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GOVERNMENT

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HEARING

ON

H.R. 2576

[H.R. 3354]

TO AUTHORIZE APPROPRIATIONS FOR FISCAL
YEAR 1980 FOR CONSERVATION, DEVELOPMENT,
AND USE OF NAVAL PETROLEUM RESERVES AND
NAVAL OIL SHALE RESERVES

BEFORE THE

INVESTIGATIONS SUBCOMMITTEE

OF THE

COMMITTEE ON ARMED SERVICES

HOUSE OF REPRESENTATIVES

NINETY-SIXTH CONGRESS

FIRST SESSION

MARCH 16, 1979

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(II)

INVESTIGATIONS SUBCOMMITTEE HEARING ON H.R. 2576, TO
AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 1980 FOR
CONSERVATION, DEVELOPMENT, AND USE OF NAVAL PETRO-
LEUM RESERVES AND NAVAL OIL SHALE RESERVES

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
INVESTIGATIONS SUBCOMMITTEE,
Washington, D.C., Friday, March 16, 1979.

The subcommittee met, pursuant to notice, at 10 a.m. in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. STRATTON. The subcommittee will come to order.

Good morning. The Investigations Subcommittee meets to consider H.R. 2576, a bill to authorize appropriations for fiscal year 1980 for conservation, development, and use of the naval petroleum and the naval oil shale reserves. This year the subcommittee jurisdiction has been expanded to include the naval petroleum reserves, and hence our interest in this particular relation.

The funding requested in the letter addressed to the Speaker is \$72.9 million. There seems to be some discrepancy in the testimony of the witness on behalf of the legislation. We will come to that later. Of that total of \$72.9 million, \$52,911,000 would be applied to the Elk Hills Naval Petroleum Reserve No. 1, while \$16,089,000 would be applied to Teapot Dome Naval Petroleum Reserve No. 3, the balance of \$3.9 million would be used for program administration costs.

The Elk Hills funds will be used only for operation and maintenance of the reserve. The expenses of development drilling, and construction of facilities, will be reprogramed from funds previously appropriated. I note, however, that no funds are requested, or are intended to be used, for exploration of the reserve.

The Teapot Dome funds will be applied to operation and maintenance and to the development and drilling program at that reserve. As at Elk Hills, no funds are being requested for exploration of Teapot Dome. The budget submission does not make it clear whether the decision to defer completion of the exploration programs at both these naval petroleum reserves was a decision of the Office of Naval Petroleum Reserves, or whether that was a decision imposed on that office by the Secretary of Energy and/or the Office of Management and Budget.

As you may recall, the Congress was so concerned about the history of inadequate funding for the exploration and development of the naval petroleum reserves that, when it enacted the Naval Petroleum Reserves Production Act of 1976, it provided that the budget estimates were to be submitted to the Congress by the President, independent

of the Department of the Navy and the Department of Defense. At that time we believed that the direct submission of the budget was the only way that the Congress could insure funding would be requested for the full exploration and development of the reserves so that they would be ready for production in the event of need. It now appears that, with the Office of Naval Petroleum Reserves submerged deep in the Department of Energy, its budget request is so refined and worked over by the time it reaches the Congress that the intent of the 1976 act has been frustrated.

Perhaps the subcommittee will want to explore that point further. In addition, I think we may wish to get a progress report on the status of our strategic oil reserves, as well as the status of former Naval Petroleum Reserve No. 4 in Alaska, which was turned over to the Department of the Interior. As a result of that transfer, our committee has no authority in this regard, but we retain a nostalgic interest in that reserve now designated the national petroleum reserve.

[H.R. 2576 is as follows:]

[H.R. 2576, 96th Cong., 1st sess.]

A BILL To authorize appropriations for fiscal year 1980 for conservation, development, and use of naval petroleum reserves and naval oil shale reserves

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is authorized to be appropriated to the Department of Energy for fiscal year 1980 the sum of \$72,900,000 for conservation, development, and use of the naval petroleum reserves and the naval oil shale reserves under chapter 641 of title 10, United States Code.

Mr. STRATTON. The witnesses for the Department of Energy are Capt. Robert H. Nelson, Director, Office of Naval Petroleum and Oil Shale Reserves; and Deputy Assistant Secretary of Energy for Oil, Natural Gas, and Shale Resources, Mr. R. Dobie Langenkamp.

I understand you have a prepared statement, Mr. Langenkamp. We will hear from you and then we will have a few questions.

STATEMENT OF HON. R. DOBIE LANGENKAMP, DEPUTY ASSISTANT SECRETARY FOR OIL, NATURAL GAS, AND SHALE RESOURCES, DEPARTMENT OF ENERGY

Mr. LANGENKAMP. Thank you, Congressman Stratton. I am going to use this mike, if it is all right with you.

I have also with me Comdr. Larry Vogel who is our Project Director for Management and Operations, and who is on my immediate right as well as Capt. Robert H. Nelson.

It is a privilege for me to be here before this subcommittee for the first time, and to discuss the naval petroleum reserves. I would eventually like to respond to each one of the points that you made in the opening statement, including the nostalgic interest in Naval Petroleum Reserve No. 4, the question of whether or not NPR is adequately funded at the Department of Energy, and so forth.

I would like at this time to submit our written statement for the record, and rather than read it into the record in detail, I would like to take a minute to summarize what we have done at the naval petroleum reserves and what we are planning to do, and how much money we think it is going to cost.

Mr. STRATTON. I think, if I can interrupt, Mr. Secretary, it would be more helpful if we go through the statement. I don't think we have

all had a chance to read it, and it is better to have some of these figures and statements on the record before us so we know exactly what you are saying. When you summarize it, we get a broad-brush treatment, but we don't get a chance of zeroing in on the specifics.

Mr. KAZEN. Mr. Chairman, let me move that his entire statement be placed in the record at this time.

Mr. STRATTON. It would be helpful if you read it and, if there are major parts that you want to skip, you can explain what those are.

Mr. LANGENKAMP. I would be glad to read it. And if there are portions here that would be appropriate to skip, I will. I don't think there are. I think it is important in every respect.

The naval petroleum and oil shale reserves include three naval petroleum reserves and three naval oil shale reserves.

Naval Petroleum Reserve No. 1, which is referred to as Elk Hills, was set aside in 1912 and is located about 110 miles north-northwest of Los Angeles and about 30 miles southwest of Bakersfield in Kern County, Calif. This is the largest producing naval petroleum reserve and is one of the largest producing oilfields in the continental United States. The recoverable reserves of Elk Hills are estimated to be about 1.1 billion barrels of oil. The United States owns approximately 80 percent of the lands within Elk Hills while Chevron owns the remaining 20 percent. I might add a parenthetical statement that this breakdown between Chevron and the United States of America varies from zone to zone based on the unit plan contract.

For instance, the Carneros Zone that is not the major producer but is an important contributor to Elk Hills is 100 percent owned by the Government, whereas the Shallow and the Stevens Zones are owned in differing percentages. The overall aggregate average is about 80/20. The result is that certain exploratory wells that we drilled last year were totally funded by the Government because they were searching for zones that were owned by or would have production totally owned by the Government.

A unitization agreement was entered into by the United States and Chevron in 1944 which gives the Government control over the time and rate of production from the unitized lands.

Naval Petroleum Reserve No. 2, Buena Vista Hills, is directly contiguous to the southwest—

Mr. KAZEN. Mr. Chairman, may I interrupt.

Are you talking about various depths—

Mr. LANGENKAMP. That is correct.

Mr. KAZEN. Some belonging to Chevron and some to the Government, rather than the surface ownership?

Are you referring to zones as layers, or as parcels?

Mr. LANGENKAMP. I am really referring to both in context. Let me explain it in a little more detail.

When the Naval Petroleum Reserve No. 1 was created and unitized, some of the sections of lands were owned by Chevron. They were at that time not taken by eminent domain, but they were included under this unit plan contract. We can show you a map that will show a checkboard.

To the extent that sections owned by Chevron in fee simple—for instance, the Shallow Zone or the Stevens Zone—had reserves under them, then the reserves are compared in a ratio of Government reserves to Chevron reserves and the production divided accordingly.

Certain formations do not contain recoverable reserves underneath the Chevron sections, with the result that 100 percent of the production goes to the Government.

