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OFFSHORE OIL DRILLING AT SANTA BARBARA

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PART I

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HEARING

BEFORE THE

SUBCOMMITTEE ON MINES AND MINING

OF THE

COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS

HOUSE OF REPRESENTATIVES

NINETY-THIRD CONGRESS

FIRST 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 NOVEMBER 17, 1973

Serial No. 93-36

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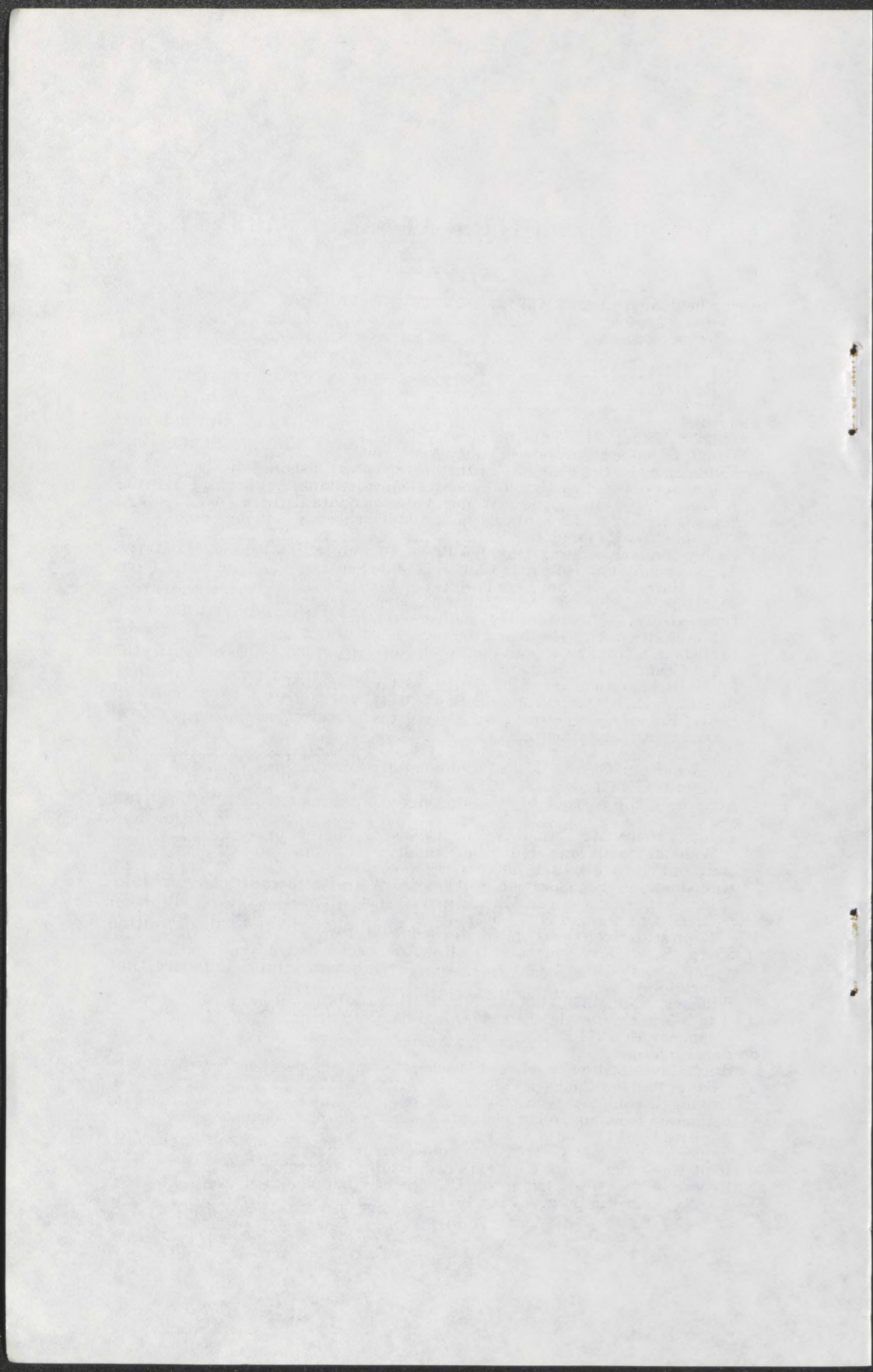
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OFFSHORE DRILLING AT SANTA BARBARA

SATURDAY, NOVEMBER 17, 1973

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON MINES AND MINING OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Santa Barbara, Calif.

The subcommittee met, pursuant to notice, at 8:10 a.m., in the board of supervisors room, County Administration Building, Santa Barbara, Calif., Hon. Patsy T. Mink (chairman) presiding.

Mrs. MINK. The hearing of the Subcommittee on Mines and Mining of the House Interior and Insular Affairs Committee will come to order.

We are very pleased to have this opportunity to hold hearings on three pending bills, two of which have been introduced by your Congressman, Mr. Teague, H.R. 3177, H.R. 3178; and the administration bill, H.R. 7500, introduced by the late Mr. Saylor of Pennsylvania. I am sure I do not need to tell any of you here about the basic thrust of the bills which are before this subcommittee. They deal with the problem of the oil drilling operations off the Santa Barbara Channel, specifically with the responsibilities of the Federal Government in terms of the moratorium which had been issued, and the pending reconsiderations of the moratorium which are ongoing.

The committee is very pleased to welcome all of you here to the hearing, and I would like to say at the outset that were it not for your Congressman and his persistence and insistence, we would not have been able to schedule the hearings, since the subcommittee had been so engrossed in the markup and deliberations of a surface mining bill which has occupied us since early spring.

We are very pleased that he persisted, and we would like to take this opportunity to commend him for his diligence and call upon him first if he would like to make any comments to the subcommittee at this time.

Mr. Teague, we appreciate hearing from you, and I am sure that I speak for all of our colleagues on the subcommittee.

[The bills H.R. 3177, H.R. 3178, and H.R. 7500 follow:]

[H.R. 3177, 93d Cong., 1st sess.]

A BILL To provide for a Federal ecological preserve in a portion of the Outer Continental Shelf in the Santa Barbara Channel and to provide for a moratorium on drilling operations pending the ability to control and prevent pollution by oil discharges and to improve the state of the art with respect to oil production from the submerged lands, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Santa Barbara Channel Moratorium and the Ecological Preserve Act".

Sec. 2. The Congress finds and declares that—

(1) hazards exist in offshore oil and gas production which present a threat of pollution of coastal waters and that such pollution has occurred in the Santa Barbara Channel of California;

(2) present drilling and production methods and unsightly drilling rigs constitute an environmental and navigational hazard and a threat to Santa Barbara and its submerged lands sanctuary, including the offshore islands;

(3) energy resources in the form of gas and oil do exist in and under Federal lands in the Santa Barbara Channel, and development of these resources must be weighed against the need to protect our environment; and

(4) there exists the need for a drilling moratorium and an ecological preserve in the Santa Barbara Channel.

Sec. 3. All rights on the leases listed in this section issued pursuant to the Outer Continental Shelf Lands Act in the Santa Barbara Channel, offshore of the State of California, are terminated. The United States shall be vested with all of the right, title, and interest in such leases:

P-0167, P-0168, P-0169, P-0170, P-0171, P-0172, P-0173, P-0174, P-0175, P-0176, P-0177, P-0178, P-0179, P-0198, P-0199, P-0200, P-0201, P-0206, P-0211, P-0212, P-0213, P-0218, P-0219, P-0220, P-0221, P-0222, P-0223, P-0226, P-0227, P-0228, P-0229, P-0230, P-0231, P-0232, P-0233, P-0234, P-0237, and P-0238. The area described in such leases shall be deemed to be a Federal ecological preserve, and shall be designated as such.

Sec. 4. (a) The holder of any lease terminated pursuant to this Act may bring an action against the United States for the recovery of just compensation for the lease or leases so terminated and such action shall be brought in the Court of Claims as provided in section 1491 of title 28, United States Code, within one year after the date of enactment of this Act. No part of this Act shall be deemed to divest the Court of Claims from determining whether or not the termination of any such lease is legally compensable.

(b) The amount of any judgment in any such action or of any compromise settlement of such action and any interest accruing thereon shall be certified to the Secretary of the Interior (hereinafter referred to as the "Secretary") by the Department of Justice. There is authorized to be appropriated out of the Santa Barbara Channel account such amounts as may be necessary to enable the Secretary to pay such judgments and compromise settlements and any interest accruing thereon. In the event the funds in the Santa Barbara Channel account are not sufficient to pay any amount so certified and appropriated there is authorized to be appropriated to the Secretary of the Treasury for advance to the Santa Barbara Channel account out of any money in the Treasury not otherwise appropriated, such funds as may be necessary for such payments. The Secretary of the Treasury shall be reimbursed for such advances from funds paid into the Santa Barbara Channel account in accordance with this Act, with interest thereon, at such rates as may be determined from time to time by the Secretary of the Treasury.

(c) There is hereby created in the Treasury of the United States a special account which shall be known as the Santa Barbara Channel account from which the Secretary is directed to cause payments to be made in accordance with the provisions of this Act. In order to provide the funds for the Santa Barbara Channel account, the Secretary is directed to offer for sale on the open market, under such competitive bidding procedures as he may establish, the United States share of the oil extracted from such United States petroleum reserves or other Federal lands as he may designate pursuant to the provisions of this Act and to pay the funds realized from such sale into the United States Treasury. In each year, sales proceeds equal to the Government's receipts from such reserves or other Federal lands during the twelve calendar months immediately preceding enactment of this Act shall be credited to the general fund and the remaining sales proceeds shall be credited to the Santa Barbara Channel account. Any sums remaining in the Santa Barbara Channel account after the payments authorized by subsection (b) have been made shall be transferred to miscellaneous receipts of the Treasury, and thereafter the funds realized under this subsection shall be paid into miscellaneous receipts of the Treasury.

(d) Without regard to the provisions of chapter 641, title 10, United States Code, any United States official invested with authority over such lands as the Secretary may designate in the above section is authorized and directed to produce, by whatever means he deems necessary, sufficient oil from the designated

lands to fulfill the requirements of this Act. Such United States official is also authorized to renegotiate and modify existing contracts relating to production of oil from said reserve in such manner as may in his judgment be necessary or advisable to enable such increased production.

SEC. 5. All drilling on the leases listed in this section and issued pursuant to the Outer Continental Shelf Lands Act, in the Santa Barbara Channel, offshore of the State of California, is suspended. Such suspension will remain in effect with respect to any such lease for no longer than five years from the date of enactment. The suspension will cease with respect to any lease, prior to the five years, only when the Secretary of Interior (hereinafter referred to as the "Secretary") finds that drilling operations on any such lease can be accomplished in accordance with criteria set forth in section 6 of this Act.

P-0180, P-0181, P-0182, P-0183, P-0184, P-0185, P-0186, P-0187, P-0188, P-0189, P-0190, P-0191, P-0192, P-0193, P-0194, P-0195, P-0196, P-0197, P-0202, P-0203, P-0204, P-0205, P-0207, P-0208, P-0209, P-0210, P-0215, P-0216, and P-0217.

SEC. 6. In making the finding required in section 5 with respect to any lease, the Secretary shall insure that—

(1) the characteristics of the specified geological formation to be drilled and produced indicate sufficient stability to allow for drilling and production without the danger of causing oil seepage from the ocean floor;

(2) the technology of the offshore drilling and production plan provides the optimum in pollution prevention for the specific geological formation to be drilled including underwater completion and production techniques, and utilization of these techniques with as few permanent structures above the surface of the water as the Secretary determines is technologically feasible;

(3) environmental impact recommendations are filed by appropriate Federal agencies or advisory boards after public hearings in Santa Barbara, California.

SEC. 7. (a) The Secretary is authorized to extend the primary term of each lease listed in section 5 for the period of the suspension provided for in section 5 and for an additional period equal to the total length of time of the primary term of the original lease. During the period of suspension the Secretary shall waive all of the rentals and drilling deferment payments with respect to each such lease. After the period of suspension is terminated and at the time the holder begins to produce oil on its leased property, the Secretary shall pay interest to such holder on its total investment in such leasehold for each day of the period of the suspension of such lease, at the rate of six per centum per annum. The total investment in a leasehold shall include the bonus payment for the lease and the expenses incurred in successful explorations on that lease before the suspension began but shall not include expenses incurred for unsuccessful explorations for oil.

(b) All interest payments referred to in subsection (a) shall be appropriated out of the Santa Barbara Channel account (which was created in section 4(c) of this Act.)

(c) At any time after the period of suspension is terminated for any lease listed in section 5, the Secretary may terminate the period of suspension for any other lease listed in section 5 which satisfies the criteria in section 6.

SEC. 8. (a) The Secretary is authorized under such terms and conditions as he may prescribe to unitize all or any part of the following described leases issued pursuant to the Outer Continental Shelf Lands Act, in the Santa Barbara Channel, offshore of the State of California, if he finds such action is necessary or desirable to prevent or minimize oil spillage, leaks, or other pollution. P-0241, P-0240, and P-0166.

(b) The Secretary shall not permit the erection of any further platforms within the leases described in this section unless he finds such erection is necessary to prevent oil leakage, not otherwise contained, and where no other methods are feasible.

(c) The Secretary shall provide for and require the orderly removal of all platforms within the leases described in this section when he finds that they can be replaced by underwater drilling or production units.

(d) At such time as the Secretary determines that no further drilling or production is required in leases P-0240 and P-0241 to prevent or minimize oil spill-

age, leaks, or other pollution, he shall report such fact to Congress in order that it may consider the termination and inclusion of such leases within the Federal ecological preserve as provided in section 3 of this Act.

(e) The Secretary shall terminate and include the lease designated as P-0166 within the Federal ecological preserve as provided in section 3 of this Act at such time as the State of California terminates the lease designated PRC-3150, granted by such State, with respect to adjoining lands in the Carpinteria Off-shore Oil Field.

[H.R. 3178, 93d Cong., 1st sess.]

A BILL To provide for a Federal moratorium on drilling operations in a portion of the Outer Continental Shelf in the Santa Barbara Channel pending the ability to control and prevent pollution by oil discharges and to improve the state of the area with respect to oil production from the submerged lands, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior shall not approve any drilling or platform permits in the Santa Barbara Channel until the conditions stated in section 2 are met.

SEC. 2. The Congress finds and declares that—

(a) The investigations of the Senate Interior and Insular Affairs Committee as well as the Senate Commerce Committee, Senate Public Works Committee, and the Joint Committee on Atomic Energy, pursuant to S. Res. 45 have completed, and the Congress has had one calendar year to implement any proposals deriving from those investigations.

(b) Oil spill containment and recovery technology adequate (1) for the Santa Barbara Channel sea conditions and (2) the rate of flow historically associated with major oil well blowouts, have been developed and made available. A finding that this condition has been met will be made by the United States Coast Guard and the Environmental Protection Agency.

(c) The reliability of technology available for drilling and producing where the water depth is such as to require an essentially new type of drilling and production apparatus has been adequately demonstrated. A finding that this condition has been met will be made by the Department of the Interior and the Environmental Protection Agency, and concurred in by the Congress.

SEC. 3. The Congress empowers the Secretary of the Interior to extend the primary term of any lease in the Santa Barbara Channel so as to allow for completion of the above conditions.

[H.R. 7500, 93d Cong., 1st sess.]

A BILL To terminate and to direct the Secretary of the Interior and the Secretary of the Navy to take action with respect to certain leases issued pursuant to the Outer Continental Shelf Lands Act in the Santa Barbara Channel, offshore of the State of California; to explore naval petroleum reserve numbered 4, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That effective on the date of enactment of this Act all of the following described leases, and all rights thereunder issued pursuant to the Outer Continental Shelf Lands Act in the Santa Barbara Channel, offshore of the State of California, shall terminate and the United States shall be vested with all of the right, title, and interest in said leases:

P-0179, P-0176, P-0178, P-0175, P-0177, P-0174, P-0173, P-0170, P-0172, P-0168, P-0171, P-0169, P-0167, P-0199, P-0198, P-0238, P-0232, P-0237, P-0231, P-0223, P-0230, P-0222, P-0206, P-0229, P-0221, P-0213, P-0201, P-0228, P-0234, P-0227, P-0219, P-0211, P-0220, P-0212, and P-0200.

SEC. 2. (a) The holder of any lease terminated pursuant to this Act shall be entitled as the sole method for the recovery of just compensation for the lease or leases so terminated to bring an action against the United States in the United States District Court for the Central District of California within one year after the date of enactment of this Act. Said court is expressly vested with jurisdiction of any action so brought without regard to the amount of the claim therein. Trial of any such action shall be to the court, without a jury.

(b) The amount of any judgment in any such action or of any compromise settlement of such action and any interest accruing thereon shall be certified to the Secretary of the Interior by the Department of Justice.

SEC. 3. (a) There is hereby created in the Treasury of the United States a special account which shall be known as the petroleum reserve account from which payments shall be made in accordance with the provisions of this Act. In order to provide the funds for the petroleum reserve account, the Secretary of the Navy is directed to offer for sale on the open market, under such competitive bidding procedures as he may establish, the United States share of the oil and gas extracted from Naval Petroleum Reserve Numbered 1 pursuant to the provisions of this Act and to pay the funds realized from such sale into the United States Treasury. In each year, sales proceeds equal to the Government's receipts from Naval Petroleum Reserve Numbered 1 during the twelve calendar months immediately preceding enactment of this Act shall be credited to the general fund and the remaining sales proceeds shall be credited to the petroleum reserve account. Any sums remaining in the petroleum reserve account after the payments authorized by subsection (b) have been made shall be transferred to miscellaneous receipts of the Treasury, and thereafter the funds realized under this subsection shall be paid into miscellaneous receipts of the Treasury.

(b) There is hereby authorized to be appropriated out of the petroleum reserve account to the Secretary of the Interior, the Secretary of the Navy, the Secretary of the Treasury, and the Attorney General, to remain available until expended when so authorized in appropriation Acts, such sums as may be necessary to—

(1) enable the Secretary of the Interior to pay judgments, compromising settlements, and interest thereon, as certified by the Attorney General under section 3 hereof;

(2) enable the Secretary of the Navy to carry out petroleum exploration on Naval Petroleum Reserve Numbered 4, Arctic North Slope, Alaska;

(3) reimburse the general funds of the Treasury for any lost royalties, as determined by the Secretary of the Interior, resulting from a reduction of existing production from existing oil and gas leases on Federal lands caused by production of oil and gas from Naval Petroleum Reserve Numbered 1 under the provisions of this Act; and

(4) carry out the functions and responsibilities required of the Secretary of the Interior, the Secretary of the Navy, and the Attorney General under the provisions of this Act.

(c) In the event the funds in the petroleum reserve account are not sufficient to pay any amount so appropriated there is authorized to be appropriated to the Secretary of the Treasury for advance to the petroleum reserve account out of any money in the Treasury not otherwise appropriated, such funds as may be necessary for such payments. The Secretary of the Treasury shall be reimbursed for such advances from funds paid into the petroleum reserve account in accordance with this Act, with interest thereon, at such rates as may be determined from time to time by the Secretary of the Treasury.

SEC. 4. Without regard to the provisions of chapter 641, title 10, United States Code, the Secretary of the Navy is authorized and directed to produce by whatever means he deems necessary sufficient oil from Naval Petroleum Reserve Numbered 1 to fill the requirements of section 3 hereof. The Secretary of the Navy is also authorized to renegotiate and modify existing contracts relating to production of oil from said reserve in such manner as may in his judgment be necessary or advisable to enable such increased production.

SEC. 5. There is hereby created a national energy reserve on the Outer Continental Shelf in the Santa Barbara Channel, offshore of the State of California, under the jurisdiction and control of the Secretary of the Interior. The said national energy reserve shall be made up of the land subject to the leases terminated pursuant to this Act, plus the land subject to waived lease P-0235 and the following described land as shown on the official Outer Continental Shelf Leasing Map, Channel Islands Area Map Numbered 6B, approved August 8, 1966, and revised July 24, 1967 as:

California, official leasing map, Channel Islands area map, No. 6B

<i>Block</i>	<i>Description</i>
50 north 66 west-----	All.
50 north 67 west-----	All.
51 north 65 west-----	Northwest quarter of the northwest quarter.
51 north 66 west-----	All.
51 north 67 west-----	All.
51 north 68 west-----	All.
51 north 69 west-----	All.
51 north 70 west-----	East half and east half west half.
52 north 64 west-----	All Federal portion thereof.
52 north 65 west-----	All Federal portion thereof.
52 north 66 west-----	All Federal portion thereof.
52 north 67 west-----	All Federal portion thereof.
52 north 68 west-----	All Federal portion thereof.
52 north 69 west-----	All Federal portion thereof.
52 north 70 west-----	All Federal portion of east half and east half west half.
48 north 69 west-----	All.
47 north 69 west-----	All Federal portion thereof.
46 north 69 west-----	All Federal portion thereof.
47 north 68 west-----	All.
46 north 68 west-----	All Federal portion thereof.
47 north 67 west-----	All.
46 north 64 west-----	All Federal portion thereof.

The national energy reserve shall be available for lease only as determined by the President and under such terms and conditions as he may prescribe in accordance with existing law.

**STATEMENT OF HON. CHARLES M. TEAGUE, A REPRESENTATIVE
IN CONGRESS FROM THE STATE OF CALIFORNIA**

Mr. TEAGUE. Madam Chairman, thank you very much for those most kind words. I was almost late getting here because I live in Santa Paula which is about 45 or 50 miles from here, and I strictly followed the 50-mile speed limit on the way up, and it took 10 or 15 minutes longer than usual.

On behalf of my constituents and friends in the audience, I am going to have to apologize for the rain. You are not seeing Santa Barbara at its most beautiful, but we do badly need the rain because one of our other problems in this area is our perpetual danger of serious forest fires. We have had some very bad ones. This rain will at least postpone that danger for a while.

Madam Chairman, I am going to be quite brief and rather general in my presentation. It is my understanding that you hope at least to hold further hearings in Washington.

Mrs. MINK. That is correct.

Mr. TEAGUE. I believe the purpose of this hearing is primarily to give Santa Barbarans and others in the area an opportunity to present their views, so I have a 4½-page double-spaced statement which I will read. Then I suggest unless there are questions which must be asked at this time, that those be withheld for our hearings in Washington.

At the beginning of this week, most of us voted to expedite construction of the trans-Alaskan pipeline and thus to promote oil production. Now, at the end of the same week, we find ourselves considering legislation that proposes to curtail or at least postpone oil production.

A question that must occur to many is, can this apparent contradiction make sense? On what reasonable basis can we promote oil production on one day and discuss foregoing oil production on another?

I suggest we view this apparent paradox from what I would call the perspective of the hasty decision. The hasty decision is becoming standard operating procedure in this technocratic era. This is unfortunate. Unfortunate because crisis management is not a substitute for considered policy development.

We are all familiar with this hasty decision syndrome. Indeed, all of us in Government have participated to some extent in perpetuating it. The emergence of crisis management as a routine is as easy for us to understand as it is hard to justify. In a crisis situation, the options are fewer, alternatives more sharply defined, and the aura of decisiveness which surrounds any decision reached under pressure brings a special gratification to those who wield power.

Systematic policy development, on the other hand, requires a complex weighing of factors, a best option is elusive, often leaving us uncertain and frustrated. There is a tendency to postpone this more difficult, less exhilarating process. When we procrastinate long enough, we are confronted with a crisis situation and avoid the difficult policy formulative process. So we do the best we can under the circumstances, and let events determine our reactions rather than shaping events by our actions.

Both our energy crisis and the Santa Barbara Channel predicament result from procrastination and nonpolicy. The Santa Barbara Channel situation was born of crisis. In 1968 when the war in Southeast Asia was reaching budget-bursting proportions and was sapping the domestic war on poverty, President Johnson realized the need for new sources of revenue. That year the Santa Barbara Channel was leased, netting \$624 million for the U.S. Treasury.

That decision was made, and drilling begun, although there was no successful oil containment apparatus in existence, no expertise in drilling seismically unstable seabed, no experience in drilling in waters of similar depth, and major pollution was occurring from oil platforms in the Gulf of Mexico. The public did not participate in the decision.

Crisis management is also at the core of our energy predicament. In fact, it is our policy in energy matters. But for how many years have we squandered energy as if there were no tomorrow? By now all of us are familiar with the statistics: Six percent of population; 44 percent of mineral resources consumed; half the world's automobiles; 50 percent of petroleum production. In the 7 years from 1960 to 1967, world consumption of petroleum equaled the consumption of the previous 70 years. In the next 3 years, consumption doubled again. This exponential growth is depleting finite resources, fossil fuels formed over millions of years.

Where is our policy? That question resolves the paradox of voting for a pipeline Monday and considering a legislative moratorium on the Santa Barbara Channel Saturday. We need a policy for the Santa Barbara Channel. For the effect of crisis-oriented decision-making has been made all too evident here.

We need oil. And we need to make decisions that will insure oil in the several years until the power of the sun and tides are harnessed to do the work of oil. Our policy for the Santa Barbara Channel

should reflect the need for energy and the need for conservation of resources.

Just this week, your committee reported out surface mining legislation which sharply restricts potential strip mining of coal—our most abundant fossil fuel—from national parks, wilderness areas, and forests. In placing these restrictions on panicle access to energy sources in areas of national value and scenic beauty, you underscored the most important point I have to make here today. Our energy situation, serious as it is, does not require that we repudiate every past decision made out of concern for the environment.

The prospect of future oil drilling and production in the Santa Barbara Channel must be considered as a balancing of benefit and cost. The reason these field hearings are important is to establish for the record how deeply the people of Santa Barbara feel about this area of our coast.

In how much jeopardy should we place our coastline, the Channel Islands, the channel itself? What is it we risk in developing the energy resources of the Santa Barbara Channel? Many of the residents of this community will speak to these points. These are fundamental questions which can only be answered by the value our Nation assigns to the living resources of the land and sea.

Certainly, it is indisputable that the Santa Barbara Channel oil has a high public value in view of our present energy problem. The remaining issue then is to decide what level of risk to our environment is acceptable to gain the benefit of these deposits. Does current technology and regulatory procedure bring the risks of development down to that acceptable level? What is the proper balance? Let us not make this important decision under the terms of crisis management.

Some have misrepresented Santa Barbarans as being parochial and unreasonable. But the legislation before this committee reflects the spirit of compromise. Moreover, it is consistent with our desire to provide energy a decade from now as well as a year from now.

The legislation requested earlier this year by the administration, H.R. 7500, does not terminate all Federal leases in the Santa Barbara Channel. The energy reserve which would be established pursuant to this legislation would consist of areas directly seaward of the Santa Barbara oil sanctuary established in State waters and a buffer zone surrounding the Channel Islands National Monument. Only leases in the most ecologically sensitive and geologically fragile areas would be set aside for us in a future emergency. H.R. 7500 does not preclude exploitation of the previously undeveloped Santa Ynez unit of leases. The most substantial oil reservoirs in the channel are estimated to lie in this area, northwest of the energy reserve contemplated in H.R. 7500. The Interior Department is in the process of assessing the environmental impact of a developmental plan for this area and, while I have personally urged a cautious approach to development, nothing in H.R. 7500 would delay completion of development plans.

The President's recommendation for the use of immediately available oil from Naval Petroleum Reserve No. 1 at Elk Hills, Calif. appears increasingly likely to be implemented. It makes sense that the proceeds of Elk Hills sales be dedicated rather than be paid into the general fund. H.R. 7500 dedicates revenue from the sales to two purposes: Establishment of the Santa Barbara reserve and exploration of Naval Petroleum Reserve No. 4 in Alaska.

While it is inconceivable to me that our strategic fuel reserves would be depleted to the point that our destroyers at sea would be without fuel, some fear that overproduction from Elk Hills would incapacitate our Armed Forces. Production should be limited and reserves in the Santa Barbara Channel should be established to offset sales from Elk Hills.

In an effort to find some solution to the impasse over the role of oil development in the channel since the 1969 blowout, I have introduced several measures which would continue the production and exploration moratorium, already established administratively, legislatively until certain conditions are met. However, I feel that termination of these critical leases provides for a more just disposition of the problem of compensation for companies deprived for 4 years already of rights to exploit leases in which they have invested heavily.

Assistant Secretary of the Interior, Stephen A. Wakefield, in testimony on Santa Barbara Channel legislation Tuesday announced that the administration was embarking on a yearlong reappraisal of its Santa Barbara Channel policy. But this does not tie our hands. Congress can establish a policy for the Santa Barbara Channel. Under the circumstances, perhaps none of the pending bills affords the best solution to a problem 5 years old.

I will suggest today a legislative approach which takes account of the most recent developments to which Secretary Wakefield draws our attention.

Congress should require that it be consulted prior to approval of any new development proposal within the proposed energy reserve. Congress must undertake an independent evaluation of the environmental impact statements which the Interior Department intends to prepare, preferably through our own Office of Technology Assessment. We must reserve the opportunity to void a decision to authorize development, if our own findings differ from those of the Interior Department. We should establish a special account into which the proceeds of impending sales from Elk Hills can be paid in escrow should Congress or the Interior Secretary determine that termination is the preferred course of action. This would spare taxpayers the burden of paying compensation to leaseholders. We can maintain, through these actions, policy options which administrative action might otherwise close off.

I will introduce legislation with these features when Congress reconvenes. It is my firm belief that initiative in resolving this conflict should not be the sole province of the executive branch.

Mrs. MINK. Thank you very much, Mr. Teague. We appreciate very much having your statement.

Would you join us, please, here?

Mr. TEAGUE. Thank you very much.

Mrs. MINK. I would like to introduce my colleagues on the subcommittee who have taken time from their own work and their own constituencies to attend this hearing this morning and this afternoon.

On my left here is Congressman Wayne Owens of the State of Utah. He also has been very, very busily engaged in the markup of our surface mining legislation. On my extreme right the gentleman needs no introduction. He is from this area, Congressman Bill Ketcham, and I am sure that his views and his judgment on this issue will be

very heavily weighed as we deliberate on the bill and the new legislation which Congressman Teague will be offering. And on my immediate right, the ranking Republican member of this committee, Congressman Happy Camp of Oklahoma, whose participation in these hearings was imperative or we could not have gone forward.

I appreciate their attendance here at the hearings today.

In our announcement of these hearings, we notified those who wished to testify that their statements had to be submitted to the subcommittee in advance so we would have an opportunity to review them before the hearing this morning. We will take other statements which have not been submitted in advance, which we will be very happy to insert into the record, in the appropriate place.

In calling the witnesses before the committee, we would urge you to limit your oral presentations to no more than 10 minutes to give the subcommittee members an opportunity to question you on the major points of your presentation. You are assured that the written statements that you have presented to the committee in advance will be inserted in the record in full. What we are asking is for your cooperation so that we might listen to all witnesses, and we do have a very long agenda. We want a full opportunity to question everyone who has indicated an interest to make known their views.

With that as a preliminary, I would like to first call on the Department of Interior witnesses, if they would step forward.

Mr. KETCHUM. Madame Chairman.

Mrs. MINK. My colleague, Mr. Ketchum.

Mr. KETCHUM. I ask unanimous consent that the statements of Congressman Lagomarsino, State senator, and Congressman Don MacGillivray, be printed in the record in their entirety at this point.

Mrs. MINK. Without objection, so ordered.

[The statements referred to follow:]

STATEMENT OF STATE SENATOR ROBERT J. LAGOMARSINO

Mr. Chairman, members, thank you for the opportunity to address this issue. We appreciate your taking the time and effort to visit Santa Barbara and hope your journey proves fruitful. Because we are addressing an issue which transcends jurisdictional lines, in a sense, I hope you will consider the views and experience of State and local government in relation to this problem.

As you know, it has been the official policy of this State for some time that no new leases shall be let or production wells drilled in the channel until it has been demonstrated that these operations can be conducted with complete safety to the ecology. At the present time the State Lands Commission is considering whether these conditions have been met by the industry; no final decision has been reached.

However, we think it is clear that government has a right on behalf of the people to impose such conditions on the development of a public resource. At the same time we recognize the seriousness of the energy crisis and the hardship it engenders. This dilemma is not easily resolved.

It may help if we consider the following facts.

If oil could be pumped from the channel today, with complete safety, it would undoubtedly help us through an uncertain winter. But the field cannot be put into production today, or this winter, even if the green light were given now. So, it is not a question of easing the present crisis.

Whether this crisis will continue its present proportions into the future is of course a matter of conjecture. We do know this however: the oil is in the ground now, and has been there for billions of years. Presumably, it will not disappear

if it waits a few more years. If indeed we do face a long term energy crisis, the deposit will become even more valuable in the future.

The future presumably will also see the development of safer and more sophisticated production procedures. An accident which could waste this resource or lessen the efficiency of its development now will aid no one.

I believe that the public is concerned with the energy crisis. I believe the public is also concerned that our energy resources not be wasted, but rather carefully husbanded. Given the difficulty and risks inherent in developing this resource now, the wisest course of action would seem to be to wait until the necessary conditions of safety and efficiency have been met. I hope you will agree with this conclusion and urge you to consider conserving this resource now for the sake of our future.

STATEMENT OF ASSEMBLYMAN W. DON MACGILLIVRAY, 36TH DISTRICT,
CALIFORNIA LEGISLATURE

Thank you for the opportunity to express my support of the proposed federal legislation with reference to the federal leases in the Santa Barbara Channel, off the coast of California.

The people in my district have been waiting for years for legislation concerning the Santa Barbara Channel to be considered by Congress, and they are desirous of having this legislation acted upon. I, too, support legislation which will protect the channel. The reasons for this are many:

1. The General Accounting Office has found over 76 violations of federal regulations on five platforms in the channel since fiscal year 1972. If any area had been carefully watched by USGS, one would assume it would be the Santa Barbara Channel. Therefore, it is easy to be skeptical of federal oil spill prevention procedures.

2. The water depth in some areas, such as the Santa Ynez Unit, is much greater than that of any producing field.

3. The bulk of the oil activity, including the onshore storage and offshore marine facilities, are located right in the heart of two state beach parks.

4. During my tenure as Mayor of the City of Santa Barbara, I went, with others, to Washington, D.C. to protest federal leasing in the channel. We were then assured that no major oil spills would occur. We are well aware of the reliability of those assurances.

In addition, the California State Legislature expressed a desire for such legislation by passing, in 1972, my AJR-6, which requested, among other things, that the Department of Interior forestall any future oil production in federal waters off the coast of California until an underwater fail-safe system of extraction has been developed, and an adequate oil clean-up system has been developed and deployed. This resolution makes specific reference to contemplated drilling and production in water depths of 700 to 1,500 feet in the Santa Barbara Channel. This is not the place for experimentation.

I applaud the current efforts being made by the oil companies toward perfecting an underwater fail-safe system of extraction, as requested in AJR-6. An example of this is the submerged production system (SPS) being developed by EXXON and Humble Oil Companies, and discussed in Volume 1, page I-52, of EXXON's Environmental Statement. However, such a system should be fully tested before any permits are considered. No matter how you slice it, oil platforms do not enhance the aesthetic value of the coast, or the recreational experiences of the many who use those beach parks. Also, no satisfactory tests of oil clean-up equipment have been conducted during normal and heavy sea conditions in the Santa Barbara Channel, as requested by AJR-6.

Due to the present energy crisis, I can see the need for further development of our oil resources. However, this committee should place a great deal of consideration on the expensive and irreversible damage that could be caused by further drilling in the Santa Barbara Channel, before making any hasty decisions.

Thank you.

Mrs. MINK. If the Department of Interior witnesses would come forward at this time, Mr. Hillary Oden, assistant regional conserva-

tion manager, and next, Mr. Fred Scambeck, area oil and gas supervisor of the Department of Interior.

Mr. Oden, would you proceed? Your entire statement will be placed in the record at this point.

[The statement referred to follows:]

STATEMENT OF HILLARY A. ODEN, ASSISTANT REGIONAL CONSERVATION MANAGER,
CONSERVATION DIVISION, U.S. GEOLOGICAL SURVEY

CIRCUMSTANCES SURROUNDING THE 1969 BLOWOUT OF WELL NO. A-21, PLATFORM A
LEASE OCS-P 0241, DOS CUADRAS FIELD, SANTA BARBARA CHANNEL

Four wells had been drilled from platform A prior to the well A-21 blowout. The same drilling and casing program was proposed for well A-21 as was used in drilling and casing these previous four wells. The notice to drill well A-21 was approved by the U.S.G.S. District Engineer on January 9, 1969. Its proposed measured total depth was 3,455' KB (3,179' BOF), or 3,400' KB (3,124' BOF) true vertical depth. Kelly bushing (KB) depth refers to the distance from the kelly bushing to the bottom of the hole. Below ocean floor (BOF) depth refers to the distance from the ocean floor to the bottom of the hole.

The 20" diameter conductor (first casing pipe) was driven to 291' KB (15' BOF) and well A-21 commenced drilling at 4:00 p.m. on January 14, 1969. A 12 1/4" diameter hole was drilled to 520' KB (244' BOF). The hole was reamed out to 17 1/2" diameter and a 13 3/8" diameter surface casing (second casing pipe) was set to a depth of 514' (238' BOF) and cemented. Blowout prevention equipment consisting of blind rams, pipe rams and Hydril (a bag type valve) was installed and tested prior to drilling below the bottom of the 13 3/8" casing. The blowout preventers are a series of valves which will shut in the well bore at the surface with or without the drill pipe in the hole.

By late January 29 the drill pipe had been stripped into the hole and was successfully screwed into the segment of drill pipe that had been previously dropped into the hole. Circulation of drilling mud through the drill pipe was attempted but the bit at the end of the drill pipe was apparently plugged and mud circulation could not be established. An attempt was then made to pull and remove the drill pipe but it would not pull free. Several attempts were made to unscrew the drill pipe at a point deep enough so as to circulate drilling mud and stop the flow of oil and gas but in each instance the pipe screwed off above the top of the original segment of drill pipe that was dropped into the hole.

A Schlumberger 1 9/16" perforating gun was run inside the drill pipe to a depth of 2,942' KB (2,666' BOF). The drill pipe was perforated with 97 holes in the interval from 2,860'-2,883' KB (2,584'-2,607' BOF). Before perforating, the drill pipe was first pressured to 500 psi. The pressure fell off to zero after perforating, indicating that the perforating job had succeeded.

While rigging up equipment to kill the well, sea water was pumped down the drill pipe with no indication that it was stopping the flow of oil and gas. On February 5, 1969 large amounts of water with green dye were pumped into the drill pipe and also down the casing outside the drill pipe. None of this dye appeared on the surface of the ocean. The dye water was followed with 250 barrels of heavy mud pumped down the casing. Pumping sea water down the drill pipe was then continued during the night of February 5, and part of the day of February 6, while assembling and hooking up additional pumps on the platform and waiting on a mud barge with an additional supply of mud.

Between January 17 and January 28, 1969 a 12¼" diameter hole was drilled to a total depth of 3,479' KB (3,203' BOF) measured depth. A directional survey instrument was run in the hole to measure the deviation of the bore hole from vertical at 3,222' KB (2,946' BOF). This survey indicated a true vertical depth of 3,143.67' KB (2,867.67' BOF) at that point, a deviation of 2° 30' and in the direction of N. 19° W.

On the morning of January 28, 1969 the drilling crew commenced removing the drill pipe from the bore hole prior to running electric log surveys and completing the well. It was reported that the first five stands (one stand equals three 30 foot segments of drill pipe) of drill pipe were hard to pull but the next three stands pulled relatively easy.

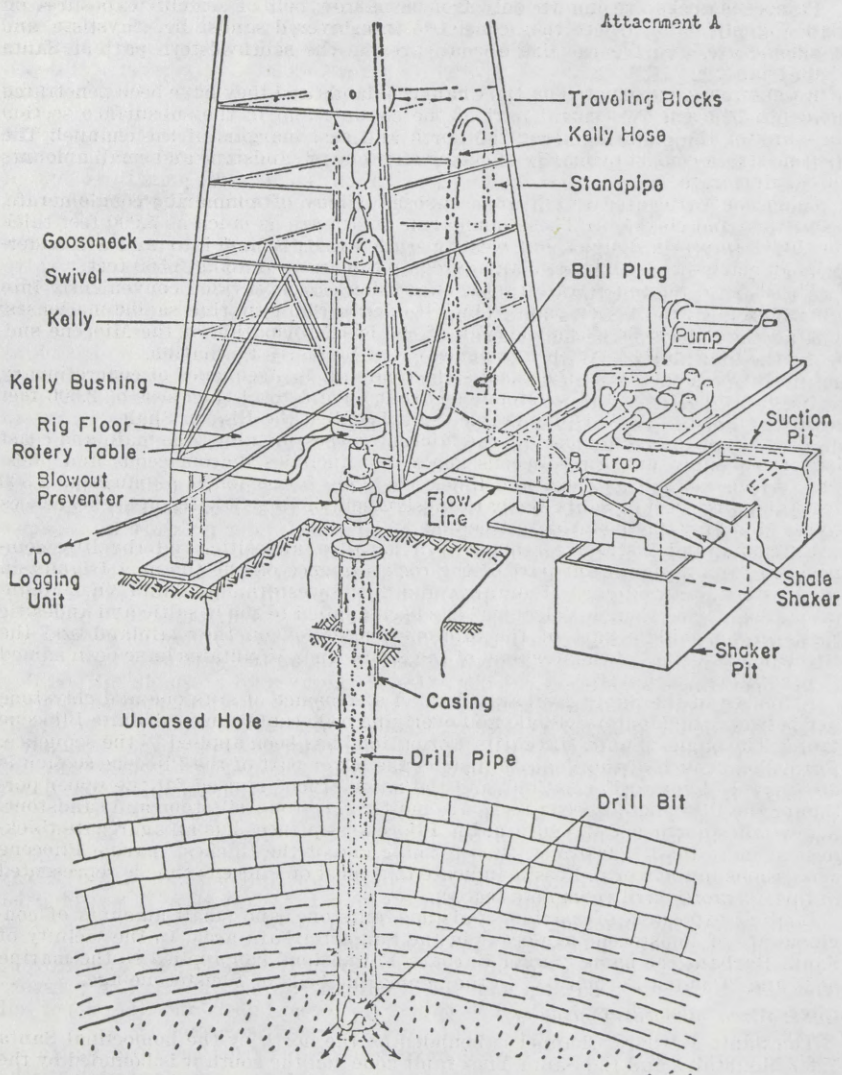
While removing and unscrewing the eighth stand the well started blowing gas through the drill pipe. An attempt was made to screw the drill pipe safety valve into the drill pipe but the well was blowing too much oil and gas to do so. The crew picked up the kelly in an attempt to screw the kelly into the drill pipe. In picking the kelly up, the kelly hose caught on a bull plug in the standpipe and broke the bull plug off. With the standpipe thus open and with oil and gas blowing up through the drill pipe, it was considered too great a fire hazard to pursue trying to connect the kelly to the drill pipe. The crew then dropped the drill pipe down the hole so the blind rams of the blowout preventors could be closed to shut the well bore in at the surface. (See attachment A for a schematic of the drilling rig equipment referred to above.)

Shortly after shutting the well in, the surface pressure was 400 pounds per square inch (psi) and boils of oil and gas began to appear on the surface of the water near the platform indicating that oil and gas under pressure in a deeper reservoir had come up the borehole and fractured the shallow caprock, allowing release of the oil and gas into the channel waters. An attempt was made to kill the well (stop the flow of oil and gas) by pumping drilling mud down the casing. This operation was not successful so the crew commenced stripping drill pipe into the hole, under pressure, through the Hydril (bag type valve) blowout preventers.

In the meantime a massive effort had been made on the part of essentially all of the operating and oil-service companies in the area to assemble all possibly needed mud, equipment, and cement for a maximum effort to stop the uncontrolled flow of oil and gas. This effort commenced at 11:05 a.m. on February 7, 1969, by pumping sea water with dye, calcium chloride water, and mud down the drill pipe. Steady pumping down the drill pipe began at 4:00 p.m. on February 7, and by 5:00 p.m. nine pumps were in operation pumping mud down the drill pipe at a rate of 30 barrels per minute at a pressure of 3,750 psi. At this time the drilling rig pumps started pumping mud down the casing annulus (space between the drill pipe and the casing). By 5:30 p.m. on February 7 the oil and gas seep bubbles began to decrease in size and intensity and the well was eventually killed with 13,000 barrels of heavy mud. Finally, well A-21 was plugged and abandoned by pumping cement down the drill pipe, creating a plug from 2,607' below the ocean floor back to the ocean floor.

Since 1969 some oil has continued to seep from the ocean floor at a rate of about five barrels per day through the fractured caprock. A negative pressure differential must be maintained between the ocean floor and the upper oil reservoirs by continued oil production to prevent greater seepage.

One-hundred and twenty nine wells have been drilled from the three platforms ("A", "B" and "Hillhouse") in the more than four years of operation in the Dos Cuadras field since the well A-21 blowout. During that time, 83 million barrels of oil and 43 billion cubic feet of natural gas have been produced.



DRILLING RIG EQUIPMENT SCHEMATIC

GEOLOGIC FRAMEWORK OF THE SANTA BARBARA CHANNEL REGION

Regional setting

The Santa Barbara Channel is the submerged western half of the Ventura Basin, an elongate east-west trending structural depression. The channel is approximately 65 miles long and 25 miles wide covering an area of about 1,600 square miles. The maximum depth of water in the channel is approximately 2,000 feet.

Stratigraphic summary

Strata in the western Ventura basin range in age from Early Cretaceous to Holocene and have a total thickness of more than 50,000 feet. Lower and Upper Cretaceous marine sedimentary rocks probably are widely distributed deep in the subsurface beneath much of the Santa Barbara Channel. Middle Cretaceous rocks, however, have not been found in the channel region.

Paleocene rocks are known only from a narrow belt of sea-cliff exposures on San Miguel Island, where they consist of interlayered sandstone, claystone, and conglomerate, and from a single small area in the southwestern part of Santa Cruz Island.

Eocene rocks are exposed on the Channel Islands and they have been penetrated at depth beneath the central part of the channel and in the subsurface section in many of the oil fields along the north and east margins of the channel. The Eocene strata consist primarily of clayey siltstone or sandstone and small amounts of conglomerate.

Oligocene variegated strata are composed chiefly of nonmarine conglomerate, sandstone and claystone. These nonmarine strata are as much as 5,000 feet thick in the Carpinteria district, but westward they thin, tongue into, and are underlain by marine beds that have an aggregate thickness of about 3,500 feet.

The diverse Miocene stratigraphic succession can be divided conveniently into lower, middle, and upper parts. Thick-bedded shallow marine sandstone lenses, in part conglomeratic, form the bulk of the basal formation of the Miocene succession. These strata have been assigned to the Vaqueros Formation.

Conformably overlying the basal sandstone unit is a sequence of concretionary claystone, mudstone, and siltstone beds that have a total thickness of 2,500 feet in the Ventura area. This fine-grained unit is called the Rincon Shale.

The bulk of the middle part of the Miocene succession along the mainland coast is a remarkably uniform siliceous shale that includes diatomaceous and phosphatic beds as well as chert and limestone. This formation is as much as 2,300 feet thick just west of Santa Barbara. Assignment of these stratigraphic sequences to the Monterey Shale is widely accepted.

