we did not used to have but we also have a better capability to review plans before work is undertaken, and indeed much of the improved safety capability results from that step and the critical review of plans that are proposed for action is ahead.

All in all, I think the industry and Government capability for preventing accidents and environmental incidents of the kind that took place in 1969 had been much improved. This does not mean, of course, that accidents are impossible. Accidents are always possible where human actions and equipment, and so on, are concerned. But the capability is very much improved and our aim is to see that none take place at all.

Mr. CAMP. Dr. McKelvey, you are with U.S. Geological Survey. Prior to the time of any drilling in the Santa Barbara area, was there any normal natural seepage from the floor of the ocean that was, you might say, caused or put there by mother nature?

Dr. McKELVEY. Yes, indeed, Mr. Camp. There are a great many natural seeps in the Santa Barbara Channel and in the aggregate my recollection is they are estimated to release something like 100 barrels of oil a day, and this has been going on for a long time. There are in the adjacent land area tar sands that represent seeps of the past.

Mr. CAMP. When we did start to explore and then to produce oil from the floor of the Santa Barbara area, how deep were the wells that produced the oil below the surface of the ocean floor?

Dr. McKELVEY. I believe, sir, that those on the Dos Cuadras structure on which the Union Oil Co.'s Platform "A" is located, is of the order of 3,000 to 4,000 feet in depth. Dr. Russell Wayland, the Chief of our Conservation Division, is here with us and he tells me that the deepest are of the order of about 5,500 feet on that structure. But most of them are in the range of 3,000 to 4,000 feet.

Mr. CAMP. Would it be your recommendation, with the knowledge that you now have from what has transpired since 1969 in the way of safety measures, that we could go back into that area and produce oil and get away from the situation that some people think we now have of seepage in the channel?

Dr. McKELVEY. Well, certainly the extraction of oil will contribute over time to the reduction of seepage because it removes the oil artificially and reduces the volume in the reservoirs that are leaking. It

was the recommendation of the DuBridge panel with specific reference to the Dos Cuadras structure that production from platform A continue for that very purpose, to reduce the volume of oil that could leak, in this case artificially, to the surface. The same principle, of course, applies with respect to natural seeps.

Mr. CAMP. In other words, you are saying, then, that if oil is produced from the channel, then that would alleviate possibly a natural seepage that we have had ever since the starting of time because the production itself would have a tendency to take off that pressure that is in the oil formation itself that causes the leakage?

Dr. McKELVEY. Yes. Evidently a good many reservoirs are involved because the seeps are rather widely distributed and, of course, to eliminate all of them would mean that all of those reservoirs would have to be identified and produced. But to the extent to which that is done, certainly the potential for seepage would be reduced.

Mr. CAMP. Thank you, gentlemen, very much.

Thank you, Madam Chairman.

Mrs. MINK. Mr. Ketchum.

Mr. KETCHUM. Thank you, Madam Chairman.

Dr. McKelvey, were you Director of the Geological Survey when the spill occurred?

Dr. McKELVEY. Dr. William T. Pecora was Director at that time. I have been Director since December of 1971.

Mr. KETCHUM. Well, then, this question certainly is not aimed down your throat, but do you feel that if the Outer Continental Shelf at Santa Barbara had been under the direction and under the regulation of the State of California, under their drilling regulations, that the spill would have occurred?

Dr. McKELVEY. Well, that is very hard to answer, Mr. Ketchum. I understand that the State of California has recently revised its regulations and very much tightened them up as we had done previously, and in fact, they adopted—directly took verbatim many of the components of our new regulation. As they stand now, they certainly would require that casing be set at a greater depth than was the case in 1969. Our regulations provide for that also. Whether their regulations would have provided for that in, 1969 I am uncertain.

Mr. KETCHUM. I think if you look at them they would have. And we resent very much the fact that the Federal Government took over the Outer Continental Shelf because we do not feel, those of us who live in California, that the spill would have occurred. I am not excusing the company for living up to the regulations nor am I accusing the Federal Government for its lack of direction. You were talking about a subsurface. I assume you are talking about a blowout preventer subsurface.

Dr. McKELVEY. Yes.

Mr. KETCHUM. Was that developed by the U.S. Government or was that developed by the industry on its own behalf?

Dr. McKELVEY. I believe it was developed—I am sure it was developed by the industry on its own behalf, sir.

Mr. KETCHUM. Thank you.

Then, Dr. Vogely, you mentioned on page 5 of your statement a series of studies undertaken on our behalf, one by the National Aero-

navitics and Space Administration, and so on and so forth. What did those studies cost us?

Dr. VOGELY: Mr. Ketchum, these were once again done for the U.S. Geological Survey.

Mr. KETCHUM. Perhaps Dr. McKelvey can answer that question.

Dr. McKELVEY. Mr. Ketchum, I am afraid I will have to supply the full answer to that for the record. My recollection is that the one undertaken for us by the Marine Board of the National Academy of Engineering cost about \$35,000 and I believe that the one undertaken for us by NASA cost more than that. But I just do not have a feel for what the exact costs may have been.

[The answer follows:]

The Marine Board Study cost \$36,500 in fiscal year 1972 and \$73,400 for fiscal year 1974. The NASA Study cost \$115,000 fiscal year 1974.

On the one undertaken by the Geological Survey I also do not have the specific cost but I would judge that it would have been of the order of \$75,000 or \$100,000.

[The correct answer follows:]

The OCS Lease Management Study by the Survey's Water Resources Division Cost \$132,000 fiscal year 1971.

Mr. KETCHUM. I am not, Doctor, criticizing the fact that these agencies have undertaken these studies. I am simply interested in finding out what they cost us when so much of that information was available in California. I think that you know as well as I that we have never had a major spill in the tidelands oil in the State of California and I believe—and I congratulate the department in California on their regulations. It was not until the Federal Government, and it certainly is not your fault, that the Federal Government assumed those responsibilities that this occurred.

I would, too, Madam Chairman, for the record—my colleague from Oklahoma, Mr. Camp, mentioned the seeps and I am assuming that he is referring to those seeps at Coal Oil Point and those seeps go back as far as recorded history. We do have evidence in California that the California Indians utilized those seeps for repairing canoes. So they have been there for quite a little while.

Doctor, again, on page 1 of your statement, first, the energy crisis—now, we use the energy crisis right now for an excuse to do an awful lot of things, some good, some bad, and I really do not think that we should be necessarily viewing the offshore oil in Santa Barbara vis-a-vis the energy crisis as an excuse to do almost anything. But the second is the enhancement of the department's capability for regulation of Outer Continental Shelf operations and third is improvement in offshore drilling and production technology since 1969 that have been developed by the oil industry. I wonder if you can expand on that just a little bit. What is so much better today than existed in 1969 other than perhaps a paralleling of regulations?

Dr. VOGELY. On the first point, the U.S. Geological Survey has very substantially improved their awareness and their capability and Dr. McKelvey can talk in detail about that.

Mr. KETCHUM. I think they are very aware. I will guarantee that.

Dr. VOGELY. On the second point we mentioned the choke valves, the subsurface completions, the continued improvements in technology

which have reduced offshore spills that occur as a part of normal operations and also have substantially reduced the risk of major blowouts.

Perhaps, Vince, you would like to talk about the new procedures. Dr. MCKELVEY. Well, I think the first and really most important of these is the improvement of the regulations, and whether or not the State regulations were tougher in 1969 than the Federal regulations. The fact is that the Federal regulations are extremely stringent and specific and do provide for safe procedures and equipment. And then I would say the next most important improvement is the capability that Congress has allowed us to develop, to review and improve as necessary, plans for drilling and other developmental activities.

As I mentioned earlier, much of the action in the area of safety prevention takes place in that step because we insist that the plans and the equipment to be followed and utilized meet these very high standards.

Then Congress also has permitted us to develop an inspection capability that in California permits us to inspect the platforms daily. The combination of these several things has given us a much improved capability for the prevention of accidents.

You mentioned, Mr. Ketchum, that there have been no major accidents in the California tidelands. I might add to that by saying that more than 11,000 wells have been drilled on the Outer Continental Shelf and in all of that drilling history, there have been only four accidents that have led to major spills, and indeed only one of those—the Santa Barbara Channel accident which was, of course, most unfortunate—brought any oil to the coastline itself.

Mr. KETCHUM. I am very well aware of that and let me point out now that I am very much in favor of continuing drilling, the offshore drilling. It was a little confusing to me in the energy message submitted early this year, wherein the original proposal was to trade off Elk Hills and establish another preserve over here but at the same time we were going to drill in the Gulf Coast and along the Atlantic coast. It was a little confusing for me to understand. What made it safe to drill in the Gulf and what made it safe to drill on the Atlantic coast and what made it unsafe to drill on the Santa Barbara coast. Now, I have been given the answer. It was a geological difference but I could bring you 500 geologists here tomorrow that would disprove that. I do not understand. Was that political or what were the real reasons?

Dr. VOGELY. Could I comment on this, Mr. Ketchum?

Mr. KETCHUM. Certainly.

Dr. VOGELY. One, we are now in the posture of reconsidering. We have not decided to drill on the Santa Barbara leases. We are reconsidering our proposal.

Two, the Santa Barbara leases, as I indicated in my statement—our position there was complementary to the State position. We were trying to go along with the State of California, which had proposed a sanctuary in shore from these leases.

Mr. KETCHUM. Well, may I interrupt for just a moment? I was a member of the California Legislature for 6 years prior to my coming here and I do not recall the State of California being on record vis-a-vis this. I recall some resolutions having been introduced. I

recall some legislation being introduced by representatives within the area or encompassing the area of Santa Barbara, but as a State position, I do not really recall that. Now, I could be wrong.

Dr. VOGELY. Well, there is on our map something called Santa Barbara Oil Sanctuary which I assume was established—

Mr. KETCHUM. That is immediately offshore of the city of Santa Barbara.

Dr. VOGELY. Yes, and the leases withdrawn were immediately offshore there. With respect to the second part of your question, it is clearly our position that accelerated development of the Outer Continental Shelf in those areas are susceptible of and capable of being developed with adequate environmental safeguards is in the national interest. The question that remains for this specific area is whether or not it can be developed in an environmentally acceptable manner. We are now reconsidering our position.

I might also point out, sir, that the Department and the administration have proposed a legislative solution to this problem for the last three Congresses and Congress in its wisdom has not acted.

Mr. KETCHUM. Now, what proposal is that?

Dr. VOGELY. The proposal which we are now reconsidering, sir, which was issued first in the 91st Congress.

Mr. KETCHUM. In other words, we could very well have made a mistake 3 years ago and now we are reconsidering it.

Dr. VOGELY. That is quite possible.

Mr. KETCHUM. It was a little confusing to me to understand. I could not understand why it was safe to drill on the Atlantic coast where we really had not drilled and we had already drilled on the Santa Barbara coast. I could not figure out how it was safe for others.

Back to your statement again on page 4, "On November 7, 1973," et cetera, et cetera, and I am now referring to your statement on Naval Petroleum Reserve No. 1 in which I have an intense interest too. "Approve production of 160,000 barrels of oil per day from Naval Petroleum Reserve No. 1," and for the record that oil goes to the military which would release 160,000 barrels a day for the private sector. I am the author of a resolution that has 100 cosponsors in the House of Representatives to accomplish just this. It says in your statement "We strongly support quick enactment of this legislation as passed by the Senate." I wonder if you could tell me what you are doing with the Armed Services Committee to encourage perhaps its chairman to consider this legislation.

Dr. VOGELY. Our congressional people have been in contact with the chairman of the Armed Services Committee. I cannot personally report the status of those negotiations.

Mr. KETCHUM. I wonder, sir, if you would for the benefit of the record, submit to this committee what the status of those negotiations is at this particular point.

Dr. VOGELY. I will be pleased to.

Mr. KETCHUM. I am very interested.

Dr. VOGELY. I will be pleased to do so.

Mr. KETCHUM. Thank you very much.

Mrs. MINK. That report will be received by the subcommittee and incorporated in the record of these hearings.

Mr. KETCHUM. Thank you, Madam Chairman.

[The information referred to follows:]

As Secretary Morton testified before your Committee on February 26, 1974, he and Melvin Laird have approached Chairman Hébert on this matter, but without success thus far.

Mr. KETCHUM. I could go on for quite a while but in the interests of time I will stop. Thank you, Madam Chairman.

Mrs. MINK. I have a few questions. The committee was in receipt earlier last year of a memorandum from your Department dated April 18, 1973, in which the Department recommended that the legislation which we are considering now be enacted.

Dr. VOGELY. Yes, Madam Chairman.

Mrs. MINK. In your statement today you indicated that the major reason for the Department now deciding they must reconsider that recommendation is because of the energy crisis, and the problems which have arisen since the Arab embargo. I take it that that is the major reason for the reconsideration.

Dr. VOGELY. That is certainly one of the major reasons. There are other reasons, too, Madam Chairman.

Mrs. MINK. Well, putting aside your statement with regard to the technological advances with which I want to take issue and really get into—the really significant factor which you are citing this morning to the subcommittee is the energy crunch, is it not?

Dr. VOGELY. There is that and there is also our legal situation with respect to these leases.

Mrs. MINK. What legal situation with respect—

Dr. VOGELY. Well, the leases have been suspended. The holders of those leases have been suffering damages. We have proposed a solution to that problem to three Congresses and we are in the position of having legal requirements under leases and we feel we must get some kind of solution to this problem.

Mrs. MINK. Well, was not that aspect of the problem also present when you made your recommendation in April of last year that these bills be enacted?

Dr. VOGELY. That is correct.

Mrs. MINK. So that part of it has not changed?

Dr. VOGELY. Well, time has changed it.

Mrs. MINK. That situation has not changed?

Dr. VOGELY. And since that time we have some court decisions which our Assistant Solicitor, Mr. Ferguson, can outline for you if you wish, as to the precise current situation with respect to these leases in the courts.

Mrs. MINK. Yes, if we could have that explanation.

Dr. VOGELY. This is Frederick Ferguson.

Mrs. MINK. How it relates to your need to reconsider the Departmental position.

Mr. FERGUSON. Well, there was a district court decision—

Mr. CAMP. Madam Chairman, would the gentleman identify himself?

Mr. FERGUSON. I am Frederick Ferguson, Assistant Solicitor, Minerals, in the Office of the Solicitor.

There is the litigation brought by the Gulf Oil Co. and the other holders of leases in which they have taken the position that we have no authority to suspend their leases, that our authority in the inter-

ests of conservation did not cover a suspension when we submitted legislation to the Congress for the termination of the leases.

In the district court we were unsuccessful. The matter was then taken to the court of appeals for the ninth circuit. We have now received favorable decision in the court of appeals which has indicated that in the opinion of the court of appeals, we had authority in the interests of conservation to suspend the leases while we submitted legislation for their termination.

That decision, as I said, is by the court of appeals. There is now a motion for reconsideration by the Gulf Oil Co. and the other litigants. That decision does state that we did have authority to submit the legislation in 1971 and to suspend in the interests of conservation while that legislation was under consideration. The court did not rule on whether or not we had authority to suspend the leases again when we submitted legislation for a second time. There is at least a hint in the decision that—well, in fact, I think there is a statement that we cannot continue this indefinitely. We cannot suspend the operations under the leases year after year while we submit legislation. In other words, it was all right for us to do it once, it may be all right for us to do it two times, but there must come a limit.

This is one of the serious considerations. It was certainly a different thing to suspend the operations for 21 months while we submitted the legislation the first time. To continue this suspension indefinitely while legislation languishes in the Congress is a different matter.

Mrs. MINK. Well, I hardly consider that report a justification for the Department now deciding to change its position. The committee is now undertaking to consider your legislation, and the reason we are unable to move forward is that the Department has changed its position. So it seems to me that, if anything, the courts will now interpret your legal status in quite a different light since the Department is now responsible for inaction with regard to the pending matter. So I just cannot see the legal status of your case with Gulf Oil as being any justification for your change of position.