Should one of the Chevron sections be drilled and reserves in that particular zone be found under that section, then we would conduct what we term a sand count to determine what the reservoir is and what the reserves are, and Chevron would receive a portion of that particular zone,

I will hold up here, for your information, a map. You see the dark-colored sections are the Chevron sections. And what we do to arrive at an 80/20 ratio is to determine the reserves under the Government sections in each zone and the reserves under the Chevron section in each zone.

It just turns out that we have yet to find oil in one or more of the zones that is under the Chevron section. But the overall weight of the average is about 80/20, which you can use for computation purposes.

Going back to Buena Vista, Buena Vista is a small reserve. The Government has a working interest and is entitled to approximately 400 barrels per day production.

Naval Petroleum Reserve No. 3, Teapot Dome, was created in 1915 and is completely Government owned and controlled. This reserve is located in Natrona County, Wyo., northeast of Casper, Wyo. It is estimated the remaining recoverable reserves at NPR-3 are approximately 29 million barrels of oil.

Naval Oil Shale Reserves 1 and 3 were set aside in 1916 and 1924, respectively, and lie in Garfield County, Colo. Naval Oil Shale Reserve No. 2 was set aside in 1916 and is located in Carbon and Uintah Counties, Utah. There is an estimated total of 26 billion barrels of shale oil located in those reserves (22 billion at NOSR-1 and 4 billion at NOSR-2), of which approximately 5.1 billion barrels on NOSR-1 are considered to have potential for economic recovery using the types of technology presently under development,

Since production commenced under the Naval Petroleum Reserves Production Act of 1976, through the end of January 1979, a total of 56,277,708 barrels of oil have been sold by the United States and over \$1 billion in revenues have been realized from the sale of this oil and the associated liquid products as well as crude oil.

During fiscal year 1978, total production from NPR-1 averaged approximately 119,000 barrels of oil per day. The Government's share of this production amounted to about 36 million barrels of oil and approximately 47 million gallons of natural gas liquids processed from the produced gas. Revenues from the sale of the crude oil and products exceeded \$470 million in fiscal year 1978. During fiscal year 1978, 120 development wells and three exploratory wells were drilled at Naval Petroleum Reserve No. 1. At Teapot Dome, during fiscal year 1978, production averaged just under 2,000 barrels of oil per day. Revenues generated from the sale of this production were in excess of \$11 million for fiscal year 1978. A total of 144 development wells and 10 exploratory wells were drilled at NPR-3 during this period.

I might mention at this point, Mr. Chairman, that the revenue calculations at these two reserves are based on rather markedly different prices for the oil and gas. For instance, at the present time we are selling the Elk Hills production at slightly under \$14 a barrel, although that price has been increasing recently due to the pressure on the crude market.

The production at Teapot Dome has been sold at about \$16 a barrel. There has been over the past several years about a \$2 or more spread between these two crudes basically because of the maldistribution of supply.

Since production commenced under the NPR Production Act, through the end of January 56,277,708 barrels of oil have been sold.

In regard to fiscal year 1979, at Naval Petroleum Reserve No. 1, assuming a resolution by June of litigation concerning the 7R section of the field, it is expected that production will reach 185,000 barrels by the end of fiscal year 1979, and would average approximately 148,500 barrels during the period of fiscal year 1979. If the 7R litigation is not settled, and the 7R area, sometimes referred to as the Northwest R Area, is not put on production, this average production would be about 142,000 barrels per day, and the peak production at the end of the year would be closer to 155,000.

Our calculation is that the R area, given 90 days, would be capable of producing about 30,000 barrels a day. Approximately 80 percent of this daily average will be the Government's share to be offered for sale if the litigation is settled. Estimated total revenues during fiscal year 1979 will be in excess of \$600 million. During fiscal year 1979, one of the two new gas processing plants, LTS-1, will be completed and placed on production together with the associated oil and gas gathering and gas injection facilities.

Oil shipping facilities in the amount of 50,000 barrels will also be completed, as will the high pressure gas injection facilities. Finally, the first phases of an electrical distribution system and a cathodic protection system will be completed during fiscal year 1979. A total of 87 wells (4 exploratory and 83 development) are expected to be drilled during this period. As of March 1, 1979, the total of 34 wells have been drilled at Elk Hills. During the week ending March 7, 1979, production at Elk Hills averaged 143,047 barrels per day. We have attached to the statement a chart depicting the number of wells drilled and planned to be drilled.

Production at Teapot Dome is expected to average approximately 4,500 barrels per day during fiscal year 1979. Revenues from the sale of this production will exceed \$26 million. While it was originally planned to drill 109 wells at NPR-3 during fiscal year 1979, in order to allow the proper engineering evaluation of well data, it now appears that 63 wells will actually be drilled in fiscal year 1979, with the remainder to be completed during fiscal year 1980 to the extent justified by the reservoir data and other information obtained in drilling the initial 63 wells.

During the week ending March 7, 1979, production at Teapot Dome averaged 4,290 barrels. As of March 1, 1979, 40 wells have been drilled. Construction of waterflood facilities will be completed during fiscal year 1979 and will support increased production at NPR-3. Preliminary enhanced oil recovery studies will continue during this time with prepilot tests to begin in late fiscal year 1979.

The naval oil shale reserve predevelopment plan is in its third year. During fiscal year 1979, the surface hydrology study at NOSR-1 will be completed, as will the Fisher assays on the core holes which were drilled during fiscal year 1978. It is also expected that a revision to the NOSR-1 oil shale resource estimate will be completed during this period. Finally, the environmental/meteorological baseline monitoring requirements will be established.

Now a word about the 1980 budget request. The total budget request for the naval petroleum reserves for fiscal year 1980 is \$69 million exclusive of the \$3,900,000 for administrative costs.

Mr. STRATTON. I think at this point, Mr. Secretary, perhaps we ought to try to clear this up.

The letter which was sent to Speaker O'Neill, and on the basis which Mr. Price and Mr. Wilson introduced a bill in your behalf, specified the request at \$72,900,000.

What has happened to the \$3,900,000?

Mr. LANGENKAMP. As I understand it, Mr. Chairman, in past years a lump sum appropriation request for administrative costs, personnel and so forth was included in the DOE budget, and this year that sum in H.R. 2576, is included in the authorization bill itself.

The \$69 million referred to in the statement is exclusive of those administrative and personnel costs.

Mr. STRATTON. What is the amount that you want us to authorize?

Mr. LANGENKAMP. \$72,900,000.

Mr. STRATTON. I don't think it helps you to come in with a different figure in your statement. If you don't want that money, we will leave it out. But, if you are requesting it and you need it, then it ought to be in your statement. You can't run a Congress with requests that are contrary to what the witnesses come up here and ask for.

Mr. LANGENKAMP. We assure you, Mr. Chairman, that we do want that \$3,900,000.

Mr. STRATTON. Then you had better correct your statement for the record so that that is clearly made apparent.

Mr. LANGENKAMP. Well, we would like to do so at this time.

The fiscal year 1980 budget request for Elk Hills is \$52,911,000. These funds are being requested for operation and maintenance of that reserve. This amount represents an approximate increase of \$8 million over the fiscal year 1979 operations and maintenance request. This increase is primarily as a result of the operation and maintenance of the additional production facilities which will be on the line during the 1979-80 time period.

The development facilities construction program will continue during fiscal year 1980 with completion of the second gas processing plant and associated gas and oil collection facilities. While it was originally anticipated that the fiscal year 1980 drilling program would provide for 90 development wells, analyses of engineering and geological data to date have caused us to reevaluate the fiscal year 1980 drilling program. On the basis of this reevaluation, we now anticipate drilling 87 development wells during this period. As more geological and reservoir information is gathered from the ongoing drilling program, the number of wells required may vary. In that case, appropriate reprogramming actions will be taken.

The fiscal year 1980 budget request of \$16,089,000 for NPR-3 provides funding for operations and maintenance and development drilling. It is estimated that 39 development wells will be drilled during fiscal year 1980. In addition, a pilot-enhanced oil recovery project will be conducted. No funds are being requested for development facilities, as no additional construction is being planned for fiscal year 1980 at this time.

Pursuant to the Naval Petroleum Reserves Production Act of 1976, the petroleum reserves are currently being produced at their maximum efficient rate for a period of 6 years. The U.S. share of

production from these petroleum reserves is offered for sale to the highest qualified bidder. The construction of necessary production facilities required to reach peak maximum efficient rate is ongoing at Elk Hills and Teapot Dome. An extensive drilling program is also underway in order to increase production at both of these petroleum reserves.