Extrusive and intrusive sequences of basaltic, andesitic, and rhyolitic composition form a significant part of the rock sequence on the Channel Islands, in the western Santa Monica Mountains, and in the westernmost Santa Ynez Mountains. The name "Conejo Volcanics" has been applied to the basaltic and andesitic rocks in the middle part of the Miocene succession on the mainland and the rhyolitic extrusives at the west end of the Santa Ynez Mountains have been named "Tranquillon Volcanics".

At places in the Santa Barbara Channel a sequence of siltstone and claystone lies between the Monterey Shale and overlying beds containing a definite Pliocene fauna. The name, "Santa Margarita Formation" has been applied to the sequence. Throughout much of the Ventura district the lower part of the Pliocene section is designated "Repetto Formation" and the name "Pico" is used for the upper portion of the Pliocene. Pliocene rocks are mostly claystone, siltstone and sandstone. A few miles northeast of Ventura, the Pliocene sequences has an aggregate thickness of more than 12,000 feet, thus forming one of the thickest marine Pliocene successions in the world. Fossils indicate that most of Pliocene time is represented in this extraordinarily complete section.

Limited exposures of marine sandstone, siltstone, and small amounts of conglomerate of Pleistocene age occur in the Santa Barbara area. In the vicinity of Santa Barbara the name "Santa Barbara Formation" has applied to the marine beds and "Casitas Formation" to the nonmarine beds of Pleistocene age.

Generalized structural geology

The Santa Barbara Channel is bounded on the north by the homoclinal Santa Ynez Mountains and the Santa Ynez fault zone; on the south it is bounded by the Channel Islands and on the east by the coastline of Ventura County. The western limit is not definitely known, but a shallowing of the ocean and a northwest bend of the structures in the area south of Point Conception may indicate a change of structural pattern. A total structural relief on the order of 60,000 feet exists between the deep central part of the basin and its elevated north and south margins. Imposed on this regional structural basin are numerous normal and reverse faults and steep-limbed folds indicative of intense deformation.

The largest fault system pertinent to the Santa Barbara Channel area is the generally east-west trending Santa Ynez fault, which forms the northern geologic boundary of the region. In general this fault dips steeply to the south, and the south side apparently has been raised 5,000-10,000 feet relative to the north side. There are several other extensive high-angle reverse faults which generally parallel the trend of the Santa Ynez fault. They have been called the Red Mountain fault, Pitas Point fault, Oak Ridge fault, McGrath fault, etc. The compressive forces that produced the high-angle reverse faults also produced steeply folded anticlinal trends. Two of the most prominent anticlinal trends are the Rincon and Montalvo trends.

Seismicity

The Santa Barbara Channel region, like many other areas in California, is seismically active. Since 1912, more than 20 earthquakes of magnitude of 6.0 or larger have occurred in southern California. Two of these were located in the Santa Barbara Channel. Earthquakes of magnitude 6 and larger can be expected to occur in the future in the vicinity of the Channel, and it would be consistent with past behavior if several such events occurred in the next century.

Historic records of the Channel region document numerous periods characterized by sequences of frequent or nearly continuous low-magnitude seismic activity without exceptionally large shocks. Such sequences are called "earthquake swarms." Hundreds of small earthquakes have been recorded. Sixty-three earthquakes of magnitude 2.8 or greater were recorded during the period June-August 1968 with the epicenters clustered approximately midway between Santa Cruz Island and the mainland.

Known occurrences of oil and gas in the Santa Barbara Channel

Aside from the many oil, gas and tar seeps that exist in the area, the drilling of more than 800 wells since 1896 have discovered and delineated more than 20 oil and gas fields underlying, all or in part, the waters of the Channel. The Santa Barbara Channel fields have produced almost 300 million barrels of oil and over 650 billion cubic feet of natural gas to date.

Oil or gas has been discovered on nineteen OCS Federal leases in the Santa Barbara Channel. Only one of these is within the proposed National Energy Reserve. Formations which have been tested and determined to contain commercial hydrocarbons are: Pico, Repetto, Santa Margarita, Monterey, Vaqueros, Gaviota, Sespe-Alegria, Sacate, and Matilija. The potentially productive formations range in age from Eocene to Pliocene. The deepest well on the Federal OCS was drilled to a total depth of 15,456 feet. Three OCS leases (P-0166, P-0240, and P-0241) are producing. Since 1968, these three Federal leases have produced more than 100 million barrels of oil and 58 billion cubic feet of natural gas. Presently these three leases are producing at a rate of about 1,500,000 barrels of oil per month.

The discoveries in the Santa Ynez Unit area, if developed, are estimated to have proved recoverable reserves of 1.2 billion barrels of oil and 500 billion cubic feet of gas. It has been estimated that the entire Santa Barbara Channel area may have 3.75 billion barrels of potentially recoverable oil reserves and 2.0 trillion cubic feet of gas.

STATEMENT OF HILLARY A. ODEN, ASSISTANT REGIONAL CONSERVATION MANAGER, CONSERVATION DIVISION, U.S. GEOLOGICAL SURVEY, U.S. DEPARTMENT OF THE INTERIOR

Mr. ODEN. Madam Chairman, I'm Mr. Oden, Assistant Regional Conservation Manager, Department of the Interior, Geological Survey.

The agenda lists both Mr. Scambeck and I as witnesses. These names were given to the subcommittee in case one of us was unable to be here, but we both are here, but I will read the statements for the record.

Mr. Scambeck, our area oil and gas supervisor, and Mr. Keith Yennig, district geologist, both from our Los Angeles office, are here today. They will also be available to answer technical questions from the subcommittee concerning the statements I furnish you concerning the circumstances surrounding the 1969 blowout in the Santa Barbara Channel, and on the geological framework in the Santa Barbara region.

In view of the 10 minutes you have requested us to keep our statements to, I will not read the complete statements but will summarize the pertinent portions.

Four wells have been drilled from platform A prior to the well A-21 blowout. The same drilling and casing program was proposed for well A-21 as was used in drilling and casing these previous four wells. The notice to drill well A-21 was approved by the USGS Dis-

trict Engineer on January 9, 1969. Its proposed measured total depth was 3,455 feet KB—3,179 feet BOF—or 3,400 feet KB—3,124 feet BOF—true vertical depth. Kelly bushing (KB) depth refers to the distance from the kelly bushing to the bottom of the hole. Below ocean floor (BOF) depth refers to the distance from the ocean floor to the bottom of the hole.

The 20-inch-diameter conductor, first casing pipe, was driven to 21 feet KB, 15 feet BOF, and well AX21 drilling commenced January 14, 1969. A 12¼-inch-diameter hole was drilled to 520 feet KB, 244 feet BOF. The hole was reamed out to 17½ diameter and a 18⅜-inch-diameter surface casing was set to a depth of 514 feet and cemented.

Between January 17 and January 28, 1969, a 12¼-inch-diameter hole was drilled to a total depth of 3,203 feet below the ocean floor. On the morning of January 28, 1969, the drilling crew commenced removing the drill pipe from the bore hole prior to running electric log surveys and completing the well.

While removing and unscrewing a joint of pipe, after about 700 feet of drill pipe had been removed from the hole, the well started blowing gas through the drill pipe. Several attempts were made to blast in the top of the open drill pipe, but the well was blowing too hard and it became too great a fire hazard to do so. The crew then dropped the drill pipe down the hole so the blind rams of the blowout preventors could be closed to shut the well bore in at the surface.

Shortly after shutting the well in, boils of oil and gas began to appear on the surface of the water below the platform, apparently indicating that oil and gas under pressure in a deeper reservoir had come up the borehole and fractured the shallow caprock, allowing release of the oil and gas into the channel waters. The drilling crew then commenced stripping or forcing the remaining drill pipe down into the hole, under pressure, through a Hydril blowout preventer.

By January 29, the drill pipe had been stripped. Circulation of drilling mud through the drill pipe was attempted but the bit at the end of the drill pipe was apparently plugged and mud circulation could not be established.

A Schlumberger 1⅞-inch-perforating gun was put in the pipe to a depth of 2,666 feet below the ocean floor. The drill pipe was perforated just above this point so that mud could be circulated through the drill pipe in an attempt to kill the well.

While rigging up additional equipment to kill the well, seawater was pumped down the drill pipe with no indication that it was stopping the flow of oil and gas. Pumping seawater down the drill pipe continued through the night of February 5 and February 6. In the meantime, a massive effort was made to assemble all possibly needed mud equipment and cement for a maximum effort to stop the uncontrolled flow of oil and gas.

This effort commenced at 11:05 a.m. on February 7, 1969, by pumping seawater with dye, calcium chloride water, and mud down the drill pipe. By 5:30 p.m. on February 7, the oil and gas bubbles began to decrease in size and intensity and the well was eventually killed with 13,000 barrels of heavy mud. Finally, the well was plugged and abandoned by pumping cement down the drill pipe, creating a cement plug from 2,607 feet below the ocean floor back to the ocean floor.

Since 1969, some oil has continued to seep from the ocean floor at a rate of about 5 barrels per day through the fractured caprock. A negative pressure differential must be maintained between the ocean floor and the upper oil reservoirs by continued oil production to prevent greater seepage.

One hundred twenty-nine wells have been drilled from the three platforms in the more than 4 years since the well A-21 blowout. During that time, 83 million barrels of oil and 43 billion cubic feet of natural gas have been produced.

As far as the geologic framework of the Santa Barbara Channel region, the Santa Barbara Channel is the submerged western half of the Ventura Basin, an elongate east-west trending structural depression. The channel is approximately 65 miles long and 25 miles wide covering an area of about 1,600 square miles. The maximum depth of water in the channel is approximately 2,000 feet.

Geologic strata in the western Ventura Basin range in age from Early Cretaceous to Holocene and have a total thickness of more than 50,000 feet.

Paleocene rocks are known only from exposures on San Miguel Island and a small southwestern part of Santa Cruz Island.

Eocene rocks are exposed on the Channel Islands.

Oligocene variegated strata are composed—are as much as 5,000 feet thick in the Carpinteria district.

The Miocene strata can be divided conveniently into three parts.

The Pliocene strata are named for the Santa Margarita Formation, the Repetto Formation, which is the formation that produces those quadophiles, and the Pico Formation. A few miles northeast of Ventura, the Pliocene sequence has an aggregate thickness of more than 12,000 feet, thus forming one of the thickest marine Pliocene successions in the world.

A total structural relief on the order of 60,000 feet exists between the deep central part of the basin and its elevated north and south margins. Imposed on this regional structural basin are numerous normal and reverse faults and anticlinal trends.

The largest fault system pertinent to the Santa Barbara Channel area is the generally east-west trending Santa Ynez fault. There are several other extensive high-angle reverse faults which generally parallel the trend of the Santa Ynez fault. Two of the most prominent anticlinal trends are the Rincon and Montalvo trends.

The Santa Barbara Channel region, like many other areas in California, is seismically active. Since 1912, more than 20 earthquakes of magnitude of 6.0 or larger have occurred in southern California. Two of these were located in the Santa Barbara Channel. Earthquakes of magnitude 6 and larger can be expected to occur in the future in the vicinity of the channel.

Hundreds of small earthquakes have been recorded. Sixty-three earthquakes of magnitude 2.8 or greater were recorded during the period June through August 1968 with the epicenters clustered approximately midway between Santa Cruz Island and the mainland.

Aside from the many oil, gas, and tar seeps that exist in this area, the drilling of more than 800 wells since 1896 have discovered and delineated more than 20 oil and gas fields underlying all or in part, the waters of the channel. The Santa Barbara Channel fields have

produced almost 300 million barrels of oil and over 650 billion cubic feet of natural gas to date.

Oil or gas has been discovered on 19 OCS Federal leases in the Santa Barbara Channel. Only one of these is within the administration's proposed National Energy Reserve. Nine different formations have been tested and determined to contain commercial hydrocarbons. There are three Federal leases presently producing. Since 1968 these three Federal leases have produced more than 100 million barrels of oil and 58 billion cubic feet of natural gas. Presently these leases are producing at a rate of about 1,500,000 barrels of oil per month. The discoveries in the Santa Ynez unit area, if developed, are estimated to have proved recoverable reserves of 1.2 billion barrels of oil and 500 billion cubic feet of gas. It has been estimated that the entire Santa Barbara Channel area may have 3.75 billion barrels of potentially recoverable oil reserves and 2 trillion cubic feet of gas.

Most of the information that I have just summarized is taken from Geological Survey professional paper 679. This professional paper contains a much more detailed treatment of the geology of the Santa Barbara Channel area and the circumstances surrounding the well A-21 blowout.

With that, I would thank you, Madam Chairman, and I am open to questions.

Mrs. MINK. As I understand it, Mr. Oden, you are not authorized to comment on the Department of Interior's policy with regard to either of the three pending bills.

Is that correct?

Mr. ODEN. That is correct.

Mrs. MINK. You are here to provide technical information to the committee only.

Mr. ODEN. Yes.

Mrs. MINK. The matter of the blowout of this particular well here in 1969, of course, has been written up and discussed in many areas.

Vis-a-vis the experience that was suffered by this particular well here in Santa Barbara and what was learned from it, how do you account for the 136 days it took to bring the blowout in the Gulf of Mexico under control which occurred in the next year in 1970?

Mr. ODEN. The blowout that you are referring to, the Chevron blowout and fire, was a more extensive blowout. There were several wells involved rather than one, and it was further from shore, more difficult to get equipment to it, and we had still not learned all the things that we have learned since on that blowout and fire.

Mrs. MINK. What were the major differences in the causes of that blowout and the one that you had here in Santa Barbara?

Mr. ODEN. The blowout in the Gulf of Mexico, the Chevron fire, was apparently caused by a fire starting on the platform. I believe there were approximately 12 or 16 wells on that platform producing at that time. Apparently one of the engines overheated. That is one explanation, causing the fire, and the wellheads disintegrated from the heat, and then the wells began blowing out.

The blowout in the Santa Barbara Channel was during the course of drilling the well, and just the one well blew out, and there was no fire accompanying the blowout.

Mrs. MINK. Prior to any incident that occurs, is it the responsibility of the USGS to approve and authorize the procedures which that particular company is to use at that site?

Mr. ODEN. Yes.

Mrs. MINK. Since 1969, have there been new procedures adopted?

Mr. ODEN. There have been many new procedures. Our regulations governing the approval and drilling for wells have been changed. What we call our operational orders, our notice to lessees or operators, the tests, the amount of casing, the drilling mud program, safety equipment, the checking of blowout preventers has been greatly changed and strengthened.

Mrs. MINK. When were these changes inaugurated?

Mr. ODEN. The regulations were revised, the general regulations were revised in late 1969. The operating orders were also revised, some of them at that time, and there have been several revisions of various of these orders since, as we learn more about the problems, as we have more experience on the failures that have occurred, and as new technology develops.

Mrs. MINK. Would you say the technology is still being developed and perfected requiring further study and further regulations on the part of your service?

Mr. ODEN. Yes. No matter how good technology is, or regulations, there is always room for improvement as we learn more.

Mrs. MINK. Are you familiar with the GAO report which was issued in June of this year criticizing the USGS for incompetence in the inspection and enforcement of the Santa Barbara operations?

Mr. ODEN. Yes.

Mrs. MINK. Would you care to comment on their findings?

Mr. ODEN. It is rather difficult to comment on. Several of the things that they found that we could do better I would not say that they found us entirely incompetent, but some of the things that they said that we could do better, improvements that we could make, these were already recognized, many of them, and in the process of being made.

Mrs. MINK. Does my colleague, Mr. Camp, have any questions?

Mr. CAMP. How much surface pipe was there on the A-21 well?

Mr. ODEN. There was 200—well, there was 514 feet of pipe across the water. Depth there is approximately 200 feet, then on up to the rig floor there was 338 feet of pipe, cemented below the ocean floor.

Mr. CAMP. At the time of the blowout, was it an open hole?

Mr. ODEN. It was an open hole from that point down.

Mr. CAMP. From your testimony I would take it then that the blowout itself came from below the ocean floor and in the area of where the foundation was.

Mr. ODEN. Really, from what we can determine, the oil and gas that blew out came from the formation very near the bottom of the hole. At that time the well was at about 3,203 feet deep below the ocean floor.

Mr. CAMP. The wells that have been drilled since then, have they been open hole wells, or have they been through casing?

Mr. ODEN. They have been open hole wells with the exception that we have required more, a greater length of surface casing and additional intermediate strings of casing before we reach the deeper producing formations.

Mr. CAMP. Thank you, Madame Chairman.

Mrs. MINK. Mr. Owens.

Mr. OWEN. Is there available a map of the channel?

Mr. ODEN. Yes.

Mr. OWENS. It would be helpful if we could see what this whole channel looks like. The State has a moratorium on the 2- to 3-mile boundary.

Is that right?

Mr. ODEN. That is my understanding.

Mr. OWENS. The Federal Government has placed a moratorium on parts of the boundary beyond that.

Mr. ODEN. That is correct.

Mr. OWENS. Would you explain the boundaries where you have the moratorium on drilling and where the 129 wells have been drilled?

Mr. ODEN. I believe Mr. Scambeck may—I can get a map from him to explain the boundaries.

Does the map that you have before you, does it show the Santa Barbara Oil Sanctuary?

Mr. OWENS. Yes.

Mr. ODEN. The Federal Ecological Preserve and the Federal Buffer Zone?

Mr. OWENS. That is right.

Mr. ODEN. Essentially the acreage, roughly 3 to 4 miles south, a strip roughly 3 to 4 miles south of the Santa Barbara Oil Sanctuary is the Ecological Preserve and the Buffer Zone. The administration's proposed National Energy Reserve would include the area south of that point to the Santa Cruz Island, plus some areas lying just north of the State waters, San Miguel Island, and a couple tracts over by Capa Island.

Mr. OWENS. Those are the proposed preserve areas?

Mr. ODEN. Yes. There were 35 Federal leases in effect that were proposed as part of the National Energy Reserve.

Mr. OWENS. What is the entire Reserve figure? Is it 3½ billion barrels, and what area does that refer to?

Mr. ODEN. The potential Reserve figures for the entire Santa Barbara Channel?

Mr. OWENS. Yes.

Mr. ODEN. It is 3.75 billion barrels of oil and 2 trillion cubic feet of gas. This would cover the entire channel area shown on this map, down over by Ventura to Point Conception and between the mainland.

Mr. OWENS. Including the Santa Ynes area, the total for the whole channel?

Mr. ODEN. Yes; and the Federal offshore area. I am taking into account the State 3-mile submerged lands.

Mr. OWENS. That does not include State?

Mr. ODEN. No.

Mr. OWENS. What are the known reserves in the State area?

Mr. ODEN. I do not have those figures.

Mr. OWENS. Would that approximate in any way the 3.75 billion barrels?

Mr. ODEN. I do not know.

Mr. OWENS. Perhaps we will have somebody later in the day that will know that.

Where was the drilling forbidden then, in all those areas you outlined?

Mr. ODEN. The drilling has been suspended in the leases south of the Santa Barbara Oil Sanctuary in the Federal Buffer Zone.

Mr. OWENS. The Ecological Preserve and the Buffer Zone?

Mr. ODEN. Yes. There are 20 leases, 20 tracts involved. On the leases north of San Miguel Island, there are about 15 tracts or leases involved there.

Mr. OWENS. Drilling has been suspended in that area, too?

Mr. ODEN. Yes. A couple tracts north, the east end of the Capa Island.

Mr. OWENS. 129 wells have been drilled where?

Mr. ODEN. They have been drilled from the three platforms that exist in the those quadrants, fields where the blowout occurred.

Mr. OWENS. 129 have.

Mr. ODEN. Yes.

Mr. OWENS. There has been no drilling since the blowout?

Mr. ODEN. Yes; over in the Santa Ynez area to the western part of the channel, there has been about 34 wells drilled in this proposed Santa Ynez development. Some of these were drilled before the blow-out, but the majority has been drilled since.

There has also been some drilling to the east on leases east of the proposed National Energy Reserve, over toward Ventura.

Mr. OWENS. 129 wells have been drilled to prevent further leakage?

Mr. ODEN. Yes; pursuant to the recommendations of the President's Committee, which was after, right after the blowout.

Mr. OWENS. Thank you, Madam Chairman.

Mrs. MINK. Mr. Ketchum.

Mr. KETCHUM. No questions, Madam Chairman.

Mrs. MINK. And Mr. Teague?

Mr. TEAGUE. Thank you, Madam Chairman.

Mr. Oden, are you familiar with the report issued in 1972 by the National Academy of Engineering and entitled "Outer Continental Shelf Resource Development Safety"?

Mr. ODEN. I have read parts of it.

Mr. TEAGUE. I am going to ask this, Madam Chairman. This report contains 19 recommendations for improving safety measures for offshore drilling. With your permission, I am going to ask Mr. Oden to supply for the record the answer to the question of how many of these recommendations have been implemented by the Government.

Mrs. MINK. Without objection, that inquiry will be an official inquiry of the subcommittee, and we would appreciate having your response which will be inserted in the record at this point of the hearing.

[The information referred to follows:]

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
U.S. HOUSE OF REPRESENTATIVES,
Washington, D.C., January 16, 1974.

Mr. HILLARY ODEN,
Assistant Regional Manager, Conservation Division, U.S. Geological Survey,
Santa Barbara, Calif.

DEAR MR. ODEN: During the hearings held on H.R. 3177 (by Teague), H.R. 3178 (by Teague) and H.R. 7500 (by Saylor) in Santa Barbara, California on November 17, 1973, you were asked to submit certain information for the record.

The question was regarding the 1972 National Academy of Engineers report entitled "Outer Continental Shelf Resources Development." This report contains 19 recommendations for improving safety measures for offshore oil drilling. You were requested by Subcommittee Chairman, Patsy T. Mink, to inform the Sub-

committee as to how many of these recommendations have been implemented by the Federal Government.

We would appreciate it very much if you would forward this report as soon as possible so that we may start processing these hearings for printing. Thank you very much for your prompt attention to this matter.

Cordially,

NORMAN T. WILLIAMS,
Staff Consultant, House Subcommittee on Mines and Mining.

U.S. DEPARTMENT OF THE INTERIOR,
GEOLOGICAL SURVEY,
Reston, Va., February 4, 1974.

Mr. NORMAN T. WILLIAMS,
Staff Consultant, House Subcommittee on Mines and Mining, House of Representatives, Washington, D.C.

DEAR MR. WILLIAMS: This is in response to your letter of January 16 to Mr. Hillary Oden, Assistant Conservation Manager, Pacific Region, in which you requested a report on implementation of the recommendations contained in a 1972 National Academy of Engineering report entitled "Outer Continental Shelf Resources Development Safety."

This report together with two other reports generated from a study on OCS safety by the National Aeronautics and Space Administration and an internal OCS lease management study formed the basis for a Geological Survey work group on OCS safety and pollution control. The report of the work group (copy enclosed) contains fifteen recommendations and includes the recommendations from the National Academy of Engineering report. Implementation on all those recommendations has commenced and is becoming a part of the Survey's ongoing lease management program. A summation of the recommendations and state of implementation is also enclosed.

Sincerely yours,

HENRY W. COULTER,
Acting Director.

Enclosures.

IMPLEMENTATION OF OCS STUDY RECOMMENDATIONS

A work group composed of key Geological Survey officials has reviewed the studies of OSC 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.—OSC Order No. 5 has been revised and now requires operators to submit quarterly failure-analysis reports on subsurface safety devices. The Off-shore Operators' Committee is developing procedures for a closed loop failure reporting and corrective action system which will include all critical platform safety components. The output from these systems is 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 antipollution 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 antipolluting standards has been formed in conjunction with the API. This committee's function is to establish standards and specifications for safety and antipollution equipment. The first project undertaken by the committee was recommended practice for design, installation and operation of subsurface safety valve systems and specifications for subsurface safety valves. Draft copies of these standards have been made available for review and comment. The final copies of these standards will be published later this year. In connection with this, a facility for the testing of subsurface safety valves will be constructed and operated by an independent research institute.

Other projects under consideration 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 Analyses.

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 is establishing a more formalized training program for their own personnel and have developed 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.

Recommendation No. 11.—Lease Management Program.

Action Taken:—Additional personnel have been hired for the Gulf of Mexico OCS office. The areas of responsibilities and goals of the individual organizational units are being 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 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 and is currently being printed.

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. The initial meeting of this committee was held in Washington, D.C. during August 1973, and the next meeting in New Orleans, La. during November 1973.

REPORT OF THE

WORK GROUP ON OCS SAFETY AND POLLUTION CONTROL

U. S. Geological Survey

Members:

A. Dewey Acuff
J. R. Balsley
Henry W. Coulter
B. F. Grossling
Hubert Risser
W. A. Radlinski, Chairman

May 1973

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Foreword

The Director, U.S. Geological Survey (USGS) appointed a Work Group to review the findings of three studies conducted at the request of the USGS on improving safety and pollution control in the management of Outer Continental Shelf oil and gas operations, and to recommend appropriate implementation actions. The studies are identified in the Appendix.

This report is not only responsive to the specific recommendations of the studies, but also reflects findings from meetings with personnel from the American Petroleum Institute, the Offshore Operators Committee, the Western Oil and Gas Association, a panel of the Marine Board, National Academy of Engineering, NASA, Occupational Safety and Health Administration, the Department's Office of the Solicitor, and others.

Several actions have already been taken where an immediate response was considered necessary or desirable. For example:

- o Contracts studies have been made to determine requirements for implementation of systems analysis reviews.
- o The Marine Board, National Academy of Engineering, has agreed to establish a Review Committee on Safety of OCS Petroleum Operations.
- o Action was initiated to expand OCS Accident Investigation Procedures to include an immediate notification, after the occurrence of an accident, to all OCS lessees and operators of potentially hazardous situations (Safety Alert).
- o The Environmental Protection Agency, the National Oceanic and Atmospheric Administration, and the U.S. Coast Guard have been requested to participate in the implementation of appropriate recommendations of the NAE study.
- o Opinions have been obtained from the Department of Justice and the Office of the Solicitor on the legal aspects of certain implementation actions.
- o Arrangements were made for API cooperation in the implementation of those recommendations calling for its participation.
- o Safety committees have been established in the Offshore Operators Committee and the Western Oil and Gas Association.

Similarly, the Conservation Division of the U.S. Geological Survey, which has the regulatory responsibility for OCS activities, has already responded to various recommendations as a result of direct discussions the Work Group has had with them during the course of the study. For example, inspection procedures developed in the Lease Management Study have been implemented.

The report is organized in sections by subject. Each section contains the related recommendations from the three study reports, some remarks, the Work Group's recommendation, and finally the implementation action required.

Abbreviations Used In The Report

AEC - Atomic Energy Commission

ANSI - American National Standards Institute

API - American Petroleum Institute

ASME - American Society of Mechanical Engineers

ASTM - American Society for Testing and Materials

EPA - Environmental Protection Agency

FAA - Federal Aviation Agency

LMS - Lease Management Study (conducted by a team of systems analysts from the U.S. Geological Survey)

NAE - National Academy of Engineering (specifically a panel of the Marine Board who conducted a study of OCS safety)

NASA - National Aeronautics and Space Administration (specifically the team of NASA analysts who conducted a study of OCS operations)

NOAA - National Oceanic and Atmospheric Administration

OCS - Outer Continental Shelf

OOC - Offshore Operators Committee (Gulf of Mexico)

USCG - United States Coast Guard

USGS - United States Geological Survey

WOGA - Western Oil and Gas Association

1. FAILURE REPORTING AND CORRECTIVE ACTION

RECOMMENDATIONS OF STUDIES

NASA--It is therefore recommended that USGS lay the groundwork for the type of activity, described above (a closed-loop, failure reporting and corrective-action program), in the drilling and production phase of the oil industry by requiring monthly summaries from each operator of failure causes and corrective action taken for all safety equipment specified by OCS Orders. All accidents and oil spills should follow similar procedures. For the procedure to be effective, its object should be recurrence prevention, with emphasis placed on the determination of causes, preventive action, and follow-up.

This recommendation, if adopted, will have a significant impact, primarily due to the change in policy made necessary by the majority of offshore operators. The statement is often made by offshore people that "the only real test of equipment is to place it in service in the Gulf".

Whether this is a valid assumption or not, the data from this "test" should be utilized to maximum advantage. The basic philosophy to be followed is that every failure has a cause, every cause can be understood, and every failure can be corrected or alternate procedures provided.

REMARKS

In order to promote technological improvements in equipment necessary for safe offshore operations, and to reduce the occurrence of equipment malfunctioning, all operators should develop a systematized method for failure identification. In many cases, malfunctioning equipment has been replaced or repaired with little or no attempt made to determine the reason for failure. Consequently, a piece of equipment with an inherent failure problem might continue to be used and replaced for a period of time before the reason for continual failure is discovered. In conjunction with an analysis of failures, a corrective action program is necessary to guard against a recurrence of the same type of failure. Implementation of NASA's recommendation would tend to encourage operators to work more closely with their suppliers to determine and remedy causes of equipment failures. Analysis of accidents and oil spills would help to identify items for closer inspection and to determine patterns of equipment failure.

OCS Order No. 5, revised effective June 5, 1972, requires a quarterly failure analysis report for subsurface safety devices. Initial experience with this system should indicate the most favorable manner in which to proceed with failure reporting on other equipment.

WORK GROUP RECOMMENDATION NO. 1

It is recommended that the USGS require all operators to establish an internal failure-reporting, corrective-action program, to include: 1) an operator's report to the USGS on incidents, problems, and failures which result in fires or reportable oil spills or reportable accidents; 2) the factual circumstances surrounding the incident; and 3) the corrective actions taken. The operator's report to the USGS should be required on a scheduled basis. Data from the reports should be computerized to facilitate analyses and corrective actions. Implementation of this recommendation should not preclude compliance with the existing requirements for immediate reporting of serious accidents, all fires, and spills as specified in 30 CFR 250.43 and 250.45, and pertinent OCS Orders.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should determine the requirements for reporting and include them in OCS Orders. For those cases where the OCS Orders cannot be issued within a reasonable period of time, notices, as appropriate, should be issued to all operators.

2. ACCIDENT INVESTIGATION AND REPORTING

RECOMMENDATIONS OF STUDIES

NAE --The official reports stemming from investigation of major accidents should receive prompt and full public disclosure, and should be available in a readily accessible form.

The U. S. Government should directly sponsor, encourage, and provide the means for a public exchange of information on the causes and effects of accidents, and on the performance of specific items of safety-related equipment in the offshore industry.

A careful analysis should be carried out after every major offshore oil spill to determine the precise manner in which the spill occurred -- taking into account any equipment failures, personnel errors, or design inadequacies, their causes and what can be done to prevent such future occurrences.

The information resulting from accident investigation and evaluation of component performance should be analyzed by a competent organization (similar to the National Transportation Safety Board or the Marine Safety Council), and its conclusions should be made public promptly.

REMARKS

The Conservation Division established, on April 12, 1971, a procedure for "Notification and Investigation of Accidents". This procedure is designed to provide prompt investigation and systematic review of accidents as a basis for taking immediate corrective actions to limit the probability of recurrence. No provision is made, however, for public disclosure of findings such as is practiced by the U.S. Coast Guard and the Federal Aviation Agency. Publication of accident investigation results is desirable to develop public confidence in, and acceptance of, petroleum operations offshore.

The Assistant Solicitor in his memorandum of January 10, 1973, to the USGS stated that, "...there does not seem to be any legal objection to the publication of such reports. However, it is necessary to be careful about the content of the report published. For example, any proprietary information should be deleted before publication. Moreover, the report should be limited to factual statements and should not include judgments on the conduct of companies or personnel. The Geological Survey should consult the Solicitor's Office before publishing any reports".

WORK GROUP RECOMMENDATION NO. 2

The Work Group agrees with all four recommendations of the NAE Study, i.e.:

- a. Reports of major accidents stemming from the current USGS procedure for investigation of accidents should be made available to the public promptly.
- b. Work Group Recommendation No. 3, calling for a system for disseminating information concerning equipment failures and accidents, should include a means for the public to have access to the information.
- c. Analyses of causes of major oil spills should be made as part of the accident investigation procedure and, if required, by additional follow-up studies. Results of all such analyses should be provided to the Review Committee (see Work Group Recommendation No. 15).
- d. Results of accident investigations, in addition to being made available to the public, should be provided to the Review Committee for possible further analyses.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should begin immediately to implement the above recommendations. They will need to determine the format and means of disseminating reports to the public and consult with the Solicitor's Office prior to release.

Referral of appropriate items to the Review Committee should be done by the Director, USGS.

3. INFORMATION EXCHANGE

RECOMMENDATIONS OF STUDIES

NASA--It is recommended that the USGS investigate the legal question of a possible anti-trust law violation regarding formal exchange of hardware and method problem information within the oil and gas industry. If a favorable ruling is obtained, USGS should encourage and participate in the development and operation of the system.

As an alternative, USGS could become the focal point for this information and disseminate it to all concerned parties.

NAE --In addition to, and separate from the inspection procedures, there should be a government-sponsored system of reporting safety-related information for the purpose of improving the safety of offshore operations and the inspection system by additions and eliminations. This system, in order to be effective, must take into consideration and allow for the problems of self-incrimination.

REMARKS

To utilize fully the information gathered through a failure and accident reporting and corrective action program, it will be necessary to disseminate such information throughout the offshore petroleum industry. NASA has noted that it has been successful in providing a rapid exchange of information in the space program which has been one of the keys to its success. The Atomic Energy Commission also employs procedures to notify all AEC installations of accidents, their causes, and remedial actions to prevent recurrences.

WORK GROUP RECOMMENDATION NO. 3

The USGS should establish and operate a system for disseminating information concerning equipment failures and accidents, utilizing data obtained through a failure and accident reporting and corrective action program, operator reports, and investigations conducted by the USGS. Such information should be made readily available to the public.

A system should also be established for immediate notification to all operators of a potential failure or accident as a result of specific incidents, prior to a full investigation and final dissemination of information.

IMPLEMENTATION ACTION REQUIRED

In view of the mass of data to be handled, and the intricacies of a system for evaluating, cataloging, and dissemination of information, the USGS should contract for the design by data-bank specialists. Due consideration should be given to the possible adaptation to USGS needs of dissemination systems used by other agencies such as NASA, AEC, FAA, and others.

A "Safety Alert" system for immediate notification to all operators of failures and accidents has already been implemented.

4. RESEARCH AND DEVELOPMENT

RECOMMENDATIONS OF STUDIES

NASA--It is recommended that USGS establish a method to determine needs and conduct or direct the research, testing and development necessary to improve equipment and methods for an increasingly safe and pollution-free operation on the OCS.

An alternate recommendation is that USGS work with the industry in establishing an organization such as the American Petroleum Institute (API) to serve as the R&D focal point, with all companies contributing toward resolution of problems.

NAE --The U. S. Government should encourage and utilize industry research and development programs by means of promotion of industry consensus standards on offshore technology so that it can act to ensure that information on improvements in safety technologies becomes available to participants in offshore resource development.

The U. S. Government should sponsor a coordinated program to specify reasonable limits of crude oil intrusion in accordance with biological and aesthetic standards. These standards should be set in a manner that will take full account of site variables. The effort should be carried out on a continuing basis in order to take advantage of improvements in the technology of offshore petroleum operations. The program should be specifically directed to provide a basis for engineering design and standards for components and systems to be used in offshore petroleum operations.

The U. S. Government should make quantitative studies of the effectiveness of the various present and potential methods of cleaning up oil from the marine environment, and of their potential marine environmental impact.

The U. S. Government should actively encourage and sponsor the development and testing of damage-limiting and fail-safe systems and techniques in the areas of damage control, fire-fighting, and well control.

REMARKS

Considerable research has been conducted by various segments of the petroleum industry and by certain governmental agencies in matters related to offshore

drilling and producing operations. In the past, however, development of additional safety controls by the industry often resulted only as a side effect from the main thrust of its research efforts. NASA has noted that individual companies have R&D programs devoted primarily to improving production capability with some effort to improve safety and anti-pollution equipment and methods included.

The Solicitor's Office has advised that there is legal authority to enter contracts for scientific or technological research into any aspect of problems related to Interior Department programs (42 USC § 1900), but there is no authority to require OCS operators to conduct R&D. They further advise that a joint Government-Industry R&D program would be a possibility, but would be more complex than a program operated by the USGS alone.

WORK GROUP RECOMMENDATION NO. 4

- a. The USGS, in cooperation with the API, should establish a program to encourage and promote research and development in safety and anti-pollution equipment and systems. Current and completed research and development should be taken into account in the determination of specific needs. Such needs should be communicated to industry through API. For those needs where there is no response from industry, or the response is unsatisfactory, the USGS should contract for the required work. (See also Recommendation No. 8a.)
- b. With specific reference to the NAE recommendations, the Work Group recommends:
 - (1) The promotion of industry consensus standards should be effected through a cooperative arrangement with API (see Work Group Recommendation No. 5).
 - (2) Requests should be made to NOAA, USCG, and EPA to sponsor programs to study the effects of various amounts of crude oil intrusion into the marine environment, taking into account site variables.
 - (3) The recommendation to undertake quantitative studies of the effectiveness of methods for cleaning up oil from the marine environment should be referred to the U. S. Coast Guard.
 - (4) The development and testing of damage-limiting and fail-safe systems in the area of damage control, fire-fighting, and well control should be an item for follow-up under the cooperative arrangement with API.

IMPLEMENTATION ACTION REQUIRED

Arrangements have been made with API for the recommended cooperative effort and the desired programs are underway with personnel from the Conservation Division participating.

EPA, NOAA, and the USCG have been requested to respond to the NAE recommendations. Their replies were favorable and pointed out the various pertinent activities in which they are already engaged.

5. STANDARDS AND SPECIFICATIONS

RECOMMENDATIONS OF STUDIES

NASA--That USGS seek API cooperation in establishing a committee to function under USGS guidance for the purpose of determining specific needs, and to write, review and approve standards/specifications for safety and anti-pollution equipment. The committee must function under the guidance of USGS.

That specifications developed by the committee contain requirements for a basic quality control system and, where equipment is to be used in a deleterious environment, an environmental test program. The committee should use, as a quality system guideline, the quality control provisions of the Bureau of Mines specification covering fuses for trailing cables used in coal mines, and in NASA Publication NPC 200-3, "Inspection System Provisions for Suppliers of Space Materials, Parts, Components and Services".

That the USGS, through OCS Orders, require the use of approved standards/specifications.

As an alternate recommendation, if the USGS cannot obtain API participation, it is recommended that USGS establish a committee, comprised of appropriate members from the industry, for the purpose of developing these standards/specifications for equipment and methods used in OCS operations.

NAE --The U.S. Government should encourage and support the development of a comprehensive system of industry consensus standards and should make use of the resulting standards system in the regulation and inspection of the offshore industry, and make adherence to such standards a consideration in the issuance of permits.

The American National Standards Institute (ANSI) should be used jointly by government and industry to integrate the efforts of government, industry, and the professional societies for the development of industry consensus standards for personnel, equipment, and operating procedures.

U. S. Government personnel associated with offshore resource development should participate in the standards preparation procedures and there should be means of assuring that such government personnel can participate as equals.

Industry and the U. S. Government should establish a working relationship for the joint development of standards for advanced deep water technology. Industry consensus standards for completion and workover safety procedures should be developed. Special consideration should be given hazard control and damage limiting methods.

The U. S. Government should develop a policy regarding the testing of offshore equipment, including the establishment of criteria for selection of test sites for such equipment in the marine environment.

REMARKS

NASA has noted the need for the development of new and more meaningful standards. It was also noted that many standards had been written in too general terms, insufficient to adequately describe a specific situation. Although equipment quality is of the utmost concern to oil operators, no requirements have been placed on manufacturers for a quality control system. Organizations already in existence, such as the American National Standards Institute, American Petroleum Institute, American Society for Testing Materials, American Society of Mechanical Engineers, etc., are best qualified to develop the necessary standards.

WORK GROUP RECOMMENDATION NO. 5

The USGS, in cooperation with API, should identify needs for additional or more specific standards for safety and anti-pollution equipment. The standards should include performance requirements for the operational testing of the equipment in the marine environment. Arrangements should be made with ANSI for the development of needed standards. API, ASTM, ASME, and other organizations should be requested to prepare proposed standards as appropriate, with USGS participation. Standards adopted by the USGS should be published and incorporated in OCS Orders. (See also Work Group Recommendation No. 4.)

IMPLEMENTATION ACTION REQUIRED

Arrangements have been made with API for its cooperation. The program is underway with participation by personnel of the Conservation Division.

6. SYSTEMS ANALYSIS^{1/}

RECOMMENDATIONS OF STUDIES

- NASA--1. The team recommends that USGS request identification of operations and equipment critical to safety of personnel and pollution prevention. Data to complete this "Critical Items List" could be derived from two sources. One, from compilation of accident history and problem/failure reports, is the topic of another recommendation. The second source could result from analysis of the systems utilized to perform a given function. Two types of design/system analysis most commonly used in industry today are the Failure Mode, Effect Analysis (FMEA) and the Hazard Analysis (HA).
2. The USGS Gulf Coast Regional Office should be authorized to implement the proposed "design review" group.
 3. The region should require submission from offshore operators a list of critical operations to be performed during drilling at time of permit request. List of critical systems should also be obtained at the time of well completion, and appropriate reviews conducted with the operator.
 4. The requirement for submission of complete Hazard Analysis should be phased into system starting with new work, with time limits on existing wells.
 5. The analysis group should work with operators to eliminate (reduce) hazardous operations by recommending redesign of hardware or operations.
 6. Inspection criteria should be revised to include any additional critical equipment identified by Hazard Analysis.
- LMS --1. Systematic procedures should be established to identify potential hazards associated with various OCS operations and provide risk assessments.
2. Design specifications for a safety program to be implemented by industry as a means of further reducing risk of accidents and losses on the OCS. The specifications should emphasize (1) the early identification of hazards, preferably in the

^{1/} "Hazards Analysis" is the term used in the NASA report. "Systems Analysis" is substituted herein because it is broader and more descriptive of what actually is desired in the Work Group's recommendation.

design or planning stage of an operation and (2) the explicit statement of assumed risks and losses associated with the operation. Such statements and hazard analyses should eventually be part of applications for new platforms and associated production equipment. As part of the first phase of the safety program, each operator should be required to submit a general safety plan following Survey-defined specifications.

REMARKS

In order to evaluate Hazards Analysis and Failure Mode and Effects Analysis procedures more fully, the USGS contracted for such analyses of actual offshore drilling and producing operations. Two separate contracts were completed, one by the General Electric Corporation and the other with the Southwest Research Institute. The results are now being studied.

WORK GROUP RECOMMENDATION NO. 6

The USGS should require lessees to submit a systems analysis prior to granting approval for platforms, pipelines, drilling operations, and production operations. Operators should provide with each analysis, an identification of operations and equipment critical to safety of personnel and pollution prevention. The latter information should be incorporated into a "Critical Items List". A phased program requiring systems analysis on existing platforms and pipelines should also be developed.

IMPLEMENTATION ACTION REQUIRED

Implementation of the recommendation will require study of the findings of the recently completed contracts for hazards analysis. Assuming satisfactory results, the requirements for systems analysis should be incorporated in OCS Orders and the necessary staffing for review of analyses should be developed by the Conservation Division. The reorganization of the Conservation Division provides for an operational unit to accomplish this work.

7. ENGINEERING DOCUMENTATION

RECOMMENDATIONS OF STUDIES

NASA--It is recommended that USGS require that certain minimum engineering documentation be available at the operator's lowest level onshore engineering office. This recommendation is made in pursuit of the preceding recommendation and others contained in this report, as well as the USGS stated objectives of reviewing process equipment designs more closely. The following list is recommended as minimum requirements:

1. Structural layout and details.
2. Piping runs.
3. Schematic diagrams (mechanical and electrical).
4. Engineering parts list (complete to valve and power supply level, including part number, name and manufacturer).
5. Specifications for all actively functioning components.

REMARKS

The engineering documentation of some platform systems is incomplete, and where such documentation exists, it is not always readily available to operating personnel. The availability of complete documentation at the working level is essential for immediate analysis of problems or malfunctions that could lead to accidents.

WORK GROUP RECOMMENDATION NO. 7

OCS Orders should include requirements for certain minimum engineering documentation such as wiring diagrams, structural layouts, piping layouts, etc., to be readily available at the operator's lowest level onshore engineering office, with copies to the USGS. A Conservation Division task force should identify which documentation is required.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should organize a task force to identify the required documentation, consult with operator groups to determine that particular items can be provided meaningfully, and include appropriate requirements in OCS Orders.

8. WEAROUT PREVENTION

RECOMMENDATIONS OF STUDIES

- NASA--1. Development of a reliable sand erosion probe under USGS sponsorship (including a specification).
2. USGS revision of OCS No. 8 specifying method of implementation of sand erosion probe.
 3. Requirement for rigorous test and inspection (X-Ray/sonic) of wells upon sand detection.

At a later date, when data on failed equipment are available, an evaluation of the necessary inspection frequency and/or periodic replacement of selected safety equipment should be undertaken.

REMARKS

Sand erosion is a major cause of failure of safety equipment on wells producing sand. Although some research toward development of reliable sand erosion detectors is underway, this effort should be accelerated.

WORK GROUP RECOMMENDATION NO. 8

- a. Include the development of a reliable sand erosion detector in the research and development program (see Recommendation No. 4).
- b. Develop rigorous test and inspection procedures for detection and control of sand erosion (see Recommendation No. 12).
- c. Using data from a failure reporting and corrective action system and other sources, specify the requirements for the frequency of inspection and the frequency of replacement for equipment susceptible to failure, and include them in OCS Orders.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should incorporate the requirement of Recommendation No. 8a in the Research and Development program, and those of Recommendation No. 8b and No. 8c in its Inspection Procedures program. OCS Orders should be revised accordingly.

9. TRAINING AND CERTIFICATION

RECOMMENDATIONS OF STUDIES

NASA--It is recommended that USGS require, through revision or addition of OCS Orders, that:

1. Operators develop methods to ensure that company or contract personnel performing inspection and test of safety or anti-pollution equipment are properly trained in USGS requirements, the equipment functions, test methods, etc., prior to performing these services and that training is periodically updated as equipment is modified or new types of equipment are utilized. Operator or outside-source certification of personnel following demonstration of skill should be required.
2. Operators provide USGS with a description of the methods to be employed in accomplishing the above, and that these methods be approved in advance by USGS.

NAE --Since operator training programs are essential to safety in offshore resource development, the U. S. Government should:

Actively encourage and support such training programs; including the objective of safe and reliable operation, installation, maintenance, and repair of equipment systems and components;

Sponsor industry-government standardization of training criteria;

Give weighted consideration to the existence and quality of job qualification requirements and corresponding personnel training in permit procedures;

Ensure the participation of U. S. Government personnel involved in standard setting, regulation and inspection or permit procedures in such training programs.

REMARKS

A considerable amount of vocational training and some safety training is already accomplished under the auspices of the Committee on Vocational Training of the Division of Production of API through courses given in various colleges and universities in the Gulf Coast area. The International Association of Drilling Contractors also trains drilling personnel, and a considerable amount of training is accomplished by the individual companies.