I can see a question with regard to the energy matter, and so I would like to have a clarification on exactly what role the litigation has with regard to the decision of the Department to look into this matter further. Your change of status really goes against the decision of the court, and adds merit to the plaintiff's plea that the Government is acting unreasonably.

Mr. FERGUSON. Well, may I read briefly from one of the concurring opinions in the court of appeals' decision? Circuit Judge Chambers wrote:

I think the rationale of *Block v. Hirsch* . . . justifies the first suspension order. I have my doubts about the second one, but that is not before us. Surely as Judge Duniway indicates, the time arrives when enough is too much.

Similar remarks were expressed by District Judge Bolt, who also submitted a concurring opinion. So we do have certainly a danger expressed in the court decision that our first suspension was fine but the second—

Mrs. MINK. Would you not agree, though, Mr. Ferguson, that your moving away from support of your own legislation gives credence to the point indicated in the concurring opinion and weakens your own case?

Mr. FERGUSON. Well, I do not know. I will have to think about that.

Mrs. MINK. Well, that is neither here nor there. I was interested in pursuing exactly what caused the Department to shift its opinion between April and November.

Dr. VOGELY. Madam Chairman, the obvious immediate thing is the need for oil which causes a reconsideration. But it is not a simple decision.

Mrs. MINK. How long has the Department been aware of the energy crisis, the impending energy crisis?

Dr. VOGELY. Many people in the Department were aware of the impending energy crisis 20 years ago.

Mrs. MINK. Were you aware of the impending energy crisis in April of 1973?

Dr. VOGELY. We at that time knew that we were coming into a difficult situation but we could not predict the Arab-Israel war of November. The Arab oil embargo in November caused this situation to become much worse.

Mrs. MINK. Are you now saying to this committee that only because of the Arab embargo, the Department is reconsidering its position on this legislation?

Dr. VOGELY. I only object in your statement to the "only." This is a major consideration. It is not the only consideration.

Mr. KETCHUM. Would the gentlewoman yield at that point?

Mrs. MINK. Yes.

Mr. KETCHUM. The chairman asked how long you had been aware of the energy crisis and you stated—or the impending energy crisis and you stated 20 years.

Dr. VOGELY. I said some members of the Department.

Mr. KETCHUM. OK. Were those members of the Department not aware that economists, and petroleum engineers, geophysicists, the industry, were forecasting this as early as 1955 in very vehement terms?

Dr. VOGELY. Well, that is 20 years, almost.

Mr. KETCHUM. And at that point they were indicating the possibility, that is, the point we find ourselves in today, 1974, without the Arab crisis, would indeed have occurred in 1976 or thereabouts.

Dr. VOGELY. Yes, sir. That is the analysis that I was talking about, 20 years ago.

Mr. KETCHUM. You know, it is unbelievable, because I happen to be one of those people, as early as 1964, 1965, 1966. It is absolutely unbelievable to me why the Department was not standing on the top of the Capitol dome speaking about this so that the people would have an understanding of it. Now we are in total confusion. I am not blaming you, sir. I just totally cannot understand it. You know, we have come to this point and now the people of the United States are totally confused, ready to point the finger of blame at Government—and perhaps they should, at the Congress—and perhaps they should and at the industry who were warning of this. It is just absolutely beyond my ken to understand why we were not informing the American public in no uncertain terms that this was going to occur no matter whether there was an Arab embargo or not.

Thank you.

Mr. CAMP. Would the gentlelady yield?

Mrs. MINK. Mr. Camp.

Mr. CAMP. I am sure that we remember a couple of years ago that we held hearings on this subject for about 3 weeks and this subcommittee at that time compiled the information through staff members, and the testimony that was given before the committee at that time, and all of this information was sent down to the Department and to my knowledge we have not heard a word on it from them since that time. I think we ought to have this as a matter of record after what has transpired in the conversation we have had between these gentlemen and Mr. Ketchum.

Mrs. MINK. Did you mean to suggest, Dr. Vogely, that the Department had a formal report made some 20 years ago in which they acknowledged the impending energy shortage in this country? If so, we would request that such a report be submitted to the subcommittee for its records.

Dr. VOGELY. No. I did not mean to imply that there was a formal report by the Department of the Interior. I meant to imply that many scientists and analysts in the Department of the Interior identified the same kind of trend that Congressman Ketchum is talking about. The major one is a paper by King Hubbert of the Geological Survey. Second, there is the Paley Commission report which came out in—

Mrs. MINK. Would you give the approximate dates of these two reports?

Dr. VOGELY. Well, the Paley Commission report was probably published in 1952 or 1953. It was a Presidential commission established by President Truman that reported on our materials position which raised these kinds of problems, and the paper by Dr. Hubbert appeared around 1954. He was not then with the Survey. He has since come with the Survey. And there were papers by Dr. Lasky, who was also part of the scientific community at that time. There were a number of professions that expressed views along the lines that Congressman Ketchum is talking about in this area. And we can give you a bibliography.

Mrs. MINK. Yes. I would appreciate that very much. I would also like to know, and again you may submit this for the record, since these learned scientists in the fifties made these analyses and projections on our energy resources, what has the U.S. Department of the Interior done in terms of its formal policy pronouncements and recommendations to the Congress or to the executive branch? Could we get such a detailed report, in recognition of what these scientists had been projecting for 20 years? What actions, what policies—

Dr. VOGELY. Yes.

Mrs. MINK [continuing]. What recommendations have emanated from the Department of the Interior?

Dr. VOGELY. We could certainly give you some major works. I am not sure we can give you a comprehensive—

Mrs. MINK. I mean the general ones in 20 years.

Dr. VOGELY. Yes.

Mrs. MINK. Appreciate having that.

[The information follows:]

1952. Paley Commission. U.S. President's Materials Policy Commission, "Resources for Freedom." A Report to the President. 5 Volumes.

1956. U.S. Congress Joint Committee on Atomic Energy. "Peaceful Uses of Atomic Energy." Report of the Panel on the Impact of the Peaceful Uses of

Atomic Energy to the Joint Committee on Atomic Energy to the Joint Committee on Atomic Energy, 84th Congress, Second Session, 2 Volumes.

1968. United States Petroleum through 1980. U.S. Department of the Interior, Office of Oil and Gas, 92 Pages.

1969. Statement of Hollis M. Dole, Assistant Secretary, Mineral Resources, Department of the Interior before the Subcommittee on Minerals, Materials and Fuels of the Senate Committee on Interior and Insular Affairs on November 12, 20 Pages.

Dr. VOGELY. Just a moment. Dr. McKelvey would like to say something.

Dr. McKELVEY. Madam Chairman, I might just say that these forecasts of the kind that we have been discussing or predictions, represented a recognition of an impending situation on the assumption that existing trends continue. They were not necessarily a forecast that an energy shortage was in fact going to occur. I believe that was the case with Dr. Hubbert, but many of these studies identified trends such as decrees in the amount of exploratory drilling in the United States, and other indicators along that line, which meant that if you did indeed continue to drill less and less each year, if that trend were going to continue, and then on the assumption that oil would not be available from other sources, of course, one could foresee a shortage. But you may recall, and this has, I think, been true right up until a year ago, that this subject and problem has been a very controversial one. There were many people not long ago who were saying that we should import more rather than less oil, partly because prices of foreign oil at that time were less than those of domestic oil and partly because some felt that we should use the oil of other countries that wanted to sell it to us before we used our own. And the subject, as I say, has been a very controversial one and while the Department and others have pointed to these problems, nevertheless there has been by no means agreement that the problem existed in the way in which it had been identified and described by some people.

Mrs. MINK. Are you saying to this subcommittee that the Department at no time took any firm stand as to the critical nature of the full oil shortage situation in spite of all of these factors that you cited, that all it did was serve as a collecting basin for a wide range of differing opinions, and that it took no position with regard to making recommendations to the administration or to the Congress.

Dr. McKELVEY. No, I am not saying that, Madam Chairman. In fact, in recent years I can recall testimony and speeches of departmental officials—Hollis Dole, Assistant Secretary for Minerals at the time, made a number of such speeches and—

Mrs. MINK. When did the Representative recognize that this particular crisis was going to hit the country? When was its first awareness of the crisis situation, last fall?

Dr. VOGELY. Madam Chairman, if I may, in overview hearings before this committee in 1967, the then Director of the U.S. Bureau of Mines presented an analysis which clearly identified these emerging trends. As far as the current crisis is concerned, and I use that in quotes, you may remember that last summer we were running into spot shortages of gasoline, specifically in Denver, Colo., for example, and in the winter of 1972-73 we ran into shortages of heating oil in some areas of the country. Prior to that there were reports, analyses of the problem done by the Department of the Interior, done by the National

Academy of Sciences, done by the National Petroleum Council at the request of the Department of the Interior. All of these were major studies. All of this analysis was changed by the use of oil as a political weapon which we have seen since November. But there was an emerging problem and you must remember that the President did make the first energy message which identified this problem in June of 1972, I believe.

Mrs. MINK. Well, then, that gets me to my question. In April of 1973, when the Department submitted its recommendation that these bills be enacted, it said on page 2 of its testimony that it has considered—

the existing energy crisis and the pressing need for oil and natural gas. As a result of this review it has been determined on the balancing of all national interests that the overall benefits to the nation from the establishment of a national energy reserve as this bill provides would outweigh any anticipated benefits which would come from permitting the development of oil and gas deposits pursuant to these leases.

If what you say is true, the Department has been aware for several years of the energy crisis, and the President made a significant message on energy in 1972, and the Department has assumed its responsibilities in this regard, yet in view of that recognition, it recommended to this committee less than a year ago that this bill be adopted. I would like to hear precisely the reasons for your change of mind with regard to the "balancing of national interests" which must be taken into consideration by this committee and by the Department.

Dr. VOGELY. Our position is, Madam Chairman, that that position may have been correct and may still be correct, but what has happened since last April are the things we have been talking about this morning—the use of oil as a political weapon, the immediate need for oil on the west coast, as I indicated in my statement, and the evolving situation with respect to our position vis-a-vis these leases. All of these having changed substantially.

Mrs. MINK. Supposing the embargo were lifted tomorrow, and there may be such a possibility if I read the news reports correctly. Are you saying then that the major reason for reconsideration may be eliminated?

Dr. VOGELY. We do not know. If the embargo is lifted tomorrow, this will be part of our consideration. The question is not whether or not the embargo exists but the way we are put to the risk of being subject to an embargo at all.

Mrs. MINK. What are the untapped, nonproductive, unexplored oil reserve potentials of the United States in the continental land area, not in the outer shelf?

Dr. VOGELY. It is very large. I think you said untapped, unexplored—

Mrs. MINK. Yes.

Dr. VOGELY. Unknown.

Mrs. MINK. Those—no. Not unknown. I am talking about those that are not in production, that are known but have not been fully explored and are nonproductive today. What would be your estimate as to the amount of barrels that we still have in the United States as an oil reserve?

Dr. VOGELY. I would find it very hard to apply that precise definition.

Mrs. MINK. Well, would you apply your own definition?

Dr. VOGELY. I will let Dr. McKelvey talk about the distinction between reserves, resources and various categories.

Dr. McKELVEY. Madam Chairman, the proved reserves of oil and natural gas and liquids in the United States are about 48 billion barrels and there is a substantially larger amount, we believe, that remain to be discovered by exploratory drilling, both on shore and offshore. There is also a substantial amount that is now left in the ground that might be recovered by secondary methods. Approximately only a third of the oil originally in place is presently recovered. Methods for improvement in secondary recovery are being developed and the proportion that is recovered by secondary methods has been increasing bit by bit over the years.

The total production in the United States has been about 115 billion barrels. So in the reservoirs from which that amount has been produced, there still remain about 230 billion barrels. That represents a target for increased recovery by secondary and tertiary methods. So in the aggregate, the potential for the occurrence or for the discovery and further exploitation of oil on shore and offshore is very large. But much of those is in the category that requires, first of all, discovery, and that means additional exploration, and then the development of improved recovery methods and certainly increments of additional reserves will be added to those processes, but they are down the road some. Except for the prospects for improved secondary recovery from producing reservoirs, the reservoirs in which these additional accumulations may occur have yet to be found.

Mrs. MINK. That you very much.

Mr. Runnels, do you have any questions?

Mr. RUNNELS. Thank you, Madam Chairman. Yes, ma'am. I am a little confused. Am I assuming correctly that the Department is not in favor of any of these three bills at this time?

Dr. VOGELY. Our position at this time is that we are considering our position and we recommend against any legislation at this point in time.

Mr. RUNNELS. H.R. 7500 is the administration bill originally, right?

Dr. VOGELY. Yes, sir.

Mr. RUNNELS. And the administration and the Department have changed their position.

Dr. VOGELY. We are—

Mr. RUNNELS. From May 3.

Dr. VOGELY. Yes. We are no longer urging you to enact any legislation on this issue.

Mr. RUNNELS. OK. Then, may I discuss your statement. You have three points on page 1 as to why—first is the energy crisis that this country is facing today. Your conveyance is, it is real and it is not manufactured, is that correct?

Dr. VOGELY. Yes, sir. I am convinced that we have a real crisis today. The question of how we got to this position is another issue, but it exists today, yes, sir.

Mr. RUNNELS. OK. Second is the enhancement of the Department's capability for regulations of Outer Continental Shelf operations. Now, what has changed since May 3, 1973, when the administration was in favor of H.R. 7500 and today? What has changed in the Department's capability for regulation?

Dr. McKELVEY. May I speak to that, Mr. Runnels?

Mr. RUNNELS. Yes, sir.

Dr. McKELVEY. Since May of 1973, there have been no revolutionary changes in this area. There has been a continuing series of advances in both the regulations and in the evaluations of the offshore safety problem.

Mr. RUNNELS. Excuse me. May I interrupt you at this point? Could you supply to this committee, then, the prior set of rules and regulations that were being used on offshore drilling in Santa Barbara or any other place and those new sets of rules and regulations after May 3, 1973, as put out by the Department?

Dr. McKELVEY. Yes, Mr. Runnels. But perhaps—let me clarify now whether or not, with Dr. Wayland, whether or not any of our new or revised orders were issued after or since May of 1973.

Dr. WAYLAND. I am Russell Wayland, Chief Conservation Division, Geological Survey.

Mr. CAMP. Would you speak a little louder, please?

Dr. WAYLAND. I am Russell G. Wayland, Chief, Conservation Division, Geological Survey. I would agree with Dr. McKelvey that our advances are stepwise since May of 1973. They are not revolutionary. One thing that we have done most recently is had our input into the API standardization with respect to several items, one of which is mentioned in the statement to the committee, and that has to do in particular with subsurface safety valves. We have studies—

Mr. RUNNELS. Excuse me just a moment. When you say subsurface safety valve, are you talking about casing a hole, talking about bottom or downhole choke, or is it all on the surface?

Dr. WAYLAND. I am speaking of a downhole choke, sometimes called a storm choke.

Mr. RUNNELS. Has the Department found in other areas—let me ask you this. Previously did the Department have a rule or regulation stating that you had to have a downhole choke on offshore wells prior to this time?

Dr. WAYLAND. Yes. The regulation with respect to these chokes is essentially the same now as it was then. Our advances are in the standardization of the circumstances under which these chokes of different designs will be applied.

Mr. RUNNELS. All right. May I ask you a further question? How many wells were found in the gulf coast of Louisiana that according to your rules and regulations, were supposed to have downhole chokes and it was found they were not even in there regardless of what the designs were? Do you remember what I am talking about?

Dr. WAYLAND. Yes, I do.

Mr. RUNNELS. How many wells were found that did not comply and did not have downhole chokes?

Dr. WAYLAND. Congressman Runnels, I think you are going back to a particular incident which was the Chevron fire that resulted in the destruction of a number of wellheads on the platform and the discovery that several of the wells under that platform did not have storm chokes. This was in 1971.