As I indicated earlier, we are producing approximately 40,000 barrels per day at Elk Hills, 4,000 barrels at Teapot Dome. We hope to be at approximately 155,000 barrels per day by the end of the fiscal year, exclusive of the Northwest "R" Area. If we are able to settle the lawsuit by June, we can add another 30,000 barrels per day.

At this time, Mr. Chairman, I would like to briefly set forth the actions that the Department of Energy has undertaken in order to increase production in Elk Hills. I realize that with the serious energy crisis confronting the United States, increases in production, consistent with the MER obligations of the law, will be of benefit. The greatest increase from production could be realized if the Northwest "R" area could be placed on immediate production.

As indicated in previous testimony before this committee, the United States is presently involved in litigation with its unit partner at Elk Hills, Chevron, regarding the inclusion of Chevron's section 7R under the unit plan contract. This suit originally arose when Chevron unilaterally attempted to produce section 7R independently. It was producing this section at the rate of about 20,000 barrels—

Mr. STRATTON. Where are we?

Mr. KAZEN. Tell us when you skip. We can't follow you.

Mr. LANGENKAMP. I started on page 12 and I am now on page 13.

Mr. STRATTON. You were on page 8.

Mr. LANGENKAMP. Do you want me to read that section that I omitted, Mr. Stratton?

Mr. STRATTON. You jumped from the middle of page 8 to the middle of page 12. If you would, at least summarize it.

Mr. LANGENKAMP. Let me go back and pick it up.

Mr. STRATTON. We have a lot of questions here, and I think we want to try and understand what you are doing at the reserves, since there is some question as to whether this is exactly what the Congress wanted you to do. And if you start skipping over things, it is going to be a little bit harder for us to find out whether you are in compliance with the intent of Congress.

Mr. LANGENKAMP. Let me go back to the middle of page 8, Mr. Chairman.

At this time, I would like to briefly discuss the Department of Energy's projection for the peak maximum efficient rate of production at NPR-1, Elk Hills. Maximum efficient rate, which is referred to as MER, is defined by the law as meaning the highest sustainable daily rate of production from a reservoir which will permit its economic development to depletion without detriment to ultimate recovery. The "peak" MER is the MER at the time a field achieves its highest production prior to gradual decline. In short, the peak MER is the highest point on the production curve. The MER of a field will change as more wells are drilled and more is learned regarding reservoir characteristics. Each month of operation provides the reservoir engineers more data regarding gas/oil ratios and bottom hole pressures to use in determining the proper rate of production.

As production from a field continues, both the pressure available and the amount of oil in the field decline, and at some point, despite continued drilling and development, the daily production level from the field will peak and begin to fall.

By far the most accurate method of determining MER and ultimate recovery from a reservoir is through use of well production data. It is a general engineering rule of thumb that usually 15 percent of a reservoir must be produced before reliable estimates of MER and ultimate primary production can be obtained.

In 1975, the principal producing horizon at Elk Hills (the Stevens Zone, consisting of six distinct producing pools and estimated to contain 800 million barrels of producible oil) was a virgin reservoir, with no significant production. Today only about 8 percent of its estimated recoverable reserves have been produced. The other major producing horizon, the Shallow Zone, has produced over 40 percent of its estimated recoverable reserves in 1975, and its production was reasonably predictable.

Generally, if the field is small or development is very rapid, peak MER will be reached quickly. The ultimate method of raising peak MER would be to completely drill and develop a field but produce no oil until the development was complete. In this case, the first day of production would be the peak and production would fall continuously thereafter. However, this method of development is inconsistent with the requirements of the Naval Petroleum Reserves Production Act.

Prior to the NPR Production Act of 1976, this latter means of development and production was planned for the NPR program. Development was to take place but production would be minimal. Consequently, in testimony before the House Armed Services Committee in April 1975, projections of the peak MER were given as 300,000 barrels per day assuming production for no more than 2 years at from 130,000 to 150,000 barrels per day. It was recognized, however, at that time that production for a longer period of time at that rate would reduce the peak MER figure.

In late 1977, recognizing that production exceeding 100,000 barrels per day had occurred for well in excess of a year, the officer in charge at Elk Hills commissioned a study, utilizing the production data available, which concluded that peak MER would be between 220,000 and 260,000 barrels per day, and occur later (1981) due to delays in opening up portions of the reservoirs. During the 1978 appropriation and authorization hearings, representatives of the NPR testified that a MER of 260,000 was the DOE objective.

It now appears that the previous estimate of peak MER should be less than previously stated. This is primarily attributable to the fact that the six individual pools in the Stevens Zone will not be produced simultaneously, and as a result each pool's individual MER will peak at a different time. The reasons for this are delays encountered in the waterflood program, the completion of certain key production facilities, and the pending litigation with Chevron involving the Northwest "R" area.

At the present time, a production curve which peaks at from 200,000 to 220,000 barrels per day in 1982 is the current MER estimate based on production history as it is presently known. This projection of necessity makes certain assumptions, one of which is that the 7R area (now in litigation) is produced before 1982.

Another important assumption is that the waterflood program, which is currently being designed and will be implemented in fiscal year 1981, will prove successful. Due to the production of the reserve, which has already taken place, and what is known regarding the various reservoirs, it does not presently appear feasible to return to earlier projections of peak MER regardless of the method of development. It must be emphasized that this revision does not lower our projections of ultimate recovery but only changes the shape of the production curve. Needless to say, we shall continue to review our MER estimates and will keep the committee informed of any changes in our projections.

I previously read the first portion of this section at the bottom of page 12. I will pick it up at the top of page 13.

Chevron was producing this section 7R, Mr. Chairman, at about 20,000 barrels per day before the Government obtained an injunction preventing Chevron from continuing to produce it. The Court ordered that the parties attempt to arrive at fair and equitable terms and conditions for the inclusion of this section into the unit. The parties negotiated, but were unable to arrive at acceptable terms and conditions; and on June 10, 1976, the Acting Secretary of the Navy for Naval Petroleum and Oil Shale Reserves (predecessor to the Secretary of Energy) issued a final decision. This decision was upheld by the U.S. district court, which ruled that section 7R did lie on the same geologic structure underlying the present limits of the reserve, and that the terms and conditions established by the Acting Secretary were fair and equitable. Chevron was successful in obtaining a stay of the district court's order while it appealed the Court's decision to the Ninth Circuit Court of Appeals. It is estimated that it will take approximately 3 to 4 years for the ninth circuit to render a decision on this matter.

The Department of Justice is presently seeking to vacate the district court's stay order in order to place section 7R on immediate production. Also, Chevron and the Government have been attempting to reach a settlement with respect to the matters involved in this lawsuit. Once 7R is placed on production, it is estimated that production at Elk Hills can increase by approximately 31,000 barrels per day within 90 days.

In addition to seeking a resolution of the 7R matter, the Department of Energy has also taken the necessary actions to include other Chevron lands into the unit in order that they may be placed on immediate production.

Specifically, Mr. Chairman, we have recently moved to include section 17G into the reserve, which is the section on the southeast corner of the reserve. This will enable us to produce wells in 8G and 17G and slightly increase our production.

Next a word about pipeline capacity. The Naval Petroleum Reserves Production Act of 1976 requires that pipelines and associated facilities constructed at or procured for NPR-1 shall have adequate capacity to accommodate not less than 350,000 barrels per day and shall be fully operable no later than April 5, 1979. On April 6, 1978, the Department of Energy made the decision that the Government should begin the final design for the construction of its pipeline from the Elk Hills to the Redlands, Calif., area, where it would tie into the proposed Sohio pipeline going from Long Beach, Calif., to Midland, Tex.

Included in this decision to begin final design was a proviso that at the end of 4 months, if Sohio had still been unable to receive all necessary permits to begin construction of its pipeline, a reevaluation would be made regarding the continuation of the Government's pipeline. During August 1978, it became apparent that Sohio would not receive the necessary permits from the State of California to complete the construction of its pipeline in sufficient time for the Government to comply with the April 5, 1979, congressional mandate. The chairmen of the House and Senate Committees on Armed Services were notified of this development by letter dated August 18, 1978. In light of the revision of the estimated maximum efficient rate of production from Elk Hills, discussed above, and in light of Sohio's hesitance to proceed with its pipeline, a decision was made to suspend further work on the Government pipeline in order to allow congressional review of this matter.