A Solicitor's opinion on legal authority for the USGS to require operators by regulation or OCS Order to develop and submit for approval programs for the training and certification of company personnel was answered on April 27, 1972, as follows: "In order to implement such a program, it is our opinion that Geological Survey must first set standards to be met by the companies for training and certification of personnel in safety and pollution control. Any course of study or training program sufficient to meet these standards should then be approved by Geological Survey. Companies should be free to establish their own training programs or send their personnel to an approved course".

WORK GROUP RECOMMENDATION NO. 9

- a. The USGS, working with industry through API, should set standards and requirements for training of personnel, to include, but not be limited to, the following:
 - (1) A requirement for minimum training in safety and pollution prevention and control for all company and contractor personnel, including identification and proper use of safety equipment, emergency procedures, and first aid.
 - (2) A requirement that appropriate company and contractor field personnel be briefed on USGS regulations and orders.

Standards and requirements for such training should be specified in OCS Orders and a certification of compliance should become a prerequisite for certain permits and operational work. Appropriate credit should be given for pertinent experience.

- b. USGS field supervisory personnel and inspectors should be required to participate in training courses appropriate to their responsibilities.

IMPLEMENTATION ACTION REQUIRED

Arrangements have been made with API for a joint effort to develop the necessary standards and specifications for training of industry personnel. The Conservation Division should pursue this effort and revise OCS Orders accordingly.

Requirements for appropriate training of USGS personnel should be included in the Division Manual.

The Conservation Division should arrange for briefing programs on USGS regulations and orders.

10. MOTIVATION PROGRAM

RECOMMENDATIONS OF STUDIES

NASA--It is recommended that USGS initiate an OCS-wide safety and anti-pollution motivation program. Such a program could be effective in terms of obtaining industry response and favorable publicity.

A program consisting of at least the following elements is suggested.

1. Visual aid package consisting of dramatic evidence of the results of carelessness and human error (pictures of platform fires, etc.) accompanied by analysis of typical events leading to accidents and pollution.
2. Periodic review of accident (safety and pollution) records, from available statistics, with appropriate awards for top performance. The awards should be public ceremonies with maximum possible publicity.

The government program could be put together by an outside company specializing in the field, but should be conducted by USGS.

Additional elements recommended to be implemented by off-shore operating companies, with some USGS participation, are:

Safety training for all field personnel to include identification and proper use of all safety equipment. Review of all emergency procedures with periodic drills. Instructions concerning daily operations to avoid pollution and minimize hazards.

Periodic review of accident and pollution history to field employee level with recognition for good performance. Recognition would assist in obtaining cooperation for better reports of incidents.

Employee suggestion program regarding safety improvements for both equipment and operations. Again, a recognition system is recommended for accepted suggestions.

REMARKS

The Work Group feels that safety and anti-pollution motivation programs would be more effective if sponsored by industry, albeit the USGS should encourage such programs and participate as appropriate.

WORK GROUP RECOMMENDATION NO. 10

The USGS should ask API to take the lead in promoting safety and anti-pollution motivation programs for all personnel involved in offshore operations. API should be encouraged to obtain descriptions of the various motivation ideas and programs now practiced by several companies and publish the best in a brochure for others to consider for adoption.

IMPLEMENTATION ACTION REQUIRED

Arrangements have been made with API to assume leadership in motivation programs, encourage such programs throughout industry, and participate where appropriate. The Conservation Division should assist API in this effort.

11. LEASE MANAGEMENT PROGRAM

RECOMMENDATIONS OF STUDIES

NASA--It is recommended that USGS regional office extend the current effort by staffing, at the earliest possible time, with personnel experienced in quality management and capable of developing, documenting and assisting the Regional Supervisor in implementing this type program. As a minimum, this program should contain the following information:

1. An organization chart
2. Functional statement for each section, district and unit
3. List of reports required of each section, district, and unit
4. Personnel training records
5. Detailed procedures outlining the functions to be performed by USGS personnel at both the district and regional levels
6. Assignment and frequency of inspection functions
7. List depicting areas to be controlled in performing inspection functions
8. Guideline procedures covering inspection and/or tests to be witnessed by USGS district personnel
9. Waiver/departure procedure

It is recommended that NASA documents NPC 200-1A, "Quality Assurance Provisions for Government Agencies", and NHB 5330.7, "Management of Government Quality Assurance Functions for Supplier Operations", be used as guidelines.

USGS should require that all data generated from this planned quality effort be assembled at the regional and Washington offices to be analyzed and evaluated to determine the effectiveness of the district operations.

LMS --The major elements of the OCS Lease Management Program, the Production Program and the Revenue Program need to be coordinated and directed to avoid conflicts over available resources.

1. Designate an OCS Lease Management Program Coordinator.
2. The Survey should hold a formal annual review of the performance of the program components.
3. Survey management should delineate specific operational policies for both programs.
4. The Survey should encourage personnel, especially field technicians, to participate in industry training programs.
5. A paperwork management study should be conducted in order to streamline procedures for processing documents related to oil and gas operations.
6. All routine procedures, decision rules, policies, and operating criteria pertaining to OCS operations should be documented in a set of Branch of Oil and Gas Operations' Manuals.

REMARKS

Staffing for quality control management capability as recommended by NASA should be provided. These functions can and should be performed by the Operations Analysis Unit in the Conservation Division's Metairie Office when it is adequately staffed. This Unit as presently constituted includes groups with accident investigation, design review, orders and field rules, and pollution control functions.

The activities at the field level involved in the OCS lease management program are so diversified and time consuming that adequate means of coordinating them is essential. These functions, however, are the assigned responsibility of the Manager, the Supervisor, his Deputy, and the heads of the Sections, Units, and Groups now existing within the organizational structure. The Supervisor and his Deputy have the direct overall responsibility for coordination of the entire program and under a proper line-staff organizational structure it would not be

appropriate to delegate this responsibility to a "Program Coordinator" Additionally, the coordination of all activities should improve when the positions under the Conservation Division reorganization plan are filled and fully operational. However, if assistance in coordinating program activities is needed, such assistance should be added to the staff.

Also, the Division's reorganization plan, when fully implemented, should provide adequate coordination of the Lease Management Program at the Division headquarters level.

WORK GROUP RECOMMENDATION NO. 11

- a. The NASA recommendations listed above should be implemented to provide the needed quality management capability. Most of the items given as a minimum for the program plan are in existence, but they need to be reviewed, updated, consolidated, and systematically documented.
- b. The LMS recommendations listed above should also be implemented, with the exception of item 1. Instead of an OCS Lease Management Program Coordinator, necessary staff capability should be added for program coordination.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should add personnel to implement these recommendations.

The Director's Office should develop the guidelines for a formal annual review and prepare the recommended operational policies.

A contract will probably be required for the paperwork management study.

The recommended operations manuals should be developed by the Conservation Division as soon as possible.

12. INSPECTION PROCEDURES

RECOMMENDATIONS OF STUDIES

NASA--a. The data processing equipment, that the team (LMS study team) was advised is being considered for location in the Regional Office, should be installed at the earliest possible time.

b. The presently used Potential Incidence of Non-Compliance (PINC) list should be modified to separate the gathering of descriptive information (e.g., number of wells/platforms) from compliance information (e.g., satisfactory operation of check valves).

c. A method should be established to ensure that compliance characteristics of the PINC list are maintained current as OCS Orders are revised or added.

d. Conservation Division should devise a "best method" of adapting study techniques to the needs of Region operations. An operating procedure should then be developed, and implemented as soon as possible, in order to provide uniform guidance to all concerned personnel. The procedure should include the use to be made of information generated by District, Region, and Headquarters.

e. The procedures referenced above should be integrated into the overall OCS Management Program Plan.

LMS --1. Adopt the inspection techniques and methodology developed and utilized in the course of this study.

2. Expand the scope of the inspections to include other production operations as they are specified in conjunction with the hazard review activity and as new OCS Orders are written.

3. Continue the review and analysis of inspection results in order--

a. to modify inspection strategies and to allocate resources in response to changes in the level of company activity and compliance;

- b. to advise the Offshore Operators Subcommittee on Safety of the inspection results.
4. Augment the existing enforcement authority with the addition of required fixed periods of shut-in time for specific items of noncompliance or combinations of items.
5. On a periodic basis, perhaps monthly, inform upper management of actions taken against their company.

NAE --Routine inspection procedures in the offshore industry should be carried out by the specific companies involved for compliance with industry consensus standards. U. S. Government inspections should be confined to spot-checking to ascertain compliance to regulations.

REMARKS

USGS inspection procedures have been criticized for lack of uniformity among inspectors in the interpretation and application of OCS Orders. It is important that uniform practices be adopted.

LMS Recommendation 4 advocates that required fixed periods of shut-in time for specific items of noncompliance or combinations of items be added to existing enforcement authority. In response to an inquiry the Solicitor's Office stated, "The question to be asked is whether a particular regulation is designed to punish or whether it is germane to the regulatory function.... Thus, a period of shut-in which is necessary to carry out a legitimate regulatory function is permissible; however, if it is designed strictly for punishment it is not permissible, and new legislation would be required".

While it might be argued that such a shut-in would be designed as a deterrent to a recurrence of the violation, it is difficult to consider the shut-in itself anything other than a punitive action.

A further aspect is that while such a shut-in might punish the company by a temporary loss or deferment of income, the public would, likewise, have a deferment of royalty income and would suffer a loss of availability of fuel.

WORK GROUP RECOMMENDATION NO. 12

- a. The USGS should incorporate into its inspection program all of the NASA recommendations (a. through e. above) and LMS recommendations 1, 2, 3, and 5 above. Punitive fixed-period shut-ins (LMS

recommendation 4 above) are not permissible under existing legislation, nor are they considered advisable.

- b. OCS Orders should include requirements for lessees to conduct inspections on a scheduled basis and report the results in a specified format to the USGS.
- c. The USGS should explore the feasibility of third-party inspections as an alternative or supplement to lessee inspections.
- d. The PINC system of inspection should be periodically reviewed to determine how it can be modified and improved.
- e. The USGS should formalize inspection strategies and policies, including optimum frequencies of inspections, and emphasize improvement of methods for evaluating inspection results.
- f. The USGS should continue to evaluate procedure for inspection and enforcement to insure the application of rigorous and uniform practices in light of new requirements and past experiences.

IMPLEMENTATION ACTION REQUIRED

While some of the recommendations have already been implemented, the Conservation Division should take the necessary steps to require standardized inspections by lessees.

They should also determine the feasibility of third-party inspections and recommend to the Director appropriate follow-up actions.

Systematic review by the Conservation Division of inspection methods and strategies should be continued. Procedures should be developed for rigorous and uniform application. Inspectors should be instructed accordingly.

Attainable inspection frequency schedules should be developed. Wherein these are less than the optimum, requirements for additional required capacity should be identified.

13. OCS ORDER DEVELOPMENT

RECOMMENDATIONS OF STUDIES

NASA--In order to remain abreast of the ever-changing needs, the following recommendation is made: The USGS Regional Office should organize an OCS Order development and implementation function. This function, technical in nature, involves many hours of research, investigation, and discussion, and should be assigned to a small committee of qualified people selected by the Supervisor. This committee should:

1. Schedule meetings periodically to review current needs and evaluate existing Orders.
2. Meet with USGS Region management to determine their overall reaction to the proposed order and/or change.
3. Schedule meetings with the Offshore Operators Committee and/or subcommittee and discuss the change and the impact it will have on the operators and other companies operating in the OCS and document their comments and/or suggestions.
4. Schedule meetings with the USGS District engineers and chief technicians, discuss the proposed changes and document their comments.
5. If needed, consult with or solicit advice from field officials of other Government agencies and document their comments.
6. Assemble and consolidate the comments into a report for USGS Region management review and evaluation.
7. Coordinate for approval with the Washington level.
8. After the new Order and/or change has been agreed to by all concerned, develop the final draft to submit to Washington for signature.
9. After the Order is approved, serve in an advisory and assistance capacity to USGS management in assuring that concerned USGS and operator personnel thoroughly understand requirements prior to implementation and during implementation.

NAE --In order to avoid inhibition of technical development and to take maximum advantage of advances made in equipment and methodology, the U. S. Government policy should be to establish regulations in terms of the objectives to be achieved and not in terms of specific methods of achieving them.

In permit procedures, there should be continuation and refinement of the current practice of requiring submission of plans of applicants in terms of equipment and including personnel qualification and training procedures which will be used to control hazards. The government should continue to make granting and continuance of permits contingent upon adherence to regulation and submitted plans.

Regulations established for the control of offshore oil operations should take into account on a continuing basis the results of the analysis recommended above*, as well as consideration of the natural environmental hazards (such as hurricanes, earthquakes, or large waves, and the state of the art of working in the marine environment).

REMARKS

The development of OCS Orders is of utmost importance in achieving and maintaining safety and pollution control in OCS operations. More formalized organization and procedures are needed to develop new orders and to revise existing orders as new and improved technology and operating procedures are developed.

WORK GROUP RECOMMENDATION NO. 13

- a. Formalized procedures of the type outlined in the NASA recommendation should be established for development and revision of OCS Orders.
- b. In general, OCS Orders should specify the objectives to be achieved, with standards for achievement included by reference.
- c. The Work Group agrees with the NAE recommendations that 1.) there should be continuation and refinement of the current practice of requiring submission of plans of applicants in terms of equipment and including personnel qualifications and training procedures; and 2.) that regulations should take into account on a continuing basis the results of the analysis of information resulting from accident evaluation, as well as consideration of natural environmental hazards.

* Information resulting from accident evaluation

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should prepare written procedures outlining the step-by-step actions to be followed in the formulation of OCS Orders for all areas, in keeping with the NASA and NAE recommendations.

14. STANDARDIZATION OF FORMS

RECOMMENDATIONS OF STUDIES

NASA--It is recommended that the USGS revise the Pollution Report form, presently being utilized in the District offices, and require its use by the operators for those spills presently requiring written confirmation. The form should include as a minimum the following:

- a. More detailed information, especially in the area of cause and corrective action. For example, if equipment malfunction is the cause, the reason should be recorded in detail.
- b. The "corrective action taken" remarks should include, in detail, the repair, if any, that was accomplished to correct the immediate problem.
- c. Information should be provided as to action taken to prevent recurrence.

REMARKS

A revised Pollution Report form is needed to derive necessary information for corrective actions.

WORK GROUP RECOMMENDATION NO. 14

The Work Group agrees with the NASA recommendation above.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should revise the form and require its use.

15. SAFETY AND ADVISORY COMMITTEES

RECOMMENDATIONS OF STUDIES

- LMS --1. *Establish Offshore Operators Subcommittee on Safety-- Subcommittee and the Survey should periodically review the performance of the Safety Program and exchange information on potential hazards and review program specifications.*
2. *A hazard review committee should periodically review reports of accidents, unusual operating conditions, equipment malfunctions, and inspection results, assess the adequacy of the current OCS Orders, and recommend changes in regulations or procedures which would reduce risks of accidents and associated losses to both industry and government.*

OTHER--*The Director, USGS, recommended a review committee be established on safety of OCS petroleum operations to serve as an independent audit of the effectiveness of USGS operations and procedures.*

REMARKS

The recommended committees would serve to focus attention on safety and anti-pollution problems, and apply the collective expertise of several disciplines to provide solutions. A review committee would also serve as an independent audit of USGS OCS policies and operations.

As a result of the Work Group's suggestion, subcommittees on safety under the Offshore Operators Committee and the Western Oil and Gas Association have already been established. These subcommittees can 1.) review proposed changes or additions to orders and regulations, 2.) analyze industrial-type accidents that occur during drilling and producing operations, including pipeline operations, workovers, installing platforms, and related activities, 3.) collect statistics on industrial-type accidents and their causes, and 4.) promote and review the results of systems analyses.

After consideration of alternate ways to establish a review committee, arrangements were made for the committee to be established under the auspices of Marine Board, National Academy of Engineering.

It is expected to be established in July 1973 with the following objectives:

- o To provide advice on the policies and procedures of the USGS in fulfillment of its regulatory responsibilities for petroleum and gas operations in federal offshore areas related to safety, pollution control, and environmental protection.
- o Review, on an advisory basis, regulations, Outer Continental Shelf Orders, field rules, and the conduct of operations.
- o Prepare recommendations on the design of safety procedures and systems, and related programs.
- o When requested, review significant events and prepare recommendations for corrective measures.
- o To keep the public informed of its findings.

WORK GROUP RECOMMENDATION NO. 15

- a. Encourage the Offshore Operators Committee (OOC), as well as the Western Oil and Gas Association (WOGA), to establish a committee on safety. This committee can serve as a vehicle for communication between the operators and the Survey in discussions of general problems that arise.
- b. Establish a Systems Review Committee in each area with OCS operations, to be composed of key USGS field personnel. This committee should meet regularly to review accidents, unusual conditions, equipment failures, inspection results, and the adequacy of OCS Orders, and recommend appropriate changes in regulations, orders, and procedures. Reports of findings and recommendations should be submitted in writing to the Supervisor, with copies, through channels, to the Director, USGS.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should communicate with the safety committees of OOC and WOGA to maximize their effectiveness.

The Systems Review Committees should be established by the Conservation Division.

The Director, USGS, should propose items to the review committee for consideration. These would, of course, be additional to items which the committee would determine to consider on its own.

APPENDIX

Identification of Study Reports

1. "Applicability of NASA Contract Quality Management and Failure Mode Effect Analysis Procedures to the USGS Outer Continental Shelf Oil and Gas Lease Management Program," November 1971.

Members:

Morris K. Dyer, NASA	-- Marshall Space Flight Center
Dewey G. Little, NASA	-- Mississippi Test Facility
Earl G. Hoard, NASA	-- Marshall Space Flight Center
Alfred C. Taylor, NASA	-- Michoud Assembly Facility
Rayford Campbell, NASA	-- Michoud Assembly Facility

This report, prepared for the U.S. Geological Survey by a team of National Aeronautics and Space Administration specialists, examines the feasibility of applying to offshore oil and gas operations advanced engineering techniques designed to increase the reliability of safety and anti-pollution equipment, and includes several recommendations. The study period was three months.

2. "Outer Continental Shelf Lease Management Study," May 1972.

Members (USGS):

Part-time Consultants (USGS):

N. C. Matalas, Project Chief
 E. R. Close
 Thomas Maddock, III
 D. W. Moody
 H. E. Robinson
 J. R. Slack
 T. D. Steele

D. R. Dawdy
 B. B. Jackson
 I. C. James, II

This is a report of a study conducted by the Systems Laboratory Group, Water Resources Division, U.S. Geological Survey. The study was proposed by OMB and authorized by the Director, U.S. Geological Survey, in August 1970. The report describes Survey's Outer Continental Shelf Lease Management Program and sets forth recommendations for increasing the effectiveness of the program in achieving the objectives of safety and pollution prevention.

3. "Outer Continental Shelf Resource Development Safety: A Review of Technology and Regulation for the Systematic Minimization of Environmental Intrusion from Petroleum Products," December 1972.

Members (Panel of the Marine Board, NAE):

George F. Mechlin, Chairman	-- Westinghouse Electric Corp.
Claude R. Hocott	-- Esso Production Research Company
Bill J. Livesay	-- University of Tulsa
Richard C. Miller	-- Oceanographic Service, Inc.
J. Jamison Moore	-- Atlantis Scientific
William B. Rand	-- Submarex Corp. (Ret.)
Willard F. Searle, Jr.	-- Consulting Ocean Engineers (USN, Ret.)
Harvey J. Smith, Jr.	-- Lockheed Missiles and Space Co.

U.S. Government Liaison Representatives:

Keith B. Schumacher	-- U.S. Coast Guard
Eugene W. Standley	-- Department of the Interior

This is a report of a special study on operational safety in offshore resources development conducted by a panel of experts convened by the Marine Board, National Academy of Engineering, at the request of the Department of the Interior. The panel met in ten working sessions from May 1971 to August 1972. The report contains numerous recommendations.

Mr. CAMP. I ask unanimous consent that the report be made part of the files.

Mrs. MINK. Yes, the report will be made part of the files of this hearing; also, the GAO report I mentioned.

[The information referred to will be found in the files of the committee.]

Mrs. MINK. Thank you very much.

Mr. ODEN. Thank you.

Mrs. MINK. Our next witness is the mayor of Santa Barbara, the Honorable David T. Shiffman.

Mr. SHARP. Madam Chairman, I am appearing for Mr. Shiffman.

Mrs. MINK. We welcome you to the hearings. Your statement will be made a part of the record at this point.

[The statement referred to follows:]

STATEMENT OF ROBERT C. SHARP, REPRESENTATIVE OF THE SANTA BARBARA ENVIRONMENTAL QUALITY ADVISORY BOARD

Madam Chairman and members of the committee, my name is Robert Sharp. I received my engineering degree from Stanford University. My oil well drilling experience covers operations in California, Texas, Louisiana and overseas in Venezuela, Brazil, Guatemala, Turkey, the Middle East, and Denmark. I have served as a Vice President and as a member of the Board of Directors of the American Association of Oil Well Drilling Contractors. Before my retirement, I was engineering Vice President of a drilling contracting company that drilled more than sixty offshore oil wells for the Standard Oil Company of California and Texaco, Inc., in the Santa Barbara Channel. I am appearing today as a representative of the Santa Barbara Environmental Quality Advisory Board. This seven-member board was created in 1969 to advise the City Council on how best to protect the very unique and very special environment of the Santa Barbara area.

Secretary of the Interior Morton agrees with us that this area is very special for he has stated:

"The Santa Barbara Channel is the most unique environmental situation on the entire Outer Continental Shelf of the United States."

An article in the Exxon Company publication "The Lamp" expresses the same view:

"A great surprise is the town's physical loveliness. Although one expects an attractive place, a newcomer is startled by *how* attractive. Santa Barbara must be one of the most favored places on the entire planet." We agree with Secretary Morton's and Exxon's description of our Community and we believe that it is reasonable to want to *keep* it that special. That is why we are testifying at this hearing.

The hearings today are to consider the several bills before your committee having to do with the termination of some Federal oil leases and a moratorium on others. I would like to confine my remarks to that bill known as HR 3177 introduced by Congressman Teague on January 29, 1973. This is a good bill but I have some suggestion as to its improvement.

First, it might be well to present some data to put oil development in the Santa Barbara Channel in a proper perspective. HR 3177 proposes to permanently cancel 38 leases in the Channel and to suspend all drilling on the remaining 29 undeveloped leases for a maximum period of five years. It is within this last group of 29 leases that the Santa Ynez Unit is located. This Santa Ynez Unit is *the big* discovery in the Channel, far overshadowing any other discovery or probable discovery. It is the largest oil field discovered in California in forty years and is among the largest *ever* discovered in the entire United States. The recoverable oil in the Santa Ynez Unit is estimated to be 20 to 30 times as great as that in Union Oil's Dos Cuadras field where the disastrous blowout occurred in 1969. The U.S. Geological Survey estimates that it will take from 30 to 40 years for complete development of this field. And so the decisions to be made in Washington, partly as a result of these hearings, will vitally affect the future of this unique Santa Barbara area for the next 40 years. And because of its size, when we talk about

future Channel oil development, we are primarily talking about the Santa Ynez Unit, to be operated by Exxon, the largest oil company in the world.

In previous public hearings at which I have appeared as a witness, the proponents and opponents of offshore oil development have often played the "numbers game" with respect to the chance of another major blowout, such as occurred in our front yard on January 28, 1969. This is an interesting game, but as a drilling engineer, I believe it is more important to look at the *specific* conditions of each offshore operation. We should ask such questions as: the depth of the wells; the distance from shore; the water depth; the potential for environmental damage if a blowout does occur; and most important, are the wells to be drilled from fixed platforms or from floating vessels? With respect to the Santa Ynez Unit, I submit that the answers to these questions indicate an *unusually hazardous* drilling and producing operation.

The U. S. Geological Survey has recently published an 1100 page Draft Environmental Statement on the proposed Santa Ynez Unit development. This Statement was published after several years of intensive study and certainly the U.S.G.S. can hardly be accused of an environmental bias. The report recognizes the ever-present possibility of a blowout. In Section III, page 4, and in Section V, page 1, these short statements are made: first, "The possibility of a major oil spill would be present." And, second, "Information presented shows that continuous oil discharges and small recurrent oil spills *would* occur, and occasional major oil spills *might* occur."

We in Santa Barbara are still fighting the results of the *last* major oil spill—a spill which all the experts told us "could not happen". The man-made leak from platform A is still leaking and our court battle over damages is still pending in the Federal Courts.

Next, let's consider the unbiased opinion of the group whose business it is to "make odds" on the chance of blowouts in offshore oil well drilling. This group consists of the large international insurance underwriters, headed by the largest Lloyds of London. This is their business, insuring against risks. Up until a few years ago, for very high premiums, they *did* insure against the pollution hazards of offshore drilling. Not so today. Since the Santa Barbara blowout these insurance companies will not insure against pollution for any premium. And the reasons are obvious. The odds are just too great that a major polluting accident *will* occur. All the assurances of safety from the American Petroleum Institute the oil industry, and even from the U. S. Geological Survey, have not changed the minds of these hard-headed insurance "odds makers". They simply refuse to underwrite offshore pollution hazards because the risk is too great. In June of 1970, Robert Niven, Corporate Secretary for the Union Oil Company made the following statement: "If the Santa Barbara Channel spill would happen today, we would not be covered for the liability * * * today it is not possible to buy pollution insurance for offshore operations."

Those of us with drilling experience are very aware of the hazards of offshore *drilling*. But we often forget that offshore *production* operations are equally hazardous. Perhaps production is more hazardous since the production facilities will be in operation for as much as 40 years. The most dramatic example of this hazard was the Shell Oil Company blowout and fire which occurred in the Gulf in November, 1970. The Shell Oil Company is the largest producer of offshore oil in the Gulf and I believe that they are one of the best and safest. Platform B was their "pride and joy", according to Jack Bullard, their drilling superintendent, and there was, quote "none better in engineering design". I am sure that this platform had all of the very latest safety equipment. Just a week before the blowout, a team of U.S.G.S. inspectors had checked the platform and found that it conformed to all regulations and safety standards. But it *did* blow out. And what a blow!

Four men were killed and 37 others were injured in the blast. The amount of oil which spilled has been estimated at from 2,226,000 gallons to 5,460,000 gallons. From a pollution standpoint, it is fortunate that most of the escaping oil and gas burned as it escaped from the eleven blowing well heads *on the platform*. I ask you to visualize what would happen if a similar situation should develop during the next 40 years on one of the proposed underwater production systems of the Santa Ynez Unit. The escaping oil and gas could not burn, since the well heads are 1000 feet or more below the surface of the sea. Instead, the oil would spread over hundreds of square miles of ocean and on to our beaches. It *could* make the Union Oil spill seem trivial by comparison. Union took 10 days to control most of the oil escaping from its major blowout—Shell took 136 days!

Again on the subject of safety, and again dealing in facts and not emotion, I would like to discuss briefly two recent U. S. Government reports dealing with offshore oil operations. The first was by the General Accounting Office, the watchdog agency of the Congress. This report was made at the request of Congressman Henry Reuss and investigated the competence of the U.S.G.S. in their inspection and enforcement role in the Santa Barbara Channel—after examining the GAO's completed report, this is Congressman Reuss's comment:

"It has been four years since the disastrous Santa Barbara spill, but the Interior Department still shows great reluctance and *ineptness* in enforcing its laws and regulations against the oil industry, even though the potential for disaster is significant." This ineptness by the U.S.G.S. is of great concern to the citizens of Santa Barbara because we have seen its result as oil on our beaches."

The second study was made by the National Aeronautical and Space Administration (NASA) in an attempt to apply some of the safety methods of the space program to offshore oil well drilling. This study was also critical of the U.S.G.S. And it verified what every drilling engineer knows—namely, that human error is much more important as a cause of blowouts than is equipment failure. I believe this. And I also believe that as you increase the complexity and the sophistication of the blowout prevention equipment, you *increase* the chance for human error. In this deep water Santa Ynez Unit, Exxon is proposing to use some of the most exotic and complicated equipment ever seen in the oil fields, some of it never used before. To oversimplify this point of possible human error, if a driller on any drilling rig has two control buttons to push in order to contain a threatened blowout, there is a better chance of control than if he has twenty control buttons to push. Also, there is ten times more change of equipment failure with twenty buttons than there is with two buttons! And so I submit that until the U.S.G.S. can do a better job of protecting the public's interest and until the proposed equipment has been extensively field-tested under actual deep water operating conditions, the Santa Ynez development in the Channel should not be allowed to proceed. HR 3177 postpones this development for five years, time for Exxon to perfect and thoroughly test their proposed new equipment.

It is important to remember that the outer Continental Shelf offshore from the Santa Barbara Coast is very different from the OCS in the Gulf Coast Area. It is different geologically but most important it is very different in water depth. The first proposed platform in the Santa Ynez Unit is located in 850 feet of water, but is only 5 miles from shore. If you were to install a platform in 850 feet of water in the Gulf, you would be approximately 250 miles from shore, or 50 times as far as here in the Santa Barbara Channel. This great difference in depth of water in the two areas is important for several reasons: One, if there is a major oil spill in this Channel, the oil could be on our beaches in hours instead of days or weeks as in the Gulf. Two, most platforms in the Gulf are out of sight of land. And, three, and most important, the majority of all wells drilled in the Santa Ynez Unit will of necessity have to be drilled from a floating vessel and not from a fixed platform. This is simply because most of the oil reserves here are located in what depths *below* 850 feet, the present practical maximum depth for fixed steel platforms.

And why is this so important? It is because wells drilled from a floating vessel are much more hazardous than those drilled from a fixed steel platform. And the reason for this is really quite simple and non-technical. In the case of the offshore platform, once the drilling machinery is installed, the drilling process is identical to that on land. True, there are problems of logistics and transportation, and the dangers of pollution are greater offshore, but basically the drilling process is the same because the machinery is fixed and stationary. *However*, when you drill an oil well from a floating vessel, you introduce a number of very different problems. The drilling equipment is *not* stationary, but moves with the sea. Under rough sea conditions it can move a great deal. The sea conditions in the Point Conception area of the Santa Barbara Channel are known to be extremely rough. Indeed, this area is referred to as "the graveyard of the Pacific". It is also the area in which the proposed oil development is located.

The oil industry has developed very specialized and very complicated equipment to solve the problem of motion and most of it works most of the time. However, each time you add equipment, particularly very special and highly engineered equipment, you introduce one more potential item which can fail and can lead to a blowout. The worldwide record of offshore drilling and production

testifies to the fact that it is an extremely hazardous business. As you add *more* complicated equipment and greater depth to the process of drilling and production, you greatly *increase* this hazard.

And so we have two very special and unusual conditions in the Santa Barbara Channel. First, I remind you of Secretary Morton's statement that the Channel "is the most unique environmental situation on the entire Outer Continental Shelf of the United States". And, second, because of the extreme water depth of the major oil discovery in the Channel the actual drilling and production operations are *more* hazardous than normal. Either one of these conditions would suggest a moratorium as provided in HR 3177. When you combine the two, the need for such a moratorium seems to me to be overwhelming.

As concerned members of the House of Representatives, you are all no doubt familiar with the various problems associated with the Alaska pipeline project. Without here discussing the pros and cons of this tremendous project, I remind you that 5 years ago the oil companies purchased 850 miles of 48" pipe and had every intention of starting installation of the line *at once*. Indeed, anyone who opposed the line was labeled as a "long-haired kook". Now, 5 years later it appears that the line will be installed. I recently received a letter from Mr. John Ratterman of the Alaska Pipeline Company in which he boasts of the fact that *during* the last 5 years the oil companies have spent \$400 million in engineering research on the line. As a result of this research, he states that the environmental hazards have been greatly reduced. But may I point out to Mr. Ratterman that it was the once ridiculed environmentalists who *forced* this 5-year delay and the additional research which he is today pointing to with such pride. The situation in the Santa Barbara Channel is very similar. We are, of course, aware of the importance to our nation of the oil in the deep waters of the Channel. However, we ask that more time be allowed for the oil industry to develop and thoroughly test the new and untried methods required for drilling and producing oil in the deep waters of the Channel. This time will also enable the oil industry to greatly improve their methods of oil containment and cleanup used in the event of a major oil spill. Congressman Teague's bill HR 3177 allows 5 years for this research.

I believe that there are several areas in which HR 3177 needs strengthening. Under Section 6 there are three conditions set out which, if met by oil industry, could void or shorten the 5-year drilling moratorium. In each case, the Secretary of the Interior is the sole judge of such conditions. I respectfully suggest that the Administrator of the Environmental Protection Agency should concur in these decisions. I would also add a fourth condition which would require that the moratorium shall not be lifted until the oil industry has developed and *demonstrated* that they have oil spill containment and recovery equipment able to operate in the Santa Barbara Channel under adverse sea conditions. This provision should also specify the *quantity* of oil the equipment is able to contain and recover. Senator Cranston's bill S 2339 specifies this quantity to be, quote, "the rate of flow historically associated with major oil blowouts (of one thousand barrels per day or more)". This minimum figure of one thousand barrels per day is entirely reasonable, since the Union Oil blowout resulted in an oil spill which is estimated to have been one thousand barrels per day to as high as sixteen thousand barrels per day. The low estimate is from the U.S.G.S. and the high estimate is from the Resources Agency of California.

Finally, we are all extremely aware of the critical energy shortage in our country. Every analysis of this shortage agrees that the more exotic sources of energy such as nuclear fusion, geo-thermal, or solar energy are many years in the future. Oil and gas from coal or oil shale in any significant quantities are also probably ten years away. And so I submit that it just makes sense to keep the oil in the Santa Barbara Channel until the need, both economically and strategically is even *greater* than it is today. The oil contained in the sands of the Santa Ynez Unit has been there for millions of years. This nonreplaceable natural resource will remain in place for the few years required to perfect the means for its safe development. I think that we should wait. Indeed, I think that past experience and the condition of our fragile environment *demand*s that we wait! I urge your support of HR 3177.

**STATEMENT OF ROBERT C. SHARP, SANTA BARBARA
ENVIRONMENTAL QUALITY ADVISORY BOARD**

Mr. SHARP. My name is Robert Sharp. Based on your request this morning, I deleted some portions of my statement in the interests of time.

I received my engineering degree from Stanford University. Before my retirement, I was engineering vice president of a drilling contracting company that drilled more than 60 offshore oil wells for the Standard Oil Company of California, and Texaco, Inc. in the Santa Barbara Channel. I am appearing today as a representative of the Santa Barbara Environmental Quality Advisory Board. This seven-member board was created in 1969 to advise the city council on how best to protect the very unique and very special environment of the Santa Barbara area.

Secretary of the Interior Morton agrees with us that this area is very special for he has stated: "The Santa Barbara Channel is the most unique environmental situation on the entire Outer Continental Shelf of the United States."

We agree with Secretary Morton's description of our community and we agree that we want to keep it that special. That is why we are appearing at this—these hearings.

Today I would like to confine my remarks to that bill known as H.R. 3177 introduced by our Congressman Teague.

First, it might be well to put oil development in the Santa Barbara Channel in a proper perspective. H.R. 3177 proposes to permanently cancel 38 leases in the channel and to suspend all drilling on the remaining 29 undeveloped leases for a minimum period of 5 years. It is within this last group of 29 leases that the Santa Ynez unit is located. This Santa Ynez unit is the big discovery in the channel, far overshadowing any other discovery or probable discovery. It is the largest oil field discovered in California in 40 years and is among the largest ever discovered in the entire United States. The recoverable oil in the Santa Ynez unit is estimated to be 20 to 30 times as great as that in Union Oil's Dos Cuadras field where the disastrous blowout occurred in 1969. The U.S. Geological Survey estimates that it will take from 30 to 40 years to complete development of this field. And so the decisions to be made in Washington, partly as a result of these hearings, will vitally affect the future of this unique Santa Barbara area for the next 40 years. And because of its size, when we talk about future channel oil development, we are primarily talking about the Santa Ynez unit.

In previous public hearings at which I have appeared as a witness, the proponents and opponents of offshore oil development have often played the numbers game with respect to the chance of another major blowout, such as occurred in our front yard on January 28, 1969. This is an interesting game, but as a drilling engineer, I believe it is more important to look at the specific conditions of each offshore operation. We should ask such questions as: The depth of the wells; the distance from shore; the water depth; the potential for environmental damage if a blowout does occur; and most important, are the wells to be drilled from fixed platforms or from floating vessels. With respect to the

Santa Ynez unit, I submit that the answers to these questions indicate an unusually hazardous drilling and producing operation.

Those of us with drilling experience are very aware of the hazards of offshore drilling. But production operations are equally hazardous. The most dramatic example of this hazard was the Shell Oil Co. blowout and fire that occurred in the Gulf in 1970. This has already been referred to this morning. The Shell Oil Co. is the largest producer of offshore oil in the Gulf and I believe that they are one of the best and safest. Platform B was their pride and joy, according to Jack Bullard, their drilling superintendent, and there was "none better in engineering design." Just a week before the blowout, a team of U.S. Geological Survey inspectors had checked the platform and found that it conformed to all regulations and safety standards. But it did blow out. And what a blow.

Four men were killed and 37 others were injured in the blast. From a pollution standpoint, it is fortunate that most of the escaping oil and gas burned as it escaped from the 11 blowing wellheads on the platform. I ask you to visualize what would happen if a similar situation should develop during the next 40 years on one of the proposed underwater production systems of the Santa Ynez unit. The escaping oil and gas could not burn, since the wellheads are 1,000 feet or more below the surface of the sea. Instead, the oil would spread over hundreds of square miles of ocean and on to our beaches. It could make the Union Oil spill seem trivial by comparison. Union took 10 days to control most of the oil escaping from its major blowout; Shell took 136 days.

I think it is very important to remember that the Outer Continental Shelf offshore from the Santa Barbara coast is very different from the Outer Continental Shelf in the gulf coast area. It is different geologically but most important it is very different in water depth. As an example, the proposed platform in the Santa Ynez unit is located in 850 feet of water, but it is only 5 miles from shore. If you were to install a platform in 850 feet of water in the gulf, you would be approximately 250 miles from shore, or 50 times as far as here in the Santa Barbara Channel. This great difference in depth of water in the two areas is important for several reasons: One, if there is a major oil spill in this channel, the oil could be on our beaches in hours instead of days or weeks as in the gulf. Two, most platforms in the Gulf are out of sight of land. And three, and most important, the majority of all wells drilled in the Santa Ynez unit will of necessity have to be drilled from a floating vessel and not from a fixed platform. This is simply because most of the oil reserves here are located in water depths below 850 feet, the present practical maximum depth for fixed steel platforms.

And why is this an important? It is because wells drilled from a floating vessel are much more hazardous than those drilled from a fixed steel platform. And the reason for this is really quite simple and non-technical. In the case of the offshore platform, once the drilling machinery is installed, the drilling process is identical to that on land. True, there are problems of logistics and transportation, and the dangers of pollution are greater offshore, but basically the drilling process is the same because the machinery is fixed and stationary. However, when you drill an oil well from a floating vessel, you introduce a number of very different problems. The drilling equipment

is not stationary, but moves with the sea. Under rough sea conditions it can move a great deal. The sea conditions in the Point Conception area of the Santa Barbara Channel are known to be extremely rough. Indeed, this area is referred to as the graveyard of the Pacific. It is also the area in which the proposed oil development is located.

And so we have two very special and unusual conditions in the Santa Barbara Channel. First, I remind you of Secretary Morton's statement that the channel "is the most unique environmental situation on the entire Outer Continental Shelf of the United States." And, second, because of the extreme water depth of the major oil discovery in the channel the actual drilling and production operations are more hazardous than normal. Either one of these conditions would suggest a moratorium as provided in H.R. 3177. When you combine the two, the need for such a moratorium seems to me to be overwhelming.

As concerned members of the House of Representatives, are all no doubt familiar with the various problems associated with the Alaska pipeline project. Without here discussing the pros and cons of this tremendous project, I remind you that 5 years ago the oil companies purchased 850 miles of 48-inch pipe and had every intention of starting installation of the line at once. Indeed, anyone who opposed the line was labeled as a long-haired environmental kook. Now, 5 years later it appears that the line will be installed. I recently received a letter from Mr. John Ratterman of the Alaska Pipeline Co., in which he boasts of the fact that during the last 5 years the oil companies have spent \$400 million in engineering research on the line. As a result of this research, he states that the environmental hazards have been greatly reduced. But may I point out to Mr. Ratterman that it was the once ridiculed environmentalists who forced this 5-year delay and the additional research which he is today pointing to with such pride. The situation in the Santa Barbara Channel is very similar. We are, of course, aware of the importance to our Nation of the oil in the deep waters of the channel. However, we ask that more time be allowed for the oil industry to develop and thoroughly test the new and untried methods required for drilling and producing oil in the deep waters of the channel.

Finally, we are all extremely aware of the critical energy shortage in our country. Every analysis of this shortage agrees that the more exotic sources of energy such as nuclear fusion, geothermal, or solar energy are many years in the future. Oil and gas from coal or oil shale in any significant quantities are also probably 10 years away. And so I submit that it just makes sense to keep the oil in the Santa Barbara Channel until the need, both economically and strategically is even greater than it is today. The oil contained in the sands of the Santa Ynez Unit has been there for millions of years. This non-replaceable natural resource will remain in place for the few years required to perfect the means for its safe development. I think that we should wait. Indeed, I think that past experience and the condition of our fragile environment demands that we wait. I urge your support of H.R. 3177.

Mrs. MINK. Thank you very much, Mr. Sharp.

I gather from your testimony that you consider the portion of H.R. 3177 which suspends drilling in the 29 undeveloped leases for a maximum period of 5 years as the most important provision of that legislation.

Mr. SHARP. Very much so, Madame Chairman.

Mrs. MINK. What activities, exploratory and otherwise, are now ongoing in this area for the 29 leases that are in existence?

Mr. SHARP. To my knowledge, there is no exploratory drilling going on. They have drilled a good many exploratory wells in the Santa Ynez unit and have defined pretty much the limits of the field. They know how large it is and what the oil reserves are, not exactly and specifically, but they drilled I believe some 39 wells already in the Santa Ynez area.

Mrs. MINK. The moratorium that was issued by the Federal Government covered this particular area where the Santa Ynez field is located.

Is that true?

Mr. SHARP. I don't think that is true. Many of those exploratory wells were drilled after. They were allowed to drill those wells after.

Mrs. MINK. None of the current, existing orders of the Secretary prevent development of the Santa Ynez area?

Mr. SHARP. Recently this last month we held hearings here in Santa Barbara, the Department of Interior did on the environmental impact statement, the large statement prepared to the relation of the Santa Ynez Unit. Additional hearings will be held on that.

Mrs. MINK. The matter that you raised in your testimony about the floating platforms and the obvious problems which that kind of technology poses is a matter which I think is very critical.

Why is it not possible for a fixed platform to be used at these depths?

Mr. SHARP. Primarily I think it is a matter of economics, to my knowledge. The deepest platform existing today is in the range of 350, perhaps as much as 380 feet. The proposed first platform that Exxon is proposing for the Santa Ynez Unit is in 850 feet of water, more than two times, almost three times as large. It is basically a matter of design and economics, obviously. The larger the platform, the more difficult and the more costly it becomes.

My personal feeling is, as a drilling engineer, as I indicated in my statement, I feel this very strongly about drilling from a floating vessel is more hazardous, just by the very nature of the conditions involved, the basic conditions involved.

Mrs. MINK. Is the development of that particular reserve not possible in your view except by using a floating method?

Mr. SHARP. This was pointed out in the environmental report that was made, that they proposed to set some platforms but in addition to that, drill a good many wells with the so-called SPS system, submerged protection system on which they have spent a great deal of research money, millions in research. I am familiar with it. It still scares me because it is untried and I do not think the channel is the place that we should experiment.

Mrs. MINK. Has the floating platform been in use in any other continental shelf area, and where?

Mr. SHARP. There are floating vessels of various types, shipshape drilling vessels, barges, what you call a semisubmersible, several types of equipment that is used to support the drilling machinery. All of the North Sea operations, or most of them, have been drilled from a floating vessel. You normally drill from floating vessels to establish a field, and after that you decide whether it's economically feasible to

put in a steel platform, except in the Santa Ynez unit, which is deeper than normal.

Mrs. MINK. What research activities are you aware of which have been conducted by the Federal Government to improve and study and evaluate?

Mr. SHARP. As you mentioned this morning, the GAO report, the NASA report. There have been others, I think, that have studied, and each one of those reports, to my knowledge, they have pointed out the human error as a cause is even more significant than any other factor.

As a drilling person with some experience in the area, I believe this very strongly. It is very important to have good regulations. It is very important to have adequate inspection by the USGS or other Government agencies. The basic problem is the people who are doing the drilling. Until they are thoroughly trained and indoctrinated in the hazards involved, I think you are going to continue to have problems. I believe the human element—and most of the reports verify this—is more important than any other factor.

Mrs. MINK. How much of a safeguard, then, is a 5-year moratorium?

Mr. SHARP. Not completely, obviously. It does, however, enable in this case Exxon, the operating oil company, to further perfect and test their underwater system. As far as the human element is concerned, it would allow—I have testified in other hearings where I believe that every drilling person who is drilling offshore should be required to go to one of the blowout prevention schools and have a certificate that he has passed his examination, so to speak, so that we have a better trained group of people that are operating.

Bear in mind the drilling goes on 24 hours a day, around the clock. You could have a blowout at 3 o'clock in the morning, maybe, when the engineer is not there. It is basically the driller and the men on the floor that make those split second decisions that determine whether you control that blowout or whether it gets away from you. I think we have to have better trained people.

May I say in all fairness that some of the oil companies, Exxon being one, have done a lot in this area. They have established a school for blowout prevention. Some of their people have gone to this school. I think it should be extended that every roughneck on a rig, because these are the men that do the work, this is the terminology for the actual men that do the work, should be required to go to one of these schools and be thoroughly trained.

Mrs. MINK. Do my colleagues have any questions?

Mr. Ketchum?

Mr. KETCHUM. First I would like to tell you how much I enjoyed your statement. Second, I think the suggestion you just made is quite a valid one. We do require a great deal of licensing in the State of California, as an example, in many varied fields.

Would you suggest that the possibility exists for legislation to require the licensing perhaps of a driller, if not the roughnecks?

Mr. SHARP. Yes, I think this could be done. We do this in other areas.

Mr. KETCHUM. I think your suggestion is a very fine one.

Mr. SHARP. You have licensing for electricians, this sort of thing. Why can we not do it for drilling personnel? I think it is even more important.

Mr. KETCHUM. I agree.

Mrs. MINK. Mr. Owens?

Mr. OWENS. Mr. Sharp, you said, as I understand it, in the Santa Ynez unit there is no moratorium there at this point.

Is that correct?

Mr. SHARP. That is my understanding. There is no development drilling simply because of the decision in relation to the BAR report.

Mr. OWENS. But Exxon would not go ahead until it became clear what the situation was going to be so that the 84 wells that have been drilled, also which I understand have been drilled since 1969, are not producing wells.

Mr. SHARP. No, sir.

Mr. OWENS. You say it is the biggest unit in the Santa Barbara Channel.

How much of those 3.75 billion barrels of oil is in that area?

Mr. SHARP. I am not in the position to answer that. Obviously the oil companies themselves—I have seen published reports to the effect that the recoverable reserve in the Santa Ynez unit is 2 or 3 billion barrels. I am not sure of that. The EIR had some. It is very difficult to pin an exact figure the way I understand your question.