Mr. RUNNELS. I am absolutely correct and you are correct in assuming what I meant. You can write all the rules and all the regulations and change all the API specifications that your heart desires. I am

trying to see now, the changes that the Interior Department has made, to see if anybody complies with what the rules and regulations are.

Dr. WAYLAND. Well, sir, your question, of course, related to changes since May of 1973, our discovery of infractions of our rules with respect to storm chokes goes back 2 years earlier.

Mr. RUNNELS. Yes, because you all remember in 1971, if you were approving this bill in 1973, you go back to 1971 and 1972 and the first part of 1973 when some part of the down chokes were being used.

Dr. WAYLAND. Our capability of determining whether chokes are being used properly has greatly increased in recent years, thanks to congressional support for appropriations and for the staffing. Therefore, the possibility that the choke will be inoperative or not installed in accordance with our regulation is, I would say, remote.

Mrs. MINK. Will the gentleman yield at this point? What Mr. Runnels is attempting to have clarified, which I am also very much interested in, is in April-May of 1973, your Department approved this legislation. Prior to that time certain incidents had occurred, in 1969 in Santa Barbara, in 1971 in the gulf coast, with regard to equipment failures and procedure failures and various other factors.

Now, since November of 1973, you have testified before this committee that because of improved procedures and technology, and we have to assume that this means improved since May of 1973, that because of these improvements and new requirements and restrictions and regulations and technology, that you are taking another look. We are attempting to find out what it is in your new procedures, requirements, restrictions, technology, that has caused you to say that you want to have another look.

Dr. VOGELY. Madam Chairman, the increase in technology, the improvement in technology and the improvement in our regulations, is a continuous matter. It is going on all the time, has been going on for a good number of years.

Mrs. MINK. Well, then, was there something marked that occurred?

Dr. VOGELY. No, madam. What we are now saying is that it has reached such a level that we want to reconsider whether or not the level of that technology as it now exists would cause us to reconsider whether or not the leases under discussion can be developed in an environmentally safe manner. We do not know whether they can or not. We want to reconsider and look. But we do know that the level of technology is substantially improved over what it was when we made the original decision in 1969 to close these leases down. But we cannot identify anything that has happened since May except what we have indicated. This is a continuous process and the question is whether, when it reaches a level, that level is great enough to cause us to reconsider and we think it is. We do not know what our reconsideration will result in. It could result in support of this bill.

Mrs. MINK. The committee is interested in finding out from you, sir, what critical point was reached in November of 1973, which caused you to say that now the level of technology and procedures require you to take another look. If we might have that kind of statement for the record, it would certainly help us to understand the basis for your not supporting the legislation at this time.

Dr. VOGELY. The immediate flash point was obviously the Arab embargo.

Mrs. MINK. The what?

Dr. VOGELY. The Arab embargo.

Mrs. MINK. No. I am talking about—we have put aside the energy crisis. We are now talking about technology. Would you list the various factors which you have laid as the basis for your rethinking on the matter.

Dr. VOGELY. We will be glad to submit that.

Mrs. MINK. We talked about the energy problem. Now we are trying to understand the use of your second factor on technology.

Dr. VOGELY. We will be glad to submit for the record.

Mrs. MINK. Since May of 1973.

Dr. VOGELY. Well, we will go behind that, too, Madam Chairman, to show you the development of these technologies to the level they are now.

Mrs. MINK. I yield back the time to Mr. Runnels.

[The information furnished by Dr. Vogely follows:]

IMPROVEMENTS IN OFFSHORE DRILLING AND PRODUCTION TECHNOLOGY SINCE MAY 1973

Enclosure 1 is a report of the Geological Survey Work Group on OCS Safety and Pollution Control.¹ This report is an evaluation of three studies conducted at the request of the USGS on improving safety and pollution control in the management of OSC operations. The report contains 15 recommendations and enclosure 2 is a synopsis of the implementation actions to date on these recommendations.

Several OCS Orders are being revised and will appear in the *Federal Register* for comment. Some of the changes proposed are:

OCS Order No. 2

More specific requirements on directional surveys, blowout prevention drills and monitoring of drilling mud volumes.

Require a second blowout preventer console at a remote location.

OCS Order No. 8

Additional information required on application for installing platforms concerning production facilities and electrical systems.

Requirements concerning production separation equipment using open flame or indirect heat.

More specific requirements on waste water and sewage discharge.

Institution of a program of erosion control and monitoring.

Specific requirements concerning welding.

OCS Order No. 9

More specific requirements on pipeline inspection and corrosion protection.

The industry continues to make technological improvements related to safety and pollution control of drilling and producing operations as reported in trade publications as shown in enclosure 3.

Notices to Lessees and operators setting forth additional requirements and Safety Alert Notices warning operators of potential problems are being issued by the Area offices. Enclosure 4 is copies of these Notices issued since May 1973.

IMPLEMENTATION OF OCS STUDY RECOMMENDATIONS

A work group composed of key Geological Survey officials has reviewed the studies of OCS lease management conducted by the National Aeronautics and Space Administration, the National Academy of Engineering, and an internal systems analysis group. As a result of this, a report was issued in May 1973 outlining fifteen recommendations.

The Geological Survey has initiated actions to implement all of these recommendations as follows:

Recommendation No. 1—Failure Reporting and Corrective Action

Action taken.—OCS Order No. 5 has been revised and now requires operators to submit quarterly failure-analysis reports on subsurface safety devices. Pro-

¹ See report beginning on page 26 of Part I, Offshore Oil Drilling at Santa Barbara, Serial No. 93-36.

cedures for a closed loop failure reporting and corrective action system which will include all critical platform safety components are being developed. The output from these systems are being computerized and will be analyzed by the safety review committee.

Recommendation No. 2—Accident Investigation and Reporting

Action taken.—The legality of publishing investigation reports of major accidents has been affirmed by the Solicitor's office of the Department of the Interior. The Regional offices of the Geological Survey are developing accident investigation reporting procedures which are more responsive to cause and effect relationships.

Recommendation No. 3—Information Exchange

Action taken.—A "Safety Alert" system has been initiated. With this system operators are advised of accidents occurring during OCS drilling and producing operations to let the industry know immediately of its own mistakes and malfunctions so that improvements can be made where applicable. It is anticipated that an information dissemination system will be designed during the next fiscal year to provide industry with the results of the failure reporting and corrective action systems, accident investigations, inspections, and other elements of the lease management program.

Recommendation No. 4—Research and Development

Action taken.—A cooperative committee on offshore safety and anti-pollution research has been formed in conjunction with the American Petroleum Institute (API). The purpose of the committee is to determine the research and development efforts being undertaken by industry and Government in this area; determine specific needs for additional efforts; and to contract for research and development in areas where industry response is lacking or unsatisfactory.

Current efforts include research on orifice coefficients for velocity controlled subsurface safety valves; research on detection and prevention of sand erosion; and research on removal of oil from water and solids.

Recommendation No. 5—Standards and Specifications

Action taken.—A cooperative committee on offshore safety and anti-pollution standards has been formed in conjunction with the API. This committee's function is to establish standards and specifications for safety and anti-pollution equipment. The first project undertaken and completed by the committee was recommended practice for design, installation and operation of subsurface safety valve systems API RP 14B and specifications for subsurface safety valves API Spec 14A. In connection with this, a facility for the testing of subsurface safety valves is being constructed and will be operated by an independent research institute. A team composed of API, industry and Government personnel will inspect manufacturers plants for quality assurance procedures.

Other projects underway by this committee include a recommended practice for design, installation, and operation of basic platform surface safety systems; and design standards for surface safety valves and actuators.

Recommendation No. 6—System Analysis

Action taken.—System analyses were performed on thirteen installations in the Gulf of Mexico under two Geological Survey contracts. These studies are currently being evaluated with the objective of possible adoption into the lease management program in connection with the work being done in this area by the committee on standards and specifications.

Recommendation No. 7—Engineering Documentation

Action taken.—The current proposed revision of OCS Order No. 8 includes requirements on documentation as recommended by the studies.

Recommendation No. 8—Wearout Prevention

Action taken.—The proposed revision of OCS Order No. 8 includes an erosion control program. This is also the subject of one of the research and development committee's projects.

Recommendation No. 9—Training

Action taken.—A committee has been formed in conjunction with the API on offshore safety and anti-pollution training and motivation. This committee is outlining the training needed for personnel working offshore, setting up training

programs, and establishing a time-framework for accomplishing this. The Geological Survey has established a more formalized training program for their own personnel and a training course in OCS Orders and regulations for presentation to the industry.

Recommendation No. 10—Motivation Program

Action taken.—The API and oil industry are taking the lead in developing a motivation program. A draft report concerning Employee Motivation Programs for Safety and Prevention of Pollution in Offshore Operations has been prepared.

Recommendation No. 11—Lease Management Program

Action taken.—Additional personnel have been hired for the Gulf of Mexico OCS office. Newly defined areas of responsibilities and goals of individual organizational units have been developed. Also under development, is a system for incorporating reports from other program areas into an annual review.

Recommendation No. 12—Inspection Procedures

Action taken.—Data processing equipment has been installed in the Gulf of Mexico Area office. Inspection checklists are being updated to keep current with OCS Orders. Special inspections are conducted bi-monthly as data gathering exercises. Consistent enforcement policy is being applied in each OCS area. Computerized data files regarding inspections, platforms, and accidents have been established and are used as input for safety review committee.

Recommendation No. 13—OCS Order Development Procedures

Action taken.—The Geological Survey has developed more formalized procedures for the evaluation and revision of existing OCS Orders and the development of new OCS Orders. Proposed new and revised orders are now being published in the *Federal Register* for public comment prior to their adoption.

Recommendation No. 14—Standardization of Pollution Report Form

Action taken.—This form has been revised for use by the Area offices.

Recommendation No. 15—Safety and Advisory Committees

Action taken.—The industry has established a committee on OCS Safety in both the Gulf of Mexico and Pacific Areas. The Area offices have designated personnel to form systems analysis review committees to meet on a regular basis. These committees have had their initial meetings. The Director of the Geological Survey has formed a review committee on safety of OCS petroleum operations. This committee is composed of experts not regularly employed by industry or the Government and is sponsored by the Marine Board of the National Academy of Engineering. Meetings of this committee are being held three times a year to review the lease management program of the Geological Survey and recommend specific courses of action.

ENCLOSURE 3—TECHNOLOGICAL IMPROVEMENTS

1. Exxon has developed a reliable method of detecting sand production in wells using a simple thin-walled sand probe in the flowline. (Reported World Oil, Nov. 1973)

2. Houston Research, Inc. has developed "The Magnetic Oil Separation Technique" which is reported to reduce oil contamination in produced water below levels generally now feasible. (Reported World Oil, Nov. 1973)

3. Halliburton Services has developed a new high resolution monitoring package for predicting potential problems during drilling. (Reported World Oil, Oct. 1973)

4. Monarch Logging Company, Inc. has developed a new warning device which gives early indications of impending drilling problems. (Reported World Oil, Oct. 1973)

5. The first concrete storage processing structure was successfully set on the sea floor in Norwegian waters on June 30, 1973. (Oil and Gas Journal, July 1973)

6. Computer programs which dynamically model pipeline performance are proving successful in producing quick response to pipeline leaks. (Oil and Gas Journal, Dec. 3, 1973)

7. Dyna-Drill Company has developed a tool with the ability to transmit well-bore orientation data to the surface at any time without the need for wireline services. (World Oil, Feb. 1974)

ENCLOSURE 4—U.S. DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY,
GULF OF MEXICO AREA

DECEMBER 21, 1973.

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES IN THE
OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

SUBSURFACE SAFETY DEVICE REQUIREMENTS FOR UNATTENDED WELLS OPEN
TO PRODUCTION

This requirement applies to wells under active repair or workover covered by an approved Form 9-331 and to wells where routine operations are in progress pursuant to paragraph 4 of OCS Order No. 5.

OCS Order No. 5, dated June 5, 1972, provides that no well open to production shall be left unattended without a subsurface safety device in place. A "well open to production" is defined as any well having perforations open to hydrocarbon-bearing zones. Unattended means no personnel present in the vicinity of the wellhead.

Effective immediately, any well open to production will not be left unattended unless a pump through plug has been installed in the tubing at least 100 feet below the mud line and the master valve(s) closed.

Where a plug cannot be set because of well conditions, approval must be obtained from the District Engineer before any alternate protection plan is used.

HYDROGEN SULFIDE IN OCS OPERATIONS

Hydrogen sulfide (H_2S) is known to be an extremely toxic, flammable, and highly corrosive gas in oil and gas operations. This hazardous gas has been encountered in land operations in Mississippi, Alabama, Florida, and in a few OCS operations in the Gulf of Mexico.

In order to minimize the potential hazards to personnel, equipment, and the environment in OCS areas of known or possible occurrences of hydrogen sulfide, appropriate preventive measures shall be taken to neutralize its effects.

These measures shall include adequate means of detection of hydrogen sulfide; provision of suitable personnel protective equipment, including adequate training in the use and maintenance thereof; an appropriate drilling mud program, including additives and/or chemicals; proper selection and use of equipment and materials in order to minimize the detrimental effects of a hydrogen sulfide environment; and all other precautions necessary to insure personnel safety and equipment integrity.

A contingency plan to provide well control, personnel safety, and environmental protection in areas of known or potential hydrogen sulfide content shall be submitted to the appropriate District Engineer for approval prior to the commencement of drilling operations.

In the event hydrogen sulfide is encountered in OCS operations, the District Engineer shall be notified as soon as possible and informed of the well location, quantity of hydrogen sulfide, depth at which encountered, and other pertinent well information.

The maximum allowable concentration of hydrogen sulfide for working conditions is 10 parts per million in the atmosphere; above 20 parts per million, protective equipment must be utilized. All necessary precautions shall be taken as soon as possible to prevent, minimize, and control these or greater concentrations of hydrogen sulfide.

APPLICABILITY OF OCS ORDERS NOS. 2 AND 4 TO OCS LEASES ISSUED OFF THE COASTS
OF MISSISSIPPI, ALABAMA, AND FLORIDA

This is to advise that the provisions of the present OCS Order No. 2, dated August 28, 1969, will apply to all drilling operations conducted on leases issued as a result of the December 20, 1973, lease sale. In addition, it will be required that after obtaining approval of Form 9-331C (Application to Drill), the New Orleans District office must be given at least 24-hour notification prior to the commencement of drilling operations.

Concerning the present OCS Order No. 4, dated August 28, 1969, the provisions of Section 2, *Production Capability*, will not be applicable to the above-mentioned leases for wells completed in carbonate reservoirs until such time as appropriate new guidelines can be formulated.

OCS OPERATIONS SAFETY ALERT—FLASH FIRES/EXPLOSIONS

There were 15 flash fires/explosions reported by OCS Gulf of Mexico Area oil operators during the first four months of 1973. Fortunately, these fires resulted in only minor personnel injuries and property damage and no pollution. The relative minor nature of these incidences should not lull operators into believing that they are normal OCS operating occurrences, and that nothing can be done to prevent similar events in the future.

The reported facts and circumstances of these accidents are contained in the following paragraphs. Recommendations which resulted from the investigation or from an analysis of the accident report follow each paragraph. The recommendations should be reviewed by all operators for applicability to their particular OCS installations and operational procedures.

GAS ENGINE RELATED EXPLOSIONS/FIRES

In two separate accidents, gas leakage from a faulty head gasket and housing of a natural gas-driven starter motor resulted in a flash fire. Ignition in one case was provided by a disconnected spark plug lead (the engine ignition system was being worked over) and in the other by a mechanical spark created by the improperly mounted starter.

The recommendation to prevent recurrence of such accidents is "Perform Preventive Maintenance." In the above described accidents, it is apparent that both the combustible gas supply and ignition source for the fires would not have existed if preventive maintenance were scheduled and performed. Proper preventive maintenance should include a daily visual examination of operating machinery as well as periodic thorough examinations.