Several amendments to the Naval Petroleum Reserves Production Act of 1976, regarding the time limits imposed by the law, were introduced in the 95th Congress but were not acted upon by either the House or the Senate.

We have, Mr. Chairman, been very concerned about the pipeline situation and we have done a lot of investigation and it is not easy to determine what pipeline capacity is available and what is not. This is information that is deemed proprietary by the companies and many times they understate their pipeline capacity as much as you would hold back your poker hand. And last year when we came before this committee, we thought we had a spare pipeline capacity of 160,000 barrels. We are now confident that we have pipeline capacity of 180,000 to 186,000 barrels. And this capacity is in the vicinity of Elk Hills, excluding Chevron's capability to transport a part of the production from section 7R.

In addition, the Government is currently negotiating with the Four Corners Pipeline Co., a wholly owned subsidiary of Atlantic Richfield Co., for the expansion of its Pipeline No. 63 by 25,000 barrels per day. This pipeline is tied into Elk Hills, and runs southwardly to the Los Angeles area (Hynes Terminal) where it ties into the Four Corners Pipeline system which transports oil to the Texas-New Mexico area.

At the present time, it appears that adequate pipeline capacity does exist for production from Elk Hills. The 180,000 barrels per day identified pipeline capacity in the vicinity of Elk Hills, supplemented by the expansion of the Arco Pipeline No. 63—25,000 barrels per day—plus capacity out of section 7R, should exceed the peak MER attainable in 1982. It is my understanding that the Department of Energy is submitting a proposal to amend section 7422(c)(2) of title 10, USCA, to delete the requirement that the Government construct or procure pipelines and associated facilities with the capability to accommodate 350,000 barrels per day by April 5, 1979.

This proposed amendment will more closely tie the pipeline capacity to field maximum efficient rate of production. I should add that the legislation will propose that the receipt from the sale of Naval Petroleum Reserve oil will be deposited in the general fund of the Treasury rather than the special account used under current legislation.

This concludes my formal statement. I would like to add, with regard to the pipeline situation, Mr. Chairman, that we have recently, in our negotiations with Chevron, been assured by Chevron that the

180,000-barrel figure that we independently arrived at, was accurate. We have reason to believe that this figure is actually 186,000 barrels. We know that before we sued Chevron and shut their production from 7R, they were producing 20,000 barrels from the "R" area, so that is another 20,000 barrels. That 186,000 barrels, plus the 20,000, plus the 25,000 Arco expansion, puts us into the range where we do not feel at this time that we will have a pipeline constraint.

Mr. STRATTON. Thank you, Mr. Langenkamp.

What do you understand the mission of your office to be in connection with the development of these naval petroleum reserves, in light of the legislation you have referred to here, the Naval Petroleum Reserves Production Act? What is it from your point of view that you think you are supposed to be doing?

Mr. LANGENKAMP. Mr. Chairman, I see the mission as twofold. The first mission, the primary mission, is to develop this field in a prompt but thorough manner to the point where the hydrocarbons can be exploited, can be produced at their maximum efficient rate. And our second function is to produce them at that level until the 1982 period occurs.

Mr. STRATTON. These are still naval petroleum reserves, are they not? And they are for the purpose, basically, of providing oil to the Armed Forces of the country in the event of emergency. That is still the basis of these reserves, is it not, and the reason why this committee, rather than some other committee, has jurisdiction over your activities?

Mr. LANGENKAMP. Well, Mr. Chairman—

Mr. STRATTON. Don't you interpret it that way?

Mr. LANGENKAMP. Well, as you are aware, the proceeds from the sale of this—

Mr. STRATTON. Forget the proceeds, which seems to be the only thing you are interested in. The new oil-fired carrier isn't going to be able to operate on dollar bills.

Don't you recognize what the function of the naval petroleum reserves is?

Mr. LANGENKAMP. Well, I believe that the statute clearly sets forth that the naval petroleum reserves is related to our ability to respond in terms of national defense.

Mr. STRATTON. It is to provide some oil in an oil-short world for the support of our military forces. That is the gut purpose of it and it always was.

Mr. LANGENKAMP. I don't want to haggle but, if the purpose of the reserves was to provide crude oil, per se, to the Navy or to the Air Force, then Congress was mistaken in directing us to sell this crude oil to the smaller refiners in southern California and other refiners.

I am not denying the fact that this act has a heavy basis in the interest of national defense and that after 1982 this Government may decide not to produce this reserve, or it may decide to take this crude oil and ship it to strategic petroleum reserves or to the Navy.

Mr. STRATTON. The purpose of the act, as I understand it, section A:

The Secretary shall take possession of all properties inside the Naval Petroleum Reserves that are or may become subject to the control of and use by the United States for national defense purposes except as otherwise provided in this chapter.

So these are for national defense purposes. We are not trying to find out how much money we can get for the oil or how much money we can put into the Treasury. It is true the legislation provided, as you have specified in some detail, that the production at Elk Hills and Teapot Dome should be increased to its maximum efficient rate so that we wouldn't lose the oil that is in there, but it also provided that we should establish a pipeline so that, if we needed what was in there once we had perfected the capability of Elk Hills to produce, we could get it to the place where the Navy or the Army or the Air Force could use it. And if it stays in Elk Hills, because there isn't any pipeline, then it isn't going to be effective for national defense purposes.

And, then, there was a third part of this legislation, if my memory is correct, that while we were producing the naval petroleum reserves and we recognize that we had to sell it, we were also supposed to be establishing a strategic oil reserve which would be financed in part, from the sale of Elk Hills oil, so that in the event of an emergency we would have that oil available. It is obvious today that that emergency is much more imminent than we thought at the time when we developed this legislation.

The thing that disturbs me about your statement is you seem to be taking great pride in how much you have been able to sell and how many dollars you have been able to get back into the Treasury and yet when it comes to one of the major assignments this legislation laid upon you, that is, completion of the exploration program to try to find out whether there might be more oil in these reserves, you have done practically nothing.

You have no money in here for exploration and you tell us about all of the development wells you have put in, 144 development wells, but only 10 for exploration at Teapot Dome, I think, and at Elk Hills it is pretty much the same thing.

There is no effort made to try to find any hidden reserves there, which is, at least according to my recollection, one of the major assignments we gave you, because this isn't going to last forever and it certainly isn't going to last forever if all you are doing with it is selling it.

I would like to know why there are no funding requests for exploration, and I would like to know where these strategic reserves are located that you are supposed to be filling.

Mr. LANGENKAMP. That was a lengthy question and my answer will have to be segmented.

Let me first address the pipeline question. As we went into detail in our statement, we have carefully looked at the pipeline situation and we feel that we have more than adequate pipeline capacity now to get the production off the reserve.

Second, in regard to the strategic—

Mr. STRATTON. Let's get to the pipeline later on. I would rather get the other two.

Mr. LANGENKAMP. In regard to the strategic petroleum reserve, although that is not under my direction, I am fully aware of where the reserves are and generally aware of what the status is.

At the present time there are 70 to 80 or more million barrels of oil that have been stored, the storage is continuing. It has been temporarily slowed down, I am told, because of the crude oil shortfall now, but prior to the last month or so the fill rate was approximately 10 million barrels per month. We have storage domes at Bryan Mound, Bayou

Choctaw, and West Hackberry. We are presently arranging for additional storage capacity and hope to have storage capacity of a very substantial amount and that storage capacity, when completed, will permit a drawdown rate that will exceed, the last that I saw the plans, over 3 million barrels a day.

One of the problems with the naval petroleum reserves, although it is a fine oil field, is that even with all the wells that have been drilled, thousands of wells incidentally, the maximum production of this reserve, even though it has over a billion barrels of reserves, has been in the 200,000 to 300,000 barrels-per-day level.

Mr. STRATTON. Are you taking the oil that we get out of Elk Hills, or a comparable amount, and putting it into the strategic reserve, or are you just selling it and letting somebody else worry about what goes into the reserve?

Mr. LANGENKAMP. Well, the Department of Energy is filling the strategic petroleum reserve as rapidly as possible. The fill rate is not related to the production rate at NPR. In fact, during most of the recent months it has considerably exceeded the production rate. Strategic petroleum reserve crude oil is purchased abroad and the NPR oil is sold domestically. In fiscal year 1978 the average cost of SPR crude was \$13.43 per barrel.

The question I would like to spend a little bit of time discussing is this question of exploration of wells.

Mr. STRATTON. OK.