Mr. OWENS. The gentleman from the USGS says that it is an estimated 3 to 3¼ billion barrels, but you have another estimator saying there are 2 to 3 billion in that unit. I am trying to see how important that is in the view of the overall resources. They are probably a third to a half at least.

Mr. SHARP. That is a guess. I am not really in a position to pinpoint that.

Mr. OWENS. I read somewhere that often slanted wells were drilled from shore. How far off can the slanted wells be drilled?

Mr. SHARP. This is an area I do know about because when I was in the business we drilled a great many directional wells from shore. This is the function of how deep the oil production is. We have drilled wells as high as 60 and 70 degrees from the vertical. So you can reach out pretty far.

Mr. OWENS. What does that mean, pretty far?

Mr. SHARP. If you are drilling—if your oil production was at 5,000 feet and you are drilling at a 40° or 50° angle, you could probably reach out half a mile from shore.

Obviously the oil industry would prefer to drill from land. It is obviously more economic.

Mr. OWENS. Looking at this map, it looks like the Santa Ynez unit is as close as about the 3 or 3½ miles, which is outside the range.

Mr. SHARP. It is impossible to drill from land there.

Mr. OWENS. Blowouts are quite common in drilling offshore, but are controllable.

Mr. SHARP. I would not say quite common. They do happen. The record indicates this.

Again, as I mentioned—

Mr. OWENS. But controllable if you have trained, competent personnel.

Mr. SHARP. That is right, much more so. The more training they have, the more chance.

Mr. OWENS. Is that a part of doing business, to consider you are going to have a lot of them when you go out, or are they quite rare?

Mr. SHARP. They are quite rare.

Mr. OWENS. Quite rare?

Mr. SHARP. Oh, yes, but in drilling many times you have kicks, a kick being a well that wants to blow, but you have the equipment and the personnel that understand how to control that kick. There are probably a hundred times more kicks than there are blowouts. I don't know if it is a hundred, but many, many times more.

Mr. OWENS. In drilling those 129 wells at the Dos Cuadras unit over here where you had your big blowout in 1969, were there as many kicks do you know?

Mr. SHARP. I have not had access to that information. I do not know. I am familiar with some of the wells that were drilled previous to the blowout. In that case there were some kicks, but I have not had access to any information after the blowout.

Mr. OWENS. Thank you.

Mrs. MINK. Mr. Teague?

Mr. TEAGUE. Just this, Madame Chairman.

I do not have a question but I want to commend Mr. Sharp for what I considered to be a splendid statement, and certainly his qualifications appear to be unchallengeable. I think his evidence will be of great help to this committee.

Mrs. MINK. I certainly concur with my colleague on that.

Mr. Camp?

Mr. CAMP. I, too, would like to commend Mr. Sharp for a very fine statement.

Mr. Sharp, if I read you right, you favor a 5-year moratorium.

Mr. SHARP. Yes, sir.

Mr. CAMP. For the purposes of gaining further knowledge through research, drilling that would prevent blowouts, where are we going to do this research if we do not do it out in the water somewhere.

Mr. SHARP. You are going to have to do it out in the water someplace.

Mr. CAMP. You do not want to do it in Santa Barbara.

Mr. SHARP. I have been asked this question before. It does seem selfish in a sense where we in Santa Barbara say, go test your equipment someplace else and dirty someone else's backyard. This is a valid point.

However, I think we can support the fact that Santa Barbara Channel is quite unique in that the drilling is so close to shore. The Continental Shelf just drops off very fast along the Pacific coast, and I am sure there are places in Indonesia, places even in the Gulf where you could get 300 miles from shore and test this equipment in a comparable water depth and not be nearly as vulnerable both from the standpoint of distance from shore and the particular environmental conditions in this channel.

It is, as you know, a tourist oriented community. It does sound selfish, but I think there are areas from a purely engineering standpoint that lend themselves to purely experimental testing much more so than our channel.

Mr. CAMP. I believe Mr. Oden mentioned the fact in his testimony, or do I understand that this oil is produced somewhere in the neighborhood of 250 feet below the ocean floor?

Mr. SHARP. I think he was talking about platform A where the blowout occurred in 250 or thereabouts, where the water is that deep.

Mr. CAMP. Where do we get production as far as depth is concerned into the ocean floor.

Mr. SHARP. Which field are you talking about?

Mr. CAMP. Anywhere within the Santa Barbara area.

Mr. SHARP. The Dos Cuadras field, the production, this is one of the problems. The oil zones are very close to the surface. You could get production from the first 500, 600, 700 feet. This is not true in the Santa Ynez unit. The Dos Cuadras field is very unique in that way, that the top oil reservoirs are extremely shallow.

Mr. CAMP. It is common knowledge that we do have some normal seepage where there is not any drilling?

Mr. SHARP. Oh, yes. It has been going on for like how many million years.

Mr. CAMP. Ever since the time the good Lord created the Earth.

Mr. SHARP. That is right.

Mr. CAMP. We will continue to have it regardless of whether we drill or not.

Mr. SHARP. Yes, sir.

To my knowledge, without a great deal of additional research, I do not know anybody who comes up with any way to stop the seeps.

Mr. CAMP. Let me ask you—the experience we had on the North Slope, and we would drill many slanted holes from the floor.

Do you think it would be possible eventually in the area that you are talking about here to use the same kind of process?

Mr. SHARP. Drill directional wells?

Mr. CAMP. Yes.

Mr. SHARP. You cannot reach it.

Mr. CAMP. I do not mean from the shore. I am talking about from a platform.

Mr. SHARP. I am not a structural engineer. I do not know the physical maximum depth that you can build a steel platform. I would assume yes, to answer your question. I think it is basically a matter of economics.

Mr. CAMP. The point I am trying to get at, from your expertise, that the economic situation is such, there is a possibility that somebody, that the research we gain as we go along, that it will be possible to drill more than one hole from a platform.

Mr. SHARP. They do now, sir.

Mr. CAMP. Out in the ocean.

Mr. SHARP. They do now.

Mr. CAMP. They do it now?

Mr. SHARP. As many as 30, 40, 50 wells from one platform.

Mr. CAMP. The same way they do on the North Slope?

Mr. SHARP. Yes.

Mrs. MINK. Mr. Sharp, much mention has been made about the geologic instability of the channel area.

I would like to ask your comment about this as a factor which we must consider.

Mr. SHARP. This is not my particular area of expertise, but I have read many reports and the professional papers 679 goes into the seismic hazards quite extensively. I think to the extent of my knowledge, it does present one more hazard, yes.

Mrs. MINK. Has this hazard actually been responsible for any pollution in the channel area?

Mr. SHARP. Not to my knowledge, no.

Mrs. MINK. The matter also of the shipping lanes has been cited a good deal by people who are concerned about that hazard. Would you care to comment about that factor insofar as the development of the Santa Ynez oilfields?

Mr. SHARP. I think this is a very definite potential hazard. It is a hazard that becomes greater as, No. 1, you increase the number of platforms; and No. 2, you increase the size of tankers. If you do have an accident, and it is a matter of human judgment sometimes, of the navigator or the captain or whatever, like Ventura Canyon, they cannot have those tankers get bigger and platforms increase in number, that potential hazard cannot help but increase.

Mrs. MINK. How much of the physical structure of the platform itself, how much of that physical structure extends into the shipping lanes as they currently exist or would have to exist?

Mr. SHARP. I do not think there is any existing platforms in the shipping lanes, but in the plans; I would doubt that they would put them in the lanes, I would have to check the map.

Mrs. MINK. Who has the responsibility for policing the shipping lanes and insuring and guaranteeing the safety of the ships going out of the channel area?

Mr. SHARP. I think the initial permit has to come from the Army Engineers for the placement of the platform. After the platform is in, I guess after it is in, enforcement regulation would be a Coast Guard function; this is not in my area of knowledge, I am not too familiar with it.

Mrs. MINK. I have been advised that industry, specifically 17 companies, have joined together in a clean sea project. Are you familiar with this project?

Mr. SHARP. Very much so.

Mrs. MINK. How effective do you believe it to be? Would you comment?

Mr. SHARP. Yes, I would care to comment. I have seen some of their demonstrations, one very recently, 2 or 3 weeks ago, I think it is a very worthwhile effort. They are to be commended for pooling their efforts and developing equipment for containment. However, and it is a big however, I do not think anyone has yet developed any equipment that would even have begun to contain something of the size of the Santa Barbara spill of 1969. In Senator Cranston's bill, he definitely ties a number to the cleanup operation. I think it is a thousand barrels a day until the oil companies can demonstrate that they can clean up a minimum of a thousand barrels per day in rough sea conditions, then we should maintain a moratorium.

I would agree with this. I commend the efforts. I think we are a long way from achieving the maximum that we need, as far as cleanup.

Mrs. MINK. In view of your statement, and the hazards which you suggest, and others suggest, what is your comment with respect to the fact that the insurance companies, since the blowout of 1969, would not consider insuring any of the operations against pollution or blow-outs?

Mr. SHARP. It is still true today; they simply will not insure.

Mrs. MINK. Do you think there will be a time with the development of new technology that the insurance companies might change their viewpoint?

Mr. SHARP. They are pretty hardheaded oddsmakers. If we do develop more fail-safe technology, yes, I would assume they would take a good hard look at it.

Mrs. MINK. Should it be one of the subcommittee's considerations, as far as their judgment in this area is, or is that an irrelevant factor?

Mr. SHARP. I think the insurance factor is very important because if we do have a major blowout, someone has to clean it up; and if there are extensive damages to be paid for, to be paid for by someone.

Mrs. MINK. On the matter of the platform that blew up in 1969, many residents in the area have written to the subcommittee that this platform is still leaking. Is this true? Can it be better controlled?

Mr. SHARP. It is still leaking; I think the operators can see that—as to the quantity that is leaking, I simply do not know. I think the best example of that, during the spill itself, there are estimates from all the way to 1,000 barrels a day, to 16,000 barrels a day that actually escaped during that 10-day period, by responsible people.

As to whether it is leaking 5 barrels a day or 10 barrels a day or 20, I simply do not know.

Mr. CAMP. Madam Chairman, I believe Mr. Oden says between four and five barrels, did he not?

Mr. OWENS. Yes, he did.

Mr. SHARP. This is a difficult thing to measure. I do not know.

Mrs. MINK. Can it be controlled? However the amount of the leakage, can it be better controlled?

Mr. SHARP. That is a difficult question to answer. I think it comes in the area of petroleum reservoir engineering. As you reduce the pressures in the reservoir, perhaps it will eventually reduce to down to zero; I simply do not have the facts on which to base that, I cannot answer that.

Mrs. MINK. We thank you, very much.

Mr. OWENS. Madam Chairman?

Mrs. MINK. Mr. Owens.

Mr. OWENS. If I might pose a further question? Because it deals with seepage, maybe you can answer it, looking at this map which shows a great many seepage points in the channel, little red dots on your maps.

Mr. SHARP. Yes.

Mr. OWENS. Mr. Camp talked to me, or made the point, of course, that some of those are God made, or in essence, are natural. Those seeps that we have here in the channel which are seeping the five barrels a day out of Dos Cuadras area, most of those that are close in to the shore, those are man made, not God made, are they not?

Mr. SHARP. Yes, sir. If you are speaking of the leak, I resent the word "seep" when it comes to a man made leak. I think it should be called a leak. A seep is something God did.

Mr. OWENS. I will accept that. That is very good. Thank you very much.

Mrs. MINK. Mr. Teague?

Mr. TEAGUE. Just this, Madam Chairman. You asked about policing the shipping lanes, I discussed this with the Corps of Engineers at high levels and the position of the Corps is, it has no authority or jurisdiction in the area because these shipping lanes are in international wa-

ters and outside their field of authority. The Coast Guard—I said Corps of Engineers—I misspoke.

Mr. SHARP. If there were any control, it would be the Army Corps of Engineers.

Mr. TEAGUE. Excuse me, I would like to comment on that. The Engineers control the granting of permits for the platforms but I do not think they have any jurisdiction either in the leasing or the shipping lanes, at least that is the position of both the Corps and the Coast Guard.

Mr. SHARP. Even the Coast Guard then is at a loss to police it?

Mr. TEAGUE. That is right. They say they have no jurisdiction to do so.

Mrs. MINK. Thank you, very much.

Mr. KETCHUM. Madam Chairman?

Mrs. MINK. Mr. Ketchum.

Mr. KETCHUM. In that regard, in relation to the Congressman's comments, there have been suggestions that it would have to be approached on an international basis, because it is international waters, to route those shipping lanes behind the islands to avoid this—to avoid possibility of pollution with the platform. That has been a suggestion, although there is a great resistance to it on behalf of the shippers.

Mr. TEAGUE. Not only the shippers, but there is a feeling that is that if we close off the channel to ships belonging to other countries, they would retaliate or reciprocate—rather retaliate against us and close their channels that we are using. I am working on this problem, but it is not easy to solve.

Mrs. MINK. Thank you, very much.

Our next Witness is Mr. Marvin Levine, county counsel of Santa Barbara County.

Mr. SLATER. Madam Chairman, I am James Slater, and I am appearing for the County of Santa Barbara in place of Mr. Levine who is a member of the county government.

Mrs. MINK. We welcome you and we have your prepared statement which will be inserted in the record in full. You may proceed in any manner you choose to summarize your statement.

[Mr. Slater's statement referred to follows:]

STATEMENT OF SUPERVISOR JAMES M. SLATER, FOR THE COUNTY OF SANTA BARBARA

I am a member of the Board of Supervisors of the County of Santa Barbara. As an elected official, I not only speak for my constituents but also I have been designated by the Board of Supervisors to speak for it. A majority of the members of the Board officially opposes oil development in the Santa Barbara Channel, and this position coincides with prior Board action with respect to other proposals to develop offshore oil resources in the Santa Barbara Channel. I will limit my comments to general environmental factors.

At the outset, it is essential for the United States Government to be aware of the undisputed fact that Santa Barbara is primarily dependent upon its unique environmental assets for its economic survival. This area is non-industrial, primarily non-commercial and specifically and intentionally designed to remain a low-density residential and recreational area. Restrictive ordinances prevent the basic character of Santa Barbara to be altered. So valuable is the coastal area of Santa Barbara County that the State Legislature a generation ago created the 16-mile-long sanctuary prohibiting the drilling or production of oil in the State Tidelands. Furthermore, on-shore drilling is prohibited in the City of Santa Barbara and severely restricted in the County of Santa Barbara along the beach front. In essence, the people of the State of California, as well as the people in the City and County of Santa Barbara, have declared that they are willing to

forego any possible revenue from oil production rather than permit a desecration of natural environmental amenities which they consider to be far more valuable and desirable.

In utter disregard of the positions taken by the State and the County, the Federal Government authorized the leasing of the Federal Tidelands in the Santa Barbara Channel and, as a result of the 1969 blowout on Union Oil Company's Platform A, the State and City sanctuaries were invaded and the beaches and shoreline, which we cherished and jealously sought to protect, were desecrated. The result was near ruin of an important portion of the economic base of the area. Even the Administration in Washington recognized the error of the their ways. Former Secretary of the Interior Udall declared the Santa Barbara Channel to be his "Bay of Pigs." Former Secretary Hickel admitted that the Federal Tidelands in the Santa Barbara Channel never should have been leased and developed, and until this past week, Secretary Morton and the President of the United States had concurred in that assessment. They introduced legislation to terminate 35 of the 70 leases in the Channel. Secretary Morton has stated many times that the Santa Barbara area is the most environmentally-unique area in the world. Santa Barbara's costal area is unique in its environmental assets and also unique in that offshore drilling has not been proven geologically suited for oil development.

The point which I wish to make is simply that offshore oil development in the Santa Barbara Channel is wholly incompatible with Santa Barbara's environment and it can only lead to its permanent destruction. Oil platforms in visual proximity to Santa Barbara are as alien as an oil derrick would be on the front lawn of the White House. An equally dramatic example would be a line of oil rigs fronting Miami Beach or Waikiki Beach. One could rhetorically ask if tourists would go out of their way to spend their holidays at those famous beach spas clustered with oil platforms if they could go elsewhere where they can still enjoy an unbroken horizon of blue seas and sky. Accordingly, the mere presence of the offshore oil industry in an area such as Santa Barbara is in itself destructive of the character and reputation of the area, and the result can only be great economic loss. An oil spill with resulting pollution of the waters and the beaches would simply be a coup de grace. The spill which occurred in 1969 nearly destroyed Santa Barbara's economic base, about which I will discuss later. The DuBridge Panel in its 1969 report stated that at the present rate of development, we can expect one major oil spill per year by 1980. Should such spill occur in the Santa Barbara Channel once again, it is questionable whether the tourist-oriented economy of Santa Barbara's South Coast could recover. Let me now describe what the economic losses consist of. We need not speculate since, as a result of the 1969 disaster, we know exactly what to expect.

The prime source of income in the greater Santa Barbara area results from tourist-oriented trade. Such trade in utilizing hotels, motels, restaurants, arts and crafts and souvenir shops, etc., not only produce income for the proprietors but also that trade creates bed taxes, sales taxes and income from concessions, which represent the prime source of the public treasury. An oil spill which inundates the beaches and closes the harbor results in a dramatic decline in the tourist traffic. This we saw occurring in 1969 and the result was tens of millions of dollars' worth of tax revenue losses to the State of California, the County of Santa Barbara, the City of Santa Barbara and other coastal cities and communities within the County. Private individuals and, in particular, shore-front property owners suffered approximately a three million dollar loss to the value of their real property, resulting in substantial property tax losses to the County. The result of this disaster was the initiation of a lawsuit by the State of California, the City and County of Santa Barbara and the City of Carpinteria, as well as by private individuals against Union Oil Company and its colessees and also against the Federal Government under the Federal Tort Claims Act. While most of the private claims were settled, I should state that as far as the public entities are concerned, the oil companies have taken a position that tax losses such as were undeniably sustained are not legally compensable damages and, accordingly, they refuse to pay any part of those claims. This matter has now been before the Federal District Court for the past four years, and the issue has yet to be decided. In short, not only can the tax-paying public sustain severe monetary losses as a result of an offshore oil spill, but they can be certain that the oil companies which negligently caused such losses will refuse to acknowledge or pay these claims. Should another spill occur in

the Channel, we can assume that the oil companies would also join in denial that even proven tax revenue losses as a result of their actions should be paid. While we disagree with the legal position taken by the oil companies with respect to a claim of that sort, nevertheless, should the courts rule in favor of the oil companies, then we can be victimized and without any recourse.

This dilemma, which we are now facing as a result of the 1969 blowout, and which we may face once again should another oil spill occur, leaves us in a bizarre position when one considers that all we can hope to get from the offshore operations in the Federal Tidelands is the pollution and economic damage and not one dollar of royalty revenue. At the very least, the Department of the Interior should not authorize any offshore oil development unless and until the lessees consent to be strictly liable for damages which occur as a result of their operations and that they pay all damages resulting therefrom, including tax revenue losses to the adjoining public entities. Apparently, this liability concept was made a part of the Alaska Pipeline approval.

It obviously will be argued by the oil companies, and no doubt echoed by USGS, that after all, oil is where you find it, and the country needs oil and we cannot, in this situation of an energy crisis, worry about Santa Barbara which, after all represents a fraction of the population of the nation. In a very recent letter, Russel G. Wayland of the Geological Survey, stated that present proved liquid hydrocarbon reserves are estimated by the American Petroleum Institute at about 43 billion barrels, or about a 7-year supply.

It is estimated, however, that all other possible reserves in the United States will give us no more than an 80-year supply at the present rate of consumption. This assumes that unknown reserves are discovered and produced. It is evident that if we are not to run out of oil in 7 years, additional discoveries have to be made, and we are not opposed to exploration for the purpose of discovering new hydrocarbon reserves. However, discovery and production are two different matters. It seems to us that if we are faced with a total dry up of recoverable oil in 80 years, then we are dealing with a natural resource which is becoming "extinct" and good conservation practices dictate that we not try to meet that predicted doomsday but rather try to prolong it. This would mean the cutting back of the consumption rate and a preservation of those oil reserves which are discovered with an emphasis on obtaining oil from foreign sources, including the middle east. The oil industry and perhaps USGS are seeking to exploit every drop of oil that it can find in the United States, and this attitude will, indeed, lead to a situation in the future that will make of our children and grandchildren economic, and perhaps even political, slaves to foreign oil powers. This sort of roughshod grab-it-while-you-can attitude is sheer stupidity, if not suicide. The Santa Barbara Channel has been explored and identified. The oil will not go away, and it can be tapped in the future when the need is critical. I am not suggesting that all known oil reserves in the United States be sealed off and kept in reserve. Obviously, this cannot be done. I am suggesting, however, that let us not develop the offshore reserves at this time since we have not yet developed technology that makes it as safe as onshore drilling and production. By placing the offshore fields in reserve and concentrating on the inland reserves, we will buy time to enable the industry and government to develop more sophisticated and safer offshore drilling techniques. That procedure, together with a concerted effort to diminish the present energy consumption rate, will aid in the needed conservation efforts and also offer greater protection to the coastal environment.

Recently, Donald R. Jones, Physical Science Advisor to the Environmental Protection Agency, reported that last year 30 million gallons of crude oil and oil products were spilled into U.S. Lakes, rivers and coastal waters, and that only 6 million gallons were recovered. He stated further that America's entry into the oil spill containment field was belated, and that he was hopeful that new regulations will be invoked to reduce the incidence of oil spills. He concluded, further, that oil spill reductions depend on the oil industry's observance of the spirit as well as the letter of the regulations. We know all too well from experience that the oil industry does not yet take seriously enough the regulations, and they are continually violating them to the extent that they have paid millions of dollars in fines over the past few years for their offshore operations. As a matter of fact, in a recent report by the Comptroller General of the Government Accounting Office, it was found that in the year 1972 over 70 violations were found to have existed in the offshore operations in the Santa Barbara Channel. This, in spite of all of the regulations and alleged inspections by USGS.

It is evident that an entire review must be made by Congress and the Department of the Interior of existing laws, regulations and procedures to prevent the further pollution of our waters by the oil industry.

In summary, Santa Barbara has become the symbol of government-inspired environmental degradation. This was recognized by Congress and declared to be the prime reason for the passage of the National Environmental Policy Act. In the environmental literature throughout the world, Santa Barbara is given as an example of the most tragic results of environmental indifference.

Now the Congress has the opportunity in a most dramatic fashion to tell the world that Santa Barbara also symbolizes imaginative and progressive conservation and environmental policies and that even in the face of an energy crisis, environmental conditions will not be ignored.

The County of Santa Barbara respectfully urges that the Congress of the United States prohibit any offshore drilling in the Santa Barbara Channel from going forward at this time, pending legislative and administrative review of offshore policies and procedures and pending further greater technological advancement leading toward a fail-safe system to eliminate spills, or at least to contain spills when they do occur.

STATEMENT OF SUPERVISOR JAMES M. SLATER, BOARD OF SUPERVISORS, COUNTY OF SANTA BARBARA

Mr. SLATER. I was going to take the statement itself and just read it for the record in as brief a manner as I can.

I would like to welcome you, Madam Chairman, and the other members of the committee to Santa Barbara County and to our meeting room. In brief, I would say I feel somewhat like I am speaking to myself in that I am normally sitting up there and someone else is down here talking to me. I am normally sitting in Mr. Ketchum's seat as a matter of fact.

I feel that many of the people here today feel like they may be virtually speaking to themselves because they simply feel that things are going to be thrust upon them without regard to the problems that are involved in the drilling in the channel. And their wishes, they feel that possibly, from the emotion based on fear for the oil shortage, that the conclusions reached will be destructive and create even more wrong than a remedy.

I speak today for three members of the board of supervisors, a majority of the board of supervisors. There are two members of the board who do not agree with this position. I wish to point out, though, that these three members of the board who do agree with this position, including myself, come from what is known as the South Coast of Santa Barbara, that is south of Goleta Point, and this is the area most directly affected by the oil drilling in Santa Barbara Channel.

I am a member of the board of supervisors of the county of Santa Barbara. As an elected official, I not only speak for my constituents, but also I have been designated by the board of supervisors to speak for it. A majority of the members of the board officially opposes oil development in the Santa Barbara Channel, and this position coincides with prior board action with respect to other proposals to develop offshore oil resources in the Santa Barbara Channel. I will limit my comments to general environmental factors.

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In short, not only can the taxpaying public sustain severe monetary losses as a result of an offshore oil spill, but they can be certain that the oil companies which negligently caused such losses will refuse to acknowledge or pay those claims. Should another spill occur in the channel, we can assume that the oil companies would also join in denial that even proven tax revenue losses as a result of their actions should be paid. While we disagree with the legal position taken by the oil companies with respect to a claim of that sort, nevertheless, should the courts rule in favor of the oil companies, then we can be victimized and without any recourse.

This dilemma, which we are now facing as a result of the 1969 blow-out, and which we may face once again should another spill occur, leaves us in a bizarre position when one considers that all we can hope to get from the offshore operations in the Federal tidelands is the pollution and economic damage and not one dollar of royalty revenue.

At the very least, the Department of the Interior should not authorize any offshore oil development unless and until the lessees consent to be strictly liable for damages which occur as a result of their operations and that they pay all damages resulting therefrom, including tax revenue losses to the adjoining public entities. Apparently, this liability concept was made a part of the Alaska pipeline approval.

Here is a side that is not in my written presentation. The question of insurance for such spills, it would seem to me, as with most large corporations or public entities, that oil companies are self-insured,

and that it would be unwise probably economically, for them to pay insurance premiums when they could pay losses from their own pockets. It is highly doubtful in my mind, viewing it as a public official and as an attorney, that insurance companies would want to insure in this area at any time in the foreseeable future with the foreseeable technology available.

Going back to the text, it obviously will be argued by the oil companies, and no doubt echoed by USGS, that after all, oil is where you find it, and the country needs oil and we cannot, in this situation of an energy crisis, worry about Santa Barbara, which after all represents a fraction of the population of the Nation.

In a very recent letter, Russell G. Wayland of the Geological Survey stated that present proved liquid hydrocarbon reserves are estimated by the American Petroleum Institute at about 43 billion barrels, or about a 7-year supply. It is estimated, however, that all other possible reserves in the United States will give us no more than an 80-year supply at the present rate of consumption. This assumes that unknown reserves are discovered and produced.

It is evident that if we are not to run out of oil in 7 years, additional discoveries have to be made and we are not opposed to exploration for the purpose of discovering new hydrocarbon reserves. However, discovery and production are two different matters. It seems to us that if we are faced with a total dry-up of recoverable oil in 80 years, then we are dealing with a natural resource which is becoming "extinct," and good conservation practices dictate that we not try to meet that predicted doomsday but rather try to prolong it.

This would mean the cutting back of the consumption rate and a preservation of those oil reserves which are discovered with an emphasis on obtaining oil from foreign sources, including the Middle East. The oil industry and perhaps USGS are seeking to exploit every drop of oil that it can find in the United States, and this attitude will, indeed, lead to a situation in the future that will make of our children and grandchildren economic, and perhaps even political, slaves to foreign oil powers.

This sort of roughshod grab-it-while-you-can attitude is sheer stupidity, if not suicide. The Santa Barbara Channel has been explored and identified. The oil will not go away, and it can be tapped in the future when the need is critical. I am not suggesting that all known oil reserves in the United States be sealed off and kept in reserve. Obviously, this cannot be done.

I am suggesting, however, that let us not develop the offshore reserves at this time since we have not yet developed technology that makes it as safe as onshore drilling and production. By placing the offshore fields in reserve and concentrating on the inland reserves, we will buy time to enable the industry and government to develop more sophisticated and safer offshore drilling techniques. That procedure, together with a concerted effort to diminish the present energy consumption rate, will aid in the needed conservation efforts and also offer greater protection to the coastal environment.

Recently, Donald R. Jones, Physical Science Adviser to the Environmental Protection Agency, reported that last year 30 million gallons of crude oil and oil products were spilled into U.S. lakes, rivers, and coastal waters, and that only 6 million gallons were re-

covered. He stated further that America's entry into the oil spill containment field was belated, and that he was hopeful that new regulations will be invoked to reduce the incidence of oil spills.

He concluded, further, that oil spill reductions depend on the oil industry's observance of the spirit as well as the letter of the regulations. We know all too well from experience that the oil industry does not yet take seriously enough the regulations, and they are continually violating them to the extent that they have paid millions of dollars in fines over the past few years for their offshore operations. As a matter of fact, in a recent report by the Comptroller General of the Government Accounting Office, it was found that in the year 1972 over 70 violations were found to have existed in the offshore operations in the Santa Barbara Channel. This, in spite of all of the regulations and alleged inspections by USGS.

It is evident that an entire review must be made by Congress and the Department of the Interior of existing laws, regulations and procedures to prevent the further pollution of our waters by the oil industry.

In summary, Santa Barbara has become the symbol of government-inspired environmental degradation. This was recognized by Congress and declared to be the prime reason for the passage of the National Environmental Policy Act. In the environmental literature throughout the world, Santa Barbara is given as an example of the most tragic results of environmental indifference.

Now the Congress has the opportunity in a most dramatic fashion to tell the world that Santa Barbara also symbolizes imaginative and progressive conservation and environmental policies and that even in the face of an energy crisis, environmental conditions will not be ignored.

The county of Santa Barbara respectfully urges that the Congress of the United States prohibit any offshore oil drilling in the Santa Barbara Channel from going forward at this time, pending legislative and administrative review of offshore policies and procedures and pending further greater technological advancement leading toward a fail-safe system to eliminate spills, or at least, to contain spills when they do occur.

Thank you, very much.

Mrs. MINK. Thank you very much, Mr. Slater, for your excellent testimony and certainly, on behalf of the subcommittee and the full committee of which we are all members, we would like to acknowledge the generosity of the board in making available this hearing room to us this morning, and for all of the other attendant courtesies which have been provided the subcommittee. We deeply appreciate your cooperation. I am sure my colleagues have a question or two they would like to direct. Are there any questions?

Mr. SLATER. You are more than welcome for the use of the room. We thank you for coming here, that is really generosity.

Mr. CAMP. I do not have a question, but I would like to say to Mr. Slater, you know I am from Oklahoma, we have oil derricks on the grounds of our capitol building.

Mr. SLATER. Different strokes for different folks.

Mr. CAMP. We take oil from out from under the building itself, it is quite a tourist attraction and we find people from across the country

that slowdown a little when they drive by our capitol building and see our oil wells.

Mr. SLATER. We would like to have them all down there.

Mrs. MINK. Any other questions? Mr. Owens?

Mr. OWENS. I am somewhat sensitive to the points that you are making in your initial remarks about the skepticism with which you greet our hearing and the fact that the Federal Government in Washington, of which we are a part, makes decisions which may or may not reflect the feelings of the local people. This is a problem we all have in our separate constituencies, obviously. It is a feeling that maybe the Federal Government really does not represent localities. We do have the obligation to look at the overall national problems, and we are sensitive to that of course as well.

I do think that you will find this subcommittee, under our very capable chairman, and the Interior Committee in the House as a whole are sensitive to your concerns, given the problems that the country is faced with today in the energy field, the problems which we have had and which you and your predecessor representing the city of Santa Barbara have set forth quite well, thrust upon us now by our new acknowledgment of the energy crisis. It may be self-serving to say, I am embarrassed to say it, but you will find us quite sensitive to your local problems. Our desires are great to protect environmental values in this country.

Mr. SLATER. The only point I would like to make, Mr. Owens, I do not think the Santa Barbara Channel is just a local problem. It has become somewhat of an example—a prime example—of what can occur if proper regulation of a necessary industry is not done. I think, because of the unique character and beauty of the area, which is somewhat marred today by clouds and fog which I assure you is there, because of that and the sharp contrast between it and the oil floating on the ocean and the seals and the birds being killed and the oil spilling up on the beaches and turning everything black, I think that is what made it such a prime example of what could occur.

I do not doubt that the committee is itself very sensitive to what is happening here and what could happen. The problem, I really fear, and one I was to address myself to, is the fact that there are other ways of doing things, there are other reserves that could be open.

The Santa Barbara Channel could be held in reserve—a very good one, a very large one—and in doing so, buy time for technology to catch up and make it safe.

We all recognize, I think, if the crunch is really there and this is the only place that oil is available, then we are going to have to bite the bullet and take what comes. But that is not the case now. There are still reserves which are safe to drill, and this could be placed in a reserve and if necessary, in the future, when all the technology has caught up with the type of drilling that is proposed, it could be taken out—there being the given need.

Mr. OWENS. You present your viewpoint very, very well, very concisely, thank you very much.

Mrs. MINK. Mr. Slater, if we are successful in establishing the oil deposits here in the channel as a reserve, to whom would you give the power and authority to ultimately decide that the area should be developed?

Mr. SLATER. Me. [Laughter]

Mrs. MINK. Should it be lodged in the President? Should it be lodged in the Secretary of Interior? Should it have concurrence of the Congress?

Mr. SLATER. I would say with the concurrence of the Congress. I would not like to see it in any one office with one man to make that decision, it is too big a decision, too important a one. Before that decision be made, future hearings be held such as this, again to be held to show that it was taken a reserve and to show that there is a real need.

Again, with the skepticism that abounds in the country today, people are asking is there really an energy crisis, or is this a big put-on. Is this something that is being used to pressure not only people but from the people's view, their representatives, to change the positions they had before. And it could very well be from fear, from emotion—people will take stands and of course when they relate those positions and stands and fears to the representatives such as me and you, that we have to react to them, as reacting to a majority will. And I think this is what we must be careful of. This is what many people are skeptical of, that this is not, in fact, as severe or as long-lasting a crisis, if at all, as is being portrayed to us. Maybe that is one of the problems both you and I face being in Government, as positions of public skepticism of what the Government states. It is a sad thing but it is a true thing.

Mrs. MINK. You are I am sure aware, as the Board is also aware, that the administration has withdrawn support of its own bill H.R. 7500?

Mr. SLATER. Yes.

Mrs. MINK. It is now inaugurating what they describe as a yearlong study in preparation of a new environmental impact statement with regard to the area that is currently under moratorium. Do you have any comment on that?

Mr. SLATER. It is very sad to see what was a stated position for a good reason that has been dropped by the Administration. I do not think there was good reason to withdraw from that position. I am always in favor of environmental impact analysis, but if it is merely a formality and is merely going through the steps to satisfy what some consider to be environmental kooks, so that it appears that all the environmental considerations are being paid heed to, then it is a waste of time. The Government should be, as generally commented, should be out front, so I really do not know what this environmental examination will amount to. A mere examination is only information gathering. The question is, what you do with it. What are you able to do with it; have we here, in the State and within the county, environmental impact reports for development of land. It is only information gathering based on that, we can say it is to their interests to do such a thing, or it is too much of an impact on the environment to do such a thing. That is what is really important; what you can do with it and what the Administration intends to do with such an examination of drilling in the channel.

Mr. CAMP. Will the gentlelady yield at that time?

Mrs. MINK. I yield.

Mr. CAMP. Do you provide the finding from this report back to our Environmental Protection Agency in Washington?

Mr. SLATER. I do not understand the question, I am sorry?

Mr. CAMP. The report that you just mentioned a minute ago that you compile here within the area, for drillings and whatever it might

be, do you give that information to our Environmental Protection Agency in Washington?

Mr. SLATER. I do not think so.

Mr. CAMP. My point is, in coming back to the line of questioning the Chair had a minute ago in regard to who would make the decision, if we ever find ourselves in that position, I think the decision should be made by local people who have knowledge of the circumstances instead of maybe somebody that is 3,000 miles away and has no knowledge whatsoever of the territory.

Mr. SLATER. We would very much prefer that, I think that is correct. In matters that there is not only local concern but various thinking, clear local knowledge of the problems, I think we know a lot more than other people across the country might. On the other hand, we have to keep in mind also that we are citizens of the whole country and not forming ourselves seceded or anything like that, we recognize nationwide problems, we are not blind. We are not blinded by just environmental considerations, but we do see something that is very much worth saving and preserving and we are just trying to say there are better ways, there are alternatives. Yes, of course, we would like to have the public input and some of the control over the opening of the Channel, whether it be now or in the future, to be placed in reserve. I think if this was conservation policywise, foreign policywise, economics to have a good large reserve so that someone cannot say—some one or some nation cannot say to you you will either take our terms or you will leave them because you have nothing to bargain with.

Until we have alternatives to the use of petroleum, we better have something in our savings account.

Mr. CAMP. I thank you.

Mr. KETCHUM. Madam Chairman.

Mrs. MINK. Mr. Ketchum?

Mr. KETCHUM. In regard to that statement, I would say we are in that position precisely right now with the Arab nations. As we all understand, they have embargoed oil shipments to the United States. They have learned to do with oil what they could not do with bullets. They have learned how to win wars. At the risk of saying "I told you so," 7 years ago I made a number of statements regarding the potential energy shortage in the United States. That was based on what I thought, at least in my opinion, were reasonable studies and I was practically laughed off the platform that I made that statement on. Of course, now we find ourselves in that situation. If there is any doubt in anybody's mind, I suggest they talk to the representatives from the Northeastern United States, the Central United States, and even in the Rocky Mountain regions of the United States, vis-a-vis last year. That situation is going to be tremendously aggravated if, relative to Elk Hills—which incidentally is in my Congressional District—Elk Hills has a reserve of somewhere in the neighborhood, proven reserve, of approximately 1.6 billion or 1.3 billion of proven reserves. I have introduced legislation early this year to release even a small portion of less than 7 percent of that reserve, in the neighborhood of 60,000 barrels a day of the oil would go as far as 180,000 if it were permitted, I certainly would not extend any new development listening to anybody in this room, that Elk Hills is going to be opened immediately or in the foreseeable future.

The Chairman of the Armed Services Committee certainly is resisting with every resources he has, the opening of Elk Hills for any reason, whether for tradeoff or relaxation of the problem that we find ourselves in today. And I might admonish the group and all that you might contact, that one of the best ways of moving ahead, at least in Elk Hills, to modify the crisis to some extent, would be—I would respectfully suggest to you, that you correspond with this chairman of the Armed Service Committee with an expression of public opinion as to what comes under a national emergency in his opinion, whether you have heat in your homes or if you, for emergency vehicles, apparently is not of the most important thing in the world at this time.

Mr. SLATER. I guess we all find ourselves in that position once in awhile, we find ourselves saying, I said it would happen. The only question I have is, I have seen recently statistics with regard to the number of barrels that were exported, barrels of oil that were exported from this country to other countries over the past years, and wonder not only where the oil—where industry was, but where was everybody else when billions of barrels of oil were being exported.

I understand that is is an economic problem as well, but maybe we cannot cut off all oil exports. I think people in the country, especially those who have heating problems during the winter, are going to wonder why—wonder why in 1972, all those millions of barrels of various kinds of oils were exported to other countries if, in fact, there was an oil crisis approaching.

Mr. KETCHUM. I think that is a perfectly valid statement. GAO has indicated there were certain oil exports and I personally am checking into that to find out just what the amounts were. I do know that perhaps two-tenths of 1 percent is exported to the South American countries, Venezuela in particular, in the form of distillates, to take this very heavy distillate oil there to mix it with it so it can be shipped back to the United States, where is is evaporated off and you condense and use it as a vehicle. That is a very minute portion, I am sure. I think you do make a valid point and we should certainly find out what is, if any, being exported this time.

I think we have to take a very strong leadership position at this particular point in encouraging the population of the United States to do everything in their power to conserve. I think we have done a terrible job along those lines.

Mr. TEAGUE. Will the gentleman yield?

Mr. KETCHUM. Yes.

Mr. TEAGUE. We were told earlier this week by the Office of Oil and Gas, that something in the neighborhood of two-tenths of 1 percent of oil is being exported out of our total oil resources, to Mexico and Canada. Much of it as Mr. Ketchum says returns and much of that oil is the type of fuel or petroleum products that is not in short supply here.

Now, Madam Chairman, I would also like to say this, if I may. While I am somewhat disappointed at the showing of possible change of position by the Administration, I have not given up at all. As I said in my statement, Secretary Wakefield, Assistant Secretary of the Interior, earlier this week, in testimony before the Senate committee, said that the administration was reevaluating its position on these various oil bills. He did not say that they had abandoned any possibility of support.

In the meantime, the environmental impact study goes on unless I am impeached in the meantime, I will be back there in Washington trying to get the Secretary of Interior not to change his position.

Mrs. MINK. Thank you.

I have one final inquiry. What is the impact of the hearings of the State Lands Commission which were recently conducted. Can you make an estimate of what the outcome of those hearings will be with regard to Santa Barbara Channel?

Mr. SLATER. It is very difficult to say what a State committee will do or what anybody else will do in that regard. I think the State is going to make the appropriation on the drilling in the channel waters for the same reason.

The facts are available to them with regard to the problem involved in drilling, they are aware of the possible energy crisis. I think they have looked at the alternatives, I think, they are going to find that the alternative of drilling in the channel is too dangerous a one, not only from the point of view of spillage and environment, but from loss of one of the maybe last great reserves and a loss of a great deal of oil if there is spillage and a great deal of money to the oil companies if they have to clean it up.

Finally, of course, if there is spillage again and blowout again in the channel, more and more pressure to control oil companies, even beyond the controls placed on them now, I think that on the basis of that, they will continue to ban the oil drilling in this State.

Mrs. MINK. If the State of California should change its attitude on the moratorium, how can you expect the Congress of the United States to do otherwise? Is that not a very key decision that awaits all of you?

Mr. SLATER. Of course it is very key. All I can say is that unfortunately if I am wrong in my prediction, I can always say I expect better from the Federal Government than I would from the State.

[Applause.]

Mrs. MINK. Thank you very much, Mr. Slater.

Mr. KETCHUM. That does not say very much for local government does it?

Mr. SLATER. We can only hope.

Mrs. MINK. Thank you very much for your testimony, our next witness is Mr. Campbell Grant, representing the Carpinteria Valley Association.

Mr. Grant, we have your testimony, it has been distributed to members of the subcommittee, it will be inserted in full in the record. I would like to note the presence of my distinguished colleague, Mr. Cronin from the State of Massachusetts. If you will proceed.

[The statement referred to follows:]

STATEMENT OF CAMPBELL GRANT, CARPINTERIA VALLEY ASSOCIATION

The Carpinteria Valley Association was organized eight years ago in the interest of preserving the beauty, quality, and character of this section of Santa Barbara County, and to take whatever action would be appropriate in furthering this purpose. The section of the County of particular concern to us includes the entire Carpinteria Valley from along the coastline to the crest of the Santa Ynez mountains, and from the Ventura County line to Summerland.

We have actively opposed channel oil development from its inception because of the damaging effects we feel it has on the type of environment we wish to preserve.

We find the four platforms in state tidelands and the five in waters of the OCS esthetically objectionable and visually down-grading to the area. The nine platforms are directly off the shores of the section of the County of particular concern to this Association. They impinge on our channel views and degrade it, are visible to the entire area during most of the daylight hours in the year, as well as at night when over-lighting makes them equally visually objectionable.

From Rincon Creek to Summerland there are eight miles of public and private beaches with shorefront residences, camper parks, and other beach and shore-oriented facilities. In addition, the views from hillside properties get the full impact of the platforms, drilling rigs, tankers, and barges. This can hardly be considered compatible with the high-grade agricultural and residential character of the area we all wish to maintain.

The blow-out of 1969 blackened our section of the coastline resulting in hundreds of thousands of dollars in damages to beachfront residences; non-use of public and private beaches for months; and substantial loss of revenue to the tourist-oriented city of Carpinteria. In addition, summer rentals, motel and camper park occupancy in the Carpinteria area dropped 90% from the former year.

According to Chamber of Commerce figures, 1,628,904 people used our County beaches in 1971-1972, and the income from tourism in 1971 to Santa Barbara and Carpinteria cities, the Montecito and Goleta areas amounted to \$53,107,000 in contrast to the zero revenue we receive from oil and gas production in the federally controlled waters of the channel.

Not only are we locally concerned over the damaging effects of offshore oil operations but also the passage of Proposition 20, the Coastal Conservation Act, and its implementation gives evidence of the importance the people of the entire State place on preserving the environmental integrity of the California coastal area including its coastal waters.

In December of 1969, 11 months after the blow-out, the failure of a safety device to function resulted in the rupture of a Platform A pipeline. Before repairs could be made, 50 square miles of channel were again covered by oil, and our Valley beaches inundated. It has been determined that the continued leakage from the original blow-out is responsible for the oil which periodically fouls the sea and beaches in our particular area when tides and winds bring the oil ashore. Furthermore, even today the residue of uncollected crude oil left on the beaches from the 1969 blow-out is uncovered during the winter months when layers of sand wash out, or when feet sink deep enough into it, both off and on shore.

During the past two years there is documented evidence that platform operation inspection has been cursory, inspectors not entirely qualified, and 76 instances of non-adherence to regulations listed by the GAO during channel platform operations in one year. What assurances can be given that there will be any greater adherence to safety regulations and to water polluting discharges in the future than in the past if extended channel oil development is permitted?

We have followed closely the development of containment and recovery systems. We state unequivocally that to date none have proved effective under the severe wind and sea conditions prevalent in the channel during the winter months, nor are capable of containing and recovering the substantial amount of oil which might be expected from any major spill.

Because of the damaging effects on our economy, the potential for increased channel pollution and complete incompatibility with our environment, we cannot tolerate any further channel development. No energy crisis is sufficiently acute as to justify the destruction of the environmental assets of an unusually sensitive area, particularly when other sources are so readily available in less sensitive areas. We therefore would approve any legislation which would provide the utmost in protection for the entire south coastal area of Santa Barbara County.

Of the three bills before you we believe that H.R. 3177 appears to provide the most comprehensive protection for the Channel and coastal environment. At the same time the bill would make possible an equitable determination of oil company compensation, while not depriving the government of revenues from production.

Considering the past and present damaging effects to the environment and the dubious future impact of channel development, provisions for the moratorium established in the bill and conditions for its termination would appear reasonable to all parties involved. We might suggest two amendments to this bill by excision, which we believe would make it more consistent with the purposes indicated throughout the bill:

1. In Section 6 (2) lines 11 and 12, the following to be excised: "with as few permanent structures above the surface of the water."

2. In Section 8, paragraph B should be excised. The reason for this recommendation is that it has already been determined that existing platforms cover the area where leakage continues, so such a provision is actually superfluous. However, it is our feeling that if this provision were left in the bill it could be an excuse leading to applications for new platform installations.

Regarding H.R. 3178 as an alternative proposal, we believe that the provisions of this bill are reasonable. Development would not be arrested indefinitely but more time would be provided for improving safety technology and pollution protective systems. This is vitally important in an area where there are so many drilling and production problems. We find that provisions of the bill do not entail any financial loss to oil companies, nor to the Government. Leases would simply be extended until conditions stipulated were met and approved through appropriate channels.

Relative to this bill, the question might well be asked, "what is the rush in expanding development in an unusually environmentally sensitive area when other sources of oil could be produced in a much shorter space of time in on-shore areas where no damage to the environment would be involved?"

In analyzing the provisions of H.R. 7500, we find them entirely acceptable; however, the bill leaves unanswered the problem of development of the 35 channel leases not considered in the bill. We feel it vitally important to make some provision for control over this area of the channel. We therefore urge that if this bill is being seriously considered it should be amended to include the provisions of H.R. 3177, which would then give some direction in disposition of the development of the remaining 35 channel leases.