Three other fires/explosions involving natural gas engines were also reported during this time period. Two were the result of backfire and flashback ignition in the intake manifold of an engine during start-up and the third was a crankcase explosion. Even though crankcase explosions cannot be entirely prevented, the effects of such explosions can be minimized by installing crankcase explosion relief valves with flame arrestors to prevent excessive engine damage and possible ignition of a secondary fire. The description, analysis, and preventive recommendations submitted by the operator involved in one of the two flashback ignitions follows:

The following sequence of events occurred while attempting to start a natural gas engine. Ether starting fluid had been applied, the engine was rolling, and ignition and fuel were on when the engine backfired. The force of the backfire blew the intake airhose off the carburetor and allowed the flame to propagate outward igniting a secondary blaze around the sides and top of the engine. The fire was extinguished by turning off the fuel and discharging a fire extinguisher around the sides and top of the engine.

The backfire which had propagated to the atmosphere by rupture of the intake airhose was identified as the ignition source. The primary source of combustibles for the fire was fuel gas fed through the engine fuel system. The fact that this source of combustibles did not cease at the moment of backfire indicated that the carburetor did not function properly either because of damage from the backfire or because of high fuel gas pressure to the carburetor.

The secondary source of fuel to the fire was found to be a leaking pipe plug in the supply line to the gas starter turning motor. The remedial action taken to render this engine safe for continued operation included:

1. Rebuilding carburetor.
2. Replacing sensitive fuel regulator (ounce regulator) and adjusting high pressure regulators.
3. Inspecting starter gas system for leaks and tightening all connections.

Recommendations which were made to help prevent similar fires on all gas engines are as follows:

1. Equipment availability permitting, replace fabric air intake hoses between air filter and carburetor with flexible metal or wirebraid reinforced hose.
2. Use a portable combustible gas detector to perform leak checks during scheduled gas engine inspections.
3. Install a relief valve downstream of engine sensitive regulators to prevent excessive fuel gas pressure.

GLYCOL REBOILER FIRES

Two of the reported fires were of identical circumstances. Both involved glycol leaks as the fuel source with the hot surface of the reboiler providing the ignition source. Recommendations to prevent future occurrences of this type fire are:

1. Check for and correct any leaking connections, especially in the area of any direct or indirect fired vessel. Leak detection and correction in these areas are particularly important because of the ever present ignition source.
2. Maintain the integrity of insulation on those surfaces which operate at a temperature which could possibly ignite the vapors and gases handled in the area. The ignition temperature for petroleum vapors is 536° F and that for natural gas is 900° F.

ENGINE EXHAUST FIRES

Three of the reported fires were the result of released hydrocarbons being ignited by engine exhaust systems. One fire occurred within a compressor building. The source of fuel for the fire was gas leakage caused by rod packing failure. The ignition source was exhaust gases escaping from a blown gasket and cracked piping on the exhaust system. The other two fires were of a similar nature to those discussed under Glycol Reboiler Fires. In each case, released hydrocarbons were ignited by the hot surface of the engine exhaust. The prevention recommendations included in the glycol reboiler fire discussion are also applicable.

Without exception, it can be safely said that the one major contributing factor to all of the above accidents is lack of proper maintenance.

Each facility is somewhat unique insofar as specific maintenance requirements are concerned; however, the below listed documents generally apply to all installations and should be useful as guides in accomplishing a safer operation.

1. API RP 7C-11F. Recommended Practice for Installation, Maintenance and Operation of Internal-Combustion Engines.
2. National Fire Protection Association Bulletin No. 37, Stationary Combustion Engines and Gas Turbines, 1970.
3. API Division of Refining. Guide for Inspection of Refinery Equipment.

OCS OPERATIONS SAFETY ALERT—BARRELS OF DEADLY POISONOUS CYANIDE
ADRIFT IN THE GULF

The U.S. Coast Guard has advised this office of a ship collision on August 5, 1973, 90 miles off the Yucatan Peninsula which resulted in the loss of 390 barrels of highly poisonous sodium and potassium cyanide.

These barrels are two and one half feet high and sixteen inches in diameter, painted blue with white stenciling. Hurricane Delia has widely scattered these barrels throughout the Gulf.

Please advise all offshore personnel of the following:

1. If a barrel is sighted—do *not* try and recover, but note the time, location, and direction of drift.
2. Notify all sightings immediately to the Commander Eighth Coast Guard District at A/C 504 527-6225.

These barrels are extremely dangerous and your help in locating them is greatly appreciated.

LACK OF ADEQUATE SUPERVISION BY LEASE OPERATOR OF CONTRACT PERSONNEL

A pollution incident recently occurred on an OCS installation where a well was left unattended with the subsurface safety device removed, the master valve open, the wing valve open, and the flowline disconnected.

The well's tubing string was to be used for orientation of perforations in another tubing string.

The well was supposedly dead; however, in order to pull the tubing plug, a contract well control unit was used to pressure up with salt water above the tubing plug. The tubing plug was then pulled by the contract wireline operator; however, due to the lack of additional required equipment and the approaching end of daylight, the contractors (both wireline and well control companies) were ordered by the lease operator's workover superintendent by radio to cease operations and secure the well.

The wireline operation rigged down, shutting the crown valve. The well control unit rigged down, leaving the wing valve open and the flowline disconnected. The

contract personnel departed the platform at approximately 5:30 p.m. The wireline operator stated on his work order, "well secured."

During the night, the well unloaded and was discovered to be flowing at approximately 2:00 a.m. by a night pumper during a routine inspection by boat. (This well is presently a flowing oil well without any additional workover.)

The lease operator had in effect a protection plan which stated, "*Wireline-Electric Line*; line not in hole—Master Valve closed." However, none of the lease operator employees checked to confirm that the plan was carried out, nor were any of the contract employees assigned as being in charge of the workover and therefore directly responsible to the lease operator for the entire operation.

Recommendations which were made to prevent a recurrence of this pollution incident are:

1. Establish a procedure whereby the lease operator's personnel secure each unmanned platform after or during the departure of all other personnel.
2. A night inspection procedure of unmanned platforms, assuring at least one inspection per night, with the exception of inclement weather qualification.

These recommendations should be reviewed by all operators for applicability to their OCS installations and operational procedures.

Mr. RUNNELS. Thank you, Madam Chairman. In the essence of time I will hop over to page 4. If I understand, the Department's position is that they are in agreement and want the Congress to approve the production of 160,000 barrels a day from Naval Petroleum Reserve No. 1, is that correct?

Dr. VOGELY. Yes, sir.

Mr. RUNNELS. Now, in H.R. 7500 that provision has to do with paying of the terminated leases out of the funds derived from the Naval Petroleum Reserve No. 1. Is the Department in agreement on that now?

Dr. VOGELY. The Department is reconsidering whether or not it will need that money because if we decide to propose development of these leases, then that earmarking of the money would not be required.

Mr. RUNNELS. Just in case we change our position somewhere later down the line, how much money at 160,000 barrels of production per day, in H.R. 7500—you take this money and put it in a pot and pay for these terminated leases if they terminate, cancel out—how much money are we talking about to pay for these, I believe there are 75 leases in that area? How much money are we going to derive from 160,000 barrels a day to set in this pot to reimburse? I am trying to get at a figure. I read in one of these other statements that the oil companies paid \$603 million for the leases. Now, is that all we are talking about, \$603 million? What is the figure?

Dr. VOGELY. That, sir, will be determined by the court of claims. We will not determine it. At a minimum, of course the bonuses paid for these leases, I am informed, was \$230 million. The question of whether or not the oil companies can collect through judicial procedures the profits they would have earned had they been allowed to develop the leases, all of this will have to be settled in the court of claims. So we cannot give you a figure as to what the cost would be of the determination—if we do terminate the leases.

Mr. RUNNELS. So we do not know whether we are talking about, in some of the 35 suspended leases—I think you stated 875 million barrels of oil and 435,000 trillion cubic feet of gas—656,000 trillion feet of gas we do not know at this time whether we are just talking about money actually paid out or to recover these amounts of money.

Dr. VOGELY. That is correct. It would be for the court of claims to determine what the ultimate liability of Federal Government was.

Mr. RUNNELS. I believe I read in the last two or three days an article in the paper where the Navy has finally gotten their position on Elk Hills to the court in California and the judge has ruled that Standard of California must cease. Is this a correct situation?

Dr. VOGELY. I read the same newspaper report. My understanding is that Standard has been ordered to cease production from that well.

Mr. RUNNELS. All right, sir.

Now I will go on, and this is my last one, Madam Chairman. On page 5, "We have also instituted a field inspection system which not only helps to insure compliance with regulations and orders but provides information useful in identifying points of weakness in equipment or procedures," and so forth.

Now, I am sure that has to do with the second question I asked earlier. For the benefit of this committee, could you also provide how you instituted new procedures on your field inspection system and you stated that due to the Congress you have more money and can hire more people.

Dr. VOGELY. Yes, sir.

Mr. RUNNELS. For the record, tell us how many people you have hired and how much money.

Dr. VOGELY. Very good.

Mr. RUNNELS. Thank you, Madam Chairman.

Dr. VOGELY. We will be pleased to do so.

[The information follows:]

At the end of fiscal year 1969 we had 47 people—\$1,407,000 for marine mineral lease management.

In fiscal year 1974 we have increased to 211 people—\$6,299,000.

Mrs. MINK. I have one final request also which we would like to have for the record. I am sure you are aware of the GAO report dated June 29, 1973.

Dr. VOGELY. Yes, ma'am.

Mrs. MINK. And the various observations which were made by the Comptroller's office with regard to inspection and the failure of the Geological Survey to have the inspection teams, to have adequate training, to have adequate investigations, and reporting, the minimal numbers of incidences in which the drillings were halted or fines imposed. I would appreciate a reaction and commentary to these points which were raised by the GAO, for the record.

Dr. VOGELY. We do have correspondence that addresses itself specifically to that between Secretary Morton and Congressman Reuss.

Mrs. MINK. Thank you very much. If there are no further questions by members of the subcommittee, we thank you both for coming to give us this valuable insight into the Department's attitude with regard to these bills.

Thank you very much.

[The correspondence between Secretary Morton and Congressman Reuss follows:]

CONSERVATION AND NATURAL RESOURCES SUBCOMMITTEE,
OF THE COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C., July 3, 1973.

HON. ROGERS C. B. MORTON,
Secretary, Department of the Interior,
Washington, D.C.

DEAR SECRETARY MORTON: Enclosed, for your information, review, and comment, are two copies of the Comptroller General's report (B-146333) of June 29,

1973, to our Subcommittee entitled "Improved Inspection And Regulation Could Reduce The Possibility Of Oil Spills On The Outer Continental Shelf." The report is based on a GAO investigation initiated in April 1972 at our request. We understand that the GAO has "discussed its contents" with Interior Department officials.

The report concludes (pp. 7, 9) :

"The President's energy message of April 1973 directed the Secretary of the Interior to triple by 1979 the annual amount of acreage leased on OCS for drilling oil and gas. We therefore believe that the need for improved regulation and inspection of OCS operations takes on added significance.

* * * * *

"Our review of [Geological] Survey enforcement actions for violations of OCS regulations showed that enforcement procedures and practices have to be strengthened in several respects."

Coincidentally, we received today an Interior Department news release announcing that the Department has asked oil and gas companies to nominate tracts in the Gulf of Mexico for oil and gas leasing. The release emphasizes "that no decision will be made to hold the sale until the Department has made a full study of environmental factors." The GAO report indicates that the enforcement and inspection activities of the Geological Survey, in this area particularly, need considerable improvement. This factor should be a part of your "study of environmental factors."

Specifically, the GAO found that:

From March 1971 to February 1972, there were 26 spills totalling about 9,600 barrels reported in an area of the Gulf where several wildlife refuges are located ;

While there were no spills during this period in the Pacific region, there are more than 60 natural oil seeps in the Santa Barbara Channel occurring daily, the "most active of which" is in the Coal Oil Point area where an estimated 50 to 70 barrels (2,100 to 3,500 gallons) seep daily ;

The OCS accounted for 16.5 percent of the volume of oil spilled in and around U.S. waters in 1971 ;

While Federal agencies did not incur any direct cost for cleaning up these 26 oil spills, they did "incur administrative costs for monitoring the cleanup or investigating the causes of the spills" which totalled over \$631,000, including over \$569,000 for the Shell oil spill which began in December 1970, and over \$56,000 for the Amoco spill in October 1971, and that these costs were never recovered ;

The "full impact of oil spills resulting from OCS activity were not well understood" and that BLM studies to evaluate their impact were not yet completed ;

No criminal enforcement proceedings were initiated in the case of the 26 spills ; Although Survey's Gulf Coast regional office "has established a uniform enforcement policy," including the writing of warnings and stopping operations where deficiencies occur, and recommendations for fines, the Survey's inspectors were observed by GAO to "not follow" the prescribed procedures in regard to violations of "required safety procedures and/or equipment" ;

The Pacific region used "only written warnings for violations of OCS orders" which were "not always effective in bringing about remedial action" by the lessee ;

The lessees were slow to take corrective action ;

In 3 instances the lessees took at least 3 weeks to repair subsurface safety devices that were leaking ;

The Survey has *never* cancelled an OCS lease for violating OCS orders, and, except in one instance, has *never* recommended fines for such violations ;

The Gulf Coast regional policy of the Survey on inspections is vague, inconsistent, and, in some instances, almost non-existent ;

In a random sample of 50 out of 807 wells drilled in F.Y. 1972 in the Gulf, only 25 were inspected during drilling, despite the region's unwritten policy of at least one such inspection ;

The frequency of inspections of production operations "averaged" about 10 months, despite policies requiring more frequent inspections ;

Survey inspectors failed to "note all items of noncompliance with OCS orders", particularly where the violations were "considered minor" and the lessee "corrected" them during the inspection ;

The GAO had no formal training for inspectors ; and

OCS orders did not cover some operations "which appear to require regulations", such as control over (1) erosion of equipment, (2) workover and wireline

operations, and (3) concurrent drilling, production, and workover operations on a single structure which are considered "dangerous" by Survey officials "because of the confusion caused by numerous operations in a confined area".

These deficiencies cited by the GAO are serious. Until adequate steps are taken to correct each of them, the program will be ineffective.

It has been four years since the disastrous Santa Barbara spill. During this period, new and better regulations have been adopted to prevent such spills and to cope with them when they occur. But, unfortunately, there is still a great reluctance on the part of the Geological Survey to enforce the law and regulations strictly against the lessees, even though the potential for disaster is significant.

The GAO has made the following recommendations:

"Although natural seepage may create special problems in OCS operations in the Santa Barbara Channel, the failure of a safety device, unless promptly corrected, could result in a blowout causing greater pollution than the seepage. We therefore believe the Survey should reexamine the adequacy of enforcing OCS requirements only through written warnings and consider the advisability of halting operations, if necessary, on individual wells, as is done in the Gulf Coast region, for correcting equipment deficiencies."

"To insure compliance with Department regulations and minimize the possibility of oil spills, the Secretary of the Interior should require the Survey to:

Emphasize the need for inspection personnel in the Gulf Coast region to apply prescribed enforcement actions for violations of OCS orders, unless deviations are authorized under circumstances specified by the region and properly documented in each case.

Reexamine the Pacific region's policy of not halting operations for violations of OCS orders and consider the advisability of ordering shut-downs of individual wells to encourage the operator to promptly correct deficiencies."

"The Survey's inspection efforts and reports need improvement in several respects. We believe that the Survey should:

Establish instructions for partially inspecting drilling operations and for inspecting and reporting on remedial and abandonment operations.

Issue instructions reminding inspectors to perform all prescribed inspection steps."

"To strengthen the inspection of OCS operations, the Secretary of the Interior should require the Survey to:

Establish a realistic policy on how frequently each type of OCS operation should be inspected, considering the resources available and the risks of oil spills involved.

Consider establishing a formal training program for the inspection staff.

Issue instructions covering partial inspections and remedial and abandonment operations."