Mr. LANGENKAMP. If we look at NPR-1, Elk Hills, there have been to the date of September 30, 1978, a total of 533 wells drilled, and by the time this development program is completed we will have over 800 wells drilled.

Mr. Chairman, that is 800 wells in a reserve that is approximately 40,000 acres. In fact, I have understated the number of wells drilled. If we take the total number of wells drilled through 1984, we will have approximately 2,130 wells in an area that is 40,000 acres.

I defy anyone, and speak to any oilman that you choose, to say that isn't a very adequate development of that field. The concept of an exploration well that we have used up to this point is that if the well was over a mile away from previous production, we considered it an exploration well or if it were into a new zone. All you have to do is take that 800 or so wells and divide it into the 40,000 acres and see just how completely this area has been developed. So, we feel that this is a very good program. We can't say that in the future, in 1981, 1982, or 1983, if Congress allows us to keep the reserve open, that there won't be additional reserves discovered, but the intensity of drilling on this 40,000-acre reserve is great.

Mr. STRATTON. You indicate that 120 development wells and only 3 exploratory wells were drilled at Elk Hills during fiscal year 1978. And at Teapot Dome you put in 144 development wells but only 10 exploratory wells during that period. I don't pretend to be an oil expert, but on the basis of Mr. Kazen's questions here a moment ago, it is not a question of what the horizontal distance is, rather the question is, what is the vertical distance?

Just because something is 3 miles away from another well doesn't mean that is the only place to explore. You explore below your present sources, as I understand it, not just laterally. You say you are putting the oil into the strategic reserve faster than it is being pumped out, but Mr. Schlesinger indicated we might have to take

the whole ball of wax and use it to get over the Iranian crunch, so that means the Armed Forces are going to be stuck for a little while until we start getting it back.

It seems to me that our primary responsibility should be to do everything we can to find whether there may not be more oil available at different depths in that area.

Doesn't that make sense?

Mr. LANGENKAMP. We do not deny that the mission of the NPR is to develop these reserves and to find new reserves, if they exist. In that vein we drilled two deep tests at Elk Hills last year. They were wells for which we paid 100 percent of the costs; Chevron was not interested in participating in them. They were the deepest wells as far as we know that had ever been drilled in that area, and both of them turned out dry and were plugged back to the Stevens Zone.

We felt at that point—our geologist and reservoir engineers felt at that point—that no further deep tests were justified.

Mr. STRATTON. My understanding is that you didn't go down as far as you intended. You didn't reach your objective depth.

Mr. LANGENKAMP. In both of those cases, and this is usually the case with deep wells, often the case with deep wells, you have severe difficulties down below 15,000 feet with pressures and collapsed casings and so forth, and in both cases those very expensive deep wells were deemed to be nonproductive and therefore no further deep test justified at this point.

When you have a very fine reserve like the naval petroleum reserve with the Shallow Zone that has been drilled with 20-acre spacing, hundreds and hundreds of wells drilled, and then you have a Stevens Zone, which is a very rich field, one of the best in the country, we feel that the best development of this naval petroleum reserve is in the direction of developing these existing reserves.

We get a Stevens Zone out there that may be one of the finest zones in the country, and we are drilling wells as rapidly as is feasible to exploit it.

Mr. STRATTON. My time has run out, but I am really concerned that you only seem to be interested in getting this oil out and getting it sold, and that, in my judgment, is contrary to the intent of the Congress. And no matter how nice the Stevens Zone is, and all these other zones are, if we don't have some oil available when these modern oil-fired carriers that we are told we have to build need it, we are going to be in trouble.

Mr. Chairman, do you have any questions?

The CHAIRMAN. Yes, Mr. STRATTON.

Mr. Secretary, on page 3 of your statement you estimate the oil shale reserve of 26 billion barrels is equivalent to our total need at the present rate of use for 4 or 5 years.

Just what is meant by the statement that " * * * potential for economic recovery using the types of technology presently under development"? We want to know, can we get this oil now?

Mr. LANGENKAMP. Well, the judgment call here is that in NOSR-1 there is enough shale of a high caliber, that under the two or three different types of existing technology, it could possibly be recovered economically. As you are aware, no U.S. oil companies have, at the present time, succeeded in a major commercial operation in the production of shale oil. Basically, the economics of shale oil production are unclear at this time. But, it does appear that, if we were to take the

Naval Oil Shale Reserve No. 1, and if you can develop the kind of technology that it appears that can be developed, there is approximately 5 billion barrels there that can be produced, perhaps at a loss but it can be produced.

The CHAIRMAN. Gathering from your statement, without going into all those mathematical figures, I know the petroleum reserve production has been about 121,000 barrels a day. That is an interesting figure, but when we think of the recent ruling of the Nuclear Regulatory Commission shutting down five nuclear plants, to replace the electricity those plants produce would require 200,000 barrels a day, that is a very interesting thought.

Mr. LANGENKAMP. That is correct.

One of the things that, as I understand it, with the maximum production of the naval petroleum reserve being in the 200,000-barrel-per-day category, it makes it difficult to look solely to the naval petroleum reserve as a means to bridge the gap in the event of any international crisis where the shortfall might exceed 3 or 4 million barrels per day.

The CHAIRMAN. So, we have some problem in the end of the deal, don't we?

Mr. LANGENKAMP. Yes.

The CHAIRMAN. That is all.

Mr. STRATTON. Mr. Spence, any questions?

Mr. SPENCE. No, Mr. Chairman.

Mr. STRATTON. Well, then, I have some questions I would like to address to Captain Nelson.

Captain, your assignment is Director of the Office of Naval Petroleum and Oil Shale Reserves.

Captain NELSON. Yes, sir, that is correct.

Mr. STRATTON. When you submitted the budget for the naval petroleum reserves to the Secretary, did you request funds for exploration at any of those reserves?

Captain NELSON. Is this for fiscal year 1980?

Mr. STRATTON. Right.

Captain NELSON. I believe, as I recall, that we did request funds for exploration at Elk Hills. We did not request funds for exploration at Teapot Dome. I could go on, perhaps—

Mr. STRATTON. What about the oil shale reserves?

Captain NELSON. As I recall, we did have an item for exploration for oil and gas at the Naval Oil Shale Reserve No. 2 in Utah.

Mr. STRATTON. You are in charge of the office, are you not?

Captain NELSON. Yes, sir.

Mr. STRATTON. You ought to be able to remember whether you requested any funds for exploration or whether you didn't. Why does it seem so difficult to recall?

Captain NELSON. Well, I do recall that we did have—

Mr. STRATTON. How much did you request?

Captain NELSON. We requested on the order of \$5½ million.

Mr. STRATTON. That is for the total?

Captain NELSON. For Naval Oil Shale Reserve No. 2.

Mr. STRATTON. Is that for everything or for just Elk Hills?

Captain NELSON. That was for Naval Oil Shale Reserve No. 2 in Utah.

Mr. STRATTON. How about Naval Petroleum Reserve No. 1?

Captain NELSON. I don't have the figure exactly at the tip of my tongue, but it was around \$5 million also for exploration at Elk Hills.

Mr. STRATTON. \$5 million for Elk Hills and \$5 million for Naval Oil Shale Reserve No. 2.

Captain NELSON. And zero at Teapot Dome.

Mr. STRATTON. So that is a total of \$10 million.

Captain NELSON. That is correct. Yes, sir.

Mr. STRATTON. And those requests were pursuant to your existing plans for orderly exploration of the reserves?

Don't coach the witness, Mr. Secretary. We want his answer not yours.

Mr. LANGENKAMP. Mr. Chairman, I am not trying to coach this fine director. I do think there is some doubt about this figure, however. I think it probably would be better to talk in terms of the number of wells, type of wells, that he could build up. I think the figure was half of that, about \$5 million.

Mr. STRATTON. We will get his testimony and then we will get yours, if you want to correct it.

Captain NELSON. That figure is subject to correction from Elk Hills because I have just taken that from a gentleman that works for me and I don't have that at the tip of my fingers.

Mr. STRATTON. Were these requests made by you in line with the existing plans for exploration of the reserves?

Captain NELSON. Yes; they were at the time.

Mr. STRATTON. What did you expect to determine with those exploration programs?

Captain NELSON. First, I would like to state—getting Teapot Dome out of the way, we do need, from time to time, to stop when we have used all the geological information we have available to us and in order to avoid wasting money—stop the exploration program until we have a time to study the geology and then proceed with the wells until we—

Mr. STRATTON. What did you expect to get out of the \$10 million that you had requested?