STATEMENT OF CAMPBELL GRANT, CARPINTERIA VALLEY ASSOCIATION

Mr. GRANT. Madam Chairman and members of the subcommittee, my name is Campbell Grant. I am the director of the Carpinteria Valley Association and I bring you no oil expertise, merely a cry of protest or anguish from our citizens group.

The following, in question and answer form, summarizes the major points made in the Carpinteria Valley Association's full statement submitted to your committee.

One, is the energy need so acute that oil and gas must be produced wherever found, regardless of resulting damage to the environment and the economy of a particular area?

We say no. No need can be so great as to justify irreversible damage to an unusually environmentally sensitive area, nor compensate for losses incurred. The channel in the south section of Santa Barbara County is such an area. Its economy and quality of life is dependent on clean beaches, unpolluted seas, views unobstructed by unsightly platforms, drilling rigs and barges, and the channel being opened to the free movement and pleasure of fishing craft.

Our full statement enumerates a number of people using the county beaches, income from tourism, and the amounts of damages incurred to private property and loss of revenue to the area due to the 1969 blowout.

The geological formation and section of this channel have been found to be uniquely fragile. The channel flow is subject to frequent seismic disturbances and one of magnitude could rupture platforms.

Two, since the 1969 blowout, and the malfunction of a safety device resulting in the rupture of the platform pipelines 11 months later, technology has advanced where safe OCS are assured under the conditions. We say no, during the past few years, offshore accidents that

have occurred should be listed here. The GAO has 76 violations of regulations during the past year involving platform operations in the channel. Periodically, strong winds and heavy seas still bring oil onto our beaches from the continuing leak around platform A. After 1 year, collision between a passenger liner and a drilling rig, we are still concerned about the hazards to boating, fishing, and shipping boats by channel oilwell operations.

Three, existing containment recovery systems are adequate to cope with the major oil spill in the channel?

We say no, today, none have proven effective in retaining or recovering substantial amounts of oil under the severe wind and sea conditions prevalent in the channel during the winter months.

Four, other sources of oil, are these less environmentally sensitive areas than the Santa Barbara Channel? We say yes. Two of the bills before you, H.R. 3177 and H.R. 7500, indicate these areas. H.R. 7500 proposes opening up the Elk Hill Naval Reserve No. 1, in Currant County, we understand is ready to go into immediate production; and utilizing oil available in the Alaskan North Oil Reserves No. 4.

In addition, Standard Oil is developing a new field in Currant County. Substantial oil and gas could be produced from these sources within a short period of time with short oil development.

Five, considering the present environmental and developmental problems involved in expanding oil operations, would it not be more logical to utilize other sources of energy in exchange for establishing reserves in the Channel for future needs?

We believe the answer to this should be yes. Provisions of all three bills will in some measure protect the Channel from premature development, while, at the same time, presenting foreign oil which should prove equitable to all concerned. We refer you to the specific recommendations made in our complete statement on each of these bills.

Thank you for this opportunity to present a brief résumé of the reasons we think it imperative to curtail channel oil development through the adoption of legislation giving us some measure of protection from further despoilment of our environment.

Mrs. MINK. Thank you very much. [General applause.]

We appreciate your testimony and certainly, as far as the Chair is concerned, I can understand each of the points you have made. We have received numerous individual letters and individual petitions from residents of your community which I would like to acknowledge and express my personal appreciation for the interest and the concern they have shown to inform the committee of their views.

Do my colleagues have any questions they wish to ask?

Mr. TEAGUE. I do not have a question, Madam Chairman, I would like to state for the benefit of the members of the committee who might not know, Carpinteria is a fine little city about 8 or 10 miles southeast of Santa Barbara and it is in the same position on this issue as most people in Santa Barbara are. They have the same local problem there right on the coast.

Mrs. MINK. Mr. Cronin?

Mr. CRONIN. Madam Chairman, I would be curious to ask the gentleman, if his association has been active at all in ways to conserve the use of fuel?

Mr. GRANT. We did not realize until a few years ago that we would have to conserve fuel, however, now that we realize that we have an instant energy crisis, I am sure the people of the Carpinteria Valley will be ready to conserve fuel as well as anybody else.

Mr. CRONIN. Has your association actively been involved in any way in planning widespread conservation methods?

Mr. GRANT. Sir, as I just said, the crisis is new to us, it is just about 10-days old, as far as I am concerned.

Mr. CRONIN. Really? You have not been reading the newspaper for the last year?

Mr. GRANT. I think Congress might have been reading those newspapers too, you know. Suddenly the crisis was on us and apparently without warning, although I am sure some people like Senator Jackson had been warning the President. But, as far as any practical situation goes, the crisis was not upon us until the Arabs shut off the oil and now I read in the papers—and I do read the papers, sir—in reading the papers we are about to get the Arab oil again, what effect will that have upon the energy crisis?

Mr. CRONIN. I think it is very slight, but I remember reading in the New York Times last summer about the tremendous gasoline crisis we were having nationwide. That certainly is a national newspaper with national coverage. My concern is somewhat parochial because as I see the production of gasoline going up, of course we see home heating oil going down and California, per capita, uses more gas than any other State in the country. This means that back in the Northeast, people are going cold this winter without having oil to heat their homes. So the comment was just one where I think we all have to get it together nationwide to help conserve energy, and I hope you will get involved in it.

Mr. GRANT. We should and we will and that will be on the agenda of our next meeting, certainly. One more point before I stop. That is that you must know as well as many of the people in the audience that for a long time, many people including myself thought this energy crisis was a bit of a phony.

Mr. CRONIN. I hope you still do not feel that way.

Mr. GRANT. We do not feel that way now, we had justifiable reasons for feeling that way, it came on us so suddenly, but now we are reconciled to the fact that it is here and we will do what we can about it.

Mr. CRONIN. Thank you very much. Thank you Madam Chairman.

Mrs. MINK. Thank you very much, Mr. Grant.

Our next witness will be Mr. William Gesner. Mr. Gesner?

We have your statement, it will be inserted in the record in full at this point. If you will proceed.

[The prepared statement of Mr. William Gesner follows:]

STATEMENT OF WILLIAM G. GESNER, SANTA BARBARA

I am deeply concerned by the Outer Continental Orders written and supervising all oil drilling and production in federal waters of the OCS. A statement released by a panel made up of members of the Marine Board of the National Academy of Engineering stated in part:

"It is questioned (by the panel) whether or not OCS orders do, in fact, even constitute regulations as such. From this level of analysis (that is applied to the safety-regulated aspects of all OCS orders) the panel concludes that the lack

of specific guidance in the form of supporting standards of what or how much is to be achieved, or tests that allow unambiguous determination of when the intent of the order has been achieved, render the OCS orders in their present state inadequate to protect the public interest."

Some of those OCS orders that the panel was discussing in their releases of December 1972 are still in effect today.

In a January 17, 1972, Oil & Gas Journal, an article was published in which USGS Director Vincent McKelvey said the following when addressing the Houston Geological Society:

"Proof that industry is deserving of confidence must come through the performance of state and federal regulatory organizations."

Dr. McKelvey continued by saying: "The USGS is responsible for communicating information on exploration and development to the public *in a form that it can understand.*"

"We in the Survey are going to have to work harder to see that the public has in comprehensive form the facts about the record of petroleum exploration and development, the environmental problems encountered, and the reliability of the procedures and equipment used to maintain safe operations, Dr. McKelvey concluded.

After reading Dr. McKelvey's article, I sat down and wrote a letter to him asking him specifically about the violations of federal rules and regulations that continue to occur in the Santa Barbara Channel. In his reply to me he stated, "In general there have been no violations in the Santa Barbara since January 28, 1969 that have been serious enough to require a shut-in."

However, in July of this year a report was released by the General Accounting Office in which they stated that the GAO inspection team had found 76 violations of federal regulations on the five platforms operating in the federal waters of the Santa Barbara Channel. These violations occurred in the fiscal accounting year of 1972. The report further stated that ALL 76 violations would have required the inspectors to shut-in production until deficiencies were corrected IF THE VIOLATION HAD OCCURRED IN THE GULF COAST REGIONAL DISTRICT OF THE USGS.

The GAO charged inadequate supervision of production in the Santa Barbara Channel, and called for substantial reforms. The report dealt further with the inadequacy of inspections, the inspection reports, the inspectors themselves, as well as with the drilling and production operations.

On July 16, 1969, the Santa Barbara News-Press carried a story concerning a statement made by Dr. Gordon McDonald, Presidential Advisor on Scientific Affairs. According to Dr. McDonald the Santa Barbara USGS staff, and the work done by them, were less than adequate. In addition, he criticized the quality of the work done by the local USGS personnel. It is interesting to note that the local USGS remains essentially the same today, more than four years later.

I think that we should take a look at the safety record of offshore OCS leases. During the period January 1967 to June 1971, USGS records for this four and one-half year period indicate that there were six blowouts, three explosions, six fires and 16 polluting incidents reported associated with drilling operations. During the same period there were five blowouts, eight explosions, twenty fires, and 713 polluting incidents associated with productoin operations on all OCS leases.

The Marine Board panel in citing precedents from other areas of technology suggests that "prompt and full public disclosures of all accidents investigations to ensure a fully informed public and to ensure the maximum chance of avoiding similar accidents by others who might be similarly exposed and should become a part of the regulatory agencies' policy. I, personally, believe that such a policy should become a part of the OCS orders in all regions.

An incident occurred on WODECO II in 1968 when it was working in the Santa Barbara Channel. A driller pulled the wrong lever which caused the red-headed Texas roughneck to lose a finger and half of another in an air hoist. The following day EXXON operators directed the welder to weld a guard across the front of the air hoist so that similar incidents would not occur in the future. What I am trying to say here is that the oil industry operators (and EXXON is one of the largest) too often act after the fact.

In the spring of 1972, I conducted an independent survey among a number of Santa Barbara Channel oil field workers. I asked each one of them if they really believed that the local USGS inspectors are qualified to regulate the production of local offshore oil industry production. All those questioned replied in the NEGATIVE. During the three year period that I worked on the federal

Channel leases, I observed the USGS inspectors were on the platforms, or drilling barges, during the daylight hours only. One should keep in mind that offshore operations are conducted on an around the clock schedule. Most of the time that the inspectors were on the platforms they spent their time drinking coffee in the galley, or reading the Los Angeles Times while they watched television.

Shortly after the Union Oil Company's blowout on well A21 Platform A, a second blowout occurred on that platform. On February 12, 1970, well A26 kicked. Fortunately, little or no pollution was involved in that blowout, and most certainly no public disclosure was ever made of that particular incident. Oil workers state that the USGS was not even aware of the incident until two days after the blowout occurred. Mr. John B. Letcher, a Special Investigator from the Department of Interior revealed that the USGS ordered Union Oil Company to tighten up its supervision of production after the time of that second blowout. The driller responsible for the blowout quit rather than be demoted. But Union Oil Company records indicate that the man was later rehired.

Since Union Oil Company is supposed to enjoy the reputation of being the sloppiest of all offshore oil operators, we cannot help but wonder how many more such incidents have taken place on their platforms while the USGS inspectors were not there to witness them.

I personally have knowledge of the oil industry using novice drillers in offshore operations in the Santa Barbara Channel. Companies involved were Standard of California, Atlantic Richfield, EXXON and Union. EXXON even used an inexperienced driller on the floating drilling barge WODECO II while drilling exploratory wells in the channel. A listing of the inexperienced workers follows:

Worker	Contractor	Operator	Platform	Barge
Don Davis.....	Laffland Bros.....	Standard of California.....	Hope.....	
Bob Wilhelm.....	Wodeco.....	Arco.....	Holly.....	
Terry Patterson.....	Wodeco.....	Exxon.....		Wodeco II.
Jim Summerlin.....	Peter Bawden.....	Union.....	A.....	

The attitude of the drilling contractor has much to do with the drilling record. In a January 1973 issue of "Ocean Industry" a drilling contractor, Mr. C. R. Palmer of Rowan Company stated that, "Of course, there will always be losses from abnormal seas and weather and well blowouts. Each may be classified as normal occupational hazards related to drilling offshore."

I am completely convinced that by revising certain parts of Outer Continental Shelf Orders No. 2 we could take blowouts off of Mr. Palmer's list of normal occupational hazards. Until such time as this revised OCS Order No. 2 is put into effect we should place a moratorium on All Drilling and Well Service Work on federal offshore leases.

It would also be advantageous if the Bureau of Lands Management would revise their present lease instrument and improve somewhat on it. A suggested change in Public Law 212-83 sec. 6 Maintenance of Leases on Outer Continental Shelf, paragraph (11), Surety Bond now reads: "The holder of such lease furnishes such Surety Bond, if any, as the Secretary may require and complies with such other reasonable requirements as the Secretary may deem necessary to protect the interests of the United States."

I believe that the Secretary should now require that Surety Bonds be doubled for all OCS leases, and tripled for all leases reported to have suffered accidents and polluting spills.

The most effective way of combating indifference in those operators working in the OCS is to develop more rigid safety standards that are strictly enforced by a qualified and dedicated regulatory agency.

If any of the legislation now being considered by this committee is enacted by Congress, the people of Santa Barbara are still going to be stuck with unsafe, irresponsible offshore lease operators producing on the other 35 leases not included in the proposed oil-free sanctuary. These irresponsible operators, regulated by an unqualified staff of USGS inspectors will give us little to look forward to other than more spills, more blowouts and more pollution until our beautiful Santa Barbara Channel has been completely desecrated.

Bibliography

1. Report by Marine Board of National Academy of Engineering, December 1972
2. Oil & Gas Journal, January 17, 1972
3. General Accounting Office Report, June 1973, to the Conservation and Natural Resources Subcommittee on Government Operations, House of Representatives
4. Santa Barbara News-Press, July 16, 1969
5. Report by John B. Letcher, Special Investigator for Department of Interior, June 1972
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7. Article in "Occasional Paper" published by the Center for the Study of Democratic Institutions, 1970.
8. "U.S.G.S. Outer Continental Shelf Resource Development Safety" page 35, published December 1972

STATEMENT OF WILLIAM GESNER, SANTA BARBARA, CALIF.

Mr. GESNER. Madam Chairman, members of the subcommittee, my name is William Gesner and I have had 5 years' experience working offshore in the Santa Barbara Channel. I am deeply concerned by the Outer Continental Shelf orders written and supervising all oil drilling and production in Federal waters of the Outer Continental Shelf. A statement released by a panel made up of members of the Marine Board of the National Academy of Engineering stated in part:

It is questioned by the panel whether or not Outer Continental Shelf orders do, in fact, even constitute regulations as such. From this level of analysis, that is applied to the safety-regulated aspects of all Outer Continental Shelf orders, the panel concludes that the lack of specific guidance in the form of supporting standards of what or how much is to be achieved, or tests that allow unambiguous determination of when the intent of the order has been achieved render the Outer Continental Shelf orders in their present state inadequate to protect the public interest.

Some of those Outer Continental Shelf orders that the panel was discussing in their release of December 1972 are still in effect today.

In January 17, 1972, Oil and Gas Journal, an article was published in which U.S. Geological Survey Director Vincent McKelvey said the following when addressing the Houston Geological Society:

Proof that industry is deserving of confidence must come through the performance of the State and Federal regulatory organizations.

Dr. McKelvey continued by saying:

The U.S. Geological Survey is responsible for communicating information on exploration and development to the public in a form that it can understand.

We in the Survey are going to have to work harder to see that the public has in comprehensible form the facts about the record of petroleum exploration and development, the environmental problems encountered, and the reliability of the procedures and equipment used to maintain safe operations.

Dr. McKelvey concluded.

After reading Dr. McKelvey's article, I sat down and wrote a letter to him asking him specifically about the violations of Federal rules and regulations that continue to occur in the Santa Barbara Channel. In his reply to me, he stated.

In general there have been no violations in the Santa Barbara Channel since January 26, 1969, that have been serious enough to require a shut-in.

However, in July of this year a report was released by the General Accounting Office in which they stated that the GAO inspection team

had found 76 violations of Federal regulations on the five platforms operating in the Federal waters of the Santa Barbara Channel. These violations occurred in the fiscal accounting year of 1972. The report further stated that all 76 violations would have required the inspectors to shut-in production until deficiencies were corrected if the violations had occurred in the Gulf Coast Regional District of the U.S. Geological Survey.

The GAO charged inadequate supervision of production in the Santa Barbara Channel, and called for substantial reforms. The report dealt further with the inadequacy of inspections, the inspection reports, the inspectors themselves, as well as with the drilling and production operations.

On July 16, 1969, the Santa Barbara News-Press carried a story concerning a statement made by Dr. Gordon MacDonald, Presidential Adviser on Scientific Affairs. According to Dr. MacDonald, the Santa Barbara U.S. Geological Survey staff, and the work done by them, were less than adequate. In addition, he criticized the quality of the work done by the local U.S. Geological Survey personnel. It is interesting to note that the local U.S. Geological Survey remains essentially the same today, more than 4 years later.

I think that we should take a look at the safety record of offshore Outer Continental Shelf leases. During the period January 1967 to June 1971, U.S. Geological Survey records for this 4½-year period indicate that there were 6 blowouts, 3 explosions, 6 fires and 16 polluting incidents reported associated with drilling operations. During the same period there were 5 blowouts, 8 explosions, 20 fires, and 713 pollution incidents associated with production operations on all Outer Continental Shelf leases.

An incident occurred on *Wodeco II* in 1968 when it was working in the Santa Barbara Channel. A driller pulled the wrong lever which caused the red-headed Texas roughneck to lose a finger and half of another in an air hoist. The following day Exxon operators directed the welder to weld a guard across the front of the air hoist so that similar incidents would not occur in the future. What I am trying to say here is that the oil industry operators, and Exxon is one of the largest, too often act after the fact.

In the spring of 1972, I conducted an independent survey among a number of Santa Barbara Channel oil field workers. I asked each one of them if they really believed that the local U.S. Geological Survey inspectors are qualified to regulate the production of local offshore oil industry production. All those questioned replied in the negative. During the 3-year period that I worked on the Federal channel leases, I observed that U.S. Geological Survey inspectors were on the platforms, or drilling barges, during the daylight hours only. One should keep in mind that offshore operations are conducted on an around the clock schedule.

Shortly after the Union Oil Company's blowout on well A21 platform A, a second blowout occurred on that platform. On February 12, 1970, well A26 kicked. Fortunately, little or no pollution was involved in that blowout, and most certainly no public disclosure was ever made of that particular incident. Oil workers state that the U.S. Geological Survey was not even aware of the incident until 2 days after the blowout occurred. Mr. John B. Letcher, a special investigator from the

Department of Interior revealed that the U.S. Geological Survey ordered Union Oil Co. to tighten up its supervision of production after the time of that second blowout. The driller responsible for the blowout quit rather than be demoted. But Union Oil Co. records indicate that the man was later rehired.

I personally have knowledge of the oil industry using novice drillers in offshore operations in the Santa Barbara Channel. Companies involved were Standard of California, Atlantic Richfield, Exxon, and Union. Exxon even used an inexperienced driller on the floating drilling barge *Wodeco II* while drilling exploratory wells in the channel. A listing of the inexperienced workers follows: I have a list of the drillers, contractors, and operators and the platform on the platform barge where this happened, do you want me to read that?

Mrs. MINK. That will be in the record as you have presented it.

Mr. GESNER. The attitude of the drilling contractor has much to do with the drilling record. In January 1973, issue of "Ocean Industry" a drilling contractor, Mr. C. R. Palmer of Rowan Co. stated that, "Of course, there will always be losses from abnormal seas and weather and well blowouts. Each may be classified as normal occupational hazards related to drilling offshore."

I am completely convinced that by revising certain parts of Outer Continental Shelf Orders No. 2, we could take blowouts off of Mr. Palmer's list of normal occupational hazards. Until such time as this revised Outer Continental Shelf Order No. 2 is put into effect, we should place a moratorium on all drilling and well service work on Federal offshore leases.

The most effective way of combating indifference in those operators working in the Outer Continental Shelf is to develop more rigid safety standards that are strictly enforced by a qualified and dedicated regulatory agency.

If any of the legislation now being considered by this committee is enacted by Congress, the people of Santa Barbara are still going to be stuck with unsafe, irresponsible offshore lease operators producing on the other 35 leases not included in the proposed oil-free sanctuary. These irresponsible operators, regulated by an unqualified staff of U.S. Geological Survey inspectors, will give us little to look forward to other than more spills, more blowouts, and more pollution until our beautiful Santa Barbara Channel has been completely desecrated. Thank you.

Mrs. MINK. Thank you very much, Mr. Gesner, you mentioned in your testimony that during the 3-year period that you worked on the Federal channel leases, you made certain observation with regard to U.S. Geological Survey inspectors on the platform. Which 3-year period was this and what was your work on the platform?

Mr. GESNER. I worked as a roughneck. This was from 1968 to March 24, 1971.

Mrs. MINK. For which company?

Mr. GESNER. For several companies—for Phillips, for Exxon, for Union—

Mrs. MINK. One other portion of your testimony, you said that you were convinced that by revising certain parts of Orders No. 2, you could take blowouts off the list of normal occupational hazards, could you amplify that statement for me?

Mr. GESNER. Yes; I have something here—this is taken from an API paper in 1937 and it was presented by Mr. Madden T. Works of Cameron Iron Works, and in his paper,¹ he stated:

In 1925 there was a practice started which although it was beyond the strict scope of this paper, is of such importance in blowout control to command attention. This practice was an organized periodic blowout drill for the drilling crew instituted by Vacuum Oil Co. operating in high pressure areas in Louisiana. Realizing that time is the very essence of control when a blowout is threatened, in order that the drilling crew might be trained and coordinated properly in their respective duties, the daily blowout drill was required of each crew.

After a well has reached a certain depth, these drills not only served a valuable purpose in the training of the personnel, but also provided valuable daily check on the condition of the drilling equipment. The Vacuum Oil Co. estimated that these drills reduced the losses by 90 percent. This was 48 years ago.

Mrs. MINK. That practice is not in effect today?

Mr. GESNER. No, sir, it is not. USGS only requires once a week for the crew.

Mrs. MINK. Thank you very much. Are there any questions from my colleagues? Mr. Ketchum?

Mr. KETCHUM. Thank you, Madam Chairman. I know that you know, and I am deeply grateful for the fact that Mr. Gesner is appearing here at my request to you. Most of the other witnesses represented organizations, I appreciate that, I am sure that he does too. Whether the gentleman is correct or incorrect, I would have to say that there is no single individual that I know in this community that has worked any harder on this particular subject than he has, starting with the day I took office as I recall, and I appreciate his comments on USGS. I have discussed with other very good friends of mine that are very familiar with this particular organization, and I would have to say at this point, the conversations I have had with them lend great credence to what this gentleman is saying. We have made some quiet investigations on our own part from my office and we intend to continue them to try to find out how deeply wrong we may or may not be. I do appreciate your bringing it to my attention on your behalf. I thank you for appearing here today.

Mrs. MINK. The Chair would like to note it is rather interesting that it took 50 years to adopt a procedure that seems rather common sensical to me. Maybe a 5-year moratorium is not long enough.

[Applause.]

Mrs. MINK. I must advise the audience here that expressions of concurrence or lack of concurrence to any comments that are made by any witness or any member of the subcommittee are not allowed. Mr. Owens?

Mr. OWENS. Madam Chairman, I first of all would like Mr. Gesner to give us more of his background. You indicated that you worked as a roughneck for several years, what is your professional background, your occupational background?

Mr. GESNER. That. A roughneck, working in the oil fields.

Mr. OWENS. How long?

Mr. GESNER. Ten years, overall.

Mr. OWENS. Ten years in the Santa Barbara area?

¹ Paper entitled, "The Development of Mechanical Control Equipment Used to Prevent Blowouts," by Madden T. Works.

Mr. GESNER. No; about 5 years in Texas, Oklahoma, Kansas—and the balance, about 6 months in Bakersfield as I recall.

Mr. OWENS. Except as you have footnoted your article here, the observations are your own, obviously?

Mr. GESNER. Other than the survey I made and the results of it.

Mr. OWENS. Let me call your attention to your final paragraph on page 3, you state that shortly after the Union Oil Co.'s blowout on well 48, platform A, a second blowout appeared on the platform and on February 12, 1971, well A26 kicked. You referred that to a special investigator of the Department of Interior, this is in their report?

Mr. GESNER. He is the one they finally released the information on. It was hearsay on my part when I made the first charge—hearsay from fellows.

Mr. OWENS. That blowout was not made public?

Mr. GESNER. None of this in this brief right here.

Mr. OWENS. Let me refer you back to your final paragraph on page 2, where you compare the safety record of leases and you cite 6 blowouts, 3 explosions, 6 fires and 16 polluting incidents, did those all deal with this area here?

Mr. GESNER. The majority of them were on the gulf coast area which is supposed to be regulated by USGS.

Mr. OWENS. I am trying to understand the contrast you make between those two paragraphs, the two sentences there. Then you go on to say during the same period there were 5 blowouts, 8 explosions, 20 fires, and 713 polluting incidents on all OCS leases. What is the difference? The first sentence refers to what?

Mr. GESNER. That has to do with drilling. The second set of incidents were production, well production.

Mr. OWENS. I see, you are making the point that you have more in drilling than in operating, that is the point that you are trying to make?

Mr. GESNER. Blowouts, yes, not polluting incidents.

Mr. OWENS. Thank you very much.

Mrs. MINK. If my colleagues have no objection, I would ask unanimous consent that the brief or report that you mentioned by Mr. Letcher, be included in the record at this point, if you would care to leave a copy of it.

Mr. GESNER. All right.

[The material referred to follows:]

INVESTIGATION OF ALLEGED DEFICIENCIES IN OIL OPERATIONS IN THE SANTA BARBARA CHANNEL, CALIFORNIA

BRIEF

It was alleged by Mrs. George Sidenberg, Jr., President, Get Oil Out, Inc. (GOO), Santa Barbara, California that safety valves are not being checked on Union Oil Company of California (Union) Platforms A and B in the Santa Barbara Channel; that there are no packers in some wells which would automatically shut off the wells if a collision or other accident occurred; that Well No. B-49 is being repressurized by water injection; that while packers are being installed in wells some are not being set; that sulphuric acid pumped into wells often spills into the ocean; that dispersants hooked up to sprinkler systems on the platforms are pumped into the ocean to break up the slick at times when the continuing seepage is particularly noticeable and heavy; and that U.S. Geological Survey (USGS) inspectors assigned to platform operations are not as familiar

with the technical aspects of these operations as they should be and the inspections are considered rather a joke by those working on the platforms.

Investigation disclosed that subsurface safety devices are being installed in all wells on the platforms and are being checked for proper operation under a systematic program by the Santa Barbara District Office, USGS, Santa Barbara, California. Packers are installed in all completed wells although some are not being set for a few days on pumping wells in order to check the proper operation of the down hole electrical pumps. Well No. B-49-I (Well No. B-49 referred to above) is an experimental water injectivity well and was approved as such within operating guidelines by the Director of the USGS in accordance with the recommendations of the DuBridge Panel contrary to Mrs. Sidenberg's contention as to the provisions of that panel's recommendations. The DuBridge Panel was established pursuant to authorization by the President of the United States for the purpose of examining methods of remedying the damage caused by the Santa Barbara Channel oil spill of January 1969 and avoiding future spills. No sulphuric acid has been used on either platform and no evidence was obtained to indicate that sulphuric or any other kind of acid was either purposely or accidentally spilled into the ocean from the platforms.

Platform A is equipped with a dispersant system consisting of garden hoses and common garden sprinklers through which a maximum of one 55-gallon drum per day of the type of detergent used to wash seabirds after severe oil spills, is mixed with 250 gallons of sea water per minute and pumped under and around the platform (nearest the oil seep) to breakup oil "rainbows" and slicks and wash residual oil from the platform supports so that rising tides do not produce new rainbows and slicks. The use of the dispersants is done with the knowledge of the Regional Oil and Gas Supervisor, USGS, Los Angeles, California, who when interviewed, stated he gave Union authority to use dispersants, but only to break up accumulations of oil under the platform, in order to prevent fire hazards. The USGS engineering technicians who make the platform inspections are chosen for their ability to perform higher mathematics and their extensive past experience in the technical aspects of the oil industry, and are backed up by graduate petroleum engineers. Union personnel consider them competent and their inspections thorough and stated that anyone who claimed otherwise did not have the knowledge and experience necessary to make a competent appraisal.

Mrs. Sidenberg, when interviewed, additionally claimed that a sea water sample taken on Friday, July 30, 1971, on Carpinteria Beach contained sufficient detergents to be harmful to humans swimming in the water. Investigation disclosed that Platform A is located approximately seven miles from the beach, that Union dispersed one 55-gallon drum of dispersant that day; that the Santa Barbara and Carpinteria sewage outfalls dump into the beach areas vast quantities of effluent which contain a tremendous amount of commercial and residential laundry detergent; and that it is these vast quantities of effluent that are the probable cause of the contamination.

It was alleged by William G. Gesner, a former employee of the Peter Bawden Drilling Company, a Union contractor on Platforms A and B, in a letter to the Santa Barbara, California Environmental Quality Advisory Board, that on February 12, 1970, Well No. A-26 almost blew out and required an Otis snubbing unit to get the drill pipe back into the hole and Dick Adams, driller, and Alex Miller, derrickman, were fired for almost losing control of the well, but were later rehired; that on July 19, 1970, Dick Schmidt, a driller on Platform A, made a false entry on the daily drilling report that a blowout prevention drill was held; that on April 4, 1969, on Platform A, he personally dumped approximately 2,000 gallons of hydrochloric acid into the ocean; that on October 1, 1970, on Well No. B-2-S (mistakenly identified as B-25 in Gesner's letter) under the direction of Herbert Works, toolpusher, the crew tried to test the tightness of the lead seal in the liner hanger and, after the test fail, works deliberately manipulated the Toteo recorder to show an 800 p.s.i. false test and had Bob Wilhelm, the driller, record a false entry on the daily drilling log to this effect; that on February 4, 1971, while doing remedial work on Well No. A-43, no reserve mud was put back into the mud tank, no flow sensor or pit level indicator was installed, the hydraulic controls for the blowout preventer valves on the rig floor were not in working order and the manual controls were not installed; and that on March 17, 1971, during redrilling operations, the blowout preventer controls on the rig floor were not hooked up nor were the manual controls installed.

Investigation disclosed that on February 13, 1970, Well No. A-26 flowed back about one barrel of mud (rather than on February 12 as claimed by Gesner)

and after the blowout preventers were closed, the pipe was snubbed back into the cased hole as an extra precaution. *Union*, after being ordered to do so by the USGS, tightened its supervision. Adams quit rather than be demoted to derrickman because he did not watch the mud sensor and could not positively prove the hole was full of mud when the well "kicked," but was later rehired. Miller was transferred to another rig. Bawden's records show and Gesner admitted that he was not on duty on Well No. A-26, at any time during the entire problem period.

Bawden's records show that on July 19 and 20, 1970, Gesner worked the day tour on Well No. A-52 under driller Dick Schmidt and that the crew was gravel packing the well and could easily have held the blowout prevention drill Gesner claimed was falsely entered on the daily drilling log. The records show that both day and morning crews held blowout prevention drills. Schmidt, however, no longer works for Bawden or in the area and could not be located for interview. Gesner could not name nor did the investigation disclose anyone else who had knowledge of the alleged false entry.

Bawden's records show that on April 4, 1969, Gesner was working on the evening tour on Well No. A-38 and that the crew was not acidizing, but was circulating mud and waiting for orders after having already acidized the well on March 25, 26 and 27, 1969, when 3,000 gallons of hydrochloric acid were pumped into the well. The acid went into the formation and the spent acid was produced back with oil and transported by pipeline to shore where the oil was processed. No evidence was obtained to indicate that any acid had been dumped into the ocean.

Bawden's records show that Works was not on Platform B on October 1, 1970, and Wilhelm who was the driller on Well No. B-2-S on that date, when interviewed, denied that he was either instructed by anyone to make a false entry of a lead seal test or that he did so. Wilhelm stated that an initial test of the lead seal failed; that additional weight collars were added to the drilling string; that the seal was retamped and that a successful test of approximately 800 p.s.i. was held for about 15 minutes on the seal before the well was gravel packed. Union officials stated that if the lead seal leaked, the gravel packing material would wash over the tool and prevent its ready removal from the hole and Bawden and Union records show the gravel pack was a success.

Gesner, when interviewed, admitted that the hole of Well No. A-43 was full of mud on February 4, 1971; that the well was cased and that the regular mud pit was full and available for use, claiming only that the reserve mud pit was not in use. Investigation disclosed that the regular mud pit had 3.2 times the volume of mud as that required to completely fill the hole in case of an emergency and Union officials claimed that blowout preventers were installed and that neither the Government regulations nor safe operating procedures requires a greater volume of reserve mud under these circumstances. USGS technician reports show that the blowout prevention equipment was installed and operative on both February 3 and 4, 1971, and USGS technicians when interviewed, confirmed these report entries. Union officials stated that only remotely operated controls for the blowout prevention equipment is required on cased holes and records show that this equipment was installed and tested.

On March 17, 1971, Gesner was on the daylight tour on Well No. B-43 and Union records show that the rams were tested at 3,000 p.s.i. and the hydril at 1,500 p.s.i. on that tour. The well was cased and the rig was performing remedial work and Union reiterated that Government regulations and safe operating procedures were complied with on this date.

Gesner complained that USGS technicians made inspections only during daylight tours. Investigation disclosed that after drilling operations were completed on the platforms, technicians have made inspections Monday through Sunday, but only on daylight tours. Prior to that time and while Gesner worked on the platforms, technicians witnessed required tests and operations on all three tours when necessary. Present regulations limit the amount of overtime which employees in the USGS are permitted to work. They are presently working near the upper limits of the overtime limitations.

Mrs. MINK. Thank you very much. If there are no further questions, our next witness will be Dr. Norman Sanders, geography department, University of California at Santa Barbara.

We have your statement, Dr. Sanders, which will be included in the record in full and you may give your summary.

[The statement referred to follows:]

STATEMENT OF DR. NORMAN K. SANDERS, ASSISTANT PROFESSOR, GEOGRAPHY,
UNIVERSITY OF CALIFORNIA AT SANTA BARBARA

Offshore oil has a number of disadvantages as a source of energy. These disadvantages lie in two areas: (1) The General Use of Oil for Energy and (2) The Particular Drawbacks of offshore oil production.

It has become painfully clear in the past months that reliance on oil for energy is a very dangerous policy. Oil is a non-renewable resource which we have already depleted drastically. Largely due to oil company manipulation, other forms of energy have been abandoned and neglected while we based our energy consuming civilization on oil. Now that oil is in short supply through overuse as an energy source, our manufacturing industry is also in danger. Many plastics, medicines and other necessities of our society are derived from the dwindling petroleum supply.

It makes good sense to save our petroleum for manufacturing by shifting energy production to renewable resources. The sun offers the most promising source of energy through direct solar heating, by producing steam for electrical production, and indirectly through wind power which can generate electricity and propel merchant ships. Other neglected energy sources are garbage and manure. Garbage can be burned for heat, fermented to produce alcohol, or be subjected to anaerobic bacterial action to produce methane. Manure is another potential source of methane (natural) gas. One pound of manure will produce ten cubic feet of methane. Since there are two billion tons of manure produced each year in the United States, we could supply half of the country's energy requirements from this source alone.

Now is the time to make the shift from oil to other energy resources. Much of the oil remaining on earth is located in offshore areas which present great environmental and technical difficulties.

Oil operations should be postponed in California offshore waters because, with present technology, it is not possible to operate without waste of the valuable oil resource, and without hazard to the environment. This view has been supported by the State Lands Commission of the State of California which has maintained a moratorium on drilling in State waters for the last years. The moratorium will be lifted at that time when the oil industry can successfully demonstrate its ability to contain oil spills when they occur.

The oil companies have issued repeated assurances through the years that they have solved their pollution problems, but the record indicates otherwise. We in Santa Barbara received reassuring words before our disastrous 1969 blowout which poured 3,500,000 gallons of crude oil onto our beaches. The residents of the shores of the Gulf of Mexico were told not to worry, that modern technology was "fail-safe", and then in 1970 had to watch in horror as a Chevron Oil Company platform caught fire and burned out of control. When dynamite finally killed the fire, oil continued to spill into the sea for an additional 21 days until its flow was stopped. After another flurry of press releases about advanced oil-field technology, a 22-well Shell Oil Company platform in the same region blew-up in 1971. It took four months to stem the flow of oil—a process which cost four lives and \$36,000,000.

If oil well drilling technology were as well developed as the oil companies say, then a Texan named Red Adair would be on welfare instead of having a million dollar bank account. Red Adair, now 57 years old, has specialized in capping runaway oil wells since 1938. During that time he has clamped control valves on about 900 wells, including all three of the disasters listed above. One of his biggest jobs was the capping of an offshore well in the Persian Gulf which was spewing 400,000 gallons of oil per day into the sea. About that incident, Adair said, "They had an oil slick 800 miles long. And they were awful careless before we got there. That well could have killed 300 or 400 men."

U.S. Governmental agencies aren't enthusiastic about the capabilities of the oil industry either. The Joint Economic Committee of Congress states in reference to offshore oil operations that "All of this would appear to raise a policy question of withholding or delaying further offshore lease and development until fully adequate technology is more nearly in hand for producing and transporting petroleum. The very high public and private costs incurred in offshore development in the recent period, the possible irreparable damage done to some resources and the fact that several aspects of technology, legislation and law are yet to be worked out or clarified would seem to suggest a go-slower policy."

President Nixon's Panel on Oil Spills reports that "Hazards arise in connection with offshore structures themselves, whether oil platforms, floating drilling rigs or whatever." The Panel goes on to say, "As offshore development continues to expand at the present rate and the frequency of accidents remains the same, we can expect to have a major pollution incident somewhere every year. It is noteworthy that the possibility of oil leakage and gas leakage from offshore oil production must never be completely discounted for the probability of blowouts cannot be reduced to zero."

The insurance industry has also recognized the hazards of offshore drilling by cancelling insurance for offshore operations. The Insurance Rating Board states, "This exception for oil is justified. The public has become increasingly aware of the agonizing effects of oil spillage and resentful of the failure of oil risks (the oil companies) to take the ordinary steps to avoid them."

People who have suffered from the oil industry's failure refuse to accept the glossy statements of the public relations men. A survey of 1008 Santa Barbara residents taken two years after the spill revealed that 2.8% of those interviewed always believed oil company statements; 54.5% sometimes believed; and 42.7% never believed their pronouncements. 83.1% of the responses thought that all oil operations should get out of the Santa Barbara Channel.

This skepticism extends even to parts of the United States where no offshore operations presently exist. On the Eastern coast, the State Legislatures are fighting against the leasing of submerged lands 100 miles offshore. The Northeastern U.S. is dependent on imported oil and gas and has a unemployment rate. Even so, the people have very emphatically instructed their government to keep oil companies from gaining a foothold.

The Special Legislature Commission on Marine Boundaries and Resources of the Massachusetts State Senate released their report on offshore drilling in September of 1972. The Commission strongly recommends that the Commonwealth of Massachusetts oppose all phases of offshore oil development until a number of conditions are met, including waiting "until blow-out and spill prevention technology have sufficiently improved to be clearly fail-safe and until oil spill technology can adequately cope with an ocean spill in adverse seas and weather conditions so as not to cause any damage to the marine environment and public health from its own effects." The Commission also found that "American corporate oil interests have a serious detrimental influence on government resource management decisions and regulation, both through direct political influence and by partial, if not complete, corporate monopolization of alternative energy sources, e.g., gas, coal, and nuclear fuels."

Specific hazards attend every phase of offshore oil exploration, production and transportation. During the exploration phase, test wells are drilled into unknown geologic structures from portable rigs. High potential exists for blowouts during this operation, especially in deeper water. If oil is encountered during the exploratory drilling operation, it is ignited and burned in a flaring device. Sometimes, however, the oil is simply dumped on the surface of the sea. When the test data is obtained, the exploratory holes are supposed to be capped. In the Santa Barbara area, considerable oil spills to the surface from inadequately capped test wells.

When exploration establishes the presence of oil, platforms are installed and more holes drilled. These wells are also subject to blowouts and furnish further pollution through accidental or intentional oil and mud discharge and dumping of acids used for increasing the flow of oil through the production zones. In addition, fire hazard can be great on oil rigs as shown by the Shell and Standard disaster in the Gulf of Mexico and two major fires in the Santa Barbara Channel. One fire destroyed 22 wells on a Mobil Oil pier near Santa Barbara and the other caused an estimated \$1,000,000 damage to a 12-well Standard Oil platform offshore.

Contamination can reach the water surface in a number of ways. Gas separating devices called scrubbers have eight inch blow-off pipes on the sides of each platform which spill oil during periods of high surge. This happens when new wells are put on the line or when a well has been worked over, both frequent occurrences. Another common form of pollution comes from drilling mud and weight material (Barium Sulphate) which is dropped overboard along with the oil drill cuttings. In addition, when a new well is brought in, the fluid is poured on the production deck until a clear stream of oil is flowing. The entire collection of liquids is then hosed into the sea, generally at night, but at anytime if fog obscures the operation. There is a distinct possibility that the build-up

of the very heavy minerals contained in the drilling mud could drastically change sea bed ecology in the vicinity of the platforms and exploratory drilling barges. Many tons of material are involved in this operation.

Still another form of pollution is the dumping of acids directly into the sea. In at least one instance, several thousand gallons of acid used to increase the flow of oil in a well were pumped into the ocean from a Santa Barbara platform instead of being taken ashore as required.

Sewage is yet another type of pollution produced by the offshore oil rigs. Sun Oil Company, operator of platform Hillhouse in the Santa Barbara Channel, told the California State Regional Quality Control Board that sewage, drilling mud, cuttings and other oil production waste pumped into the ocean total 100,000 gallons daily.

Transportation of the oil from platforms to shore offers further potential for spillage. Pipelines on the bottom are subject to corrosion, submarine landslides, and breakage by ship's anchors. The second massive oil spill in the Santa Barbara Channel which occurred during December 1969 shows the vulnerability of the pipeline system. A break developed in a Union Oil Company pipeline allowing a 50-square mile slick to form before being detected. The pipeline is equipped with automatic pressure reduction sensing devices and automatic shut-off systems which are supposed to guard against such an occurrence, but none of the devices functioned.

Technology still has not come up with the answers to two very basic problems: 1. Containing spills on the open sea and 2. Disposing of spilled oil. According to the U.S. Coast Guard, no boom arrangement now available can contain spills in seas greater than 5 feet high. I have been an observer during many containment tests and all the systems have been inadequate. What works well in a test basin fails in the face of complex natural wind and wave patterns. Skimmers can cope with small spills in sheltered areas, but are pathetically inadequate of dealing with a 50 square mile slick in the open sea.

Chemical methods of spill containment may offer some hope, but presently are not practicable. Chemicals can make the situation appear better visually by sinking or flocculating the oil, but the chemicals themselves are toxic to marine life forms. One popular chemical, COREXIT, has been found by the U.S. Fish and Wildlife Service Fishery-Oceanography Center to be toxic to anchovy eggs and larva at concentrations as small as two parts of dispersant to a million parts of sea water.

Straw remains the best method of oil spill cleanup. The straw method can be used on sandy beaches, but rocky shores are either left alone or steam cleaned. A tremendous problem arises in disposing of the oil soaked straw. Burning causes air pollution and dumping allows the oil to flow downhill back into the ocean. This occurred in Santa Barbara when oil from straw dumped in a canyon during the original Spring 1969 cleanup seeped back onto local beaches.

Another difficulty with offshore oil operations is the hazard posed to navigation. The drilling barges have extensive anchoring systems consisting of buoys and unlighted cables. In a Notice to Mariner, the Coast Guard reports that: "The anchoring system for these vessels may extend to 5,000 feet from the vessel. The limits of anchoring system are marked by orange and white vertically striped buoys equipped with white lights flashing every two seconds. Mariners should not pass between these buoys and the drilling vessel."

On December 5, 1968, the Matson liner Lurline was forced to quickly alter course on a clear night to avoid the drilling barge Bluewater II off Santa Barbara. A California couple barely escaped death when their boat rammed an unlighted buoy near a Santa Barbara platform. Their boat sank, but luckily they were rescued by the Coast Guard. Many yachtsmen and fishermen tell of near misses with the numerous cables, pipes, and buoys strewn the Channel.

So far, a major tragedy has not occurred. What we fear most is the very real possibility of a 250,000 ton supertanker ramming a 50-well oil platform in the fog. That disaster would make our earlier problems seem trivial by comparison.

Oil spills have far reaching effects when they occur. Tourist and fishing economies are hard hit, and the environment suffers long term damage. Bird kills are the most obvious result of oil pollution, but are probably less serious than the long term effects on marine life. Dr. Max Blumer, Senior Scientist of the Woods Hole Oceanographic Institute, Massachusetts, has been studying the results of an oil spill in a nearby bay for several years. He finds that oil is still causing serious damage to organisms in the bay, even though most of the visual traces of the spill have disappeared. One of Blumer's major concerns is his

discovery of increasing levels of cancer-causing substances in oil-exposed marine life. Dr. Blumer warns flatly that we must choose between our present primitive oil production and shipping techniques and our fisheries—we cannot have both.

The Santa Barbara commercial fishing fleet has never recovered from the oil spill disaster. During the three months following the blowout, the total landing of commercial fish at Santa Barbara was down a quarter of a million pounds from the previous year. The halibut catch was down to 185 pounds compared to 9,050 pounds in the same period in 1968. Bonito was down from 14,799 to 46 pounds. A lobsterman pulled up 500 lobster traps and netted 41 pounds of lobster—a record low for his thirty years in the fishery. In addition to lower catches, fishermen reported expensive damage to gear which became coated with a thick layer of crude oil. All this was in addition to the continuous problem of snagging nets on pipelines and other underwater obstructions connected with the oil operations.

Another major argument exists for postponing offshore drilling at the present time. We are indeed faced with an energy crisis. According to USGS figures, worldwide production of crude oil will peak in the year 2000 and then decline to almost nothing by the year 2050. It makes good economic sense to produce oil first from inland areas, foreign and domestic, reserving our offshore fields until we can produce them without waste. Oil off the coast to California should be kept in escrow for the future when technology has developed to the point where it can be efficiently extracted. Oil in the ground is an excellent investment—royalties payable to California through leasing and production will be far greater in the future when other oil fields have been depleted.

If the costs and benefits of drilling for oil in California waters are examined honestly, it is plain that the oil should be left in place at present. Right now it is a certainty that oil will spill. The main costs of this spillage will not be borne by the oil companies (although they will spend considerable sums in attempting cleanup operations). It is the people of California who will pay the biggest price. Fishermen will be affected, the tourist industry will suffer, and many will be denied the pleasures of simply visiting the shore of the Pacific Ocean. The people of California just don't deserve to have their ocean turned into an industrial slum.

STATEMENT OF DR. NORMAN SANDERS, GEOGRAPHY DEPARTMENT, UNIVERSITY OF CALIFORNIA AT SANTA BARBARA

Dr. SANDERS. Members of the subcommittee, Madam Chairman, ladies and gentlemen, my name is Norman K. Sanders, I am presently Assistant Professor of Geography at the University of California, Santa Barbara. I have a bachelor's degree in geology, geophysics from the University of Alaska, a master's degree from the University of California at Los Angeles, a Ph. D. degree in coastal geomorphology from the University of Tasmania in Australia where I attended on a Fulbright scholarship.