"To bring under regulatory control all OCS operations which are within Survey's jurisdiction and which have potential for causing pollution, the Secretary of the Interior should require the Survey, as part of its implementation of the three studies recommendations, to issue OCS orders for the control of erosion, workover and wireline operations, and concurrent drilling, production, and wireline operations."

We are pleased to learn that the Geological Survey and Departmental officials have agreed to implement each of these recommendations. We also note that the Environmental Protection Agency told the GAO that it was not "completely satisfied with Interior's regulations and inspections on the OCS". EPA offered three specific suggestions designed to overcome this dissatisfaction. They are as follows:

"More specific provisions could be written into the lease agreements regarding spill prevention and contingency plans in case of spills."

"The number of inspectors in the Gulf Coast region may have to be increased in view of the more than 1,800 platforms operating in the Gulf. More inspectors would be able to prevent more discharges of oil and induce lessees to improve their equipment and procedures."

"Better preventive maintenance could be required of the lessees by (1) asking them to submit a preventive maintenance schedule, (2) prescribing a list of parts needed to periodically repair certain equipment, or (3) issuing a specific enforceable OCS order."

We request that you provide to us on a monthly basis, beginning September 1, 1973, the Survey's progress report in correcting the deficiencies mentioned by the

GAO and carrying out the GAO's recommendations and the suggestions of EPA. We also request that you provide to us as soon as possible copies of the various written instructions and orders applicable to the Gulf Coast and Pacific regions concerning the regulation and inspection of OCS leases.

Sincerely,

HENRY S. REUSS,
Chairman, Conservation
and Natural Resources Subcommittee.

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., August 3, 1973.

HON. HENRY S. REUSS,
House of Representatives,
Washington, D.C.

DEAR MR. REUSS: Thank you for your letters of July 3 to the Director, U.S. Geological Survey and to me, together with copies of the General Accounting Office report No. B-146333, dated June 29, 1973, entitled "Improved Inspection And Regulation Could Reduce The Possibility Of Oil Spills On The Outer Continental Shelf." The opportunity for review and comment is appreciated. The Director's comments are incorporated herein.

Let me say at the outset that we share your concern about the need to further strengthen regulatory and inspection procedures designed to reduce oil spills and other undesirable consequences of oil and gas operations on the Outer Continental Shelf (OCS). Much progress has been achieved since 1969 in this objective, both through the tightening of regulations and Orders and through the development of our inspection capability. But we agree that still more effective capability and procedures are needed, and the U.S. Geological Survey is working hard to achieve them.

As the GAO indicates in some detail on pages 32-35 of its report, the U.S.G.S. has had several studies undertaken on our behalf by NASA, the Marine Board of the National Academy of Engineering, and internal groups to identify weaknesses in regulations and procedures on the OCS and to recommend remedial measures (we also have had available for study a "Draft Report of a Technology Assessment of Outer Continental Shelf Oil and Gas Operations" prepared by the University of Oklahoma under an NSF Grant, and the report of a conference on "Safety and Pollution Safeguards in the Development of North-West European Offshore Mineral Resources" held in London in March 1973). The analysis of the results of these studies was completed by a special Work Group in May 1973. I am pleased to enclose a copy of the May report, a press release announcing its completion, the Director's May 31 memorandum advising the Chief, Conservation Division, to proceed with the implementation of the Work Group's recommendations and his June 19 response outlining plans for doing so.

These plans for modification and improvement in our lease management program cover a broad range of recommendations and include, among others, the changes recommended by GAO. Some of these will take time to accomplish fully, but others will be accomplished shortly. The status of action on each of the GAO recommendations, in the order in which they are listed on page 4 of the report, is as follows:

1. Emphasize the need for inspection personnel in the Gulf Coast region to apply prescribed enforcement actions for violations of OCS orders unless deviations are authorized under circumstances specified by the region and properly documented in each case.

The U.S.G.S. Gulf Coast personnel have been reinstructed to apply prescribed enforcement actions for all violations, unless deviations have been authorized, by memorandum from the Chief, Conservation Division, to the Conservation Managers, Gulf of Mexico OCS Operations and the Western Region, dated July 17, copy enclosed. In part, this repeats instructions issued in September 1972, copies enclosed.

While the immediate purpose here is to see that regulations and orders are complied with fully, the inspection program has another important objective—namely the identification of weaknesses in OCS operations and the development of corrective measures. For this the G.S. will utilize not only its own records of reported violations and failures, but information required from the operators. OCS Order No. 5 requires them to submit quarterly failure-analysis reports on subsurface safety devices and as indicated in Recommendation No. 1, Failure Reporting and Corrective Action, of the enclosed May report of our Work Group

on OCS Safety and Pollution Control, we are in the process of extending this to require reports on all incidents, problems, and failures that result in fires, reportable spills, or reportable accidents.

2. Reexamine the Pacific region's policy of not halting operations for violations of OCS orders and considers the advisability of shutting down individual wells to encourage the operator to promptly correct deficiencies.

As mentioned on page 15 of the GAO report, the G.S. is following the recommendations of the President's Task Force to pump oil from the three platforms on the Dos Cuadras structure in the Santa Barbara Channel, but is not intended that this result in a no-shutdown policy for individual wells where a hazardous situation is found to exist. Reaffirmation has been accomplished by way of a memorandum, copy enclosed, from the Chief of the Conservation Division to the Conservation Manager, Western Region, requesting also that operators be informed that failure to take prompt remedial action will be taken as evidence of a knowing and willful violation and will be reported for action under the provisions of the OCS Lands Act.

3. Establish a realistic policy on how frequently each type of OCS operation must be inspected, considering the resources available and the risks of oil spills involved.

As indicated in the Work Group Recommendation No. 12 on Inspection Procedures, the G.S. is in the process of further developing its inspection system to meet the GAO recommendation and other objectives as well. Part of the problem has been a lack of resources to make inspections as frequently as would be desirable and while past and future increases in allocations have and will strengthen our capability, we recognize that it is unlikely that we will ever have staff and funds large enough to inspect all operations frequently. As a means of achieving the basic purpose of inspection—to see that operations are conducted safely at all times—it is planned to include in OCS Orders requirements for lessees to conduct inspections on a scheduled basis and report the results in a specified format.

4. Consider establishing a formal training program for the inspection staff.

The G.S. inspection staff presently receives on-the-job training but as indicated in Recommendation No. 9 on Training and Certification of the Work Group report, we recognize also the need for formal training. The G.S. is working with industry and the American Petroleum Institute to develop standards and requirements for training personnel, and intend that G.S. personnel will participate in training courses appropriate to their responsibilities. In the meantime, Conservation Managers have been instructed by memorandum from the Chief, Conservation Division, copy enclosed, to institute a formal training program in inspection procedures.

5. Issue instructions covering partial inspections and inspections of remedial and abandonment operations.

This recommendation is being adopted as part of the steps described under Work Group Recommendations Nos. 12 and 13 on Inspection Procedures and OCS Order Development.

6. Issue regulatory orders to control erosion, workover and wireline operations, and certain concurrent operations from a single structure.

This recommendation will be adopted under plans discussed in the Work Group report under Recommendations Nos. 8 and 13 on Wearout Prevention and OCS Order Development.

The status of action with respect to the suggestions of EPA officials, listed on page 31 of the GAO report, is as follows:

1. More specific provisions could be written into the lease agreements regarding spill prevention and contingency plans in case of spills.

OCS Orders provide regulations concerning spill prevention and containment plans in case of spills. All lease agreements require full conformance with OCS regulations and Orders, which are revised and updated as needed to incorporate new standard requirements. Lease agreements themselves cannot be revised during the life of the lease except through revision of the OCS regulations and Orders.

The Bureau of Land Management prepares an environmental impact statement on each proposed lease sale containing a tract by tract analysis. Based on the results of this analysis special stipulations may be developed for inclusion in the lease, or recommendations may be made for revision of existing operating orders. Recently such a stipulation on the timely availability of containment and clean-up equipment in the event of oil spills was included in certain OCS

leases in the Gulf of Mexico. The Bureau is continuing its efforts to gather additional and improved information both by contract studies and through environmental analysis teams which will aid in the development of additional improved lease stipulations.

2. The number of inspectors in the Gulf Coast region may have to be increased in view of the more than 1,800 platforms operating in the Gulf. More inspectors would be able to prevent more discharges of oil and induce lessees to improve their equipment and procedures.

As indicated above, we agree that more inspectors are needed. The Department's FY '74 budget will permit a further increase in the G.S. inspection staff and an additional increase is being requested for FY '75. As discussed above, it is planned to supplement the inspection capability by requiring the operators to make and report systematic inspections following prescribed procedures.

3. Better preventive maintenance could be required of the lessees by (1) asking them to submit a preventive maintenance schedule, (2) prescribing a list of parts needed to periodically repair certain equipment, or (3) issuing a specific enforceable OCS order.

The first and third components of this suggestion are being met in part now under OCS Order No. 5 and Work Group Recommendations Nos. 5, 6, and 7 on Standards and Specifications, Systems Analysis, and Engineering Documentation. Because of the great variation in OCS equipment—much of which is custom built—it may be impracticable to specify parts needed for periodic repair but we believe the objective EPA officials have in mind will be met by implementing the Work Group recommendations listed.

I have asked the Director of the Geological Survey to provide you with the information requested in the last paragraph of your letter of July 3. Accordingly, he has furnished the enclosed copies of the following listed written instructions and Orders applicable to the regulation and inspection of OCS lease operations in the Gulf of Mexico and Pacific areas:

1. Regulations Pertaining to Mineral Leasing, Operations and Pipelines on the Outer Continental Shelf.
2. OCS Orders 1-12, Gulf of Mexico Area.
3. OCS Orders 1-10, Pacific Area.
4. List of Potential Items of Non-Compliance and Enforcement Action, dated May 1971.
5. Drilling Inspection Report Form.
6. Production Inspection Report Form.
7. Notice of Incidents of Non-Compliance Detected (Form 9-1832, September 1972).
8. Memorandum dated April 12, 1971: Notification and Investigation of Accidents.
9. Memorandum dated June 1, 1971: June 3-7 Intensive Production and Drilling Inspection Strategy and Procedures.
10. Memorandum dated June 18, 1971: Implementation of Inspections of Activities other than Drilling and Productions.
11. Memorandum dated November 5, 1971: November 8-12, 1971, Blitz Production and Drilling Inspections.
12. Memorandum dated May 12, 1972: Blitz Production and Drilling Inspection May 15-19, 1972.
13. Memorandum dated July 26, 1972: Blitz Production and Drilling Inspections, July 31-August 4, 1972.
14. Memorandum dated September 12, 1972: Inspection, September 18-22, 1972.
15. Memorandum dated September 17, 1972, transmitting a memorandum of September 5, 1972: Enforcement Policy.
16. Memorandum dated November 22, 1972: Inspection, November 27-December 1, 1972.
17. Memorandum dated January 24, 1973: Inspection, January 29-February 2, 1973.
18. Memorandum dated March 20, 1973: Inspection, March 26-30, 1973.
19. Memorandum dated May 30, 1973: Inspection, June 4-8, 1973.
20. Notices to Lessees and Operators, dated December 11, 1972, January 19, 1973, February 16, 1973, and June 1, 1973.
21. OCS Operations Safety Alert Notices, dated September 22, 1972, December 13, 1972, January 3, 1973, January 9, 1973, and June 15, 1973.

I believe the actions already taken and in progress testify to our determination to bring OCS operations to the highest possible level of safety and environmental protection. I am pleased, however, to give you my personal assurance that we will do all within our power to achieve this objective. To further assist us in this effort, and to help assure the public that our program is conducted effectively, the Director of the Geological Survey has asked the National Academy of Engineering to appoint a Review Committee of experts to examine their activities on a continuing basis, identify weaknesses and recommend actions, and make public their findings. This Committee held its first meeting on July 31, and August 1.

Again, I appreciate the opportunity to inform you about these activities.

Sincerely yours,

ROGERS C. B. MORTON,
Secretary of the Interior.

Dr. VOGELY. Thank you, Madam Chairman.

Mrs. MINK. Our next witness this morning is Mr. Donald J. Everitts, manager of energy resources, State of California, and he is accompanied by Mr. E. N. Gladish, executive officer of the State land commission. If both of these gentlemen will come to the witness table, we will be glad to hear from you and accept your testimony for the record and you may proceed in any manner you choose as expeditiously as possible so we can finish our business before the quorum call.

STATEMENT OF DONALD J. EVERITTS, MANAGER OF ENERGY RESOURCES, STATE OF CALIFORNIA; ACCOMPANIED BY E. N. GLADISH, EXECUTIVE OFFICER, STATE LANDS COMMISSION

Mrs. MINK. Mr. Everitts.

Mr. EVERITTS. Madam Chairman, I would like to refer to Mr. Gladish to begin.

Mr. GLADISH. Madam Chairman, members of the committee, I am Ed Gladish, executive officer of the State Lands Commission of California. I might start on a lighter note. We will try to be brief but I am sure you are aware that in about 1965 the Supreme Court ruled that the Federal Government had jurisdiction over those lands in the channel and we would be most happy to receive those lands back if the Federal Government chose to reverse its position.

Mr. CAMP. Madam Chairman, if I may, if this is Mr. Gladish's report, may I request that it be made a part of the file unless whatever excerpts from it the staff might deem necessary to put in the record.

Mrs. MINK. Without objection, so ordered.

[The document referred to will be found in the files of the subcommittee.]

Mrs. MINK. Please proceed.

Mr. GLADISH. Thank you, Madam Chairman. I do not have a prepared text per se. Most of the things we will be covering today are included in the report before you.

We are here in response to your invitation to speak on Santa Barbara Channel oil drilling. I am speaking on the broader issue, namely, intentions of the State for further developments in the channel. Mr. Everitts will address his comments to State procedures and regulations, oil spill technology, and the environmental aspects of offshore drilling in the channel.

I might insert at this point that I am executive officer to the State lands commission, as such a career administrator in State government. I have many years experience in broad fields of oil and gas regulation,

geology, forestry and the like. Mr. Everitts will qualify his background as he is our supervising engineer in regard to leasing offshore.

California State Lands Commission has primary management responsibility for California's offshore tideland areas, navigable waterways, school lands, and mineral resources under other State properties. These responsibilities stem from numerous State laws. The commission consists of two elected officials, constitutional officials, and one gubernatorial appointee.

California has numerous regulatory agencies with responsibilities germane to offshore development. These concerns include water quality, industrial safety and the like. The State division of oil and gas has regulatory responsibilities for oil, gas and geothermal wells drilled in California regardless of ownership. State Lands Commission procedures for development and division of oil and gas regulations are closely integrated in offshore development in California.

California has developed and maintains an interagency oil spill contingency plan for response to accidents endangering California waters. Skeleton staffing is assigned full time and Mr. Everitts will elaborate on this subject in his testimony.

In 1972 the people of California established a coastal conservation commission to develop for the legislature a coastal plan. This area covers from about 1,000 yards inland to 3 miles offshore. This plan is scheduled for completion in 1975.

California has been a pioneer in development and protection of its offshore resources. California's development dates back some 50 years. Since that time over 1,300 wells have been drilled without significant mishap and here I am talking about two or three barrel spills. The State also recognizes that offshore development was not compatible with certain adjacent onshore values and established nondevelopment sanctuaries in concert with its leasing program.

California's tide and submerged lands have been and continue to be significant supplies of crude and natural gas. In aggregate they produce approximately 180,000 barrels per day, about 20 percent of the State's daily production.

Before I focus in on the Santa Barbara Channel let us turn to the report before you, A Review of the State Lands Commission Drilling Moratorium on State Tide and Submerged Lands and particularly to exhibit 1.¹ I just want to give you briefly an overview of State leases and sanctuary areas.

If you will turn to the page immediately following page 23 of the report, you will see defined there current State sanctuary areas. You will note that most of the central coast and southern California coast have been placed in nonoil drilling sanctuaries. Many of these sanctuaries are permanent while others carry fixed time limits.