Captain NELSON. At Elk Hills we had anticipated a three-well exploratory program—three exploratory locations.

Mr. STRATTON. What did you expect to get from three exploratory wells?

Captain NELSON. We would explore two zones, principally, the Stevens Zone and the Carneros Zone. The Stevens Zone is the principal producing zone at the present time and the Carneros Zone is a potential zone for gas condensate; it is not a principal producing zone at this time.

Mr. STRATTON. Are you looking for more oil or for more gas?

Captain NELSON. We are looking for more oil and more gas.

Mr. STRATTON. And that would be at a depth lower than the existing producing areas?

Captain NELSON. Certainly in the case of the Carneros Zone, that is the 10,000- to 12,000-foot range.

Mr. STRATTON. And it was your judgment that even though the previous explorations ran into all of the difficulties that Mr. Langenkamp described, nevertheless there was some value in continuing to make that exploration; is that correct?

Captain NELSON. We had that judgment, yes. That was our judgment.

Mr. STRATTON. At what point were those funds deleted from your budget?

Captain NELSON. They were deleted at the departmental level.

Mr. STRATTON. What reason was given, do you know?

Captain NELSON. Yes, sir. The intent at the time was—it was essential that we produce as much oil as possible because of this crisis which was imminent and is continuing today. It was our job, as we saw it at the time, to put the funds rather than in exploration, to put it into development wells, wells which we were sure would produce additional crude for availability as early as possible.

Mr. STRATTON. In other words, in line with the questions that I was just asking a moment ago, the thrust of the Department was, "Let's get all the oil that we can out, never mind about what the military's needs are going to be 10 or 15 years hence."

Captain NELSON. I must say in defense of that position, however, that we do have a very great need for crude oil today and that was an intent, to provide a portion of that need.

Mr. STRATTON. I don't think the purpose, the intention of Congress was to provide all current needs out of the naval petroleum reserves. That is why it is retained by this committee. Somebody has to think of the future of the Armed Forces and that is what this committee has been trying to do. Some were not thinking about the future back in the 1920's when the Teapot Dome became a very famous name. So, this committee ever since then has undertaken to look a little bit further ahead than the immediate needs.

Let me ask you another thing, Captain Nelson. If these reserves are going to be made available for the armed services, and if the Navy, as the administration apparently insists, is going to continue to be using oil for some time—in fact, I was astounded to find that now we are even talking about diesel submarines in the Seapower Subcommittee—that oil is going to have to be available at various places around the world where the Navy operates.

I remember in the 1973 embargo, when our committee made a trip to Egypt and to Israel immediately following the cease-fire in the Yom Kippur war, we found it was almost impossible for us to get any aviation fuel to get back to the States.

Have you done anything about establishing some of these reserves on foreign shores or in foreign bases so that fuel might be available?

Captain NELSON. No, sir. We have taken no action in that regard.

Mr. STRATTON. How good is our reserve going to be if we don't have the petroleum supplies available where they are needed instead of on the southern coast of California?

Captain NELSON. Well, sir, I would look at the establishing of such reserves as a responsibility, of course, of the Navy Department, others, not the Department of Energy. I am sure that there are very capable people doing that.

Mr. STRATTON. You are in there representing the Navy, aren't you, representing the Navy's interest?

Captain NELSON. Yes, sir.

Mr. STRATTON. Judging from what you said about the exploration, the Department of Energy doesn't seem to be paying too much attention to what the Navy needs.

Captain NELSON. I think that the Department of Energy is of the belief, and there is good reason for them to be, that the military would

have access to what their petroleum needs would be in the case of any crisis through the Defense Production Act.

Mr. STRATTON. But the Defense Production Act doesn't put the oil over where the 6th Fleet carriers might need it and, if somebody in the Navy Department has not thought of that, maybe it is time to think about it. We seem to be operating on the assumption that everything is going to be available whenever you need it and then suddenly we wake up and find that isn't true.

And I would assume the reason we are paying you, and the other captains and admirals in the Navy, is to do a little thinking about the future. So, as far as you know, nobody has done any thinking about locating any of these fuel reserves around the world where the U.S. Navy supposedly wants to operate.

In fact, the President and the Secretary of Defense have said that we have to get a much greater presence in the Indian Ocean. That is a pretty big ocean if you have looked at a chart lately, and I don't think you can spend too much time steaming around there in oil-fired ships without needing a little bit of oil, and you can't come back from the Indian Ocean to Los Angeles or Long Beach to fill up.

Captain NELSON. To refer specifically to your statement that, as far as I know, no one is doing this, I do know that there are people who are planning for and building these facilities.

As an example, before coming to this job I had the Seabee desk at the Naval Facilities Engineering Command and one of my responsibilities was to insure that we did get exactly that type of capability at Diego Garcia, which is under construction now and possibly very near completion.

Mr. STRATTON. Well, we will try to get them before the committee. I have a couple of other questions here too.

Mr. Secretary, I understand in October the Navy intends to recall its 20 officers who have been on assignment to the Department of Energy to operate the naval petroleum reserves. Do you know whether there has been such a recall?

Mr. LANGENKAMP. That is correct.

Mr. STRATTON. How many of the Navy's positions are vacant at this time?

Mr. LANGENKAMP. I think we have approximately five or six.

Mr. STRATTON. Well, my information is that you have three that are vacant now and four more to become vacant during the summer.

Mr. LANGENKAMP. That is correct.

Mr. STRATTON. Is this because the Navy doesn't want to assign people for this duty?

Mr. LANGENKAMP. As I understand it, the Navy, as certain officers' tours of duty expire, has failed to refill those slots and the Department of Defense has notified us that all officers are to be recalled by September of this year. They are not replacing the officers whose tours of duty are ending the last 6 months of that period of time.

Mr. STRATTON. If the Navy's professional staff is eliminated from the Department of Energy, what plans do you have for staffing the Office of the Naval Petroleum and Oil Shale Reserves?

Mr. LANGENKAMP. We hope in some cases, Mr. Chairman, officers presently with the Navy will take retirement and stay with the program. We are, at the Department of Energy, and I am personally quite impressed with the caliber of the people at the Naval Petroleum

Reserves in California, in Wyoming and in Washington, D.C., and we consider them good people and to the extent we can steal them away from the Navy we are going to do so.

Mr. STRATTON. Does this apply to you, Captain?

Captain NELSON. Yes, sir; it could apply to me.

Mr. STRATTON. Then you hope to hire some civilians to take over the operation of the reserve, Mr. Secretary?

Mr. LANGENKAMP. Well, as you are aware, there are civilians now in positions of responsibility on the reserve. A member of the Operating Committee in California and one of our key decisionmakers with regard to these technical questions is a civilian, and it is true that once the Navy officers are recalled and the ones who do resign, resign and come with us, they will all be civilians.

Mr. STRATTON. And they will all be working for you and they won't be working for the Navy.

Mr. LANGENKAMP. I consider them to be working for me now, Mr. Chairman, and I don't think there ought to be any doubt about that.

Mr. STRATTON. I think the whole purpose is that you have a Navy function here and the interest of the Navy should be very specifically represented, as I see it.

Mr. LANGENKAMP. Let me make a statement about that. The Naval Petroleum Reserves Production Act, which we are governed by, speaks for itself and I don't profess to know it book, chapter and verse, but as I read it, in section 7422 we are obligated to develop this reserve and we are obligated to sell the oil that we produce up until 1982. We have no obligation to do anything other than what we are doing. The statement that you have made that the Department of Energy is not interested in anything but the proceeds from this reserve, is inaccurate. We did definitely want to develop this reserve, the law requires it.

But, the law also requires that we produce it at maximum efficient rate, and you are not producing at maximum efficient rate if you don't produce these wells as they are drilled.

In regard to the wells, we have drilled a total of 1,876 wells on the Elk Hills. If you talk to an oilman and ask him whether it is possible to drill a wildcat on a 40,000-acre tract when you have already drilled 2,000 wells, he is going to say it is very difficult.

For instance, we have drilled many wells into the Carneros Zone. We know the Carneros Zone is there, it is not a question of where it is.

I don't think this record is accurate if the impression is given that this program for drilling 87 wells for Elk Hills indicates that we are letting these reserves go begging. The difficulties we had were not in the drilling in the Carneros Zone or the Stevens Zone, but on the deep wells. Those 87 wells that we set forth in our chart, we are drilling to the Carneros Zone.