I have had industrial experience working for a number of years for Aerojet General where I helped develop geophysical prospecting equipment for the Kermickey Prospecting Co. I am representing the California Coastal Alliance. I am on the executive committee of the California Coastal Alliance. The California Coastal Alliance is an amalgamation of environmental groups that was organized to push through the proposition 20, coastal initiative in the last November election.

The title of my presentation was misprinted in the typing and I am afraid I did not have a chance to proofread it to get it to you in time. The title should be "Disadvantages of Offshore Oil 'as' an Energy Resource."

I feel offshore oil has a number of disadvantages as a source of energy. These disadvantages lie in two areas: (1) the general use of oil for energy and (2) the particular drawbacks of offshore oil production.

It has become painfully clear in the past months that reliance on oil for energy is a very dangerous policy. Oil is a nonrenewable resource which we have already depleted drastically. Largely due to oil company manipulation, other forms of energy have been abandoned and neglected while we based our energy-consuming civilization on oil. Now that oil is in short supply through overuse as an energy source, our manufacturing industry is also in danger. Many plastics, medicines, and other necessities of our society are derived from the dwindling petroleum supply.

It makes good sense to save our petroleum for manufacturing by shifting energy production to renewable resources. The sun offers the most promising source of energy through direct solar heating, by producing steam for electrical production, and indirectly through wind-power which can generate electricity and propel ships. Other neglected energy sources are garbage and manure. None of this is new; in fact, the Germans and Swiss already have on the drawing boards a 120-pound manure ship that can go 70 knots a ton with accelerating power. We can make electricity from solar power now. The astronomers from Arizona have worked out a technique of solar power that interfaces with a steam generating plant. These things are within our grasp. Garbage, one of our greatest outputs, can be utilized for heat, directly burned. It can be fermented to reduce alcohol to run machinery. It can be subjected to inner bacterial action to produce methane gas. Methane gas is natural gas. That is what we burn when we burn natural gas from an oil well.

Incidentally, when you talk about solar power, oil and natural gas are solar power. They were made by the sun many years ago, millions of years ago, and compacted and put on the earth; now we are tapping these solar resources of many millions of years ago, why not tap them directly? Shorten the pipeline.

Another major resource of the United States is manure. We produce 2 billion tons of manure per year in the United States, which is a waste disposal problem. This can also be subject to anaerobic bacterial action and can produce methane. One pound of manure produces 10 cubic feet of methane. We could supply half the country's energy requirements from this source alone.

I am not saying that any one of these sources should be our sole source, but we are neglecting almost all of them. Now is the time to make the shift from oil to other energy resources. Much of the oil remaining on the earth is located in offshore areas which present great environmental and technical difficulties. As has been previously noted, the State Commission of the State of California has recognized these difficulties and has had a 4-year moratorium on drilling in the State tidelands; this may or may not be lifted. I testified at the hearings on the State tidelands, I attended those hearings, and it was apparent at that time that the technology has not been well enough developed. If that moratorium is lifted, it would be lifted for political reasons, not because the technology has been fully developed.

We have had assurances—continual assurances—from the oil industry advertising that they are operating in a safe manner. The record shows otherwise. We have heard of some of the other mistakes; Mr. Gesner mentioned them. The Gulf of Mexico has had major blowouts. In 1970, a Chevron Oil Co. platform caught fire and burned out of

control; oil continued to spill into the sea for 21 days after the fire was put out. The 22 Shell platform in the same region, blew up in 1971. It took 4 months to stem the flow of oil, four lives were lost, and it cost \$36 million. Platform A is still leaking today. You will see that as you go out there.

Another thing you might watch for when you go out, is the detergent sprinklers. A detergent is only supposed to be used around the platforms to minimize the fire hazard. Whenever they get any VIP visits out there, they turn on the detergent sprinklers to cut down the visual pollution. So, watch for the sprinklers on the corner of the platforms.

Incidentally, I am sure they will not pollute while you are there. If we could just induce you to go in shifts for months on end, to be on the platforms, I think we would have a lot better operation out there.

If oil well drilling technology were as well developed as the oil companies say, then Red Adair would be a popular person. He makes his living on putting out blowouts, putting out fires. He has controlled about 900 wells, including 3 of the disasters in the last few years mentioned above. One of the biggest jobs is the capping of an offshore well in the Persian Gulf which was spewing 400,000 gallons of oil per day into the sea. About that incident, Adair said, "They had an oil slick 800 miles long. And they were awful careless before we got there. That well could have killed 300 or 400 men."

In Santa Barbara, we are very sensitive to the operations of the oil industry. I have been running a poll on what the people think about the oil industry, and I have run this poll since 1969 and I run it two or three times a year. Many say my poll is biased; perhaps it is, it is not taken at random but by my students, my long-haired students. And, perhaps, when they go into the community and they do not go into Alta Vista, they must go into downtown Santa Barbara. Perhaps the people that talk to them are filtered by who is talking to them. Perhaps people who are for the oil industry will not talk to them, I do not know. This is the problem with the poll, but they do interview massive numbers of people.

One of the polls interviewed 1,008 Santa Barbara residents; this was in 1971. Of those interviewed, 2.8 percent always believe oil companies' statements; 54.5 percent sometimes believe; and 42.7 percent never believe, their pronouncements. And 83.1 percent of the responses thought all oil operations should get out of the Santa Barbara Channel.

What about today? The last poll I took was in March of 1973. This was a little different sampling. A total of 575 people—I refined the questionnaire a little bit; I broke it down a little more. The results were: "Should the industry leave immediately?"—40.3 percent said yes, they should get out immediately. "Should the oil companies leave after the platform A leak is stopped?"—25.3 percent—this adds up to 65.6 percent. And 21.4 percent said they should remain; 12.9 percent said they had no opinion.

What we are saying is that the rise in the "no opinion" column and the low rise in the "should remain" column, the people who were here during the oilspill do not forget. They were affected very greatly by that spill.

There are two basic problems that technology has not come up with the answers to. One is containing oil in the open sea, and one is cleaning up the contained oil. I recently attended a symposium on oilspills, in

Rensselaer, N.Y. The Coast Guard there told me and the Shell Oil people told me that they could not presently contain oil in seas greater than 5 feet in height. Straw remains the best method of cleaning up oil. Detergents such as the English used are cosmetic only, they sink the oil, put it in solution in the water, and it is very toxic then to life forms.

Fortunately, the United States does not use detergents to any great extent. On navigation, the steamer lanes would be absent if the steamers took to them, but in fact they do not.

We have been pushing for years, to get all the major steamer traffic out of the Santa Barbara Channel. They simply do not have the navigational—well they do have the equipment, they do not have the will to use it. The last major collision that we had in the channel was between *Copper State* and *Cosatat*, one was a tanker and one was a Navy ship, that was in the late 1960's. They reported their position as off Santa Cruz Island. They found later that they were actually off Ana Cappa. They did not even know where they were, much less each other.

The new supertankers, I was reading the Ocean Law Newsletter, it said the tanker companies are very upset about the new laws that say they have to proceed at a speed that will allow them to stop in a length of half the visibility. They say, even with perfect visibility to the horizon, they cannot stop. It takes them 12 miles to fully stop, or fully laden it takes a tanker several miles to just turn it.

Therefore, we must move the traffic outside the channel, going around the outside. Another problem perhaps, but it just does disturb us. The damage resulting from the oil spill is always a debatable point. I am not going to go into it here, except to say that people that seem to work for the oil industry say there is no damage. Independent researchers such as Max Bloomer of the National Oceanographic Institute say there is a lasting damage.

That is a point that we can discuss for a long time.

Briefly, and in summary, I think that the American people are sick and tired of what big business and big government has been doing to them. They have been watching oil company profits soar while people are denied fuel for their homes. We have seen Union Oil profits up 62 percent in the third quarter. Exxon Corp., the world's biggest oil company, announced an 81-percent jump in profits. And Shell Oil, 23 percent rise. Gulf Oil reported a 90-percent profit advance in the quarter and 60 percent gain in the first 9 months. Continental Oil, 38.3 percent and so it goes.

Watergate has made the people distrustful of Nixon and Congress. In the Congress, we see Senator Henry Jackson's office says \$10,000 donated to his unsuccessful campaign for the 1972 Democratic Presidential nomination will be returned to a Gulf Oil Corp. lobby.

The chairman of National Oil Co. has admitted making an illegal \$100,000 cash contribution to President Nixon's re-election campaign. We see the oil industry apparently manipulating the democratic process. The people are tired of this. They watch Congress apparently taken in by this energy crisis, apparently fall all over themselves passing the Alaskan Pipeline bill and other bills favorable to the oil industry. This is an industry which created its own crisis. It created this crisis either by manipulation of oil stocks at the present time or through a long-term process of not allowing us to use alternatives.

We in California do use a lot of gasoline. We had initiated Proposition 18 to get mass rapid transit funded from the gas tax funds. Who was the major lobbyist against this? The oil industry. They lobby very heavily against any plans we have ever had to cut down on the use of gasoline and they have kept us on a one-fuel energy supply.

This committee can help restore faith in Washington by taking two positive steps. One, you should pass legislation preserving our precious oil resource for the future; and it is precious for manufacturing. Two, you should embark upon a legislative program aimed at diversifying our energy resources. Make it impossible for the oil companies to continue to commit extortion on the American people by manipulating oil supplies. It is up to you.

Thank you. [Applause.]

Mrs. MINK. Thank you very much, Dr. Sanders.

Several witnesses, including yourself, made mention of the State Lands Commission moratorium, which was invoked 4 years ago. This moratorium, I assume, extends over the 3-mile zone from shore to ocean in addition to the Santa Barbara oil sanctuary, is that correct?

Dr. SANDERS. It is a moratorium on all drilling on the State tidelands of the State of California, and as such, is in addition to the Shell Cunningham sanctuary that is right off Santa Barbara. That is a narrow sanctuary 16 miles long right off the city of Santa Barbara; where many of the people in this area do not live in Santa Barbara at all; they live in Goleta and in sort of a string development along the seacoast.

That does protect downtown Santa Barbara, but the bulk of the population does not benefit from it.

Mrs. MINK. The State Lands Commission has no authority by and in itself to do anything with regard to the Santa Barbara oil sanctuary?

Dr. SANDERS. Not the Shell Cunningham Sanctuary. They do have control of the State tidelands and the rest of the channel. The channel itself is 16 miles long, and it includes more than just the State tidelands on the landward side. It also includes the State tidelands on the Channel Islands, a string of islands offshore, which is a very considerable area.

Mrs. MINK. Have there been any drillings in the Santa Barbara oil sanctuary as such after the sanctuary was established in 1955?

Dr. SANDERS. Not to the best of my knowledge, no.

Mrs. MINK. Do any of my colleagues have any questions?

Mr. TEAGUE. No.

Mrs. MINK. Mr. Cronin.

Mr. CRONIN. Two comments. Basically, I dispute the statement that the Congress has been taken in, and I suggest that you pick up the rather extensive and active hearings that were conducted by the Subcommittee on Energy of the Science and Astronautics Committee over the last 3 years on the alternative sources of energy, all of which were mentioned, some of which you have not mentioned.

We are making substantial headway in many of these areas. In fact, I am a member of that committee as well as this, and leaving here I will be going to Albuquerque to look at some work that we have coming on line with solar heating in perhaps 2 to 4 years, and back to Los Angeles where we are having additional energy hearings.

Quite to the contrary, we are not standing still. Congress has been moving in many areas all at the same time.

Dr. SANDERS. I applaud that, but I would also say that last year our total research budget for solar power was \$2.5 million.

Mr. CRONIN. I would also point out that most of the research dollars in this are being put up by private industry, not by Government. They are currently running into \$1 billion annually.

Dr. SANDERS. Generally that includes atomic energy research. I do not think atomic energy is a viable resource.

Mr. CRONIN. I am talking about only solar on that point.

Dr. SANDERS. Southern California Edison spent \$20,000 last year. That is the only local outfit I know dealing with solar energy.

Mr. CRONIN. I am glad to say it is not a local effort; it is a national effort. Arthur D. Little has just completed a substantial report which I think is also available, and you might avail yourself of that. This was completely funded by the heating and air-conditioning industry—that is now a \$3 billion a year industry—who is very concerned about utilizing solar energy. We are looking ahead to using solar plants on line by the heating season after next, where we could have a solar adapter that would help forced hot water systems and steam systems.

Dr. SANDERS. 2 million Japanese now have roof solar water heaters. I think this is something we could do very easily and quickly in the United States.

Mr. CRONIN. We are doing it in some parts of the country.

On the point you made on the supertanker, are you aware of a new collision avoidance system for the tankers?

Dr. SANDERS. In the San Francisco Bay?

Mr. CRONIN. No; I am talking about shipboard radar systems.

Dr. SANDERS. I am an electronics engineer. I have been around electronics a long time. Electronics fail, and also the people that watch the electronics fail.

I think this is good. We need more control of ships certainly at sea.

I am of the opinion—I agree with Mr. Gesner on this—we need human beings who are well-trained on these ships. Right now the people who get employed on tankers are not highly trained to either run the electronics gear or to be crewmen. They are practically automated now, these tankers. I think we are depending on gadgets too much. We need specialized training courses for tanker crewmen, and we need to stop automating so much.

There is no substitute for a lookout in the bow. These boats do not have them any more. They do not have a man on duty whose job it is at all times to look out like they did in the old days, because they are relying on their electronic gear. When their electronic gear fails, they either hit the bottom or the shore or each other.

There are 4,000 tankers registered in the world today. Every week two of them hit something and spill oil.

Mr. CRONIN. That is mainly because many of them are small; they are old; they are half-antiquated equipment, and quite often their collisions are just speeding up the point before they fall apart on the open seas.

Dr. SANDERS. We just had the largest ship ever to sink at sea, a supertanker 238,000 tons.

Mr. CRONIN. That is a long way from the size of the supertankers we are talking about. The United States just recently—and I am sur-

prised you did not point it out—has declared that all ships, not only being built by the United States, but all the future supertankers that will be coming in to the United States, will be required to have collision avoidance radar on them. The U.S. Congress did that.

I am surprised at you being an electronics engineer and a Ph. D. to boot, not knowing the rates of failure for these things, and not even being aware of the collision avoidance systems I am talking about. There are five manufacturers in the country that are making them. You will find there is a very high degree of reliability and contrary to increasing the problem, I think they will help to solve this problem.

Dr. SANDERS. Well, it will help solve the problem, but unless you have lookouts on the bow and people trained to deal with these problems, we are going to have more and more spillage.

Incidentally, I do not agree with supertankers at all. It is an economic problem, not a seafaring problem. They are unwieldly seafaring vessels. Supertankers are only there because it is cheaper. You do not have to pay so many people to be a crew, for one thing. You can use the same crew as you do on that 12,000 ton ship. You can give Americans work.

Mr. CAMP. I make a point of order. We are getting into the maritime business.

Mrs. MINK. A good point.

Mr. OWENS.

Mr. OWENS. Dr. Sanders, a great deal of what you said was very good and a great deal I do agree with. Certainly the cynicism in your statement as to how the Government has been influenced by the major oil companies is well founded, and I concur basically with your thrust in that area and with your concern. It is a matter of opinion obviously, and I am concurring with your opinion, as the gentleman on my right from Oklahoma has pointed out to me—that is literally and figuratively on my right.

I will draw some disagreements, however, with your discussion or alternate sources of energy. I agree we should have done more, but there is a great deal more than the \$2½ million that you indicate was spent last year by the Government in the area of solar research. The figures, I recall, are over \$12 million that went to the National Science Foundation for solar research.

There are some other funds. I wish it had been 10 times that much, and I hope that it will be this year. We do react to crisis situations. That is how this system functions, unfortunately. Unfortunately, we did not look forward all the time, as we should.

As a farmer from a small town in southern Utah, though, I will dispute your statement as to how much manure is produced every year in this country. There are several million horses in this country and two or three times as many cows; and I fail to see how many animals could produce 2 billion tons of manure a year.

Dr. SANDERS. Hogs.

Mr. OWENS. Pardon me?

Dr. SANDERS. Hogs.

Mr. OWENS. I am also an old pig farmer. They do not produce that much, I do not think. I would be interested in your source of information, the source for this statistic. [General laughter.]

Mr. OWENS. I do understand the source of manure.

Dr. SANDERS. I can get that for you. I do not have it here. I can get it for you.

Mrs. MINK. That information will be inserted in the record at this point.

[The information referred to follows:]

UNIVERSITY OF CALIFORNIA,
Santa Barbara, Calif., November 28, 1973.

DEAR REPRESENTATIVE OWENS: Thank you for taking the time to come to Santa Barbara. I enjoyed our brief discussion during the hearings.

You expressed an interest in the methane conversion potential of manure and asked for more data. I have enclosed an article from the local paper telling of the difficulties one researcher in methane conversion has encountered in getting anyone to listen to him.¹

Another worker in the manure field is Dr. James Steele of the University of Texas. At a meeting of the U.S. Animal Health Association in Miami Beach he reported that one pound of manure can yield 10 ft.³ of gas. At the current rate, the 2 billion tons (I think that I said 200 billion tons, which was in error) of manure from cows, chickens and hogs produced in the U.S. each year could meet half of the country's energy demands.

This very neglected energy resource is being ignored because nobody will take it seriously. (I find it hard to keep a straight face when I talk about it myself.)

A Congressman such as yourself, with an awareness of the problem and a knowledge of agriculture, could be instrumental in getting the country to benefit from this valuable source of energy.

Sincerely,

Dr. NORMAN K. SANDERS.

P.S.—Please let me know if I can be of any assistance in furnishing information.

Mr. OWENS. I thank you, Madame Chairman.

Mrs. MINK. Mr. Teague.

Mr. TEAGUE. Madame Chairman, I would like to say this as gently as I can and hope that you all understand. I assume almost all of you are my constituents. I would hope that future witnesses will not be too rough on the members of this committee or on Congress as a whole.

Remember we need these people's votes, as well as the full Committee on Interior and Insular Affairs, the votes in the House and in the Senate. So I would recommend that you not be too critical of Congress if we are going to have any chance of getting this legislation passed.

Dr. SANDERS. Congressman Teague, I feel these people came here to hear our opinions.

Mr. TEAGUE. I did.

Dr. SANDERS. That is the way I feel, and I think a lot of people feel. I do not want to buy their support. I want to make them make a decision on the information available. I am being polite. I am just expressing how I feel.

Mr. OWENS. Will the gentleman yield?

Mr. TEAGUE. Yes.

Mr. OWENS. I will just say, under our rules you are entitled to disagree and are entitled from time to time to insult us if you do it in good taste, we hope. Short of physical abuse, I do not think that we will object to your presentation of ideas. We will try to maintain our perspective.

Mr. CRONIN. If the gentleman would yield?

Mr. TEAGUE. Yes.

¹ Article has been placed in the subcommittee files.

Mr. CRONIN. One additional comment on that. I completely agree, but I think that there are responsibilities on both sides. The examples that I gave in somewhat rebuttal to some of the points that you made was the result of your not being aware of some of the things Congress has done.

We all recognize the limitations, but I think there is a responsibility to understand the information and the knowledge of what has been done before the criticism begins. That is the tone in which I made my comments at that time.

Mrs. MINK. Thank you very much, Dr. Sanders. We certainly appreciate your testimony.

Our next witness is Mr. Robert Kasson, Santa Barbara Audubon Society. We have your statement here which will be inserted in full. You may proceed as you wish for your 10 minutes.

Mr. FISHBIND. Madame Chairman, Robert Kasson was unable to be here this morning. I will deliver excerpts from his—

Mrs. MINK. If you will identify yourself.

Mr. FISHBIND. My name is Michael Fishbind. I am on the board of Santa Barbara Society.

Mrs. MINK. Please proceed.

[Mr. Kasson's statement referred to follows:]

STATEMENT OF THE SANTA BARBARA AUDUBON SOCIETY, SUBMITTED BY ROBERT E. KASSON

Representative Mink and members of the committee. We wish to thank you for the opportunity to appear before you in public hearing. We have great respect for a government which makes this possible. We appreciate as well your holding this meeting in Santa Barbara at some inconvenience to yourselves.

Our statement represents the position of the Santa Barbara Audubon Society and it has the full concurrence of the National Audubon Society which celebrates its 75th anniversary this year. Audubon members come from every walk of life. Some are businessmen. Some are housewives. Some are retired. Others are firemen, teachers, engineers, accountants, students, scientists, football players, doctors and lawyers, to name a few. No one in Santa Barbara Audubon is paid for his services. In a certain sense we therefore might be termed laymen. However, as conservationists we consider ourselves qualified to address the problems at hand. In speaking of the Audubon membership it should be said that it is not anti-oil company. To the contrary, many members own or have owned shares in the oil companies which are doing business offshore.

We remember telling the Department of the Interior about seven years ago that in our opinion oil wells should not be drilled in Federal waters. We remember the well meant statements and claims by employees of oil companies. They asked us to trust them and to have faith in their technological expertise and state of advancement. We got the big spill of 1969 and in addition day-by-day pollution so that often our beaches are not fit to walk on nor the waters clean enough to swim in. City and county beaches and parks are only a few miles from producing wells. El Capitan and Refugio State Parks are six miles from the proposal Exxon development in the Honda field.

What has changed from the situation at the time of the oil spill of 1969 and the situation today? One thing has changed. The proposals now are to put wells in much deeper water, specifically, in the case of the proposed new Exxon platform, in 850 feet of water, twice the depth of any producing well in the world. Again we have been asked to have faith in the experts and on top of that we have been told that these experts are not just employees of a corporation doing a job of making a profit for themselves, their company, and their shareholders, but that they are conservationists at heart and in practice. We do not doubt their sincerity, but we must take a different viewpoint. The methods of drilling have only changed in small detail in the last five years, and the laws of physics have not changed at all. Wells in 850 feet of water present unknown variables of awesome proportions.

The Wall Street Journal ran a front page article on October 2nd of this year with the headlines, "Pollution of Oceans Is Enormous Threat but Few People Care." The article said:

"It is the last pollution.

"Last to seep into public consciousness; last to be treated by the rule of law; last to be analyzed by science.

"It is the last pollution because it is into the oceans—the ultimate sewer—that all the wastes of man that aren't piled or buried on land must find their way. And it is the last pollution because if the oceans—source of most oxygen—are poisoned, life on earth as we know it cannot go on."

Another paragraph in the same article said: "Behind the indifference and unawareness of most people and many governments lies the most unfathomable difficulty; a great gap in scientific knowledge about pollution of the seas. A gush of research following oil spills of the 1960's barely has begun to lay the groundwork for decades of study needed before people can know just what pollutants are in the sea, how much there is of them, where they go once there and what effect they eventually will have on life in the oceans and on land."

Once again it is our unhappy duty to speak a warning. The ingredients for tragedy are here. The South Coast of Santa Barbara County with the most beautiful beaches in California; the Santa Barbara Channel weakened with faults and rocked at times by seas as rough as any in the world; proposed oil wells in 850 feet of water—twice the depth of any offshore well in the world; Refugio and El Capitan State Parks only six miles from the proposed new wells; a concerned citizenry which knows that establishing wells in these waters is a dangerous business.

The Los Angeles Times in its editorial of September 20th of this year has this to say. "... drilling for oil in the tidelands of the states or cut in the deeper waters of the continental shelf is at best a practice fraught with much risk." We concur with that and we also agree with the statement in the same editorial that the "government should carefully weigh the known perils and esthetic blight of drilling against the more attractive possibility of tapping known federal oil reserves in safer inshore areas."

STATEMENT OF ROBERT E. KASSON, SANTA BARBARA AUDUBON SOCIETY, PRESENTED BY MICHAEL FISHBIND

Mr. FISHBIND. Madam Chairman, members of the committee. We wish to thank you for the opportunity to appear before you in public hearing. We have great respect for a Government which makes this possible. We appreciate as well your holding this meeting in Santa Barbara at some inconvenience to yourselves.

Our statement represents the position of the Santa Barbara Audubon Society and it has the full concurrence of the National Audubon Society which celebrates its 75th anniversary this year. Our local chapter numbers about 800 members.

We remember telling the Department of the Interior about 7 years ago that in our opinion oil wells should not be drilled in Federal waters. We remember the well-meant statements and claims by employees of oil companies. They asked us to trust them and to have faith in their technological expertise and state of advancement. We got the oil spill of 1969 and in addition day-by-day pollution so that often our beaches are not fit to walk on nor the waters clean enough to swim. City and county beaches and parks are only a few miles from producing wells. El Capitan and Refugio State Parks are 6 miles from the proposed Exxon development in the Honda field.

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Again we have been asked to have faith in the experts and on top of that we have been told that these experts are not just employees of a corporation doing a job of making a profit for themselves, their company, and their shareholders, but that they are conservationists at heart and in practice.

We do not doubt their sincerity, but we must take a different viewpoint. The methods of drilling have only changed in small detail in the last 5 years, and the laws of physics have not changed at all. Wells in 850 feet of water present unknown variables of awesome proportions.

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Behind the indifference and unawareness of most people and many Governments lies the most unfathomable difficulty; a great gap in scientific knowledge about pollution of the seas. A gush of research following oil spills of the 1960's barely has begun to lay the groundwork for decades of study needed before people can know just what pollutants are in the sea, how much there is of them, where they go once there and what effect they eventually will have on life in the oceans and on land.

Once again it is our unhappy duty to speak a warning. The ingredients for tragedy are here. The south coast of Santa Barbara County with the most beautiful beaches in California; the Santa Barbara Channel weakened with faults and rocked at times by seas as rough as any in the world; proposed oil wells in 850 feet of water—twice the depth of any offshore well in the world; Refugio and El Capitan State Parks only 6 miles from the proposed new wells; a concerned citizenry which knows that establishing wells in these waters is a dangerous business.

The Los Angeles Times in its editorial of September 20 of this year has this to say. "Drilling for oil in the tidelands of the States or out in the deeper waters of the Continental Shelf is at best a practice fraught with much risk." We concur with that and we also agree with the statement in the same editorial that the "Government should carefully weigh the known perils and esthetic blight of drilling against the more attractive possibility of tapping known Federal oil reserves in safer inshore areas."

I would like to add one thing, just to anticipate a question of the relation of these bills to the energy crisis that we now face. Santa Barbara has oil reserves which many people regard as the solution to our energy squeeze. It also has reserves of a different sort, an unpolluted sky, invigorating warm sunshine and cool ocean breezes, mountains and the sea, and for us inherent Santa Barbara as much as oil, these things are resources. They do not generate electricity or power cars, but they do enrich our lives and our community, both in a monetary sense—we have an economy based on tourism and recreation—but also in the less tangible senses. Our way of life, our style of life here in Santa Barbara is very obviously sustained by more than

electricity and internal combustion engines. So we have to balance the value of the oil in the channel with the cost of getting it out, and a series of very unpleasant events have taught us in order to maximize the oil that we produce from the channel, we shall have to turn our backs on the other resources that sustain our life in this community.

To live dependent on oil, we should have to cease to depend on our clean air and unpolluted beaches. We have learned from Los Angeles, and if it were a clear day, toward the end of the day you would be able to see the smog coming up the coast from Los Angeles. But we have learned from our city to the south that all the exhaust from automobiles can hide the mountains and darken the sky. We remember very vividly how in January 1969 the oil from platform A fouled our beaches. We can all imagine what peace there will be in a walk along the beach when the noise of bulldozers and pump engines competes with the sound of the waves.

Because we know these things, we have a choice to make. Either we maximize without limit our conception of oil, or we take the first steps toward setting reasonable limits in the interest of maintaining the quality of our style of life.

The present oil shortage is only in part a consequence of events in the Middle East. It is really the result of self-indulgence and waste. We have allowed ourselves to live in a system that encourages us to consume all the oil we can produce. Dr. Sanders, just before me, noted how the oil industry has very consistently in California opposed efforts to go down on consumption. They opposed proposition 18, which would have devoted some of the revenues from the State gasoline tax into the building of mass transit.

We are like a man who on principle spends all of his money, paycheck every month. Of course, this would be courting disaster. The energy crisis cannot be resolved until the country as a whole is convinced that the supply of oil cannot be multiplied endlessly. Only then will we take steps to balance our conception of oil with the appreciation and love of our resources of earth, air, and water.

The alternative to an oil famine, in other words, is not oil squandering but reasonable and moderate consumption. And so we request that oil drilling not be resumed in the Santa Barbara Channel. We support the bills before the committee.

We ask, too, that a program of fuel conservation be instituted forthwith so that the oil saved from wasteful and unnecessary uses can be directed to necessary activities. We support an inquiry into how we can live on a nonincreasing supply of oil without serious economic dislocation.

In this context, once again we fully support the idea of an ecological preserve in the channel, and the moratorium for at least the 5 years on drilling.

Thank you.

Mrs. MINK. Thank you very much, Mr. Fishbind.

Are there any questions of my colleagues of this witness?

Mr. CRONIN. Madame Chairman.

Mrs. MINK. Mr. Cronin.

Mr. CRONIN. A quick comment. The Massachusetts Audubon Society has taken the lead in energy conservation in the country and now has under construction a headquarters which is an energy-saving building,

and I think the knowledge of that construction and what its is going to give us can be promulgated by the Audubon Society anywhere and everywhere in the country. I think it is a major step in the right direction.

Mr. CAMP. Will the gentleman yield?

Mr. CRONIN. Yes.

Mr. CAMP. I think you people should know that the country is having a problem in the northeastern part of the United States entirely different than anything that happens up and down your coastline here. It is my understanding that your mean temperature is somewhere, 70; 75 degrees, where up in this country it gets pretty cold. They are having real problems as far as the energy situation is concerned.

We were up there some 5, 6 months ago and listened to testimony from those people that have no gasoline. At that time one individual told us they had under their control 150 service stations. This was an independent and a woman that inherited this business from her husband. Maybe, too, we have to take a look at the picture overall, the supply of energy to all people in the United States, as Paul mentioned a minute ago.

So I think, too, as we have expressed this morning, it is our job, our responsibility to look at both sides of the picture so that we can make a determination that needs to be made for all the people.

Mr. FISHBIND. I agree very strongly that this is indeed a crisis. Our position would be that it is the sort of crisis that has to be faced by looking both at production and consumption. The two things have to be balanced, and there has to be a great deal of innovation in facing the fact that production is not something we can expand without limits. We are running into costs, and the environmental cost in Santa Barbara is very great.

Mr. CRONIN. I agree completely. I think part of our problem, however, is that for several years we seem to be polarized between energy interests on one side and environmental issues on the other side. I do not think that has to be true. I think the two can come much closer together, if we would just add efficiency, which is what energy conservation is all about—much more efficient use of the energy that we have. I think those of you that have been actively involved in environmental concerns and understand what conservation is all about can now play a leading role in trying to lead these two polarized forces together so we can all have a society that benefits.

Mrs. MINK. Thank you very much. We appreciate your testimony.

Our next witness is Mrs. Mary Lou Kasson, representing the League of Women Voters.

We welcome you to the hearings, and you may proceed.

STATEMENT OF MARY LOU KASSON, LEAGUE OF WOMEN VOTERS OF SANTA BARBARA, INC.

Mrs. KASSON. Mrs. Mink and members of the panel, it is a great pleasure to speak to you. I am going to be very brief because much of this has been covered. I am speaking for the League of Women Voters of Santa Barbara, an organization of 335 women.

In 1949 the League of Women Voters of Santa Barbara studied the possibility of oil drilling in the Santa Barbara Channel—this was before there was any drilling in the Santa Barbara Channel—and de-

cided that any offshore drilling or production would be detrimental to Santa Barbara esthetically and economically.

Between 1949 and 1969 the league would agree with former County Supervisor George Clyde, Santa Barbara made two mistakes:

One, in 1959, when we allowed the 16 miles and did not demand that there be no drilling in the State tidelands along the entire channel coast; two, in 1956 to 1957 we did not demand that there be no drilling in the Federal waters of the channel. We attempted to make some compromise. I don't think we would have gotten anywhere on the Channel leases if we said we do not want any in the Federal Government, because they would not even see George Clyde in Washington. Mr. Udall refused to see him.

After the oil spill in 1969, the league was convinced that any concessions made to offshore drilling was unwise as to existing technology.

In 1969 the league formulated the policy which we support to this day, and which includes the following objectives:

One, prohibition of future leasing for oil exploration, drilling, and production in the Santa Barbara Channel.

Two, rescinding of all oil leases granted in 1968, or before.

Three, cessation of present offshore oil operations, unless as a remedial act to suppress a leak.

Four, removal of all non-operational oil platforms and rigs when operations have ceased.

Five, legislative measures to insure prompt cleanup.

Considering that we oppose all drilling in the Santa Barbara Channel, and that all three bills being reviewed allow drilling under some conditions, none of these bills is strong enough to merit our unqualified support. Therefore, we urge you to explore the feasibility of canceling all leases in the Santa Barbara Channel.

We regret having made concessions that led to the 1969 oil spill. We do not want to make the same mistakes again.

Thank you.

Mrs. MINK. Thank you very much.

Are there any questions of this witness?

Mr. KETCHUM. Just one, Madame Chairman.

Mrs. MINK. Mr. Ketchum.

Mr. KETCHUM. I note in your presentation in subparagraph 2 that the league is recommending or advocating the rescinding of all oil leases granted in 1968 or before.

I wonder if you might give me the benefit of your thinking as to how do we pay off these leases.

Mrs. KASSON. I do not think the Government should have made them in the first place.

Mr. KETCHUM. That does not answer my question.

Mrs. KASSON. The reserves could be used for that.

Mr. KETCHUM. In other words, you are recommending that we open up the Elk Hills reserves and utilize any profits we gain to pay off the leases.

Mrs. KASSON. Right.

Mr. KETCHUM. I am not sure there is enough there to do it. That is a good suggestion.

The other answer I would like to get, if we rescind all the oil leases granted in 1968 or before, I really have no figures on the employment,

related employment relating to the industry here in Santa Barbara. I am wondering, too, what do we do then about those individuals who have been displaced?

Mrs. KASSON. Mr. Ketchum, I do not have all the answers for this. Our position is that there should not have been drilling in the Channel under present technology. And the financing of Santa Barbara, our chief income is this is an attractive place to live and to visit. This is our only reason for existence. If you destroy that you destroy our reason for existing.

Mr. KETCHUM. I concur in that statement, and in your view, but I would respectfully suggest that the League of Women Voters, if they are going to take positions such as this, also offer us some answers so we have some alternatives to work with if we were to adopt this suggestion.

Mrs. KASSON. To the gentleman from Massachusetts, we are working very hard on clean air and conservation of natural resources. This has been a National League position. I am sure you are familiar with it.

Mr. CRONIN. Yes, I am. You know, Lucy Benson comes from Massachusetts and is a resident there. I know you do study different projects in great depth, but have you come up with any proposals on a local level that perhaps even taking some leadership positions, through examples as League Members, of different ways that we can conserve energy?

Mrs. KASSON. We do have a lot of bicyclists. We do a lot of carpooling. We work very hard for Proposition 18 for rapid transit. We were also responsible among other people, for the local transit district, which is the Southwest Metropolitan Transit District.

Mr. CRONIN. I am glad to hear that, particularly regarding carpooling. People fail to realize how much energy that could save. If we could just increase our ridership from the presently 1.3 individuals nationally to 2.3, one more person in every car going back and forth to work, we could save over 700,000 barrels of gasoline per day.

Mrs. KASSON. Right.

Mr. CRONIN. When people begin to realize through conservation, it can have a real effect, not only on the energy crisis but substantial savings to their own pocketbooks because as energy becomes scarce, it becomes more expensive, I think you would be providing a real service to the community, and I commend you for it.

Mr. TEAGUE. Will the gentleman yield?

Mr. CRONIN. I would be pleased to.

Mr. TEAGUE. I think the people on the east coast are more aware of the crisis and the necessity of doing something more than perhaps they are out here. I say that because yesterday my secretary drove me from my office out to the airport. We strictly stayed under the 50-mile suggested limit and only one or two cars passed us. I drove up here today from Santa Paula and I regret to say that there were only two or three cars observing the 50-mile suggested limit, and practically every other car passed us. I think California is not keeping up with the East in this suggestion.

Mrs. KASSON. Congressman Teague, there is something worse than that. In the Los Angeles Times this morning the Highway Patrol said they were going to arrest people for obstructing traffic on the freeway

if they slowed down to 50 miles an hour and went into the outer lanes. I was appalled.

Mr. TEAGUE. I was, too, but you can still go 50 miles an hour in the inner lane and not violate the law.

Mrs. KASSON. We are going to have to work on our State government on this very hard.

Mrs. MINK. Thank you very much.

[Applause.]

Mrs. MINK. Our next witness is Dr. Kalon Kelley of the Los Padres Chapter of the Sierra Club.

Dr. Kelley, we have your statement, Dr. Kelley, and that will be inserted in the record.

Dr. KELLEY. Madame Chairman, I have the other copies requested in your letter.

Mrs. MINK. If you will proceed.

[The statement referred to follows:]

STATEMENT OF DR. KALON KELLEY, SIERRA CLUB, LOS PADRES CHAPTER,
SANTA BARBARA, CALIF.

We greatly appreciate the scheduling of these hearings here in Santa Barbara, and are hopeful that from the deliberations of your committee a legislative solution to the rather extraordinary dilemma we have here in the Channel will evolve.

We raise first several points that relate to the need for legislation that limits petroleum operations within the Channel. Following that is a specific discussion of the legislative proposals under consideration by your committee.

SANTA BARBARA CHANNEL IS ENVIRONMENTALLY UNIQUE

There is no single attribute that distinguishes the Santa Barbara Channel area from other offshore environments. The uniqueness of the Channel is rather that there is a confluence here of environmental hazards in connection with offshore petroleum operations that is perhaps unmatched anywhere in the world. We note the existence of the following hazards or adverse environmental impacts:

1. The Channel is seismically active and heavily faulted.
2. Shipping lanes pass through the Channel and across tracts that have been leased.
3. The aesthetical impact of platforms in the Channel would adversely affect a substantial population.
4. The coastal communities are tourist and recreationally oriented, and an oil spill accident could severely damage local economies.
5. There is a significant local fishing industry that could similarly be damaged.
6. Offshore processing facilities for offshore operations would themselves adversely affect the coastal area, and these facilities are viewed as incompatible with the local environment (cf., the successful referendum that disallowed the building of a processing facility in Carpinteria.)
7. There are a number of animal populations that could be severely damaged by an oil spill (e.g., the seal rookeries on San Miguel and the whales that migrate through the Channel to Baja, California.)
8. The Channel is subject to severe wind and current conditions that increase the hazard of marine operations.
9. The transport of petroleum produced from the Channel may itself be environmentally hazardous (as, for example, the proposal to ship petroleum produced in the western part of the Channel by tanker would be.)
10. The water depths at which drilling would be carried out on many tracts exceeds that of production anywhere, and is effectively below the depths at which divers can at present effectively accomplish repair work.

It is the fact that all of these problems pertain to petroleum operations within the Channel that makes this one of the least desirable spots in the world to carry out such operations.

ADDITIONAL UNIQUENESS OF THE SANTA BARBARA CHANNEL

There is yet another reason, an historical one, why the Santa Barbara Channel area is unique. In 1955 the California legislature, recognizing the environmental uniqueness of the Santa Barbara Channel, established a State sanctuary from petroleum operations off the coast of Santa Barbara. Notwithstanding this clear statement of environmental values, the Federal Government, in an action now widely conceded to have been misjudged, opened the Federal waters within the Channel for leasing. Thus it is that the present dilemma has been created. Governments, however, no less than people, should rectify their past mistakes when possible. If the Congress will act now on this legislation it would signal in the strongest possible way not only a willingness to acknowledge prior misjudgments, but a commitment to cooperatively solving environmental problems with the individual states. The legitimate concern of many states that their environmental protection efforts will be rendered useless by Federal activities could be significantly allayed (and a State-Federal environmental partnership initiated) through enactment of legislation that recognized the environmental values of the Santa Barbara Channel as perceived by the people and the State of California.

CLAIM THAT OCS PETROLEUM OPERATORS NOW SAFE INCONSISTENT WITH FACTS

While there has been technological advance in the state-of-the-art of the various phases of offshore operations, the industry has much further to go. As the NASA report (Nov. 1971) to the USGS made clear, there is a level of sophistication in quality control and accident analysis that goes far beyond what the industry (and the government as the promulgator of OCS regulations) has done. The GAO survey (June, 1973) pointed out the need for substantial changes in inspection and regulation procedures. The presentation of the US Coast Guard at the California State Lands Commission hearings (Sept., 1973) noted the significant limitations of existing oil spill containment and recovery technology. And the draft environmental statement issued in connection with OCS Sale No. 32 (1973) comments on a variety of accidents that have occurred subsequent to the 1969 blowout.

Evidence such as this is, simply, not consistent with any claim that the industry has attained an acceptable level of competence in the conduct of offshore operations.

BENEFICIAL CONSEQUENCES OF POSTPONING SANTA BARBARA CHANNEL OPERATIONS

There are a number of reasons why a postponement of any further development of the petroleum resources of the Santa Barbara Channel is in the national interest: we will mention several of these. First, however, a comment on the "energy crisis". While proponents of immediate Santa Barbara Channel development have argued that the energy crisis mandates that the Channel be developed now, they have never attempted to demonstrate that development of the Channel reserves in the time interval, say, from now through the next twenty years, will be more valuable to the nation than any subsequent time interval. Until evidence that would substantiate this tacit premise is produced, we believe any attempt to subjugate environmental concern to the current crisis atmosphere is unjustified and shortsighted.

1. As the pace of offshore operations around the world picks up, so has the commitment to technological innovation and development. Even a casual reader of the industry literature cannot fail to notice the many new concepts in offshore operations that are under development. Clearly this work will continue, and we may confidently look ahead to a time when offshore petroleum operations can be carried out with substantially reduced environmental impact and hazard. In an environmentally sensitive area such as the Santa Barbara Channel it is judicious to wait for as much technological advance as possible to be attained.

2. The percentage of oil in-place that is recovered is a function of the reservoir development technology and market price of petroleum products in relation to production costs. The percentage of oil recovered has increased by .5% annually for a number of years, and to judge by the large number of new secondary and tertiary recovery technologies being developed this trend should continue. The implications of this along with projected increases in market price of petroleum products suggests that the ultimate amount of oil recovered from the Santa Barbara Channel will increase with a postponement of development.

3. Technological progress does not come by itself, of course, but must be motivated. Strengthening the liability laws for offshore petroleum operations can serve this end. Similarly, the establishment of certain technological milestones that must be met prior to development of offshore resources can serve to motive R & D expenditures. Implicit in some of the legislation before your committee is just exactly that sort of motivation.

LEGISLATION

While none of the bills under consideration by your committee (H.R. 3177, H.R. 3178, H.R. 7500) provide an optimum solution to the Santa Barbara Channel problem, they all have some good features. We comment below on the various bills pointing out what we take to be their strengths and weaknesses. It is our hope that your committee will report out not any one of these particular bills, but one that incorporates the good features from all of them.

1. We believe any bill should recognize that the Santa Barbara Channel needs environmental protection throughout its length and not just in part. In that regard, the approach of H.R. 3177 that deals with all the leases in the Channel is to be preferred over H.R. 7500 where only partial protection is provided.

2. H.R. 3177 provides for the inclusion of tracts P233, P226, and P218 in the Federal Ecological Preserve while H.R. 7500 does not. P233 is part of a unitized area (Pitas Point Unit) the other part of which (P235, P234) would be in the Preserve under either bill. Consequently, to avoid the anomalous situation wherein only part of a unit is incorporated in a Preserve—with all that implies with respect to incomplete reservoir development and drainage problems—P233 at least should be included with the leases that would comprise the reserve.

3. The provisions for establishing an account to pay any claims arising from the establishment of an energy reserve (or ecological preserve) are more flexibly handled in H.R. 3177 in contrast to H.R. 7500. The flexibility inherent in not tying the account income to development of any particular Federal reserve or land is desirable.

4. The protection of a lessee's interests as provided for by Sec. 2(a) of H.R. 7500 or Sec. 4(a) of H.R. 3177 appears to be adequate.

5. The need for suspension of operations on any leases not cancelled is recognized in H.R. 3177. To insure, however, that such suspension adequately provides the environmental protection that is sought, we propose the following changes in Sections 5, 6, and 7 of that bill.

A. The automatic lifting of the suspension in five years is philosophically inconsistent with the basic principle of these sections, namely that there exist certain milestones that should be met prior to resumption of any offshore operations. The attainment of these milestones is not guaranteed simply by the passage of time. This time limitation on the suspension should be eliminated.

B. There is a need for further specification (beyond that of Sec. 6) of those milestones that should be met before the suspension could be lifted. The conditions of H.R. 3178 are appropriate. Similarly appropriate are the findings enumerated in Sec. 4 of S. 2339.

C. The factual determination that the enumerated conditions have been met and that the suspension can be lifted is best handled as in H.R. 3178, where such determination is a Congressional responsibility and not simply a matter for the Interior Department.

D. The manner and degree to which a lessee should be compensated during the period of the suspension is more a legal issue than an environmental one. We suggest, however, that it would not be inappropriate for legislation to tacitly recognize an error in judgment by *both* the United States Government and the industry in the premature leasing of the Santa Barbara Channel. The fault should not be attributed to either party alone.

In that connection, we mention for your consideration a compensation arrangement wherein the royalty payment due the government for petroleum eventually produced is reduced by a specified percentage for each year of the suspension. This would provide for a degree of compensation without immediate government expenditure.

E. The extension of lease terms so as to compensate for the suspension period is required. We do not, however, see the justification in extending the lease term for the length of the primary term of the original lease once the suspension is lifted (H.R. 3177 Sec. 8.)

CONCLUSION

It is difficult, in these days of an imminent fuels shortage, to view the Santa Barbara Channel situation in the larger context of environmental preservation and long-term energy needs. Yet it is exactly this view that is needed, as nothing done (or not done) in the Channel will impact on our immediate energy problem. Only our more distant futures will be affected by what your Committee does.

An error in judgment was made in 1968; we trust that error will not further be compounded. We ask that the strongest possible legislation be reported by your Committee for full Congressional consideration.

STATEMENT OF DR. KALON KELLEY, CHAIRMAN, OIL SUBCOMMITTEE, LOS PADRES CHAPTER OF SIERRA CLUB

Dr. KELLEY. My name is Dr. Kalon Kelley. I am appearing here on behalf of the Los Padres Chapter of the Sierra Club. We have approximately 2,000 members in our chapter.

I am going to summarize by testimony and just hit some of the high points. I particularly want to get to some of the specifics having to do with the legislation.

We do appreciate very much the scheduling of these hearings here in Santa Barbara, and your coming out here.

The testimony I have today is in two parts, the first part dealing with why legislation is needed, the second part some specific comments on the bills that are before you.

The first point we would like to make has to do with the environmental uniqueness of the Santa Barbara Channel. It is our position that while there is no single attribute that distinguishes Santa Barbara and the Santa Barbara Channel from other locations, we have here a confluence of environmental factors having to do with offshore operations that does make Santa Barbara Channel unique.