Exhibits 2(a) and 2(b), the next two pages, depict the array of State leases and State drilling facilities as related to Federal leases. Not highlighted on exhibit 2(b) is a major development in the Long Beach area, development in trust with the city of Long Beach. All of these leases and the development facilities were in being at the time of the 1969 spill discussed earlier.

I might interject at this point that these leases last year produced \$100 million for education and conservation projects in California.

¹ This report can be found in the Subcommittee files.

With increasing oil prices we expect this income to double next year, assuming that the FEO price control is not rolled back too far.

In 1969 following the blowout on the Federal lands in the channel the State Land Commission insisted that no new drilling be undertaken on offshore locations until, (1) there was a complete review and updating of drilling regulations and procedures, and (2) the oil industry had established the existence and availability of adequate containment and cleanup equipment in the event of an oilspill.

In April of last year the State lands commission directed its staff to hold public hearings and conduct an indepth review of its policy, this moratorium. This effort was concluded in the fall and we reached a number of key points. One, that State procedures in existence in 1969 were adequate and that the blowout would have not occurred on a State lease. Even though our record speaks for itself, guidelines need constant review and updating. We did that. The division of oil and gas is also in the process of finalizing and updating their regulations. We believe these procedures and regulations make drilling in State waters as safe as it can be made.

In 1969 there was virtually no containment and cleanup equipment in existence or available. Equipments and organization are now available that would have prevented the oil from reaching the beach in the platform A spill. There is not yet available and may never be available absolutely fail-safe containment equipment that will operate under all conditions. For this latter contingency we have devised the "Critical operation and curtailment plan" concept. Each lessee is required to submit and have approved a plan listing anticipated critical operations and a plan for curtailment of such operations when given conditions occur.

Last December the commission adopted the new procedures and authorized drilling operations to be resumed on a lease by lease basis. You understand that production has continued on those leases since 1969. Such resumption will be predicated on a review for compliance with the procedures and final review by the commission of each lease.

Also inherent in this resumption are compliance with the California Environmental Quality Act and the California Coastal Zone Commission requirements, whatever they may be.

In summary, it is the expressed intent of the State lands commission to resume drilling from existing offshore facilities under very stringent procedures and regulations.

Other express policies of California will be of interest to you. Governor Reagan has officially supported the resumption of the drilling on State leases in the Santa Barbara Channel and elsewhere. He has also supported prompt development of the existing Federal leases in the Santa Barbara Channel and development of the Elk Hills Naval Reserve. The California Legislature has considered, as Mr. Ketchum mentioned earlier, and rejected proposals to modify leases in the California tide and submerged lands including the Santa Barbara Channel. The California Legislature has requested an updating of oil and gas reserves in all tide and submerged areas to serve as a basis for future intelligent policy decisions. As tide and submerged land managers, we consider it our responsibility to protect existing State nonoil drilling sanctuaries.

The State Lands Commission will do everything within its power to receive compensation for drainage that might take place from

Federal development. The State lands commission will require both environmental protection and financial compensation from those aspects of Federal development that impinge upon State tide and submerged lands. Here we are talking at this point primarily about pipeline and loading facilities.

In closing, I would like to point out that California production of crude oil has dropped from 1.1 million barrels a day in 1969 to approximately 900,000 barrels a day this year. Consumption exceeds 1.4 million barrels a day. Prudent development of offshore reserves, both Federal and State, can materially assist in meeting current and future demands.

I would like at this time to turn to Mr. Don Everitts.

Mr. EVERITTs. Madam Chairman, my name is D. J. Everitts. I am a petroleum engineer by education and by training and by experience. I spent most of my working career working for large oil companies, and have been in State government for approximately 8 years.

I will try to be brief but I ramble a lot and I do think I have some notes here that may answer several of the questions that the committee has posed to Dr. Vogely and Dr. McKelvey. I would like to, incidentally, echo their sentiments that this thing about oil drilling and fail-safe drilling is something that does grow. You do not make any quantum steps. You just keep growing and one day you reach a point where you think you are ready to go.

In 1969 after the oil spill the commission did cause a moratorium to be imposed on drilling offshore State lands. The division was the State lands division which is the staff agency. The division was directed at that time to make a technical review and report on the occurrence and take a hard look at procedures and spill containment capabilities on all of the offshore oil and gas leases authorized by the commission.

Pending adoption of more stringent drilling procedures and the development of effective spill containment and recovery devices, recommendations for drilling new wells would be considered by the commission on a well-by-well basis if there were unique circumstances that justified such drilling. As a result, although the commission has recognized that wells drilled or redrilled from the uplands, particularly from the uplands, do present special circumstances and has approved such wells on an individual basis, only 12 wells have been approved from filled islands and no wells have been approved from platforms since January of 1969.

As Mr. Gladish indicated, more recently the commission directed the division to continue a new in-depth review of commission policy. Public hearings, I might say sparsely attended public hearings, incidentally, were held by the division in Los Angeles and Santa Barbara agencies concerned with possible oil spills, from the oil industry and and testimony was received from State, local and Federal government agencies concerned with possible oil spills, from the oil industry and from other interested groups and organizations.

A basic and necessary assumption in that review was that there is always some small risk of an oilspill in offshore oil operations. The hearings were, therefore, directed to three specific questions. If drilling is resumed, were to be resumed on State offshore leases, what are the chances of an oilspill occurring and what can be done to minimize those chances?

(2) If a spill does occur, what can be done to control the spill?

And (3) if you cannot control the whole spill, what would be the consequences?

Further, the hearings did address themselves only to those questions as they related to existing facilities on existing leases. They were not concerned with the issuance of new leases or the issuance of any specific well permits.

Necessarily, any discussions of oilspill risk was considered a matter of geological hazard and natural oilseeps. Briefly, then, we found the comments are regularly made that the Santa Barbara Channel is cut by earthquake faults, that it has porous sediments and there is an abundance of oil at least at the surface and this is true. It is a description of a geological basis with a high petroleum recovery potential. It is also a description of the Los Angeles Basin, San Joaquin Basin and most other petroleum provinces of the world.

The State division of oil and gas has documented 53 seeps offshore California.

Geologists estimate that the Coal Oil Point seep (a particularly active seep in the Santa Barbara Channel) began to leak 9,000 years ago, and that it may have leaked as much as 200 million barrels since that time. Written records from as far back as 1792 document the existence of oilseeps in the channel. Tar sands were mined in Carpinteria in 1909, and mines under the University of California Santa Barbara campus had pure tar formations 40 to 60 feet in depth exposed on the seacliffs where tar flowed onto the beach.

Sentimental opinion suggests that there has been a great increase in oil on the beach, and that the oil is not seep oil, but is from oil producing operations. Testimony was given by two independent researchers, however, that (1) seep activity in the Coal Oil Point area in particular, and in the channel in general, has shown diminishing activity for the past 26 years (probably due primarily to offshore producing activities), and (2) 70 percent of the tar deposits identified in one 1969-70 study of the Santa Barbara-Ventura beach area originated from natural seeps, while only 2 percent were identified as coming from the platform A spill.

Attention was called by several to the "hyperactive" seep offshore Coal Oil Point and near platform Holly on State land that received much publicity in California in June 1973. That seep coincides almost precisely with aerial photographs of other seep activity in 1929. Actual sea-floor observations made by myself and department of fish and game personnel in a small manned-submersible at depths in excess of 200 feet confirmed that the oil and gas were seeping from the ocean floor, and the department of fish and game report of the investigation concluded that the upwelling is not caused by or related to the production and extraction of petroleum products.

The division's conclusion is that the 1969 blowout was caused by personnel error, geologic conditions, and an improperly designed well casing program. The Santa Barbara Channel is a unique geological environment only in that it contains valuable petroleum resources. There are no geologic reasons for not resuming drilling activities offshore California.

Offshore oil is not new to California. Beginning in 1896 off Summerland—in the Santa Barbara Channel—development has continued more or less continuously since that time, gaining legitimacy and re-

spectability through legislation in 1921 which authorized the surveyor general to issue permits and leases, followed by the State Lands Act of 1938 which created the State lands commission, and finally the Cunningham-Shell Tidelands Act of 1955, which is essentially the law of today. The State's expertise in the area of petroleum operation regulation and procedures has thus grown over the years.

The commission in 1969 directed the State lands division to review its operating regulations and procedures. We have done that. Additionally, the State division of oil and gas and other regulatory bodies have significantly strengthened their controls, through both new laws and administration procedures. Each offshore oil and gas lease issued by the State Lands Commission contains a specific provision prohibiting pollution or contamination of the ocean or the tidelands. These are not new provisions, however.

As we stated above, more than 1,300 wells (from both uplands and offshore) have been drilled on State lands without a major incident of pollution, largely because of State operating practices enforcing the lease prohibitions. California's new procedures and regulations consider the specific geologic and engineering conditions that led to the 1969 Santa Barbara oilspill, and formalize many of the practices that have resulted in California's excellent record. At the same time, the number of safeguards to be observed by offshore operations is increased.

The new procedures are stringent—and they will cost the State—and the oil industry money—but they *will* get needed crude oil out of the ground—and they will do it with minimum risk to the marine environment.

The purpose of the procedures is to allow recovery of oil and gas from beneath State lands in an orderly and safe manner without conflict with the environment or jeopardy to the health or safety of workmen engaged in those oil and gas operations.

There preparation of these procedures involved a careful assessment of the statutes and rules and regulations of the State Lands Commission and of the in-house procedures that have heretofore governed drilling and production operations on State oil and gas leases. In addition, the regulations and procedures of other State agencies and Federal agencies that have regulatory responsibility in the offshore area were reviewed and analyzed so as to eliminate, as far as practical, any conflict in regulation of oil and gas operations in State waters, and to maintain general consistency with those regulations established for operations in Federal waters. Where accidents have occurred, resulting in injury to personnel, damage to the environment and loss of natural resources, the causes of these accidents were studied so as to provide safety procedures to prevent similar occurrences on State oil and gas leases.

Oilspills occur primarily due to personnel error, equipment failure, and inadequate design of equipment. The procedures address themselves to such problems, and contain detailed engineering requirements on well programing, blowout prevention equipment, testing procedures, and supervision and training related to these subjects. The operator is required to maintain close on-the-job supervision of drilling operations on a 24-hour basis, and a representative of the State is required to perform a variety of *daily* inspections of procedure.

The procedures require that well casing programs be based upon all relevant geological and engineering factors.

Studies of the Santa Barbara oil well blowout on Federal Outer Continental Shelf lands, for example, concluded that although the principal reason for the blowout was personnel error, the continued escape of oil to the surface of the ocean was due to fracturing of the thin and porous overburden caused by high-pressure fluids from a deeper zone reaching shallower zones because of insufficient casing. State procedures call for more casing which will prevent such a mishap.

The procedures detailed requirements for blowout-prevention equipment to be used on each casing string and requirements for auxiliary and backup equipment. The installation and testing of all blowout-prevention equipment will be witnessed and approved by the Division of Oil and Gas. In addition, all equipment is required to be operated and inspected at least once a day, retested at least once a week, and shop inspected at 6-month intervals. Weekly blowout prevention drills are to be conducted for each crew and drillers will receive well control training on an off-work basis. All company and contractor drilling supervisors are required to have completed a well control school or seminar within the previous year must have passed a proficiency test.

Since the primary line of defense in the prevention of uncontrollable flow from a well is the mud system, the procedures include detailed instructions on mud control during the various phases of the drilling operation in order to recognize and prevent a blowout before it develops. Mud testing equipment, mud tests, and equipment to monitor the mud system volume and flow characteristics, as well as a degasser (equipment to remove gas that is entrained in the mud) are required on all wells. The provisions also provide that drilling operations will be suspended if the approved minimum quantities of mud material are not maintained on the drillsite.

These have been highlights. They are not necessarily brand new concepts. As I have said, we have drilled 1,300 wells without a mishap—so obviously we've been doing something right. They do, however, represent a formalization of good engineering practices, using the latest state of the art, and provide the best guarantee available that no oil will be spilled on the surface of the ocean while drilling.

I'll be even briefer on the discussions of producing procedures. All well work involving producing wells is of course controlled by the same procedures that control drilling wells. Of special significance is the requirement for an integrated and automated safety-control system capable of causing shut-in of all wells, and shutdown of the complete facility in the event of fire, pipeline failure, or other catastrophe. All platforms currently have such a system in one degree of sophistication or another. It is expected that all systems will be modernized as the occasion requires. As backup to something that either Drs. Vogely or McKelvey said, we have also been interested in some of the API tests and standards that are being devised. Currently, standard API 14 C, for example, referred to a system analysis of this integrated safety system which we think is a very positive step forward. Those procedures have not been released yet but we are working on them.

Duplication of inspection by State agencies will be avoided to the maximum extent possible, and to this end the procedures were de-

veloped in cooperation with the division of oil and gas, whose own regulations, which will be under the California Administrative Code, are currently under review. As other large landowners in California do, however, the State lands division will desire additional review of certain operations. Further, both the division of oil and gas and the State lands division have specific statutory authority and requirements that they must follow.

Regardless of how excellent the State's procedures are, they are only as good as the enforcement of those procedures. The State has the expertise and the bodies to insure the enforcement of these procedures.

As I have stated, the procedures will add cost to the production of oil, both to industry and the State, but safety must be the overriding consideration. Support was given to this concept by one simple statement made by the city of Santa Barbara Environmental Quality Control Board when a representative testified that if one State requirement alone had been enforced by the Federal Government on its Outer Continental Shelf leases, "Santa Barbara would probably not have been subjected to the disastrous pollution in 1969."

During our review, containment of spilled oil—and its recovery—have been major considerations, for obvious reasons.

The first step in oilspill control is prevention. There is no necessity to spill oil on the water. Past State lands division regulations and practices have served to prevent any major oilspill. The new procedures are designed to preclude a spill even further. In the unlikely event, however, that a spill does occur, organization, preplanning, equipment, and training are necessary to "fight" the spill.

In 1969 neither the oil industry nor anyone else had the equipment or organization to deal quickly and effectively with a major spill in the open sea.

Since that time, the national oil and hazardous substance pollution contingency plan has been developed to provide a pattern of coordinated and integrated pollution response between the spiller and Federal, State, and local authorities. The State has developed its own plan, which can function either within the Federal plan, or independently, as required, and industry has established a formal Pacific coast network of cooperative response teams.

There are two major factors in spill recovery. It has been reported that strong southeast winds drove oil from the Santa Barbara blow-out to the shore in less than 5 hours. Response time must be such, therefore, that the spill can be contained rapidly. Additionally, equipment must be durable enough to operate in open seas under high sea-states.

Significant efforts have been expended for research and development in these areas, not only by industry, but by the EPA, the U.S. Coast Guard, the National Science Foundation, the U.S. Navy, NASA, and many others. Money has been expended for the procurement of equipment, large inventories have been built up, and additional equipment is on order or will be ordered.

Prevailing weather conditions in the Santa Barbara Channel are relatively mild when compared to northern California, the Gulf of Mexico, or the North Sea. Based on historical data, 99 percent of the time wave height in the channel will be less than 10 feet. Waves will

be less than 8 feet 94 percent of the time, and will be less than 5 feet 88 percent of the time. Weather conditions off the southern California shore in Los Angeles and Orange Counties where wells exist can be expected to be even milder.

The Coast Guard has been testing an air-deployable system that has been designed to contain oil effectively in 20-mi/h winds and 5-foot seas, and to survive 40-mi/h winds, 10-foot seas, and 2-knot currents. Tests indicate that the system does have the potential to meet the specifications. The selection of 5-foot seas as a performance goal was initially based upon operational considerations, and, in speaking to this, the Coast Guard has said,

Seamen have difficulty maintaining effectiveness when working from small service vessels in seas greater than five feet. Further, the size of equipment systems to perform in higher seas is expected to be too great to facilitate meeting air-delivery requirements. Subsequently, several oil spills were reported to have broken up in seas greater than five feet, the oil being distributed in the water column. This phenomena is currently under study, and it appears to set a practical limit on sea conditions for cleanup purposes. It is noteworthy that a review of past records indicates that the five-foot sea criteria will allow cleanup of oilspills approximately seventy-five percent of the time along the U.S. coast.