We have an area here that is only 14 miles across and about 6 miles high. We have drilled wells on virtually every 20 acres of the reserve and drilled most of the formation.

Mr. STRATTON. The captain testified that his office had requested \$10 million in funds for exploratory wells to carry out a program consistent with their plans and with the direction of the Congress but that the money was denied. I don't think we can accept the idea that the final discoveries have ended at Elk Hills and that nothing more can be discovered.

Mr. LANGENKAMP. Mr. Chairman, in regard to that figure, I think that the record will reflect that it was something less than \$10 million.

Mr. STRATTON. \$9 million, \$8 million. It is just as bad. Here we have the interest of the Navy being represented by this office and they feel, quite properly, that we ought to be exploring and you reject it. It is not the figure we are concerned with; it is the attitude.

Mr. LANGENKAMP. To put it in perspective, we are going to spend—so we don't lose sight of what we are doing there—in the year 1980 a total sum of \$237 million. Of that, \$52 million are operations and maintenance figures. We are going to spend \$111 million on the essential facilities that are needed to produce this field like gas plants and high-pressure injection plants. We are going to spend \$57 million drilling development wells. These development wells are not out at the edge of the reserve. We delineated the periphery of these zones and I think that this \$237 million expenditure is a very adequate commitment to the development of this field.

Mr. STRATTON. Mr. Secretary, I happen to have been on the committee at the time we passed that legislation. The intention of the committee was to have the resources of these fields available for national defense purposes. That was spelled out in the opening words of the legislation I read to you. It was pointed out to us that Elk Hills, as it stood at that particular time, was no good to the national defense since you couldn't get anything out of it, and if you got it out there weren't pipelines to get it where the Navy wanted it.

The experts who were on the committee pointed out to us that we ought to get that field, which had been drilled on for a long time without much being done, get it into shape so that if there was an emergency we could go in there and turn on the spigot and the oil would come out. And to do that we had to undertake complete exploration and development so the production capacity, as you indicated, would be up as the maximum efficient rate.

And that is what the development was for, not to see how much we could get out of the wells between now and 1982, but to have them available so that if we needed it for national defense, we could turn it on.

So, I don't know how many millions of dollars you have to expend; but the purpose is not to see how much oil you can get out of the wells before your deadline expires. The idea is to have the reserve in position so that, when the oil is needed, it can be turned on. And, obviously, that does require a process for disposing of the oil after producing it. And that oil, as I have indicated it was our understanding at least, was going to be transferred to the reserve so that that would be available as oil, not necessarily the same drops, but at least a comparable amount.

In addition, we had to get a pipeline. We had no pipeline and so we directed the construction of a pipeline. I pick up the paper this morning and find out that Sohio is not going to build its proposed pipeline and therefore, if Sohio isn't going to build it, Elk Hills cannot be transplanted eastward where it should go.

You have said here that you have some other pipelines available in the Elk Hills area. Just for the record, I would like to have you make clear whether the pipelines you are talking about are going to be adequate to get that oil down to where it was supposed to go.

Mr. LANGENKAMP. Mr. Chairman, let me first address this question of the reserve. I assume you are speaking of strategic petroleum reserve. If you look at the amount of oil we produced at Elk Hills last year and the amount injected in strategic oil reserve, you will see more was inserted in the strategic oil reserve by a considerable margin than was pumped out from Elk Hills. I think the production from Elk Hills was 43 million last year and the amount injected into the strategic petroleum reserve was in the 60- to 70-million range. In fact, we had hoped it would be many many times more than that. It is true that the proceeds to date from the sale of oil from NPR is put in a special fund that can be transferred over to the strategic oil reserve, but since Congress has been generous in funding the strategic oil reserve, it is really a bookkeeping entry. There was never any intention, as far as we know, for the actual oil to be transmitted 2,000 miles to the reserve site.

In regard to the pipeline. This 186,000 barrels that we now estimate as being available, and we generally rounded that off to 180,000, consists of 180,000 barrels of total capacity. This runs, from the reserve, just off the reserve, connecting it to various refineries and various other major pipelines: 100,000 barrels of Chevron pipeline capacity connected to the reserves and 86,000 barrels of ARCO pipeline capacity connected to the reserves. These are common carrier lines available to us, and these are the lines we are presently using now to transmit some 140,000 barrels a day off the reserves.

In addition to this 100,000 and the 86,000, we are, as I mentioned, going to arrange, hopefully, for the expansion of that ARCO line by 25,000 barrels and then we will also have the capacity of Chevron out of our 7R area. So, we should have capacity in excess of 200,000 barrels.

Mr. STRATTON. Will you give us a map that would show us what those connections are?

Have you completed your pipeline out of Elk Hills so that it can connect with these?

Mr. LANGENKAMP. These pipelines that I do refer to do come out of Elk Hills. I will be glad to submit for the record at a later time a map that shows the pipeline locations. [See pp. 22-23. A larger, more complete map is retained in subcommittee files.]

[The material follows:]

DEPARTMENT OF ENERGY,
Washington, D.C., March 26, 1979.

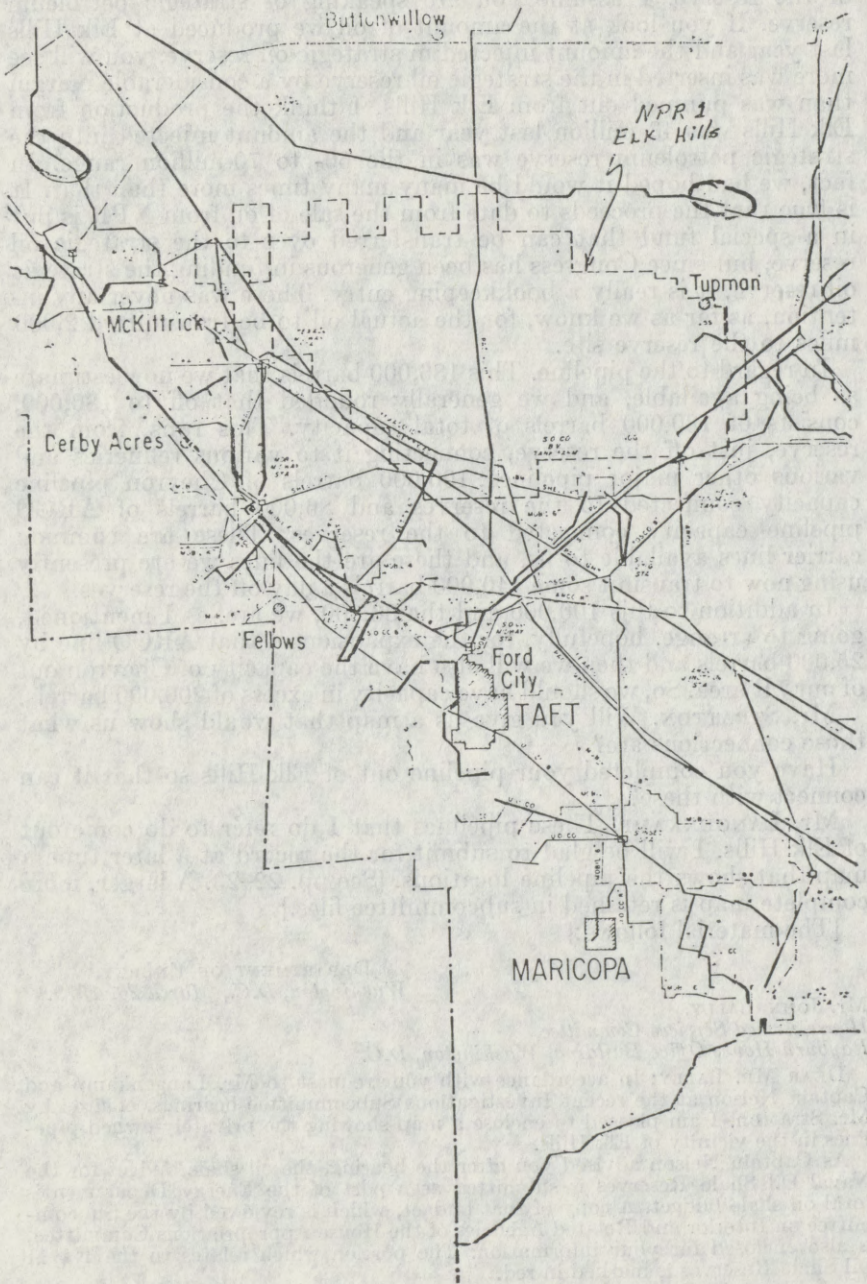
Mr. JOHN LALLY,
House Armed Services Committee,
Rayburn House Office Building, Washington, D.C.