The Channel is subject to a number of environmental impacts or environmental hazards with respect to offshore operations. We list in our testimony 10 of these. I will not go over them now. Many of them have been mentioned already.

It is bringing together of all these impacts or hazards that I think distinguishes the Channel and our location, not the existence of any single one of them.

We have a uniqueness, as well, having to do with the historical fact that the State of California established a State sanctuary which has not been respected by the Federal Government. I think that is an issue that does have in particular some national implications that I think would be worthy of consideration by your committee.

When the State sanctuary was established in 1955, it was not respected when the Federal leasing took place subsequent to that time, and I think one of the concerns of not only Californians, but many people in a lot of different States is what they are trying to do in their own States with respect to environmental protection, environmental concerns, is going to be overridden by what the Federal Government does. I think you see this kind of clearly in the testimony that is made having to do with issues like deepwater ports and issues like that.

What is needed is the establishment of a State-Federal partnership that I think has been missing, has been absent from the actions that have taken place in the Santa Barbara Channel. We have asserted that the claim that is often made that the industry has not reached an

acceptable level of competence in offshore operations is not consistent with the facts. Some of these facts have been put forth before your committee already this morning, such things as the NASA report. It describes really a level of sophistication and error analysis and quality control that goes far beyond what the industry or the Federal Government as the promulgator of OCS regulations has done, or accomplished. The hearings we have had on oil spill containment and recovery here in the State of California, all of these factual reports just provide evidence that is not consistent with any assertion about acceptable levels of competence on offshore operations.

Should development of the Santa Barbara resources be postponed? There are environmental consequences that could result. The most obvious one has to do with improvement in technology. There is no question that as each year passes, the technology will improve, will get safer. This is the point that Mr. Oden made in his presentation this morning as well.

There is another point that is of particular interest as we think about petroleum resources. That is, with the delay of development in the Santa Barbara Channel, it will certainly be an eventual greater recovery of the petroleum resources in the channel. Only a percentage of the oil in a place is ever recovered from a petroleum operation. That percentage has been increasing over the last several decades very consistently. It has been increasing, the Secretary of Interior reports, 1 to 1.5 percent per year.

You can judge by the number of technological developments and innovations that are underway with respect to secondary and tertiary recovery techniques. It can confidently be predicted that that trend will continue. This means when it is coupled with the almost certain higher prices for petroleum products that the longer recovery and exploration of the channel resources is delayed, the greater percentage of these resources will eventually be recovered and made available to the country.

I think that is a point that is worth keeping in mind as we think about energy needs.

I would like to turn now to some of the specific legislation before your committee and start off by saying that we here in Santa Barbara are very grateful to Congressman Teague for all that he has done on drafting legislation and pushing it, working for it. We are where we are in terms of legislation before your committee to Congressman Teague, and we appreciate it.

All three of the bills before your committee have some good points, many good points, but they are all deficient in one way or another, and it is our hope that your committee could take the best parts of those different bills and report out a piece of legislation that will incorporate all the good parts.

The first point we would make with respect to legislation is we insist on the unity of the Channel. In particular, that means the legislation should deal with all of the leases in the channel in one way or another as it done in Congressman Teague's H.R. 3177.

We do feel, however, there is somewhat a philosophical inconsistency in the legislation that establishes a specific time limit on how long a suspension should run. In particular, there is a 5-year maximum

time limit on the suspension that could be lifted before then if certain things, conditions, or findings are made.

Our concern about that is, there is a sense in which that establishment of a time limit is inconsistent with the whole concept of why a moratorium exists; namely, to give the industry the opportunity, the motivation to develop more adequate techniques for operations, off-shore operations. There is no guarantee per se that simply the passage of time will accomplish this. It requires more than simply the passage of time.

So we think what is needed is a specification of those milestones that should be met before the suspension is lifted, and that alone should determine what will bring about the lifting of a suspension of operations.

We have made in our testimony, and I will not mention them here, some specific suggestions about the kinds of milestones that make sense in terms of the suspension, what ones could be and should be incorporated in the legislation.

I would like to suggest that this area of compensation, it is a hornets' nest, I suppose, and we have no simple solutions or answers to the subcommittee members, but we suggest that one way of approaching it is not to make the tacit recognition, which I think is part of all of this legislation, that an aggrieved party, if there is an aggrieved party, if there is an aggrieved party in the case of a suspension, is simply the oil industry. We think that while they suffer from a suspension, economically suffer from a suspension, we think that the legislation might incorporate tacitly or explicitly that when this leasing took place, an error in judgment was made not only by the administration, which it clearly was, but also by the industry participating in it, and that a compensation need not therefore be simply all that would be desired, all that the industry might want to be compensable if it were simply a disinterested nonparticipant in the leasing process.

We think that is an avenue, anyway, that should be investigated as far as compensation is concerned.

In conclusion, it is difficult in these days of an imminent fuel shortage to view the Santa Barbara Channel situation in the larger context of environmental preservation and long-term energy needs. Yet, it is exactly this view that is needed. If nothing is done by you—anything that you do, by this committee on this channel, will do nothing more than our immediate energy problem. Only the distant future will be affected by what your committee does. Thank you.

Mrs. MINK. Thank you very much, Dr. Kelley. We appreciate in particular your detailed analysis of the pending legislation, and we will certainly take all of your suggestions and recommendations into consideration as we get to our deliberations on these pending matters.

With respect to the 5-year limit, as I understand your testimony, the Sierra Club as you represent it, is suggesting that there be no limit on the suspension, that the 5-year limit provision be eliminated from the bill. Is that correct?

Dr. KELLEY. We raise for the consideration of your committee that that poses a philosophical inconsistency with the concept of a suspension wherein there are designated milestones and conditions that should be met.

Mrs. MINK. The conditions that you allude to would not satisfy the elimination of the suspension. Is that the position you are taking?

Dr. KELLEY. They would not result in the lifting of the suspension, that is correct.

Mrs. MINK. As I understand it, those are the provisions that have been included in the Senate bill offered by Senator Cranston.

Is that correct?

Dr. KELLEY. That is correct.

Mrs. MINK. Are there any questions by my colleagues?

Mr. CAMP. I have no questions.

Mrs. MINK. Mr. Owens?

Mr. OWENS. I have a few brief ones. The first point, as you list the areas that you find environmentally unique about the Santa Barbara Channel, you referred back to a question that the chairman asked in earlier witnesses this morning, saying that the channel is seismically active and heavily faulted.

Has this ever caused any seepages or leakages or shifts?

Dr. KELLEY. Within the channel I believe it has. There was when we had the San Fernando earthquakes a few years back, there was a pipeline rupture and oil petroleum leakage from that pipe. That was on land down in Los Angeles somewhere. Anyway, that is the kind of concern, I think.

Mr. OWENS. Are there studies or documented statements produced by experts that would indicate that could be a severe problem in the channel, some material or data that would be available to us on the assumption that if you drill wells because it is, as you say, seismically active and heavily faulted, that that poses a statistically documentable extra hazard?

Dr. KELLEY. I am certain it does. This is recognized in the various environmental impact reports that the Department of Interior puts out, where they deal with the seismic issue in some detail, and our concern to show that the design criteria of the platforms that are proposed will withstand earthquakes of magnitudes such and such, and that this is the kind of thing that you can expect under these conditions.

Mr. OWENS. What—

Mr. CRONIN. Will the gentleman yield?

Mr. OWENS. Yes.

Mr. CRONIN. Along those same lines, do you have, or does anybody in your group have, a continuous seismic profile of this area that would back up this type of information that we might be able to submit in the record?

Dr. KELLEY. The Sierra Club does not. I do not know if it is available elsewhere.

Mr. KETCHUM. If the gentleman would yield further.

Mr. OWENS. Certainly.

Mr. KETCHUM. Madam Chairman, I would strongly suspect that the geologists of the State Division of Gas have been carrying out a rather unique and very in depth study, seismic study in the State of California, probably the best that has ever been conducted, and I strongly suspect that they might have the profile to which Mr. Cronin is referring. I would be delighted to try to get that for the record.

Mrs. MINK. Without objection, if such a record is available, it will be inserted in the record at this point.

[The information referred to is in map which is part of Geological Survey professional paper 679, placed in the files of the subcommittee.]

Mr. OWENS. I would like to suggest to the witness, if he has data that would be helpful in explaining anything beyond what appears to be an obvious hazard, that he provide that to the Subcommittee.

Madam Chairman, I would ask that that be inserted as well.

Mrs. MINK. Without objection, so ordered.

[The information referred to is in same map as above and placed in subcommittee files.]

Mr. TEAGUE. Will the gentleman yield?

Mr. OWENS. Yes.

Mr. TEAGUE. That information is available from the U.S. Geological Survey and we only have one copy. During the week we submitted that to the Senate Committee, so we will undertake to get another copy.

Mrs. MINK. You make reference, Mr. Teague, to the Geological Survey professional paper 679?

Mr. TEAGUE. The answer is "Yes," with accompanying maps.

Mrs. MINK. We will receive the maps and paper 679 and place them in the file of the subcommittee.

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

Mr. OWENS. Your fourth point, you do list some interesting proposals that would be helpful if we had more documentation. The early representative, I think, of the city referred to tax damages, taxed revenues being lost at the time of spillage.

If there are statistics available indicating the losses due to decreased tourism and recreational use, those would be very helpful, if those could be supplied.

Dr. KELLEY. As I said, that information was available as part of the legal proceedings in the county in connection with trying to get compensation for damages.

Mr. OWENS. I suggest that inasmuch as you raised the point, it would be helpful if you would perhaps take it on yourself to supply that to the committee.

Mrs. MINK. Without objection, if such information is available, it will be received for the files of the subcommittee.

[The information referred to can be found in the files of the subcommittee.]

Mrs. MINK. Do you have any further questions?

Mr. OWENS. That is all.

Mrs. MINK. If not, we thank you very much, Mr. Kelley, for your very informative testimony.

I would like at this time to call out of order Mr. Harry A. Lyon of the California Oil Purification Co., whom I believe is being represented by Mr. Joe Pichert, the vice president of the California Oil Purification Co.

We would be pleased to receive your testimony at this time on behalf of Mr. Lyon.

STATEMENT OF HARRY A. LYON, CALIFORNIA OIL PURIFICATION CO., REPRESENTED BY JOSEPH PICHERT, VICE PRESIDENT OF OPERATIONS, ALLIED CONSTRUCTION & ENGINEERING CO.

Mr. PICHERT. Honorable Chairman and distinguished gentlemen, I am Joseph Pichert, vice president of operations for Allied Construction & Engineering Co., also safety engineer for that same company.

Mr. Lyon expresses his deep regrets that he is unable to be here this morning, but I will bring you his thoughts from a letter he gave me last night.

My name is Harry A. Lyon. I appear before you today representing myself and two different corporate entities. Both of these entities and myself are very much interested in the bills under consideration today.

My family and I own, and I am the former president of, Allied Construction and Engineering Company of Ventura, California. Allied since its formation in 1951 has been an integral part of the oil industry in California. It has been a participant in the construction, maintenance, and operation of several of our offshore platforms and of their onshore facilities. Allied has trained personnel who understand the necessity of safe production operations and are experienced in maintaining this safety.

While it is probably true that Allied would monetarily benefit from the continued and increased Channel Operations our firm's officials do have an intimate knowledge of the manner in which the facilities have been developed and operated over the years and know the improvements that have been made and are fully cognizant that the state of the art is such that all phases of construction, drilling, production, and maintenance of the offshore facilities can be done in a fail-safe manner. As a representative of Allied, I urge the continuance and further development of our offshore oil program.

The other corporate entity I represent today is the California Oil Purification Company, commonly known as COPCO, of which I am president. We, at COPCO, are in the process of converting a de-activated agro-chemical plant in Ventura into a low-sulfur fuel oil plant. We will take crude oil, remove the sulfur to the limits allowable under our new regulations and thus provide this environmentally acceptable fuel for industry and the public. A prime requisite to our operation is a stable source of local domestic crude oil. The maintaining of our existing local production and the development of additional supplies is necessary to the providing of a stable source of environmentally acceptable fuel oil.

The intent of Congressman Teague is that the Elk Hills Reserve oil be substituted for Santa Barbara Channel oil. The Congressman's reasoning is indeed fallacious. With an ever increasing energy demand we need both the Santa Barbara Channel oil and the Elk Hills oil. We need both of them; they are both essential to our well being; one cannot be substituted for the other. This is especially true today in the light of the increasing instability of our sources of foreign imports. What with the situation in the Middle East and our inability to compete in the Far Eastern market, the development of our own resources is increasingly important.

I would now like to speak as a concerned individual. We know that a sound economic base is as important to our community as is a proper environmental climate. I am well aware that in view of our past failures that concerned citizens have the right to be concerned as to what the continued operation of our existing production and the further development of the leases will do to our environment. From my personal knowledge and from the wealth of data which has been submitted to you by the lease holders as to the methods for controlling the safety of their operations, I am satisfied that the state of the art is such that a safe operation is assured. From my knowledge of the energy demands both locally and nationally I know that the development of our Channel oil is vital to our economic survival.

Daily we are becoming increasingly aware of the energy crisis. We are today faced with a 50 mile per hour speed limit; we are faced with both gas and fuel allocations; and we are faced with increased prices and increased taxes. Surely, this is the most inopportune time to even consider action on the legislation now before you. I ask that these bills be defeated and I thank you for the opportunity of presenting my thoughts on this matter.

Mrs. MINK. We thank you very much, Mr. Pichert, for your testimony.

Are there any questions by members of the subcommittee?

We thank you very much.

Mr. PICHERT. Thank you.

Mrs. MINK. I would like to call Mr. F. Huntsinger, Sr., chairman of the board, Vetco Offshore Industries, Inc.

Mr. Huntsinger.

**STATEMENT OF F. HUNTSINGER, SR., CHAIRMAN OF THE BOARD,
VETCO OFFSHORE INDUSTRIES, INC., REPRESENTED BY HAROLD
LYNCH, CHIEF ACCOUNTANT**

Mr. LYNCH. I am Harold Lynch. I am glad to read a letter that he wrote to Madam Mink on November 7.

DEAR MADAM: The undersigned is Chairman of the Vetco Offshore Industries, Inc. We employ at the present time 1,321 people. I am also on the Executive Committee and National Finance Chairman of the National Ocean Industries Association, NOIA, Washington, D.C.

Just by accident I was informed that there will be a public meeting to be held in the city of Santa Barbara at the courthouse, at which time you will be the chairman, in regard to the status of the following three bills: H.R. 7500 Saylor bill; H.R. 3177, Teague bill for terminating 35 leases; H.R. 3178 Teague bill introduced for GOO to prohibit the Secretary of Interior from granting drilling permits on platforms until EPA and the Coast Guard approve the ability of industry to contain and clean up spills. The pros and cons of this has been discussed so often this year. I attended two meetings in October, one for the State Lands Commission and the other one for the Department of Interior. Being a man of industry, I think this has been very plainly and explicitly demonstrated by the equipment industry's technology and expertise since the mishap of 1969, so these blowouts or spills hardly can happen.

We design and build offshore drilling and production equipment, a fact which has been presented to Senator Henry Jackson, Chairman of the Full Committee, and to Congressman Thomas Downing, Chairman of the Subcommittee. We build this equipment to test up to 15,000 pounds, to be shipped to the North Sea, the Far East, such as Borneo, Australia, where we have plants, also to South America.

My dear Mrs. Mink, you are the hearing officer on these bills. The N.O.I.A. organization and I, as head of Vetco, cannot understand the philosophy of the governmental agencies and our duly elected representatives in regard to the extreme emergency and shortage of natural fuel. And this will be only the beginning. I am afraid, my dear lady, that from 1974-75 and up to 1978, we are going to be in a very, very precarious position, not only for the private home owner, but more so industry which is dependent on the fossil fuel and natural gas.

I think the plastic industry will suffer a very great deal. We, ourselves, in our company, cannot understand why we as Americans have to give our expert knowledge and incentive to design and develop this drilling and production equipment which is sold to foreign countries. We are exporting 93 percent of our production. We are selling to some of the countries which have cut off the delivery of these petroleum products to us. Actually, if you seriously look at it, it is very ironic that we are helping them cut us off, let us struggle along and sell the same products to Japan, Australia and some of the other countries, but not to the United States.

I am speaking openly and frankly and laying the cards on the table. All I can say is: the Lord put the petroleum products in when this earth was formed and created without any of us having anything to say about where they should be. We can only drill and explore for these minerals where we find them. I am speaking of the minerals off the coast in the Santa Barbara Channel which belong to all of the citizens and taxpayers, and not only to a select few which holler the most. And the politicians are lending an ear; apparently, it must be sounding good.

I beg you and your office to use your good honest and sincere sound judgment to make your decisions on what I have stated to you.

Very sincerely yours,

F. HUNTSINGER, Sr., *Chairman of the Board.*

Mrs. MINK. We thank you very much, Mr. Lynch, for reading Mr. Huntsinger's letter.

Are there any questions by members of the subcommittee?

Mr. KETCHUM. Madame Chairman.

Mrs. MINK. Mr. Ketchum.

Mr. KETCHUM. Not a question, Madame Chairman, but perhaps a criticism of the letter. In the second paragraph it says "Just by acci-

dent I was informed that there will be a public meeting to be held in the city of Santa Barbara at the courthouse."

I somehow resent that statement, Madame Chairman. You as Chairman I know have publicized this hearing for at least a month, maybe longer. I cannot know how long in advance it was, but reading the papers in Santa Barbara, it sure was no surprise to me that we were having hearings. That alone, I have no criticism of the gentleman's statement other than that, which indicates that perhaps the Chairman might have been trying to go around a corner so everybody would know what was going on, and I hope that that is offered constructively.

Mrs. MINK. I thank the gentleman for his comments and appreciate the clarification of the record.

Mr. CRONIN. Mr. Lynch, what is your position with the firm?

Mr. LYNCH. Chief accountant.

Mr. CRONIN. I do not know if you are the proper person to ask or not, but could you give me a brief synopsis of what the firm makes, what you are into.

Mr. LYNCH. They manufacture offshore drilling equipment.

Mr. CRONIN. Just the drilling equipment?

Mr. LYNCH. Yes.

Mr. CAMP. Will the gentleman yield?

Mr. CRONIN. Yes.

Mr. CAMP. What does that consist of?

Mr. LYNCH. I am not knowledgeable, but they have motion compensators, blowout preventors, choke lines. I am not that familiar with the equipment.

Mr. CAMP. Not the actual drilling.

Mr. LYNCH. They do not do drilling. They sell the products.

Mr. CAMP. The accessories that you might need to use to prevent any spills or blowouts.

Mr. LYNCH. That is correct.

Mr. TEAGUE. Will the gentleman yield?

Mr. CRONIN. I would be pleased to.

Mr. TEAGUE. Vetco is a very large firm. Mr. Huntsinger is an outstanding citizen. Vetco is listed on the stocks exchange, either New York or American.

Mr. LYNCH. New York, and in London.

Mr. TEAGUE. They do a large amount of business very efficiently and very successfully, and quite understandably they have a terrific interest in this problem.

Mr. CRONIN. Thank you for the enlightenment.

One last question. I notice particularly that your Chairman is involved with the National Ocean Industries Association.

Have you participated in or are you contributing to in any way the underwater drilling accumulation and distribution on shore that would eliminate the platforms?

Mr. LYNCH. I do not know. I cannot answer that.

Mr. CRONIN. Thank you very much.

Mrs. MINK. Thank you very much.

If there are no further questions, I would like to announce that the hearings will recess until 1:30 this afternoon, at which time we will hear from Mr. Francis Sarguis of the Get Oil Out, Inc. In lieu of his oral testimony, he will give a slide presentation for 10 minutes.

Those who are assisting in presenting the slides at that time should be ready to begin promptly at 1:30.

The hearing is in recess.

[Whereupon, at 12 m., the subcommittee was recessed, to reconvene at 1:30 p.m. the same day.]

AFTERNOON SESSION

Mrs. MINK. The hearings of the Subcommittee on Mines and Mining are resumed.

We will first call the Get Oil Out, Inc. organization. I believe Mr. Francis Sarguis is here, President of Get Oil Out, and Mr. Bottom who will be presenting the slides.

Mr. TEAGUE. Madam Chairman?

Mrs. MINK. Yes.

Mr. TEAGUE. Before Mr. Sarguis starts, I would like to take this opportunity on behalf of my constituents and people of this area and express my personal gratitude, and I know theirs, of you and other members of the committee for coming all the way out here to California to conduct these hearings.

Mrs. MINK. Thank you very much. [Applause.]

STATEMENT OF FRANCIS SARGUIS, ATTORNEY, PRESIDENT, GET OIL OUT, INC., ACCOMPANIED BY JAMES BOTTOM, VICE PRESIDENT, GET OIL OUT, INC.

Mr. SARGUIS. Madam Chairman and members of the committee, I have a prepared statement which I wish to submit to the committee in writing.

Mrs. MINK. Your entire statement will be inserted in the record at this point.

[The statement referred to follows:]

STATEMENT OF FRANCIS SARGUIS, ATTORNEY, PRESIDENT, GET OIL OUT, INC.

For almost five years, since the time of the disastrous oil spill of January 1969, the people of Santa Barbara have struggled to get legislation that would protect the Santa Barbara Channel from further oil development damage.

As a result of the devoted efforts of Congressman Charles M. Teague, the concern of the President and the Secretary of the Interior this committee has before it for consideration three bills concerned with Channel oil legislation. Each bill deals somewhat differently with the situation. However, each contains a proposal destined to help preserve the Santa Barbara Channel from further desecrating oil development.

The question should be asked: "Is this area unique and deserving of special treatment? and Would permitting unrestricted offshore oil development in the channel result in major changes and irrevocable damage to the area?" We are firmly convinced that the answer to both of these questions is YES.

Because of the foresight of our nation's government, this nation is blessed with national parks, national monuments, and wilderness areas. Each of these is uniquely beautiful, and each has by congressional order been saved for the generations to come so that they too may enjoy their beauty.

Hawaii has its Haleakala; Wyoming has its Yellowstone; Utah has its Bryce Canyon; and Arizona the Grand Canyon. And if the people of Santa Barbara had had their way this area would also be a national monument so that the Santa Barbara beaches, the Santa Barbara Channel and the Channel could be set aside to save them for the generations to come.

Our reaction toward the erection of oil platforms and drilling rigs in the Channel is exactly the same as would be the reaction of others to similar opera-

tions in Haleakala crater, or at the base of Angel Falls, and for the same reasons.

Santa Barbara is a Southern California coastal city, 85 miles north of Los Angeles, and the county seat of Santa Barbara County. It occupies a shelf of land between the Santa Ynez Mountains and the Pacific Ocean. It is a popular resort and retirement community, with a beautiful harbor. It has a bird refuge, botanic gardens, natural archaeological and historical museums, the world-famous Center for Democratic Studies, a child's zoo, an excellent Art Museum, world-famed beaches, and the renowned Santa Barbara Mission.

Tourism, research and education are the city's prime economic factors. It is a culturally oriented community. One of the main attractions of the city and county of Santa Barbara is its outward appearance which is old world Spanish and Mediterranean. Santa Barbara's climate is ideal and the area has more days and more hours of sunshine than any other coastal area. The city of Santa Barbara has frequently been called the "Riviera of the Pacific".

Santa Barbara County, not including any of the island coastline, has 87.1 miles of sandy "effective beach". Including the four adjacent Channel Islands Santa Barbara County has 250 miles of coastline. Part of the mild climate of Santa Barbara is brought about by the buffer effect of the Channel Islands, the Santa Ynez Mountains and Point Conception. Both currents and winds are buffered and calmed by these natural barriers. The Channel Islands represent more than $\frac{1}{2}$ of all U.S. coastal islands and are completely unspoiled and natural.

Santa Barbara is indeed one of the most beautiful places on earth. It is a national treasure visited by people from all over the world. In 1972 more than four and one-quarter million people visited Santa Barbara to view and to enjoy its beauties. Incidentally, those visitors spent more than \$56 million dollars while they were here enjoying our coastline and beaches. In that same time Santa Barbara received ZERO income from the oil and gas industries operating in federal waters of the Santa Barbara Channel.

Secretary of the Interior, Rogers C. B. Morton gave special recognition to Santa Barbara when he refused the placement of two more platforms in the channel in September 1971. At that time he stated that Santa Barbara's environment was indeed unique and that it must not be marred by future platform structures.

More recently, when asking Congress to enact legislation to create a sanctuary in the Santa Barbara Channel, the President had this to say:

"* * * this proposal for Santa Barbara illustrates our strong commitment to use of offshore lands in a balanced and responsible manner * * * This recommendation is based upon the belief that immediate economic gains are not the only, or even the major way, of measuring the value of a geographic area. The ability of that area to sustain wildlife and its capacity to delight and inspire those who visit it for recreation can be far more important characteristics. This proposal recognizes that technology alone cannot bring national greatness and that we must never pursue prosperity in a way that mortgages the nation's environment."

The simple elemental issue with which we are faced is to prevent additional ravage to the beautiful Santa Barbara Channel from any increase in oil operations on the Outer Continental Shelf off Santa Barbara.

We have restrictive ordinances which help make certain that the basic character of Santa Barbara cannot be altered. A generation ago the State Legislature created a 16 mile long sanctuary prohibiting the production and drilling of oil in the State Tidelands off Santa Barbara. Additionally, in 1971 the State enacted legislation creating a sanctuary for three miles surrounding the Channel Islands. Offshore drilling is prohibited in the city of Santa Barbara and is severely restricted in the county along the beach fronts. Oil development is *completely incompatible* with Santa Barbara's environment and can only lead to the destruction of this area.

The Santa Barbara Channel has a potential for catastrophe. The instability and inadequacy of the channel floor create dangers to the coastline far exceeding any benefits that can be derived from any oil production there.

Many people believe that the 1969 oil spill is a thing of the past, that Santa Barbara has completely recovered from the ravages of that spill and that our beaches and surrounding area have returned to normal. This is not true, for today Platform A still continues to leak oil into the ocean at the rate of 400 gallons per day. And since the time of the 1969 oil spill was controlled, that Platform has poured more than half a million gallons of oil into the sea and

onto our beaches. In addition, a number of cracks and fissures were open by production in the Dos Cuadras field and these too continue to seep large quantities of oil into the ocean daily into now our beaches are covered with more oil than at any time in history.

In reference to his granting permission for the opening of the channel for leasing, former Secretary of the Interior, Stewart Udall, stated that he thought of this as his "Bay of Pigs".

The hazards of offshore oil development are well documented. Although most of the available data relates to areas other than the Santa Barbara Channel, it serves to indicate the irrevocable damage that would occur if the Channel should be opened for unrestricted development. Almost 36.5 million barrels of oil are spilled annually into the marine environment as the result of an average of 10,000 oil spills or "mismanagement".

During the period July 1962 through June 1971, the U.S. Coast Guard recorded 24 incidents of collisions between vessels and fixed platforms in the Gulf of Mexico. It should be noted that this was in an area not plagued by high seas and fog as is the Santa Barbara Channel. Using these statistics it is reasonable to say that at least one or two such accidents would occur yearly in the channel if it is proliferated with additional platforms. The Santa Barbara Channel is noted as one of the most dangerous waterways anywhere and is historically known as the "graveyard of ships".

Let us look at the safety record on the leases of the Outer Continental Shelf. The period in the study referred to was for the period January 1967 through June 1971. The U.S.G.S. study figures showed there were 6 blowouts, three explosions, 6 fires and 16 reported pollution incidents associated with drilling operations on all platforms. In addition, there were 5 blowouts, 8 explosions, 20 fires, and 713 polluting incidents associated with production operations on the platforms. (Pg 35 "A Review of Technology and Regulations for the Systematic Minimization of Environmental Intrusion from Petroleum Products.")

A study done by our Executive Director, Ellen Sidenberg, brought out some very interesting facts about the safety records of one of the world's largest oil production companies, EXXON. This company is one noted for its outstanding safety record, and they also have a slogan that they use, "No Pollution, Not Any". The period covered in the study was from January 1955 through June 1973. During that period Exxon experienced ten blowouts, had 120 violations and penalty actions, plus two refinery fires. Additionally, they experienced two large pipeline disasters and at least three major shipping accidents. This is the track record of a company known for its safety in operations and also for being environmentally aware and concerned. The conclusion to be drawn, is that it just is impossible to produce oil without accidents and polluting incidents.

We are told time and time again that the need for producing the oil in the channel overrides all environmental considerations, that the oil must be had to meet our present energy crisis. But when we are discussing that oil we must remember that at best it would be three to four years before any of that oil can reach the market. This certainly is not going to be of much assistance in meeting the present energy shortage. To go ahead and produce the relatively small amounts of oil present in the channel, and to ruin a national treasure in that production, does not seem to make very much sense to us.

It took millions of years for God to develop the beauty that is the Santa Barbara area, and man can ruin that beauty overnight if he moves in more drilling rigs and platforms into the Santa Barbara Channel. Santa Barbara will become just another oil boom town devastated with the continuing small oil leaks, the occasional platform fire, the barge accidents, the pipe breaks, the ship collisions, the blowouts that cannot be controlled—all those things which normally accompany oil production. It will follow that the channel and the Channel Islands will become blackened, ravaged, and desecrated forever.

While the Administration's Bill HR 7500 deals with only a part of the Channel, it does set up a sanctuary of 35 leases in the center of the Channel.

HR 3178, the bill proposed by Get Oil Out, deals with the entire Channel, and solves the problems created by any production in the Santa Ynez Unit with its treacherously deep-waters. This bill which requires fail-safe technology for production, is a bill that should receive serious consideration we believe.

We believe that the choice is clear. We recommend enactment of H.R. 7500 amended to include portions of HR 3178 in order to cover the entire channel and that no further leasing be permitted in the channel at any future time.

Recognizing the unique characteristics of the Santa Barbara area, and recognizing the concomitants of offshore oil development, we submit that the two

are totally incompatible. We ask therefore, that this committee consider the possibility of creating a sanctuary that encompasses the entire Santa Barbara Channel, and that further legislation be considered declaring this channel and the Channel Islands a National Monument.

Mr. SARGUIS. Inasmuch as many of the things that the organization which I represent have been stated already this morning, in the interests of the committee's own education I think it would be worthwhile to have the slide presentation.

Mrs. MINK. Yes.

This was earlier agreed to. Mr. Bottom will present the slides.

Mr. BOTTOM. Madame Chairman and other members of the committee, I am James Bottom, vice president and cofounder of Get Oil Out, Inc. With your permission, I would like to give you a slide presentation showing what it was like in Santa Barbara at the time of the 1969 oil spill. I am certain this audience will agree with me that Santa Barbara's location, climate, and environment makes her a unique place to live.

She has more amenities to offer us as human beings than any other place in the world. Besides her natural attributes, her citizens take great pride in her great cultural aspects, and share her historical background.

Santa Barbara is a national heritage. She has always been equated with beauty and she must be protected for all of us Americans.

Since the 1969 Union Oil spill, she has become a national symbol of the ecology movement. She deserves as much protection as do our national parks and monuments, because she is becoming a model of a lifestyle based on quality. To many of us, she is our Camelot, the closest thing we know of a manmade Utopia.

Her closeness to the sea makes her and the sea one. Her stages are Ocean Vista and the Channel Islands are the background scenery.

Before the oil rigs came, man could watch the sailboats, the white-caps moving across the stage. Man's psyche was happy. However, those oil rigs have destroyed that beautiful horizon, vista with ugly, vertical steel monsters, completely out of context with her beauty, our beauty that nature has provided us with, and then greed, change our recreational facility, our own wharf into a heavy, oil-oriented industry, completely against our city's charter and right at our front doorstep. The sight of these rigs make us sick with fear. We live in anticipation of when disaster will strike us again.

These rigs are ugly reminders. We do not deserve it, and we do not deserve to allow these monsters to destroy our vistas, to continue to intimidate us.

When we go to the beaches today, oil is still on these waters. Tar collects on our feet. Dead birds and other animals make us look at these platforms. These are beaches—and this happens quite often, all the way from Gaviota as far south as Carpinteria, as I have noticed.

Dead birds do wash ashore. We look at these monsters out there and we are reminded, and we curse the day the oil men came to Santa Barbara and they assured us and our legislators and tried to convince us that their operation was safe and clean. These men soon cast a black plague on our beautiful home.

This is a few days after the spill started, and this is what it looked like. Platform A, somewhere between January 28 and the first or second or third of February. This is our harbor a few days after the

spill began. That was 3 miles out to sea, and the oil is now on our beaches.

That is our breakwater. It was about sometimes 2 or 3 inches thick floating around on the beaches.

That is our kelp. We probably have the most fantastic kelp in Santa Barbara. It houses such things as abalone, lobster, all kinds of fish. These are our kelp beds, and this is where thousands of birds died that we never did see.

This was our harbor, and then these were our beaches, and then, this was our surf and our beautiful ocean, and then, and then, and the birds died by the thousands.

The first techniques of cleanup were charging boats through the oil and trying to break it up. That was our first cleanup techniques. It did not help; 99.9 percent of the birds that were rescued and cleaned all died.

At any rate, the oilman's techniques for cleanup were as sorry as their techniques for drilling. Straw and kitty litter were their two cleanup remedies.

That is our harbor, our beaches. That sells for \$70 a ton now.

We the citizens demonstrated that we did not want them here, and have continued that fight for almost 5 years now. We have asked our legislators to write legislation to help us get oil out so that Santa Barbara and the Nation can continue to enjoy this magnificent heritage.

January 28, a year later, we had a declaration of the environmental rights in Santa Barbara, and Mr. Teague was there, as he had been from the very beginning, as was Mr. Cranston, but now the men in black suits are back again trying to convince you and me that everything is fine and dandy and we need not worry. Their new fail-safe drilling techniques will work, and of course, we do have an energy crisis, unquote.

But, we still do not want them, because we do not trust them. If they cannot control leaks and messes like this on land—and this was a local oil spill, and here is one in the valley not far from here in the Santa Barbara County district—if they cannot control messes like these on land, how can they control leaks in more than 900 feet of water? What about collisions? What about supertankers?

Imagine one of these supertankers hitting one of these platforms, or colliding with another tanker.

Every time man returns from the moon, he exclaims what a fantastic planet this is that we live on, and now that we have seen it, we know how infinite it is. Once its natural resources are gone, there is no more. We are told that oil is one of those finite resources and that it will soon peter out, as have those other finite sources of energy, like wood, fuel, coal. It will go that way.

Perhaps the real crisis is the energy that man himself spends depleting our finite resources. We must now dedicate ourselves to the pursuit of the infinite source, the sun. They say that the oil industry is a dying monster. That is our Channel Island during the oil spill, 22 miles south of here.

They say the oil industry is a dying monster, that it will go the way of wood and coal as a major energy source. If this is true, then why must it do its death throes on our doorstep?

These are the Channel Islands.

Between the oil industry's unproven cleanup techniques with mother nature's proven fragile rock formations and an earthquake prone ocean bottom here in our channel, the risks are far too great.

That is platform A again. We do not want it here. Santa Barbara does not deserve it here. We aspire, Santa Barbara, that is, aspires to be a cultural center of America, and we want the channel to be a national park.

So as long as there are those of us that know what a national asset is to this America, we will continue to fight, we will continue to fight the oil monster which seems to be determined to destroy us along with its last dying breath. Our environment must come first.

Thank you very much.

Mrs. MINK. Thank you very much, Mr. Bottom. [Applause.]

Are there any questions that the members of the subcommittee would like to ask Mr. Sarguis or Mr. Bottom regarding any part of the presentation?

If not, thank you very much. We appreciate your coming.

Mr. SARGUIS. Excuse me, Madam Chairman.

It was pointed out to me during lunchtime you posed a question this morning that may not have been answered satisfactorily concerning the ramifications of State action on its own moratorium.

Mrs. MINK. That is correct, yes.

Mr. SARGUIS. As I understood it from Mr. Sharp who testified this morning, this is almost an academic question for the reason that for many years before Federal drilling occurred, there had been extensive drilling in the State waters, and that for all practical purposes, there has been a very intense depletion of the oil reserves in these waters, and that therefore it is almost a moot question whether there is renewed drilling or not because not much of it would take place.

Mrs. MINK. What is the purpose, then, of the hearings that have been called and that were held recently by the State land commission?

Mr. SARGUIS. It concerned the question of whether the moratorium would be lifted in the State waters, because as I understand it the danger there from the point of view of this south coast community would not be a significant one, even if it were lifted, as compared to the danger posed by the potential Federal activity because of the fact that a great deal of the oil in the State waters is already out and overly used for many years; many years before Federal activity ever took place, the State had taken the oil out.

Mrs. MINK. How extensive was the State moratorium that was declared 4 years ago?

Did it cover all of the State tidelands?

Mr. SHARP. May I answer that?

Yes; there has been recently on relaxation where they have a man-made platform, a rocker platform where they allowed additional drilling other than that.

One other point as far as the State moratorium is concerned, the hearings that were held here last month provided that there would be no new platforms involved. It would be simply to allow some additional drilling, perhaps, remedial wells, water injection wells on the platform under State leases.

Mr. OWENS. Madam Chairman.

Mrs. MINK. Mr. Owens.

Mr. OWENS. I want to see if I understand the thrust of what you are saying. There is no more oil in the State 3-mile limit.

Mr. SARGUIS. That is what I understand, Mr. Sharp.

Mr. OWENS. Anywhere in the channel.

Mr. SHARP. It is simply on State land simply because they have been in production for a good number of years. The peak production is past. They are in a declining production curve. It is not really comparable to opening the Federal lands where there has been, other than the Dos Cuadras field.

Mr. OWENS. The $3\frac{3}{4}$ billion barrels of oil that you tell us are in the Santa Barbara Channel, it is virtually all of that, then, on Federal lands?

Mr. SHARP. Oh, yes, that would certainly be my guess. I cannot come up with any exact figures.

Mr. OWENS. Nobody has any figure on what is probably left in the State.

Mr. SHARP. Those figures could be developed. The State division may want to give some projections on that, and the various publications have production figures, if the committee is interested.

Mr. OWENS. It would be helpful.

Mrs. MINK. Without objection, that information will be inserted in the record at this point.

[The information referred to follows:]

CITY OF SANTA BARBARA, CALIF.,
February 11, 1974.

Hon. JAMES A. HALEY,
Chairman, Committee on Interior and Insular Affairs,
U.S. House of Representatives, Washington, D.C.

(Attention Norman R. Williams, House Subcommittee on Mines and Mining.)

DEAR MR. WILLIAMS: In answer to your letter of January 15, 1974, and the telegram of January 28, 1974, I am forwarding herewith a table showing the estimated crude oil reserves remaining in place in the Santa Barbara Channel. First, a few words of explanation.

The amount of oil in place in the State lands is very minor as compared to that in the OCS lands under Federal control. This is due to two factors, (1) the much larger area contained in the lands under Federal control and (2) the fact that the State offshore leases have been in production since as early as 1960.

In any discussion of petroleum reserves, it is very important to define the terms. Reserves are usually shown in three principal categories:

- (1) Original oil in place in the reserves.
- (2) Oil recoverable by *primary* production methods.
- (3) Ultimate oil recoverable using *secondary* recovery methods (water flood, gas injection, steaming, etc.).

Since categories (2) and (3) above are directly affected by the *price* of crude oil, it is also very important to consider the economic factors. In today's very fluid condition with respect to the price of a barrel of crude oil, the figures for reserves in (2) and (3) can vary a great deal depending upon the basic assumption made as to price.

For example, with oil selling at \$3.50 per barrel, it may be economically profitable to recover 25 percent of the oil in place in any reservoir by primary production methods. However, if oil is selling at \$10.00 per barrel, this percentage could increase to perhaps 40 percent. The same principle applies to ultimate recovery of oil using secondary methods. Indeed, many old and depleted oil reservoirs in the United States which show up in the various tables as having no remaining reserves are being re-activated today with the increasing price of crude oil. Many millions of barrels of oil can now economically be recovered from these old reservoirs.

Having noted the above and having examined some of the literature which gives estimated reserves in the Santa Barbara Channel, I have shown reserves in the following table as *total oil in place*—a “rule of thumb” often used in California oil fields (and it is very much a “rule of thumb”) is 25 percent of total oil in place recoverable by primary production methods and an additional 10 percent recoverable by secondary recovery methods. These percentages can vary greatly with the type of reservoir, the gravity of the oil, etc., as well as with the *price* of crude oil as noted above.

In the table of oil reserves in the Santa Barbara Channel, I have used three basic sources, all with local knowledge of the geology of the Channel. Most of the figures available from the A.P.I., the Department of the Interior, the State of California, and others, are general in nature. I attempted to obtain specific reserve figures from the Santa Barbara office of the U.S.G.S., but was informed that they could not release this data. They did suggest that such data may be available to your committee by contacting “Chief, Conservation Division, U.S.G.S., National Center, Mail Drop 650, 12201 Sunrise Valley Drive, Reston, Virginia 22092.

I hope this information will be of help to your committee.

Yours truly,

R. C. SHARP,

Environmental Quality Advisory Board.

Enclosure.

ESTIMATED REMAINING OIL IN PLACE IN THE SANTA BARBARA CHANNEL

- I. In the area of the Channel under State Control :
Total remaining oil in place=53,250,000 bbls.¹
- II. In the area of the Channel under Federal control :
Estimate #1—Total oil in place=21 billion bbls.²
Estimate #2—Total oil in place=25 to 30 billion bbls.³

¹ SOURCE : Santa Barbara County Assessors' Office, January 1974.

² SOURCE : Society of Petroleum Engineers of AIME—Paper #SPE 4212, by R. L. Richardson—1972. “California Oil's Past, Present, and Future—Coastal District.”

³ SOURCE : American Association of Petroleum Geologists, Memoir 15, 1971—“Geology, Oil Fields, and Future Petroleum Potential of Santa Barbara Channel Area,” by John F. Curran, Kempton B. Hall, and Robert Herron.

Mr. CAMP. Madam Chairman.

Mrs. MINK. Mr. Camp.

Mr. CAMP. Mr. Sharp, could you tell us what the average production is on the State lands per well?

Mr. SHARP. I am sorry. I do not have those figures. I have seen some figures which are published in the California Oil World and the Oil and Gas Journal periodically. I do recall that they have declined very substantially.

Mr. CAMP. How many years have they been in production, 30?

Mr. SHARP. No. The first platform went in, as I recall, in 1960, 1959 perhaps. State lands I am talking about. The peak production has long since passed on the existing State lease.

Mr. CAMP. Thank you.

Mrs. MINK. Thank you very much. We appreciate your testimony.

Mr. SARGIS. Madam Chairman, one final thing. I was asked to give you a present from the Get Oil Out Organization, and apparently the Secretary of the Interior Hickel was given one of these and accepted it, as I understand it; soon after he took it he got fired.

Mrs. MINK. I hope that this does not establish a precedent.

Thank you very much.

Mr. SARGIS. Thank you very much.

Mrs. MINK. Thank you very much.

Mr. KETCHUM. Madam Chairman?

NOTE.—In I above, all of this oil is proven reserves in place. In II above, much of this estimated oil in place is undiscovered as of 1/1/74 and hence is much less exact.

Mrs. MINK. Mr. Ketchum?

Mr. KETCHUM. I ask unanimous consent that Joint Resolution No. 6 authorized by Assemblyman MacGillivray and cosponsored by Senator Lagomarsino be included with their previous testimony in the record.

Mrs. MINK. Without objection, so ordered.

[The resolution referred to follows:]

CALIFORNIA LEGISLATURE—1972 REGULAR SESSION

AMENDED IN ASSEMBLY JUNE 29, 1972 : JUNE 20, 1972 : MAY 4, 1972 : AND MARCH 22, 1972

(Introduced by Assemblyman MacGillivray, Coauthor: Senator Lagomarsino, January 26, 1972)

ASSEMBLY JOINT RESOLUTION NO. 6 (RELATIVE TO OIL DRILLING) REFERRED TO COMMITTEE ON PLANNING AND LAND USE

LEGISLATIVE COUNSEL'S DIGEST

AJR 6, as amended, MacGillivray (P. & L.U.), Oil drilling.

Memorializes President and Department of the Interior to forestall any future oil production in any federal waters until absolute safeguards for production and cleanup to protect the coast have been developed and full and open hearings have been conducted, and to deny the granting of permits for oil drilling in California coastal waters until an underwater fail-safe system of extraction has been demonstrated and an adequate oil cleanup system has been developed and deployed.

Fiscal Committee—No.

Whereas, Well blowouts in federal waters off the California coast have caused damage to the coastline and hardship to the people of this state; and

Whereas, No adequate oil cleanup system capable of operating in rough seas has been developed as yet, much less deployed; and

Whereas, Although to date no oil has been produced in water depths greater than 380 feet, future oil production in the Santa Barbara Channel is contemplated at water depths of 700 to 1,500 feet, in spite of the fact that the Santa Barbara region is still suffering from the effects of the disastrous 1969 oil spill in federal waters; and

Whereas, The residents of California coastal areas have the right to the full protection of their property from oil spill damage and the Santa Barbara Channel spill and numerous other environmentally detrimental offshore oil spill accidents off the Gulf Coast in lesser water depths indicate inadequate protection; now, therefore, be it

Resolved by the Assembly and Senate of the State of California, jointly, That the Legislature of the State of California respectfully memorializes the President of the United States and the Department of the Interior to:

1. Forestall any future oil production in any federal waters until absolute safeguards for production and cleanup to protect the coast have been developed, and full and open hearings have been conducted to satisfy and answer the questions of all concerned citizens of the coastal areas; and

2. Deny the granting of permits for oil drilling in waters off the coast of California until an underwater fail-safe system of extraction has been demonstrated and an adequate oil cleanup system has been developed and deployed; and be it further

Resolved, That the Chief Clerk of the Assembly transmit copies of this resolution to the President and Vice President of the United States; to the Secretary of the Interior, and the Administrator of the Environmental Protection Agency.

Mrs. MINK. Our next witness is Mr. Philip K. Verleger, counsel of the Western Oil and Gas Association. Your statement will appear in the record at this point.

[The statement referred to follows:]

STATEMENT MADE ON BEHALF OF WESTERN OIL & GAS ASSOCIATION
BY PHILIP K. VERLEGER, COUNSEL

Madam Chairman, Ladies and Gentlemen:

My name is Philip K. Verleger. I appear as General Counsel for the Western Oil and Gas Association. The Western Oil and Gas Association is a trade association which includes most of the companies producing or marketing oil in the Western United States, including Alaska. All of the companies presently operating in the Santa Barbara Channel are members of the Association.¹

Initially, I would like to thank the members of the Committee for this opportunity to appear and express our views. It is one of the fine things in the American democratic tradition that, when legislation of this sort is under consideration, a full and fair opportunity is given for the expression of all points of view with respect to it.

The views I have to express are strongly in opposition to all of the proposed bills. The bills all suffer from the same overriding defects.

This is a time when the United States desperately needs to develop intensively every source of energy available to it. It is a time when we are acutely threatened by shortages, in large measure as a result of the actions of other countries. I need only to refer to the measure called for in the President's recent energy message to demonstrate our country's problem, and the conservation measure he has called for may only be the beginning. At this singular time, these bills would arbitrarily lock up an important reserve and foreclose development of that reserve.

All suffer from another overriding defect. They destroy existing contract rights without any adequate provision for fair and quick compensation. They thus, to a significant degree, cast into doubt the reliability of the promises of the United States.