Individual components of equipment available to industry have reportedly been tested in 8-foot seas. The upper limits of the equipment are not known. I have personally observed successful sea test of integrated systems in relatively calm seas in the natural seep areas. Rapid response equipment was demonstrated to the State lands division and others in October of last year. The equipment is capable of being towed to the site of a spill at high velocities, and, once upon the scene, can be deployed in less than an hour. It is reportedly effective in preventing spread of oil in significant waves up to 6 feet and winds of 20 to 30 knots. In the mode in which the boom is used, there is little or no current across the boom that could cause loss of oil under the boom which is a common mode of failure.

Additionally, individual operators maintain large inventories of material on board platforms for use in case of minor spills, and to facilitate rapid response while awaiting other equipment.

Such capabilities were not available during the 1969 oilspill, and ship and platform records of sea conditions during the critical period of the spill (January 28 to February 7) indicate to me that currently available equipment would have prevented oil from reaching the beach.

Finally, we must admit that there may be a time—and a place—that the equipment might not work. Under such circumstances although it may be categorized by some as "enlightened self-preservation," industry, in the conduct of offshore drilling operations, has testified it will "not knowingly incur risk of accidents by conducting sensitive phases of their operations during hazardous weather conditions." Should such conditions arise, "all necessary precautions would be taken, including, if necessary, suspension of the critical phases of drilling operations in progress."

By statute, an operator must suspend any drilling and production operations, except those which are corrective, protective, or mitigative, immediately in the event of any disaster of or contamination or pollution caused in any manner or resulting from operations under its

lease. Such drilling and production operations shall not be resumed until adequate corrective measures have been taken and authorization for resumption of operations has been made by the commission. Corrective measures shall be taken immediately whenever pollution has occurred.

To expedite such action, our procedures require that each operator must maintain an up-to-date oilspill contingency plan for initiating corrective action to control and recover oil spilled on the ocean. The plan must cover both minor and major oilspills associated with lease operations. Such plan and any subsequent revisions shall be filed with and approved by the State lands division.

Further, as you are aware, certain operations performed in drilling and production work are more critical than others with respect to well control, fire, explosion, oil spills, and other discharge or emissions. The critical operations may occur during drilling, well completion and recompletion, well maintenance and stimulation, wireline servicing, facility maintenance, and construction.

Each lessee will be required to have on file with the State lands division, and approved by the division, a critical operations and curtailment plan for the lease, which will contain:

A list or description of critical operations that are or are likely to be conducted on the lease.

The list or description will distinguish between operations to be ceased, limited, or not to be commenced under given circumstances or conditions.

Further, the plan will contain a list or description of circumstances or conditions under which such critical operations shall be curtailed. This list or description will be developed from all the factors and conditions relating to the lease, and shall take into account but not be limited to the following:

(a) Whether the lease operations are conducted on shore, from filled islands, or from platforms.

(b) The availability and capability of containment and cleanup equipment.

(c) Production characteristics of the well, whether they would flow or not.

(d) Spill-control-system response time.

(e) Known and expected weather conditions.

(f) Availability of personnel and equipment for the particular operation to be conducted.

(g) Other factors peculiar to the particular lease under consideration.

When any such circumstance or condition listed or described in the plan occurs or other operational limits are encountered, the lessee will be required to curtail the critical operations. In the conduct of critical operations, full consideration will be given to pertinent factors such as supply of well control materials, subsurface conditions, inventory of spill containment equipment, weather conditions, particular esthetic conditions, fire hazards, available transportation equipment, spill-control response time, and nature of work planned.

The plan will be periodically reviewed and updated. Any amendments will require State lands division approval.

Now, one other question you asked and I think I can whip it out here in a minute now, the matter of other environmental hazards associated with offshore drilling in the channel.

Three major areas of possible adverse environmental impact were discussed. They were: (1) the matter of esthetics, (2) the involvement with navigation and ocean traffic, and (3) the effect of operations on the marine ecology.

Little can be said regarding the matter of esthetics. Oil operations have existed on the California seacoast for more than 70 years. When the drilling moratorium on State lands is lifted and only on existing leases and existing platforms, the visual impact of such operations will be essentially the same as it is now. There will be little, if any, change in operations visible to the untrained eye. A person either likes or does not like platforms on the marine landscape.

The impact of existing offshore oil and gas producing operations on navigation and ocean traffic is minimal. Sealanes have been established along the coast of California, and the existing platforms and islands are not within the prescribed coastal sealanes. The existing platforms are located precisely geographically, and are indicated on all official navigational charts for any given area. Therefore, not only do such structures act as an aid to navigation, but, further, have been used as emergency havens in more than 150 documented instances. The additional impact of renewed drilling also will be minimal, and will consist of some additional boat and helicopter traffic. In fact, new drilling, and the associated new oil production, could easily result in the need for fewer imports, thus decreasing tanker and boat traffic. A study by the resources agency indicated that 75 percent of all oil spilled between 1956 and 1969 resulted from vessels, and, of these, 90 percent were tankers. From a purely environmental point of view, therefore, resumption of offshore drilling may be far less hazardous to the environment than continuation of the moratorium.

Perhaps one of the most hotly debated subjects is that of the ecological impact of offshore oil and gas operation. Arguments against resumption of drilling summarize the more important points of the effect of oilspills on the environment by saying, (1) large spills and chronic pollution of the sea have presented a threat to certain species of birds; (2) the immediate killing of shallow-water marine life may be great and recovery slow, especially of preexisting balances; (3) chronic pollution and coating of shores can reduce the habitat along the high tide line in rocky areas; and (4) oil can be a long-lived contaminant containing toxic and cancer-producing substances.

Proponents of the resumption of drilling hasten to point out that such conclusions may be true, but are based on research done in closed areas in which refined oils were spilled.

In the case of the Santa Barbara spill, heavy rains and flooding complicated interpretation of data gathered. Although there was a significant mortality rate among the waterfowl population at the time, there has been no evidence reported that bird habitat was permanently damaged, thus indicating that such impact was only temporary. The California Department of Fish and Game reported that it is known that California crude oil has little lethal effect on marine mammals, such as the seals, sea lions, and whales.

The Santa Barbara Channel in particular is highly contaminated by oil because of natural seeps, and it is probable that organisms in

that area have developed a natural immunity to crude oil. In addition to this natural immunity, investigations have indicated that the effect on marine life by crude oil was minimized primarily due to the ability of the organisms to migrate down to greater depths, to close up their shells until high tide, or to produce a mucous-like coating for protection.

The department of fish and game has further reported that, notwithstanding the social impact of oil spills, there is substantially less damage to living marine resources by spills of California crude oil on the open ocean waters than there is by spills of processed oils in more restricted areas, and have concluded that, simply put, it is because crude oil on sea water degrades much more rapidly and is less toxic than processed oils. The department's experience has shown that, except for bird life, the damages from crude oil spills have only a temporary effect on the marine environment. The fact that an abundance and variety of species live and breed in the coal oil point area, where an average of 50 to 70 barrels of oil a day continue to seep naturally, lends further credence to these theories.

In summary, then:

(1) Over 1,300 wells have been safely drilled on State-owned lands, largely due to enforcement of past procedures and regulations. The State has drafted more stringent procedures that are designed to preclude oil spills and that would have prevented the 1969 blowout on Federal Outer Continental Shelf lands.

(2) Advances have been made in equipment and recovery systems that were not available in 1969. These systems provide rapid response and will function in the seas that are expected to occur most of the time. Proposed procedures require curtailment of critical operations during adverse weather conditions.

(3) The geology in the Santa Barbara Channel is not unique. There is, however, a lack of adequate information concerning the nature of natural seeps and their relationship to oil on the beach.

(4) The ecological changes from the Santa Barbara Channel spill were short term by nature, and most of the resulting problems related to esthetic, recreational, and economic matters.

(5) Drilling should be resumed on existing platforms and existing leases on State-owned lands.

Thank you.

Mrs. MINK. Thank you very much.

Mr. Camp.

Mr. CAMP. Madam Chairman, I would yield briefly to Mr. Ketchum from California. I believe he has some comments.

Mr. KETCHUM. Thank you, Mr. Camp. I thank my colleague from Oklahoma for yielding.

Off the record.

[Discussion off the record.]

Mr. CAMP. Madam Chairman, if I may. Mr. Everitts, I think your testimony has been very, very informative and I also would add that I expect you have covered the subject better than maybe anyone that we have had the opportunity to listen to up to now, either here in the committee room or out in California.

I would just add one brief question. Do you feel at the present time that the rules and regulations set down by the State of California are clear enough and cover the subject enough that we could drill in the

Santa Barbara without too much fear of an oilspill?

Mr. EVERITTS. Yes, sir, I do.

Mr. CAMP. Thank you, Madam Chairman.

Mrs. MINK. Mr. Runnels.

Mr. RUNNELS. Thank you, Madam Chairman. I, too, want to congratulate the State of California on these hearings, and so forth.

Just for clarification, now, in your report, am I led to believe that the Federal Government since January 1969, has allowed some additional wells to be dug on Federal leases in the Santa Barbara Channel?

Mr. EVERITTS. Yes.

Mr. RUNNELS. Has the State of California allowed any drilling on any of the State-owned lands offshore?

Mr. EVERITTS. We have drilled no wells from offshore, Mr. Runnels. We have drilled some from the upland and did drill some from filled islands, none from Santa Barbara Channel at all.

Mr. RUNNELS. Does the State own any mineral leases in the Santa Barbara Channel?

Mr. EVERITTS. Yes, we produce about—

Mr. RUNNELS. Do you know approximately when the State would release their rules and regulations to allow drilling on the State-owned leases?

Mr. EVERITTS. Well, the procedures are in effect right now. Before we can actually start drilling offshore, the commission gave us permission to start on a basis of a lease-by-lease review, at which time we have to develop these curtailment—critical operation curtailment plans and have to comply with the California Environmental Quality Act.

Mr. RUNNELS. But it is your opinion that the State of California will allow some drilling very shortly on the State-owned leases.

Mr. EVERITTS. I have hopes we will be drilling before the year is out.

Mr. RUNNELS. And in your report it states that out of 1,300 wells, I believe, on State-owned lands there have been no drilling problems or pollution problems?

Mr. EVERITTS. As Mr. Gladish pointed out, some minor 5 and 10 barrel spills. I say you are going to have those. There is no way you can get away from 5 and 10 barrel spills on normal operations but those are not the killer spills.

Mr. RUNNELS. Then, since the January 1969 famous oilspill, the State of California has undertaken a review of their rules and regulations and made some changes, is that not correct?

Mr. EVERITTS. That is correct.

Mr. GLADISH. Those are included in the documents I believe you have a copy of. I may just kind of explain on an earlier question you are right about when we might start. We have arrays of leases, some of which are pretty well played out and in fact, are in the process of removing platforms. We have others where we have significant reserves and we anticipate significant developments which throws us under the California Environmental Quality Act in the State, which is comparable to NEPA at the Federal level, and this review process alone is going to take some months. It will probably be September or October before we get any action drilling on those kinds of leases.

Mr. RUNNELS. Did I hear you state a figure of how much is brought to the State of California on this oil during the years?

Mr. GLADISH. Yes. The last fiscal year we netted over \$100 million.

Mr. RUNNELS. \$100 million.

Mr. CAMP. Will the gentleman yield just a minute? I missed that last statement.

Mr. GLADISH. The last fiscal year we netted in excess of \$100 million. We are forecasting considerably more than that this year depending on final FEO price control regulations. The State is now exempt. The revenues this year could go up to over \$150 million and could conceivably go to a quarter of a billion dollars next fiscal year depending on the stability of FEO price controls and the State's exemption from price controls.

Mr. RUNNELS. Would it hurt the State of California if you had too drastic a price rollback?

Mr. GLADISH. You bet.

Mr. RUNNELS. So the State of California then is real interested in not rolling the price of crude back too far to cripple exploration.

Mr. GLADISH. Yes, sir. The Governor, many California Congressmen and other executives in State government are on record opposed to rolling back in regards to State exemption. But it is a matter of degree, you might say. Any rollback will hurt us. The less it rolls back the less we are going to get hurt.

Mr. RUNNELS. The less it is rolled back the less you are going to get hurt.

Mr. GLADISH. Yes.

Mr. RUNNELS. Now I understand—

Mr. GLADISH. If we could hold now at the \$9.10 level which is your—

Mr. RUNNELS. You would be supporting—the State of California would be supporting a \$9 per barrel on crude.

Mr. GLADISH. Yes, sir.

Mr. RUNNELS. I would think so since the States uses 1.3 million barrels a day and burns nearly 6 billion cubic feet of natural gas a day, I just wanted you to know that New Mexico is the fourth largest producer of natural gas in the United States, and California receives 94 percent of all our natural gas.

Mr. GLADISH. We like your gas.

Mr. RUNNELS. And if you roll the price too far back somebody is going to get hurt and you are going to get caught short because the exploration in New Mexico will dwindle if you roll the price back and if the Federal Government sets the price too low at the wellhead for natural gas California is just going to be hurt.

Mr. GLADISH. Yes, sir.

Mr. RUNNELS. Thank you, Madam Chairman.

Mrs. MINK. Thank you.

Mr. Ketchum.

Mr. KETCHUM. Thank you, Madam Chairman.

In regard to my colleague from New Mexico's statement, I assure him here is one Californian that does not support rollback and I do not think the land commission does either.

Mr. GLADISH. I did not mean to give that impression.

Mr. RUNNELS. He said he supports \$9 a barrel.

Mr. KETCHUM. I am sure of that but when you asked the question it sounded as though you were supporting a fixed price. Maybe I had misunderstood.

Mr. GLADISH. No. We are not supporting rollback. I say the less it rolls back the better off we are.

Mr. KETCHUM. Glad to hear it. It is a pleasure, Madam Chairman, for me to greet Mr. Gladish. We have known each other for some time. I am very familiar with the work of the State land commission. I am certainly not going to use up a lot of time because I think, as Mr. Camp has said, the statement by Mr. Everitts is perhaps the best that we have received before this committee yet. I am very glad that he substantiates what I said, that the oil spill in the Santa Barbara Channel would very probably not have occurred had the offshore drilling been under the California State regulations.

I am also glad that he supported my statement that I made to the gentlemen preceding concerning California's lack of support of non-drilling in the Outer Continental Shelf which certainly differs from the Department of the Interior.

I just have one question. Either Mr. Gladish or Mr. Everitts, prior to the spill, had the Feds. ever come to the State of California to perhaps parallel their regulations with ours? That is, "ours," I mean California's?

Mr. GLADISH. Let me speak to that first. Mr. Chairman, I mentioned the Supreme Court, *U.S. v. California*, settlement of the title to the channel.

Mr. KETCHUM. That was another mistake they made.

Mr. GLADISH. I said we would take it back. But right after that settlement and initiation by the Interior Department of proposals to lease for development those areas now belonging to the Federal Government, I personally prepared the necessary papers, calling the program of the State to the Federal Government's attention in two different letters, and attempted for something like at that time—this was in 1967—something like \$10,000 a year we offered to assume the regulation of those leases. We believed that under the law that was possible. The State does now regulate onshore Federal development as any other private developer in that sense, and we were not able at that point in time to cut our way through the maze. We got consistent rejection. But we offered at that time to fund the program out of an assessment on the operators themselves. Really no direct cost to the Federal Government. That did not get off the ground.

Mr. KETCHUM. I think that is a very, very important statement because this is something I have tried to impress upon this committee since the time I have been here, that had the State of California, even if the Feds. had cooperated, let us regulate it, we probably would not be in the situation we find ourselves now.

Mr. GLADISH. We had been going on the experience factor. We had been there and kind of grew over the years with it.

Mr. KETCHUM. I think this same thing for the record as applies to the Atlantic coast and gulf coast, that those oil producing States that have regulations know far more about the operation and regulation of oil well drilling and production than does some individual sitting here in the Interior Department 3,000 miles away from the source.

I thank you for your testimony. I think it is very enlightening.

Mr. CAMP. Will the gentleman yield?

Mr. KETCHUM. Certainly.

Mr. CAMP. Mr. Everitts, I would like to ask you a question with your knowledge and the background of the situation on offshore drilling. Is there any way for secondary recovery?

Mr. EVERITTS. Oh, yes. That is quite common. As a matter of fact, even platform A is considering—probably is using secondary recovery methods right now. What water flood—specifically pressure maintenance with water.

Mr. CAMP. You can do this with offshore drilling.

Mr. EVERITTS. Oh, yes. There is no difference. In fact, once a platform is set, practically once you are doing it on a platform you do not have much difference between that and any other operation. It is just a small patch of ground, no problem.

Mr. CAMP. Thank you, Mr. Everitts.

Thank you, Madam Chairman.

Mrs. MINK. I would like to know from either of you two gentlemen whether you have had an opportunity to review the so-called improved new regulations promulgated by the U.S. Geological Survey and whether they come up to the standards of the State of California's regulations.

Mr. EVERITTS. I will answer that, Madam Chairman. We have worked—we may have had trouble working and cooperating with the U.S. Geological Survey before the oil spill. Since the oil spill they have been very cooperative. It may have been a two-way street, I do not know. But many of the Outer Continental Shelf orders were worked out in direct concert with State regulatory agencies.

I think that the basic matter of casing design, your safety devices, this type of thing, is probably pretty comparable to what we have now. We tried to make them comparable because we do not want an operator working inside the 3-mile limit with one set of rules and upland with another set and Outer Continental Shelf with another set, so we tried to put them into sort of one phase.

There are some major differences that I see. I think, for example, that we have far more inspection, require more inspection. We have more personnel for inspection purposes at this point. I think this critical operations and curtailment plan that we are proposing is very unusual. It is going to be very tricky. Very expensive. This is not a part of the Federal requirements. And I think our requirements for a contingency plan—we may require something more than the Federal Government. I think—what I am saying, the basic rules are there but it is how they are going to be applied.

Mrs. MINK. Do you have a training program for your inspectors?

Mr. EVERITTS. Our inspectors are mostly people from the industry now who have undergone much experience and training in the past and we do have—we are training some new people. We just hired some new people, for example, who will work through the system.

Mrs. MINK. How many people do you employ that actually have field enforcement and investigation responsibilities in the State of California for your operating wells?

Mr. EVERITTS. The State land division probably has about 45 or 50 field level type people, although a lot of this inspection, if you want to call it that, has to be done within the office, too, because the casing design, the actual design of a well that is determined, that is going to

be done in the office. So including those, we have perhaps 75 people involved in various investigative levels and —

Mrs. MINK. And this is for how many wells and how many barrel production?

Mr. EVERITTS. Probably talking about 700 active wells and probably talking about 60,000 barrels. Excuse me. We are talking about more than that. With Long Beach, probably talking about 180,000 barrels and maybe 800 wells.

Mr. GLADISH. These are shore leases essentially concentrated in the Los Angeles, Orange County and Santa Barbara-Ventura area.

Mrs. MINK. How many Federal inspectors and enforcement personnel are there in California?

Mr. EVERITTS. I will guess with you. A half dozen, maybe. Maybe you can get a better answer.

Mrs. MINK. So in reviewing and putting your testimony and this report, which I have had a chance now to glance through, in its proper perspective, what you are telling the subcommittee, is that insofar as the State of California is concerned, with regard to their leasing requirements and procedures and investigations and enforcement of their rules, you are satisfied that you have enough competence and personnel to produce a reasonably safe kind of operation with regard to your leases. Is that the proper perspective—

Mr. EVERITTS. I think—

Mrs. MINK [continuing]. To place your testimony in?

Mr. EVERITTS. I think that is very specific. I think in more broad terms, though, I do not think that oil causes that much damage and I do not think that there is that much danger of oil spreading. I think we are in a better position to fight the oil than could apply to the U.S. Geological Survey.

Mrs. MINK. You are then saying with respect to your experience, on the State level, that with regard to the Federal jurisdiction in the Outer Continental Shelf, that here, to, you believe that the Federal Government has sufficient competence and personnel to proceed with the proper authorization and leases, and so forth, in your area.

Mr. GLADISH. That is a difficult judgment for us to make.

Mrs. MINK. I want to make sure we are not confusing your testimony with regard to your area of jurisdiction insofar as this bill is concerned, that we are not considering—

Mr. GLADISH. We were speaking in regard to your invitation to the intentions and programs of California.

Mrs. MINK. Yes.

Mr. GLADISH. I would not feel that, and I do not think Don would, in the sense of evaluating the adequacy of their staff, I do not think that is our role.

Mrs. MINK. So you are not really coming before this committee to give your official point of view with regard to the Federal question, Federal leases and Federal moratoriums, with regard to the Outer Continental Shelf in the Santa Barbara Channel.

Mr. GLADISH. Well, yes and no. We are responding more specifically to your invitation which stressed the intentions of the State in regard to the channel and some specifics on regulations and environmental aspects and that sort of thing. In addition, I indicated to you what the Governor's position was as a spokesman for the executive branch. I

indicated to some degree considerations that have been before and rejected by the legislature in regard to the channel. So in that context I am relating the State's position as previously expressed.

Mrs. MINK. The kind of drilling that is contemplated for the Santa Ynez unit is quite different from the kind of drilling that occurs in State offshore drilling areas. Is that not true?

Mr. EVERITTS. I think long-range the first proposal is a platform in rather deep water but I see no reason why you cannot build a platform in deep water. Just a little bit deeper water but that phase is not much different than anything going on right now. Maybe when we go out to the other satellite ocean floor-type thing we will get something else but I would not care to comment on that.

Mrs. MINK. So in terms of the development of the Santa Ynez unit you see no difference in what is now the operation technique with regard to the State leases in your area.

Mr. EVERITTS. I say step No. 1 in maybe a series of many, many steps is not much different. The first step is to build a platform in deep water, quite a bit deeper water than has been built.

Mrs. MINK. Are there no additional risks involved in that kind of drilling operation?

Mr. EVERITTS. There is probably more risk. The deeper the water and the further out you get to sea I suppose the more the risk is but I consider that a pretty conventional proven method of producing oil. Platform offshore.

Mrs. MINK. I have one final question. I am confused. On page 10 of your report you indicate that the precise geologic conditions that existed at Union Oil's Co.'s platform A site in Santa Barbara do not exist on State lease plans, and that at platform A, the top of the shallowest major producing zone is overlaid by a very thick section of highly porous and permeable rock and that this condition does not exist in the State leases. And yet, you go on in the conclusions on page 21 to indicate in conclusion No. 4 that geologic conditions at Santa Barbara is not unique. May I have a clarification of these two seemingly inconsistent observations?

Mr. EVERITTS. It is not a unique situation that exists at platform A. It is not unique in an oil province. It is not unique geologically. It happened to be unique in that particular area. The definition of unique is, had the casing been run properly. In fact, in the testimony before, I believe your committee, maybe not before your committee, but Mr. Sharp, who has appeared before your committee on occasion, from Santa Barbara, has pointed out that it really was personnel error. Even the casing design was not all that bad but if I had not been an inexperienced driller on the thing—it is different. That particular condition does not exist anywhere else in the channel. But it exists in other areas. And it is not so unique that it is unbelievable or not understandable. It just happens to be a situation. Maybe the word "unique" is wrong. Perhaps it is a poor choice of words. I really do not see any inconsistency there.

Mrs. MINK. Does that geologic condition exist in any other area under State jurisdiction or is it only a situation that could exist in the Outer Continental Shelf?

Mr. EVERITTS. No. I think it could exist any place. When it happened there, there were some shallow oil producing sands that were under

land. By deeper high pressure gas sands when the mud came that was supposed to be controlling the pressure from the lower deeper sands was not—the cover failed, was not there, it puts the higher pressure sands on these lower sands or upper sands—excuse me—puts the pressure from the deeper sands, upper sands, and then fractured the overburden.

Now, there is a field in New Mexico, Yates Field, that has a deep producing zone and has a shallow producing zone and the shallow producing zone some people have told me actually was originally not an oil zone at all but it was a zone that was repressured accidentally through some poor procedures from the bottom sands. There is a situation where there is a lower deep—deeper sands. The oil and gas sands—you could have 2 or 3 foot interval in a producing sands and it just depends where the upper and bottom one is. This happens either at the Santa Barbara Channel platform A. The highest, uppermost producing sands was right at the ocean floor almost and that was—these seeps that we spoke about at Coal Oil Point, outcropping of the Monterey zone, which is 6,000 feet deep, at the Santa Ynez unit, that is a producing zone at the Santa Ynez unit.

Mrs. MINK. Since the Federal Government's investigation of the 1969 blowout said that it was caused by personnel error, geologic conditions, and an improperly designed casing, two of which you say were minimal, if likely, contributors, the geological factor and the casing, and you place the responsibility largely on personnel error, has the commission taken any position with regard to a requirement for licensing drillers in order to meet this personnel error factor?

Mr. EVERITTS. I would not use the term licensing. I know that Mr. Sharp, from Santa Barbara, has used that term and that might be a proper approach, licensing. Certainly, we are going to require training. In fact, the lieutenant governor, who is one of the commissioners, made that a condition of his approval for lifting the moratorium, that a specific training program be established in our procedures.

Mrs. MINK. Can you describe roughly what kind of a training program you are talking about?

Mr. EVERITTS. The program has not been completely designed but there are facilities available in the Santa Barbara area for training of personnel, using prevention equipment. There are courses sponsored by the American Petroleum Institute. Various junior colleges, community college level, have programs. Of course, Oil Field Technical have just set up a program and say you will have to take certain courses, certain subjects.

Mr. CAMP. Will the gentlelady yield?

Mrs. MINK. Yes.

Mr. CAMP. Would this statement be anywhere near the ball park, that before a man ever crawls on the derrick floor as a driller he has to have prior experience as either a roughneck or in this area to have gained the knowledge from practical experience because of, using the word again, the unique instance in the drilling of oil wells in different areas of the United States?

Mr. EVERITTS. Well—

Mr. CAMP. Different types and formations, and so forth?

Mr. EVERITTS. I would certainly be afraid to let a driller up on any derrick floor, any rig of mine if he had not had some experience as a roughneck and had not had a little experience in the oil patch.

Mrs. MINK. Both of you gentlemen make that statement, but is there a requirement? Just merely observing that you would hate to have somebody do it is fine but are there any requirements to assure the public—

Mr. EVERITTS. There will be—

Mrs. MINK [continuing]. That your fears and mine are properly cared for by Government regulation.

Mr. EVERITTS. There will be a requirement in our program that the man have proper experience. Now, I have to admit—

Mrs. MINK. There is none now existing.

Mr. EVERITTS. We are not drilling right now either. What I am saying is that we have got the go-ahead to start drilling on a certain basis and that basis being that we satisfy all of the requirements that we say are necessary—training, et cetera.

Mr. GLADISH. Madam Chairman, we have woven through our regulations which are our platform for going forward, for example, on page 8 of the regulations you will note—that is the attachment to the report—you will notice on page 8, subsection 4, there is a requirement that "The operator shall provide continuous company supervision of drilling operations, on a 24-hour basis. The company and contractor drilling supervisors shall have completed a well control school or seminar within the previous year and shall have passed a proficiency test. The operator shall require well control training for drillers on an off-work basis and shall not depend wholly on weekly blowout prevention drills to train personnel. Written certification shall be filed immediately"—and so forth.

This is our platform to go forward on developing, for example, this type of training. This is our guidance to ourselves and to the leaseholders. We have not formalized it. We are not drilling, as Mr. Everitts said.

Mr. EVERITTS. We will not drill until we have implemented these procedures. It is just that simple.

Mr. GLADISH. Because we have to comply with EPA Act, these procedures which include training, contingency and curtailment plan for each lease.

Mrs. MINK. There is not now any drilling under State auspices anywhere off the California coast?

Mr. GLADISH. That is true, ma'am. There has not been since 1969. But we are preparing to move.

Mrs. MINK. And based upon this new recommendation that the commission has made with regard to lifting the moratorium, when will the first well, in your estimation, be permitted to proceed?

Mr. GLADISH. Oh, I would say a round estimate, late this summer.

Mrs. MINK. Late summer of 1974.

Mr. EVERITTS. We do have a number of applications on file right now pending as we are trying to develop these programs.

Mr. GLADISH. For instance, if there is to be a major development of leases, just the environmental quality aspects will take a minimum 90 days to process. Just on that one aspect. Not counting other things.

Mrs. MINK. The State Land Commission requires a well-by-well determination. Is that the status of your—

Mr. GLADISH. At this point there have been some wells drilled, 69 on uplands, onshore locations but as we move down the road under these procedures we will be going on a lease-by-lease basis, doing away with

the individual well considerations. We will be looking at the total development program for the lease.

Mrs. MINK. Lease-by-lease, not well-by-well.

Mr. GLADISH. Lease-by-lease, environmental impact and consequences.

Mrs. MINK. Do you have anything further?

Mr. CAMP. I have just one other one I think maybe we had better clear up just a little. You mentioned a minute ago on your personnel that you had from somewhere in the neighborhood of 75 people working and you have somewhere in the neighborhood now in numbers of producing wells some 800. Now, how many of these are offshore?

Mr. EVERITTS. Half of them.

Mr. CAMP. In other words, how much more time would it take to supervise those offshore than it would onshore?

Mr. EVERITTS. Three or four times. You have got the problem of logistics, transportation to the platform, that type of thing.

Mr. CAMP. Then, in your knowledge, does the Federal Government have enough people in the supervision of the wells they have offshore on Federal leases?

Mr. GLADISH. Well, I believe Madam Chairman raised the same question earlier and my response is we are not qualified to speak to that. We have not really analyzed that.

Mrs. MINK. I have one final question. We have been told that there is only a very small amount of oil left in the State's portion of the Santa Barbara Channel Basin and that the State's lifting of this moratorium, therefore, is a symbolic act. Is that true? Would you care to comment?

Mr. GLADISH. Well, yes, I would care to comment. One, our leases—we are concerned not only about the channel but other leases in southern California. And our reserves in the Santa Barbara Channel are not going to solve the world's problems. There is no question of that. We have indications that there are some very significant reserves under some of our leases. Other leases are pretty well played out. But our reserves are not in the same magnitude as we know them now. We were just in the process in 1969 of moving into some deeper zones that appear to be quite productive but our reserves are not in the magnitude of those under the control of the Federal Government's Santa Ynez unit. So we estimate in gross statewide on all areas, we are talking perhaps $2\frac{1}{2}$ billion barrels, under the leases we have out perhaps half a billion barrels to go. But this is plus or minus depending on the price and the price is going up, increase in reserves, might fluctuate a little bit.

In one sense our production in the channel is not going to solve the world's problems but it all contributes. We would have some problems in our minds sorting out, treating those people in the channel different than those people at Huntington Beach or Long Beach or wherever else they might be. What is—our total production in the channel now is running about 30,000 barrels.

Mr. CAMP. 30,000 a day?

Mr. GLADISH. Yes.

Mr. CAMP. Do you know what it is from the wells on the Federal leases in the channel?

Mr. EVERITTS. Fifty or 60, something like that.

Mr. CAMP. I believe that is the figure.

Mrs. MINK. Well, thank you very much. We appreciate your taking the time to give us the benefit of your commission's analysis of this issue.

Thank you very much.

Mr. CAMP. And coming 3,000 miles.

Mrs. MINK. Yes.

The subcommittee stands adjourned.

[Whereupon, at 12:30 p.m., the hearing was concluded.]