Let me discuss these points in just a little greater detail. The first and critical point is—we need the oil.

Every discussion of this sort of legislation has to start with the proposition that the United States needs, now, every barrel of domestic reserves that it can develop. It is almost ironic to be discussing today proposals to lock up and place in the deep freeze significant reserves within the United States, while simultaneously to read headlines of efforts to prevent, by what is called a computerized search, any oil from the Arab countries from reaching the United States. If there were any doubt, at any time in the past, that the United States cannot depend on foreign sources of crude, that doubt is now gone.

It is of course WOGA's hope that peace will be achieved in the Mideast, so that some portion of the United States' needs can be met by imports—for every projection that we have seen indicates that even if every source is developed in the United States, there will still be a substantial need for imports. But nevertheless, at present, the fact is that a barrel which is not produced domestically is not a barrel which is replaced by imports: it is simply a barrel which is not replaced at all—a barrel we are short. The question whether to develop oil offshore in Santa Barbara, or offshore anywhere else in the United States, today has to be thought of in the harsh terms that say that if that oil is not produced, it may well not be replaced at all. I am filing herewith a copy of the study recently made by the California Resources Agency on California's petroleum requirements. I ask that that be received as part of my statement. A perusal of that report will disclose beyond any question the crippling effects which shortages of petroleum will have here in California.

The shortages that I am talking about are shortages that are here—now, in terms of present demands, given present restrictions in supply. That problem promises to be far worse in the future. It is worth noting that unless, somehow or another, the growth of the whole economy is frozen arbitrarily, energy needs by 1985 could approximately double what they are today. As we all know,

¹ I do not include Pauley Petroleum Company, although they are a WOGA member, supporting this statement because they are engaged in pending litigation relating to some of these leases.

nuclear power is foreseen to fall far short of AEC forecast, due to licensing delays, fabrication, and construction. Growth in hydroelectric energy is forecast to be limited by the availability of economic sites. The increased use of coal, essential although it is, poses environmental problems which are far more difficult than those involved in the offshore development of oil and gas. And so it simply makes no sense to lock up any portion of our oil and gas heritage.

Let there be no doubt, in this connection, that the reserves involved are in all probability very substantial. Because of the various suspensions, exploration of the Channel has been greatly inhibited. Yet two areas of major discoveries—Dos Cuadras and Santa Ynez—have been discovered. Given free exploration, there would undoubtedly be much more.

And the implication of a "freeze" goes far beyond the Channel.

The Continental Shelf area is one of the few remaining areas in the United States offering a large number of attractive undrilled prospects. The economic and technological aspects of offshore activities require incentives—not obstacles—if the nation is to realize the benefits of these activities. Industry and the nation need an orderly progression of offshore lease sales, not lease terminations, if we are to satisfy from domestic sources even the projected 50% of our petroleum needs. And, if the attitude that "oil production is all right somewhere else but not here" is permitted to prevail in Santa Barbara, what answer can be given to other areas of the country who, like Santa Barbara, need the fuel but would just as soon it be produced somewhere else.

To sum up my first point, then, we need the oil and should develop it.

Let me look next at the opposite side of the equation. What are the risks involved? Oil drilling has gone on in the Santa Barbara Channel for over seventy years. Offshore operations literally started in the Channel with drilling from piers extended into the ocean. Over all that period, there was *one* serious incident and its effect was short-termed with the area returning to normal very quickly.

Since that incident, drilling regulations and drilling practices have been greatly tightened. Those regulations require setting of many casings strings as drilling progresses, a practice which probably would decrease the probability of a blowout as is shown by the fact that more than 131 wells have been drilled in the Dos Cuadras field safely without incident.

Most of the opposition to operating offshore in Santa Barbara is based on misinformation. Thus, the construction of platforms in 600 or 800 or 1,000 feet of water is described as involving totally novel technologies. The truth is that the skills involved are conventional—like those involved in designing high rise buildings. Earthquakes are made a bogey, although no earthquake has ever damaged a drilling platform—and although platforms can be designed to resist the ground shaking resulting from any probable earthquake. Developments in clean-up technology are simply ignored by opponents to drilling. The fact is that weather conditions in the Santa Barbara Channel make recovery of spills, if any occur—and they should not—far easier than countless other places where oil operations are accepted.

To sum up here: under current regulations, significant spills should not occur. And under most weather conditions, such highly unlikely spills can be cleaned up.

On this topic of safety, as related to the deep water of the Channel, I call particular attention to one solid piece of data. That was brought to public attention in the recent hearing on the Santa Ynez Unit. It was there established that one company has drilled *31 wells in the Channel in water deeper than 500 feet and 12 wells in water deeper than 1,000 feet*. Those wells were drilled from floating vessels. The regulations applicable, casing program, and basic techniques are the same as those on a platform. Those wells were drilled safely. There can be no question but that this can be done.

The next part of this paper will discuss the bills themselves, and particularly the provisions for compensation.

Certain of the proposed bills would substitute Elk Hills production for Santa Barbara production. Those same bills would propose to use revenue from Elk Hills for the purpose of reimbursing companies that have investments in Santa Barbara for those investments. In general, it would seem to be the theory of those bills that Santa Barbara production would become a reserve in lieu of that in Elk Hills. Considered from any point of view, these ideas do not make sense.

The best estimates around are that Elk Hills will produce from 150,000 to 200,000 barrels a day. And there can be no question that the existing deficit in

the United States' requirement far exceeds that amount. The short answer to Elk Hills as a "substitute" is that we need both Elk Hills and Santa Barbara. Considered as a source of compensation, we submit that these proposals are unjust, perhaps unconstitutional.

Industry paid upwards of 600 million dollars for leases off the Santa Barbara Channel area. Because of freezes, suspensions, and delays, no return has as yet been realized on that investment, except for two producing leases. At current rates of interest, the simple loss of use of that money is worth additional hundreds of millions of dollars, which goes uncompensated.

H.R. 7500 and H.R. 3177 all depend on sales from Elk Hills to meet the Government's obligation to pay just compensation. But there can be no assurance that production from that reserve will be produced at a rate or in an amount such as to satisfy the constitutional obligation, promptly, to pay just compensation for condemned property. Also, unless the possible presence and potential extent of reserves over these leases has been determined by exploratory drilling, it would be impossible to fix a fair compensation to be paid for each cancelled lease.

One more comment on the bills is in order. H.R. 7500 purports to create a "National Energy Reserve." The implication is that this "reserve" would be available in times like the present, when shortage threatens. The fact is that an area which has not been explored, indeed which does not have production facilities installed, is useless as a reserve. In the recent Santa Ynez hearing, it was indicated that it will take *more than five years to fully develop* the first field of that Unit—and it has been *explored*. The "reserve" created by the bill is illusory.

To sum up: The oil is acutely needed. It should be developed. These bills should not be approved.

STATEMENT OF PHILIP K. VERLEGER, COUNSEL, WESTERN OIL & GAS ASSOCIATION

MR. VERLEGER. My name is Philip Verleger. I appear as counsel for the Western Oil and Gas Association. I should also add that the formal statement which I filed here, and which I certainly will not read, is also endorsed by the American Petroleum Institute.

The Western Oil and Gas Association is a trade association in which most of the companies producing oil in the western part of the United States including Alaska are members. Most of those people producing in the Santa Barbara Channel are members.

I would like to add, if I may, as I go through the summary of the talk that I intended to present, that I would like as I go to touch on a few matters that were raised in the testimony earlier today. If I become too lengthy at any point, I would appreciate a notice, and I am sure I will receive it.

I would also like at this point to file two or three additional items with this committee. First of all, I would like to file with the committee a study entitled "Energy in California, its supply and demand problems." It is applied to man and problems. This is by the Resources Agency of the State of California, January 19, 1973. It discloses the genuine need that exists for the resource, both out to the 3-mile limit in the State waters, and the Federal area. With the permission of the chairman.

Mrs. MINK. That document will be received for the subcommittee.

[The information referred to may be found in the files of the subcommittee.]

MR. VERLEGER. I would like to file two items, one consisting of two volumes. The two volume item is entitled, "Biological and Oceanographic Survey of the Santa Barbara Channel Oil Spill, 1969 and 1970." This was prepared by the Allen Hancock Foundation of the University of Southern California.

Very briefly, after the spill occurred, the Western Oil & Gas Association felt it would be highly important to get an objective appraisal of effects at the earliest possible date, and most completely. They, therefore, made funds available to USC on a basis where it was understood that USC would do the work and that the association was to have no voice and no control over what USC said. The only condition was that the results of the study would be published.

This I think would furnish an objective appraisal of the biological and ecological effects of the 1969 spill. There is no question that the worry over that spill troubles people more than any other single item when one speaks of resuming operations. It is worth having, I think, an objective appraisal. The indications are that fortunately there was essentially no permanent ecological effect for which we say, thank goodness.

There is a followup study, "The Influence of the Santa Barbara Oil Spill, February 19, 1969, on the Intertidal Distribution of Marine Organisms" by the same group.

I would like to file these.

Mrs. MINK. The committee will receive those for the use of the committee.

[The information referred to may be found in the files of the subcommittee.]

Mr. VERLEGER. The final document I would like to lodge is a statement by the Western Oil & Gas Association that was filed before this committee. It does have some detail. I will not attempt to discuss it.

Mrs. MINK. That will be received by the subcommittee.

[The information referred to may be found in the files of the subcommittee.]

Mr. VERLEGER. Let me go on and say it is hard for me to imagine how this committee could have a more timely hearing on the question of whether these particular reserves should be developed. Actually the events that have occurred since this hearing was announced are remarkable. Since that time, the Arabs announced their embargo on the delivery of oil to this country. Since that time we have received in the President's energy message a call for a unique conservation effort, and I add, the companies that I represent are doing their best to assist in those efforts. They have instructed their people to stay down to 50 miles an hour and are doing their best to implement conservation in every way they can. They are furnishing information to the public on ways to save gasoline by advertisements and other techniques.

Since the hearing was announced, the administration has indicated at least for the present its support for one of these bills is withdrawn.

Mrs. MINK. You are not suggesting, I hope, that the announcement of my hearings had all these consequences.

Mr. VERLEGER. Quite the contrary, but these events set this hearing in a pretty timely environment, I think. One would hate to feel that one went through life like I think it was Joe Bifflespick in the Li'l Abner cartoon, the man who went around through life with a rain cloud above his head.

It is, I think, however, a peculiarly timely hearing and in this particular sense. The pictures that you saw a minute ago of Santa Barbara represent a significant fraction of the total. There is another

fraction that needs to be added into the whole computer. Santa Barbara is like much of California in that it is wholly dependent on the industry which one speaks of here for the transportation of the people of the community. In Santa Barbara, like Los Angeles, we depend almost entirely on the automobile to move around. Santa Barbara and Los Angeles depends on oil and gas to produce electricity which is used every day. And so it becomes in this particular situation peculiarly important to note that there is no question at all, that the petroleum from these reserves is needed. This need is significant in a different sense because the offshore areas are by far the largest portion of the undeveloped, and in instances, unexplored reserves of the United States. They are the only major reserve available now, since whatever the long term, 15, 20 years from now, solution to energy may be, today we need gasoline to make our cars go. And we need oil for electricity out here where we have no coal and probably would not be permitted to burn it anyway. We need it for the power-plants.

We have learned in the hardest way imaginable that it is extraordinarily uncertain to depend entirely on foreign sources. But total dependence is where we will be if we do not develop our domestic sources. The need is acute. It is necessarily very difficult to say whether the next area that needs to be developed should be in the San Diego area, out to sea where the so-called outer banks are, or on the eastern seaboard of the United States. But wherever it is, it is very difficult to say to some other portion of the United States, "You would like to have oil, too, but you have to have it produced close to home." But out West they would like to have it too and they do not need to accept production close to home. We do need the oil. I add that this is not and it cannot be suggested rationally that the shortage is a result of a manipulation or anything of that sort.

One of the great troubles we have today is coping with these extraordinary difficult problems is what I will call the devil theory, for the origination of all our difficulties. It is certainly not in the oil industry's interest that the Arabs have cut off the supply at the present time. Again, for the best of reasons—that is, the control of air pollution—the automobile's consumption, new-car-wise, suddenly jumped by something like between 7 and 10 percent, a jump no one foresaw. Again, the third major factor that is involved in the shortage lies in the suddenly increased use of oil as a powerplant source, as a source for electricity when coal became environmentally undesirable.

With all that, there was a massive and sudden increase in the number of purchases of automobiles. Backed against that was the fact that American sources were declining, and the Alaskan project has been held up for years. In order to build a refinery you have to know where the crude is going to come from. You do not put \$500 million into a refinery for crude that may come from somewhere, someday, you hope. Up until very recently, foreign crude could not be imported in substantial quantities. There was another basic bottleneck over which no one had any control, which was that environmental difficulties made it hard to build a refinery, if you decided it was an appropriate thing to do. All these conditions have tended to bring about what is indubitably a long-term problem.

The problem is real. It is the result of circumstances over which we have no control. It needs in the worst kind of way to be attended to.

It seems to me that if one takes as a given fact that we do need the oil and the gasoline that will be produced, we have as domestic sources available to augment our production only Alaska and the offshore areas of the United States. One is then brought to this question of safety. Most of the criticisms that have been made here with respect to the safety of offshore operations are criticisms which are really generic to the whole business. They would be equally true whether you were talking about operations in this channel or the Gulf of Mexico or somewhere on the Atlantic or elsewhere. I think therefore it is worth noting that they do not recognize the real progress that has been made and the work that is going on continuously to make them better.

Let me use one particular example in that connection. There was mention by one of the speakers before of the Shell fire that took place in the gulf in 1970 or 1971. My understanding is that that was a fire that resulted while work was going on downhole in a gas well. Part of the problem was that with the technology at that time, using what is called a storm choke, it was necessary to remove that device in order to do the work.

Today you would use in this channel a different device which is known as a subsurface safety valve, which works automatically, so that it will automatically close in the event of a major problem. The way it works is simply it is kept open by affirmative pressure from the surface, so if there is a fire on top and the hydraulic system therefore is destroyed, without anyone's effort it automatically cuts off.

That tool does not have to be removed in order to work downhole. You work with it in place. As well as one can figure, that should go a long way to reduce that particular sort of hazard. I use that as one example.

The industry has gone at this problem with great diligence. The USGS has employed outsiders to study it as well as itself. The company that made the recent proposal for the Santa Ynez unit out here employed a company outside—the General Electric Co.—to do what is called a hazards analysis after they figured the whole thing out as well as they could themselves. There is a monumental amount of effort being made to reduce the risk as well as one can.

I use one other example. Today the regulations require multiple strings of casing so that the hole is cased down to about 3,000 feet, where in the past under some geological key conditions it may have been appropriate under the regulations to approve a system of casing that only went down 200 or 300 feet. That again reduces to a significant degree the risk of blowout.

What I say is that on the one hand we do very seriously need this oil, and on the other hand these are very substantial steps for safety. They are all steps in detail. Somebody said the system is in general the same as it was in the old days. The system is essentially similar. It improved in detail. Improvements in detail are precisely what is needed to get the hazard out of one location or another as far as one can.

Speaking of hazards, at this point I would like to turn to some of the areas that are spoken of in Santa Barbara as being unique. The suggestion is that this is a seismically active area and therefore it is

inappropriate to operate offshore here. There is no question that California is seismically lively. I have lived here since 1918. I have gone through two major earthquakes, and I cannot remember the number of little ones. It is also the fact that California has been a productive oil area going back well into the 1920's. As far as we have been able to discover, neither the 1933 earthquake, centered down in Long Beach close to the oil operations, nor the earthquake out in San Fernando that centered a bit further north produced any significant oil losses. It did not produce, as far as we can discover, any blowouts or anything of that sort.

There is a very practical reason for that. The reason is simply, if an earthquake hits an oil well with enough force so that the damage will be done, the normal effect is a collapse of casing to close the hole. So instead of having an eruption and other things, what you have to do is redrill it, which is an expensive, unsatisfactory situation from the point of view of the operator. It costs money. It does not mean that there will be oil distributed over the landscape.

Seismic conditions are relevant to operations in the sense if you are designing a platform to go out in the channel, you first have to locate a site that is solid and secure. You then have to calculate the earthquake stresses so that you build a building that will withstand them. This is essentially the same problem that is followed and solved in the same way whenever you build a highrise, steel-framed building in this particular area.

In spite of the fact that this area is seismically active, up to the present time there has been no significant damage that we are aware of to any platform. The criteria that are being used today in designing them are the same as they are in a highrise building, and one has this double precaution. That is, if somehow or another, despite the fact that it should not happen, an earthquake knocked down a platform, one now has these subsurface safety valves that should cut off the entire flow.

Now again, discussing this whole problem of safety, one must look at the matter of cleanup. That is another level of protection which ought to be worked out and has been intensely worked at. If you go back to 1969 when the platform A spill occurred, there existed a technology for cleanup in harbors. There did not exist a technology for cleanup in the seas. Here we have a cooperative, Clean Seas, Inc., which has been formed for the purpose of cleaning up spills and is equipped not with a single type of boom, but several types of booms and related equipment to clean up spills. Now no one can guarantee that such equipment can be operated under all the conditions of weather that can occur at any time, if for no other reason that if storm conditions are found, it may very well blend the petroleum and the water down to a depth where a boom and suction equipment will not be effective, or it will be unsafe to be out at sea. But if one had to pick all the areas in the United States where there is least likely to be a storm problem, one would have to select Santa Barbara.

The estimates we have—the weather has been studied carefully. One of the operators here hired a local outfit which specializes in this to review all of the records of the weather department that would relate to this hazard. The conclusion one reaches is, this equipment will work on 94 percent of all the time that can be expected. Some of the time in

the remaining 6 percent the equipment will be effective to contain the oil if the weather is too severe to pickup the oil.

The point I think that needs to be made is there has been a monumental amount of progress in this field since 1969. One of the questions that was asked—and I will just touch on it briefly here—and then perhaps I had best stop before I go on too long in this fashion—one of the questions that was asked is what does this seismic condition result in with respect to natural seepage.

Seepage is one of the interesting things about this area. It is true enough that there is oil on the beaches today. That oil can be analyzed and the source determined. The studies that have been made of it indicate that the oil that comes ashore, 70 percent comes from natural seepage.

One of the interesting things about Santa Barbara is that oil of that sort has been reported in the records going back to the days of the Spaniards. One of the old reports speaks of going through a quantity of floating oil here in the 1700's. The appearance of oil is not pre-eminently a result of oil operations. Of the remaining oil, 25 percent is unidentified, and there is a small amount that escapes as a result of platform A's blowout. The oil did not come up the hole. It worked its way through a fissure elsewhere. That is intact today, but there is a relatively small amount of the total seepage that comes out of that area.

I think it is probable that a violent earthquake in that area would result in some escape of oil from these natural sources. But the tendency of oil development should be to reduce that risk rather than increase it, for the reason that to the extent that one's production reaches the source of the seep, the amount of oil that remains there will be reduced. Much of the seepage is undoubtedly from sources close to the surface. How much of it would be reached I think is debatable.

The only possible effect of oil operations is to reduce that hazard rather than to increase it.

The remaining topic I will speak of is the proposals that have been made that provide for reimbursement, from the use of Elk Hills oil. I would say, as others have said, we need the Elk Hills oil and we also need Santa Barbara's oil. And there is no way one can reasonably expect production from oil wells if it is opened up to come at a rate which would be that which would meet the constitutional obligation to pay prompt and adequate compensation on property that is condemned. Condemnation is what happens in effect if all these leases are rescinded or taken back or permanently suspended or nearly permanently suspended.

So if I may sum up very briefly, first, this country will need the oil that it can get from Santa Barbara and from the other offshore sources. Second, the Santa Barbara oil is available more quickly because those leases have been issued. They are outstanding, and exploration, not in the 35 leases but around the sides, has gone forward. It will be possible to get production from that area sooner than say from the outer banks or from some other new area.

Third, we need not the termination of leasing, but we need an orderly sequence of leases. A logical place to develop is Santa Barbara, which in orderly sequence is far earlier than places where the Government still has not figured out where it wants to lease.

Finally, an immense amount of work has been done to make these operations safer and the level of safety has been greatly increased.

Thank you.

Mrs. MINK. Thank you very much.

Do my colleagues have any questions?

Mr. Teague?

Mr. TEAGUE. Thank you, Madam Chairman.

Mr. Verleger, I want for the record to correct one statement that appears in your written presentation on the last page, the next to the last paragraph where you say, "H.R. 7500 would create a national energy reserve. The implication is that this reserve would be available in times like the present when shortage threatens. The fact is that an area which has not been explored, indeed which does not have production facilities installed, is useless as a reserve. In the recent Santa Ynez hearing, it was indicated it would take more than 5 years to fully develop the first field of that unit, and it has been explored. The reserve created by this bill is illusory."

As a matter of fact, and for the record, H.R. 7500 has nothing to do with the Santa Ynez area, and that is a misinterpretation by you, and I think the record should be corrected.

Mr. VERLEGER. I did not intend to indicate that it covers Santa Ynez. I intended to use Santa Ynez as an example of how long it takes to develop an area.

Since my statement did create a misapprehension, Congressman Teague, I much appreciate your correcting it.

Mr. TEAGUE. Thank you.

Mr. OWENS. Madam Chairman?

Mrs. MINK. Mr. Owens?

Mr. OWENS. Mr. Verleger, you indicate that 70 percent of the oil on the beach comes from natural seepages.

Prior to the blowout in 1969, did you have oil then on the beaches?

Mr. VERLEGER. Yes. As a matter of fact, I can speak to it personally. I can remember quite vividly camping up along the coast here and going down to the beach. The seeps that are along here, they have been referred to in a variety of historical literature. At the last, at the hearings on the Santa Ynez, you know, a number of people testified as to their experience of walking on the beach before the spills. It is something that goes way back in California.

Mr. OWENS. Was it approximately what you have now or a great deal less or more?

Mr. VERLEGER. The amount of seepage cycles up and down. You will have periods when there is more and there are periods when there is less. Within the last—I cannot fix it exactly, but 6 months or so, there was a period of livelier action. If you go back, one of the earlier explorers coming through here reported seeing oil on the surface of the ocean where he wandered, which was apparently due to some—

Mr. OWENS. I have heard the story. I am trying to pin it down to that beach. The beach then got as much oil as it gets now, basically as much as prior to the incident?

Mr. VERLEGER. Basically as much, with variations from time to time.

Mr. OWENS. The second question, you say 131 wells have been drilled in the Dos Cuadras fields, safely, without incident. Maybe I misunderstood other witnesses this morning. I thought there had been.

Mr. VERLEGER. The statement that I heard was the first I had ever heard that indicated that there had been other blowouts on Dos Cuadras. I seriously doubt that there were.

In the time available, I will be glad to inquire into that and supplement the record. [See answer provided below.]

Mr. OWENS. You might have a look at that report of the Interior Department which was referred to this morning which said there was one.

Mr. VERLEGER. I had better look at the report.

Mr. OWENS. I think that would be helpful.

The last point I would make is——

Mrs. MINK. If my colleague will yield at that point.

Mr. OWENS. Yes.

Mrs. MINK. How is it possible that a blowout could occur and the Department of the Interior would issue a report and your association not be aware of it?

Mr. VERLEGER. I am puzzled, I am equally puzzled, Madam Chairman.

The problem may be one of terminology. I picture a blowout as something where a significant amount of oil gets away. My guess is if it happened there, not only would I have heard about it, but it would have been all over the headlines, and it is not something you can do inconspicuously.

Mrs. MINK. Was there any inconspicuous incident of which you recall?

Mr. VERLEGER. I do not mean to say there have been no incidents. I remember that there was a pipeline break. I recall that. The operations were stopped until the pipeline break was repaired. That came in after the original and it involved a relatively insubstantial amount of oil. A well blowout with the oil blowing out of the top, it is hard for me to imagine that not creating headlines.

Mr. OWENS. I would call the witness' attention to his own testimony where you state, 130 wells have been drilled in the Dos Cuadras field safely and without incident. That is a pretty strong statement.

Mr. VERLEGER. That is correct.

Mr. OWENS. We would appreciate you checking into that.

Mr. VERLEGER. We will look into it and respond.

[The information provided follows:]

I have checked, and am advised there were no significant and harmful incidents in drilling those 131 wells after the blowout.

Mr. OWENS. You state, I understand from earlier witnesses, but perhaps misunderstood, that there had been wells drilled in water deeper, you say here, than 1,000 feet. I did not know there were operating wells at more than about 350, 400 feet. That was my understanding.

Mr. VERLEGER. There is a difference between drilling wells. When you explore an area like these deeper leases, you drill wells from floating vessels. The drilling techniques are the same as those used in drilling from a platform, with these qualifications. That is, on the platform you have the blowout preventers immediately beneath the platform floor, whereas from a floater you are drilling, they are placed down on the floor of the ocean. In the one instance the drilling equipment is mounted on the vessel. In the other instance, it is mounted

on a platform. The equipment is the same. The casing requirements are the same. The regulations applicable are the same.

If anything, the only difference is because of the need for stabilizing the vessel you have some things to do on a ship you do not have to do on a platform.

The wells that we referred to, they were drilled from floating vessels in waters of that depth. They were then capped. They cannot be produced. You cannot produce wells from that area until additional facilities are built. These wells demonstrated the feasibility of drilling wells safely in that much water.

Mr. OWENS. At 1,000 feet.

Mr. VERLEGER. Yes.

Mr. OWENS. Have there been any over 1,000 feet?

I know when you are looking at the Santa Ynez you are talking about 2,000 feet. Has that ever been done?

Mr. VERLEGER. I know there are 12 wells in water deeper than 1,000 feet out there, not into 2,000. The initial proposal for the development there, the one on which the impact hearing was recently held, does not involve any in waters as deep as 2,000 feet. I do not remember offhand whether there are any portions of the unit that far. The platform itself, the first platform would be in 800 feet of water.

Mr. OWENS. Then there will be no drilling in 2,000 feet of water.

Mr. VERLEGER. Nothing of that sort is scheduled in the portion covered specifically by the application. I would have to check again. I can supplement the record if desired, as to whether there are any areas anywhere in it that might ultimately be developed.

Mr. CAMP. Will the gentleman yield?

Mr. OWENS. Yes.

Mr. CAMP. We have places in the North Sea where they drill below 1,500 feet.

Mr. OWENS. From a floating platform?

Mr. CAMP. Yes.

Mr. OWENS. 1,500 feet of water?

Mr. CAMP. Yes.

Mr. OWENS. Successfully?

Mr. CAMP. Yes.

Mr. OWENS. That is interesting. I missed that point, obviously.

Mr. VERLEGER. Reaching back into my own memory, the range of potential locations in the three fields that are discussed in the impact statement, as I recall, range from about 800 feet from the first platform out into the areas where the water is approximately 1,200 feet deep. It would surprise me to find it goes more than 2,000.

Mr. OWENS. You are talking about the Santa Ynez?

Mr. VERLEGER. Yes; that was the question.

One observation further on the Santa Ynez unit that was mentioned in prior testimony. One of the witnesses expressed some concern over the use of submerged production systems there, Mr. Sharp, I think.

I was going to say that the program the company involved has an application pending with Interior to test this equipment in the Gulf of Mexico first. The first step to be taken in Santa Ynez allows platform development rather than SPS. It has been worked on in SPS. I was interested when the man from VETCO spoke. To my knowledge, a great deal of the development on the SPS was done at VETCO.

Mr. OWENS. One further question.

You state that Elk Hills as we know would produce between 150,000 and 200,000 barrels a day if it were put into full production.

What would you contemplate—do you have any figures to contemplate what the total production would be if the present leases were allowed to operate fully?

Is there any estimate you can give us?

Mr. VERLEGER. I think the estimate has to be sort of a horseback extrapolation.

Mr. OWENS. I understand.

Could you extrapolate?

Mr. VERLEGER. Let me do it this way so it is easier. The estimates that have been given for Santa Ynez run something between 150,000 100,000, and 150,000 barrels a day. It is my belief that the peak of Dos Cuadras, I am a little uncertain, is 68,000. That is the figure that comes to mind, but again, I would submit variations.

I ask leave to submit the figures after varification.

If you just take roughly 25 percent of the leases, I think this is about as well as people can do, and indicate they have a potential somewhere on the order of 100,000 to 150,000 barrels a day, you might quadruple that for the total here, which is what you get if you wind up with everything running, which would get you somewhere between 400,000 to 500,000 barrels a day.

Mr. OWENS. Everything in the Channel?

Mr. VERLEGER. In the leases.

Mr. OWENS. That is leased.

Mr. VERLEGER. That is a guess. Again, I think it might be better if I tried to submit something later on.

Mr. OWENS. It would be helpful.

I would ask, Madame Chairman, that be inserted in the record.

Mrs. MINK. Without objection, that information will be inserted in the record at this point.

[The information referred to follows:]

I have not been able to develop anything better than the sort of broad brush guess set forth above. The thirty-five leases are viewed as promising. Substantial bonuses were paid for them. Until they are explored, however, estimates are of necessity speculative.

Mr. OWENS. You are the only representative of the dark suits here today. It is unfortunate we do not have more time.

Thank you.

Mrs. MINK. Any questions?

Mr. Cronin?

Mr. CRONIN. I have two.

On page 4 of your written testimony you say "the economic and technological aspects of offshore activities require incentives."

What kind of incentive do you envision?

Mr. VERLEGER. The basic incentive has to be if one buys a lease and explores it, and makes a find, one has to be allowed to go ahead and develop it. The prospect of exploring a lease and then—or buying it to the tune of \$600 million and have it placed in cold storage for an indefinite period of time is very discouraging.

Mr. CRONIN. I understand that. When I saw the word technological, I thought you might be alluding to some incentives to improve the technology of drilling.

Mr. VERLEGER. My honest belief is the industry has and is doing everything in their power to do that job just as well as they can and that includes improving it. I know they have a substantial research affiliates working on it. I know the development of the production of this submerged protection system is a major effort, and offers great promise, probably because it allows one to get at reserves not only on a practical but on an economic basis in waters that are deeper.

One of the problems when you go into 1,000 or 2,000 feet of water on a platform is the platform gets bigger and bigger and bigger, and unfortunately it gets more and more expensive.

Mr. CRONIN. I appreciate that. I am very interested in that.

Congressman Camp and I heard a great deal of NASA testimony and now Congressman Ketchum is on Science and Astronautics. It's a tremendous amount of technological capacity that NASA has produced that are sitting there for the taking by American industry and they are now beginning to utilize them in different areas.

I am wondering if you had any ideas on how we might be able to provide some incentives to utilize some of that technology for this drilling.

Mr. CAMP. Will the gentleman yield?

Mr. CRONIN. Yes.

Mr. CAMP. We want to remember, too, that some of the work that has been done by NASA that would be considered as research was the oil in the Gulf of Mexico.

Mr. CRONIN. Right.

The other question I have is on page 5 of your testimony. That is pretty well covered. You alluded to one statement that you made which I think is worthy of being read into the record on page 2, the last sentence in that paragraph, "But nevertheless." I wish you would read that through to completion.

Here, I will read it:

But nevertheless, at present, the fact is that a barrel which is not produced domestically is not a barrel which is replaced by imports; it is simply a barrel which is not replaced at all—a barrel we are short.

In the East we are feeling that very, very much. I do not think that that statement can be emphasized enough when we talk about the resource question.

Mr. VERLEGER. We feel strongly that it is all too easy for people to say perhaps tomorrow the Arabs will say we can have the oil and the problem will go away for a little while. It is our conviction that this problem is going to be with us for quite some period of time. It is highly important to get at supplies not only that will be available tomorrow, but one of the reasons we are in trouble now, for example—I do not mean to criticize the hearings and so on. On the Alaskan pipeline, one of the reasons we are in trouble now to the extent on the capacity of that pipeline, is that 3 years ago events took a turn that are different from what they are at this point in time.

Since one never has the option of remaking history, retrospectively, to suit one's tastes, we think it is important to make decisions now so that it will be available 2 and 3 and 5 years down the road.

Mr. CRONIN. I agree, not only the energy shortage but other shortages that our Nation is beginning to face up to a lack of paper, a lack of chlorine to take care of our drinking water, and many other short-

ages, are the direct result of an attitude that permeated the United States for 10 years. That was basically the failure by many of the decisionmakers to make the hard decisions that had to be made if we ever are going to continue as a viable economic entity.

You cannot continue to just say stop and hope that a problem will go away. That is not what built America. America always stood up to problems and solved them. I do not think we should destroy our environment in our pursuit of technology. By the same token, I think that if there are threats to the environment, we have the responsibility of solving them before we go ahead.

Mr. VERLEGER. We do not think the way to go is to lock up the oil in the Channel, or on the Atlantic coast or whenever it may be. The way to go is to work just as hard as one can to do it safely and effectively and in a way that will create just as little a problem for the environment as possible.

We regret all this conflict between people and being on one side of a dichotomy. What we would like to do is get the job done but get it done in a way that will not be subject to criticism.

Mr. TEAGUE. Will the gentleman yield?

Mr. CRONIN. I would be pleased.

Mr. TEAGUE. Suppose we have a further reduction of oil from the Arab countries. Suppose we lose Indonesian oil.

Is there not something to be said for having a reserve of our own instead of ending up a few years from now with no oil from other countries and all our own reserves being depleted?

Mr. CRONIN. Are you addressing that to me?

Mr. TEAGUE. Yes.

Mr. CRONIN. Quite frankly, my research shows me that through the year 1985, if we were lucky enough to bring on every known source of oil in the world that we could possibly use, if we were able to maximize our nuclear production, if we were able to bring solar energy through increased efforts in the next 10 years, if we are able to utilize every bit of geothermal and able to cut our demand by 20 percent, we would still come out with a 15 percent shortage. I think that is very significant—I do not think it is a question of having reserves for a rainy day. I think it is a question of how short we are going to be.

Mr. TEAGUE. I appreciate your answer. I still think there is much to be said for maintaining a reserve.

Mr. CRONIN. I do, too, if we can provide other means of energy. I think it is incumbent upon all of us to put all the emphasis we can to bring new sources of energy supply. I think to be able to have reserves somewhere down the line, would be great.

Some of the previous testimony pointed out the tremendous need for petrochemicals. J. Paul Getty gave one of his rare press conferences about a month ago that said using oil just to burn for heat is one of the most wasteful things man has ever done. We are going to be in dire straits in the next generation, not through a lack of oil for heating, but due to a lack of oil for so many other things such as petrochemicals, medicines, much higher and better uses than the burning in the air for heat.

Mr. OWENS. Madam Chairman.

Mrs. MINK. Mr. Owens.

Mr. OWENS. At the risk of subjecting our audience to a debate between Members of Congress, I would take sharp issue with the gen-

tleman from Massachusetts statement about our energy needs. If we are able to develop solar energy in 10 years, that can produce in States like this State and like my own State of Utah, according to statistics I have read, up to half or 60 percent of our total energy needs. We have got to find a way to collect it. We have got to find a way to store it without making the rest of the State a gigantic battery.

We have things we have to overcome. I think your statement, Mr. Cronin, of the energy needs based on the assumption that we develop solar power and geothermal, and other sources, would provide far more adequate energy needs without requiring every source of oil.

That having been said in the record, I suppose we ought not to debate it. I was concerned about your statement of our energy needs. I do not know particularly how it is relevant to this gentleman's testimony. It has been brought out.

Mr. CRONIN. If the gentleman would yield for just a moment, the only thing I would refer him to is the Joint Committee on Atomic Energy report as set forth by Jack Bridges that takes into consideration a substantial amount of solar and coming up with substantial shortages. It is not an easy problem to solve. There are going to be differences of opinion.

Mr. OWENS. I would refer the gentleman to the hearing of the Environment Subcommittee of this committee this year which contradict on the surface the book the gentleman refers to.

Mrs. MINK. I would like to suggest that the real issue here is not development of the oil fields in Santa Barbara to meet the current, immediate energy crisis of this country. What we are really attempting to search and discover is the state of the art, the technology in order to answer the question whether these oil resources here in the Channel area can be recovered at this time in technological history with the kind of safety and security assurances which you say the industry can provide, because these were the same assurances of safety and security which were given the community in the past which did not bear out and which then ended in the catastrophe of 1969.

It boils down to the issue of what exactly do you mean and the community interprets to mean the words "fail-safe."

I would appreciate very much your giving us your definition of that word at this time.

Mr. VERLEGER. Very briefly, when one speaks of using fail-safe methods, in the first place, one means methods that do not require an affirmative action by somebody to operate. The example I gave a little while ago of the subsurface safety valve is an example of a fail-safe technique as compared to the storm choke that was used for many years over much of the oil industry.

The subsurface safety valve is required today in all the oil wells that will be drilled up here. The way it works is there is hydraulic pressure that comes down from the operator and keeps the valve open. If at any point that pressure stops, the valve automatically closes and that shuts in the well and closes it so that it will not operate anymore.

The virtue of that over a technique that requires an affirmative act from somebody onshore is that if there is an explosion, a fire or something that instantly destroys the equipment on top, then the effect is that the valve closes and the oil does not come out.

Another example, I think, is the present use of multiple casing strings required by Interior. It is possible to drill a well with relatively shallow steel casing and keeping a correct mud balance on it. That is balancing the subsurface pressure by the right rate of mud to complete it without accident. If one does not have a lead casing and there is an accident, there is a risk under some geological conditions, if the pressure gets out of control, something may come up, not through the pipe but sideways.

The effect of the multiple strings of casing is to wall them out, so even if a mistake is made on the surface, it should be feasible, with a great deal less trouble, to shut the well in again and prevent the accident.

The other sense in the way I use the term is to depend not on one but a series of precautions that are available. So, for example, one could say that with all these additional precautions, the risk of another major oil spill is much less. Keep in mind that the industry operated in the Santa Barbara Channel for 70 years. Santa Barbara had the first offshore oil wells that there were.

Before this one affair happened—you don't ground all airplanes because one airplane has a crash.

Mrs. MINK. You do ground an aircraft if you find the aircraft has a defect.

Mr. VERLEGER. You do not ground it if the pilot makes a mistake.

Mrs. MINK. You were talking about the technology. Does the technology now assure us of this concept of fail-safe?

I want to get back to the point that a number of witnesses made with regard to the human factor. Are you saying the human element and the necessity to improve the training and expertise of the people involved, that this is no longer important because you discovered fail-safe technology?

Mr. VERLEGER. I would never say people were not important. I do not think all the technology in the world could eliminate the individual error in this. A great deal has been done since the 1969 oil spill, a training facility was constructed at Sadaquois. The purpose of that training facility is to run the crews through repeated courses where they experience simulation, they face these oil well kicks as distinguished from a blowout. A kick is a sudden and unexpected surge of pressure. There is often a variety of causes. There are steps the operator could take to bring that under control. This gives him repeated doses doing that under circumstances where nothing should go wrong.

In that same area, on the matter of blowout prevention drills that take place on platforms, I remember Mr. Gesner said here, as he has many times that he thinks those drills should take place daily.

I would like to give you a reason why the people in the business think they should not. The way you conduct a drill of that sort is that somebody, without telling the crew, takes a step with respect to the equipment so that the drilling crew looking at the various instruments, think there is something wrong. They are required to go through this drill and take the steps to shut the well in without knowing that the test is not real. If you do that once or twice a week, you are going to get credibility. If you do that thing every day, you are likely to get into a position where the drilling crew has seen and heard you cry wolf so often that he thinks he is going to assume that every time he sees a kick it is a fix.

The judgment of the people in the trade is once or twice a week is safer than every day. I am not an oil well driller. I am just a lawyer. I do not pretend to know which of those groups are right.

I suggest that since the people that have these platforms have every inch of hostility to blowouts as you do, in addition to catching the very dickens from the public, they also have \$35 million worth of investment out there, that when they say it is better to do this way than Mr. Gesner tells out of his few years as a roughneck, their judgment in that should be respected. They have got every reason to not want an accident to happen. Doing it is not going to make any difference in the terms of the economics of the thing, whether you do it once a day or twice a week, it is the same.

Mrs. MINK. Would your industry oppose or support the licensing of your workers on the platform?

Mr. VERLEGER. I would have to say in all honesty I have never asked them. I do not know. I do not know what the pluses and minuses are.

Mrs. MINK. With respect to the subsurface safety valve that you have described, when was this developed?

Mr. VERLEGER. My belief is it is one of these things that was first developed several years ago and has been steadily improved. I think it was used in this area somewhere earlier than in the Gulf because of differences in the conditions there. That is a very broad impression.

Mrs. MINK. Could you make an estimate when it was first used here?

Mr. VERLEGER. Rather than give you an estimate, I had better find out. I will do that.

Mrs. MINK. What is your best estimate as to the year when it was first developed?

Mr. VERLEGER. I do not know.

Mrs. MINK. Was it last year, 2 years ago before the blowout here in Santa Barbara or after?

Mr. VERLEGER. I would have to say quite directly I do not know. I have since checked: I am advised that the remote controlled, fail-safe type of subsurface safety valve was first developed in the last half of the 1960's.

Mrs. MINK. If the subsurface safety valve is such a tremendous development of technology, why was it not used at the time of the Santa Barbara incident, and if it had been in effect, could it have prevented the damage?

Mr. VERLEGER. To answer your question, no. The safety valve is a device that is used at a different stage. It would be effective in preventing the sort of thing that happened on the Shell Platform in the Gulf of Mexico. It would not have prevented the Santa Barbara, the Platform A affair.

It is simply—there are arguments, I think between different people as to what exactly occurred there. Based on the USGS report, I would guess the regulation that has been adopted since that would do the most good is the one that has changed casing practices.

Mrs. MINK. Even if the subsurface safety valve had been in place on Platform A in 1969, the blowout could not have been prevented in Santa Barbara?

Mr. VERLEGER. It is my belief that assuming it would have been practical to drill that well with the casing practices required today, that that would have prevented the blowout. I do not think the subsurface

safety valve would have been relevant at that particular point in time. You have different improvements in technology. I just used that as an example, and different portions of the operation. There are things—like automated indicators for mud level, changes in casing practice and other devices that are relevant at different stages.

Mrs. MINK. What brought about the changes in the casing requirements, or the casing procedures used by industry?

Mr. VERLEGER. The one thing that made them inevitable was the change in the regulations. My understanding is that those regulations were arrived at, but the people in the industry undoubtedly expressed a view as well.

Mrs. MINK. However, once the regulations were proposed for this casing, did the industry support it or oppose it?

Mr. VERLEGER. I am not aware of any opposition.

Mrs. MINK. This was not something which the industry themselves developed. It was required of them by the Government.

Mr. VERLEGER. They would have had to have developed it. They developed the technology. I think, up until the time that the regulation was adopted, the amount of casing used was a judgment matter for each well and each operator.

It is my belief that there would have been many wells in which a particular operator might have determined to use the same amount as required by the regulations. Someone else might have thought something different, maybe something else was needed. The one thing you have to say, once it is going, the use is inevitable.

Mrs. MINK. Do you consider the Government regulations now adequate and effective?

Mr. VERLEGER. The engineers that I have talked to believe the Government has done a good job in its present regulations. In some instances there is some feeling that for some geological structures that they may go beyond what is required. I do not think there is any feeling at all that the Government is falling short, which I would think would be the material problem here.

Mr. OWENS. Would the Chairman yield very briefly?

Mrs. MINK. Mr. Owens.

Mr. OWENS. It is your clearcut, straightforward position, is it not, Mr. Verleger, is that if present technology had been available in 1969, the blowout would never have occurred?

Did I understand you to make that flat statement?

Mr. VERLEGER. It is my belief that if that—while I am not an engineer—it is my belief that if the well had been drilled in the way that is required in the regulations today, that particular thing that happened could not have happened because essentially—may I rely not on personal knowledge of what did, but what is set out in the USGS report—what they say is when they shut in the blowout preventers at the top the oil found its way out sideways. The effect of the blowout preventers is to close up the hose off at the top. It is a gate. It found its way sideways below the level of the casing strings, and came out at a little distance away.

Mr. OWENS. That was a regulation failure, not a technological failure?

Mr. VERLEGER. Since I am not an oil well driller myself, I would not comment. It would be inappropriate for me to talk about the judgment involved in how much casing was put in.

What I am saying is, since the present regulations require about 3,000 feet of casing, I do not see how that particular kind of event could have occurred.

Mr. OWENS. It is the industry's position then that the cause of the big blowout was not a technological failure. It was a failure to abide by regulations.

Mr. VERLEGER. You can call it any of those things. The problem is there are many things to consider in where you set casing. As I understand here, we have got to worry about whether the rock you have got is competent to take a good cement job. It is their obligation under Government lease to diligently develop it.

Mr. OWENS. The industry does not have a position on what caused it?

Mr. VERLEGER. I have to speak as a delegate. I do not have a position. I am giving you the benefit of responding to the question.

Mr. OWENS. One of the problems we have in trying to legislate intelligently in an area like this is trying to isolate the technological problems and then getting our expert people who can tell us whether that makes sense or not.

What I am trying to get out of you, if it is a technological—

Mr. VERLEGER. Can I try to separate two things?

There is still litigation going on with respect to this and I do not want to go and talk about that aspect of it. On the question of whether that kind of spill could happen with 3,000 feet of casing, which is what would be required under current regulations, all I can say is, if I understand the situation correctly, it seems as though that would have prevented it, that particular kind of trouble.

Mr. OWENS. Why do you not supply the subcommittee—have your technicians supply us with a statement as to the improvements in technology that would contribute—

Mr. VERLEGER. Preventing another platform A?

Mr. OWENS. Yes. And the chairman just called my attention to a legal problem in terms of what you can say and cannot say, but perhaps you could provide us with a brief, some of us are lawyers on the committee as to the other point you were trying to make today.

Both those points might be quite helpful.

Mr. VERLEGER. I am lost. I may have tried to make too many. The other point particularly that you would like a brief on?

Mr. OWENS. The point that you were just trying to make, trying to avoid saying what you are trying to avoid saying, trying to explain why perhaps it was not a technological failure. Perhaps it was a failure of a regulation not being enforced or not being in force.

Mr. VERLEGER. I am trying to decline to state on that. There is not only a lawsuit, but our office is mixed up. It would be inappropriate for me to express an opinion on that.

My only question is whether it could happen now, which it seems to me is really what you folks have to worry about.

Mr. OWENS. Given your legal problems, maybe you could state for us in carefully considered language what caused the blowout. That would be most helpful.

Mr. CAMP. Will the gentleman yield?

Mr. OWENS. Yes.

Mr. CAMP. If you will take the statement, if you will turn where he has this picture drawn of a derrick.

Mr. OWENS. Mr. Oden's statement?

Mr. CAMP. If you take a look at it, this will give you an idea of what transpired.

Mr. OWENS. What I am interested in is the industry's viewpoint on that.

Mr. CAMP. Well, I have been around them since I have been 14 years old.

Mr. OWENS. The gentleman is not a representative of the industry.

Mr. CAMP. I am a Representative of Congress.

Mr. OWENS. No further questions.

Mrs. MINK. We thank you very much for your testimony.

Is there a representative here of Standard Oil of California?

If not, the subcommittee hearings will adjourn this afternoon. The members will be taking a trip out to see one of the platforms. The hearing will resume again in Washington where we will take further testimony from departmental witnesses.

Thank you very much.

[Whereupon, at 3:15 p.m., the subcommittee was adjourned.]