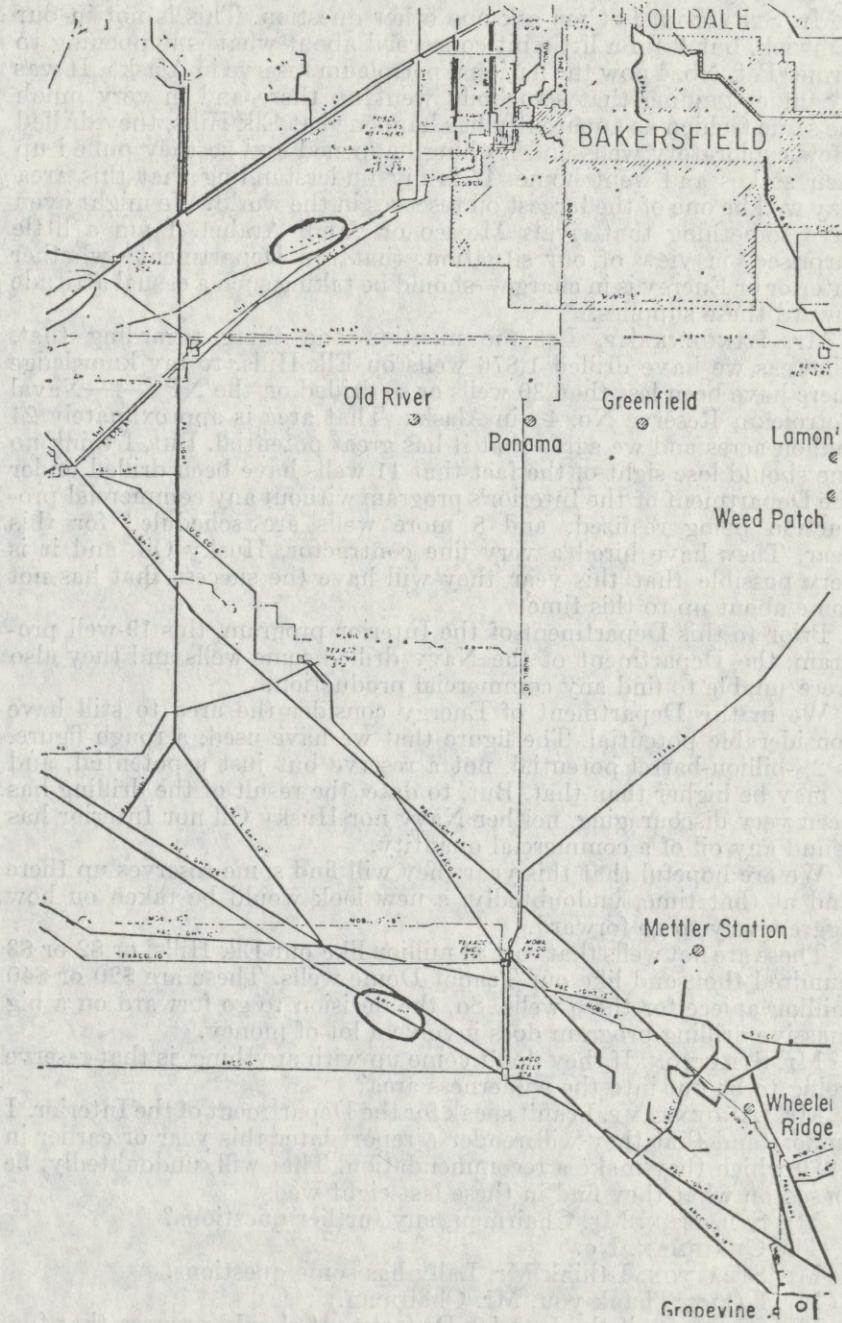
DEAR MR. LALLY: In accordance with your request to Mr. Langenkamp and Captain Nelson at the recent Investigations Subcommittee hearings, chaired by Mr. Stratton, I am pleased to enclose a map showing the privately-owned pipelines in the vicinity of Elk Hills.

As Captain Nelson advised you after the hearing, the oil shale budget for the Naval Oil Shale Reserves is submitted as a part of the Energy Department's total oil shale budget. A copy of that budget, which is reviewed by the Subcommittee on Interior and Related Agencies of the House Appropriations Committee, is also enclosed for your information. The portion which relates to the Naval Oil Shale Reserves is marked in red.

Sincerely,

GEORGE S. McISAAC,
Assistant Secretary, Resource Applications.





Mr. STRATTON. Let me ask one other question. This is not in our bailiwick, but I am a little bit concerned about what is happening to former Pet. No. 4 now the national petroleum reserve in Alaska. It was my understanding that somebody went up there and in very much the same fashion as apparently has happened at Elk Hills, they drilled a few exploratory wells and nothing happened and so they pulled up their stakes and went home. It is my understanding that this area may well be one of the largest oil reserves in the world. We might even have something that rivals Mexico or Saudi Arabia. I am a little surprised, in view of our situation, that the Department—whether Interior or Energy is in charge—should be taking such a casual attitude toward these supplies.

Mr. LANGENKAMP. Let me mention one thing regarding that. Whereas we have drilled 1,876 wells on Elk Hills, to my knowledge there have been less than 30 wells or so drilled on the NPR-4—Naval Petroleum Reserve No. 4—in Alaska. That area is approximately 24 million acres and we agree that it has great potential. But, I think no one should lose sight of the fact that 11 wells have been drilled under the Department of the Interior's program without any commercial production being realized, and 8 more wells are scheduled for this year. They have hired a very fine contractor, Husky Oil, and it is very possible that this year they will have the success that has not come about up to this time.

Prior to this Department of the Interior program, this 19-well program, the Department of the Navy drilled some wells and they also were unable to find any commercial production.

We in the Department of Energy consider the area to still have considerable potential. The figure that we have used, a rough figure, is 2½-billion-barrel potential, not a reserve but just a potential, and it may be higher than that. But, to date, the result of the drilling has been very discouraging, neither Navy nor Husky Oil nor Interior has found any oil of a commercial quantity.

We are hopeful that this year they will find some reserves up there and at that time, undoubtedly, a new look would be taken on how aggressively to go forward.

These are not wells that cost \$1 million like our Elk Hills, or \$2 or \$3 hundred thousand like our Teapot Dome wells. These are \$20 or \$40 million apiece for these wells. So, the decision to go forward on a big massive drilling program does involve a lot of money.

Mr. STRATTON. If they don't come up with anything, is that reserve going to be put into the wilderness area?

Mr. LANGENKAMP. I can't speak for the Department of the Interior. I understand that they will render a report later this year or earlier in 1980 which they make a recommendation. That will, undoubtedly, be based on what they find in these last eight wells.

Mr. STRATTON. Mr. Chairman, any further questions?

The CHAIRMAN. No.

Mr. STRATTON. I think Mr. Lally has some questions.

Mr. LALLY. Thank you, Mr. Chairman.

Mr. Secretary, if the Interior Department should propose that further exploration be abandoned on the naval petroleum reserve in Alaska and propose that it be restored to the wilderness area, would the Department of Energy oppose such a recommendation?

Mr. LANGENKAMP. I think there probably would be discussions at the OMB level at that point.

Mr. LALLY. Don't you believe there should be an opportunity for commercial exploration in an effort to determine whether there is any oil up there?

Mr. LANGENKAMP. I have asked that very question, Mr. Lally, to a number of representatives, executives of the oil companies, asked them why they think the area has so much potential when there have been so many nonproductive oil wells drilled, and they said the key to finding oil is not the number of wells but the number of different people trying out their own theories and that each geologist looks at this area and sees it in a different way, and they think that, if enough different perspectives were allowed to have access, more would be found up there.

I personally tend to agree with that approach. I don't have any opinion at this time regarding what we ought to do after these eight wells are drilled. I think we ought to wait and see what Interior recommends.

My experience has been that they are very sincere in their desire that their program work out and they are as disappointed as anyone that the first 11 wells were dry.

Mr. LALLY. You mentioned, Mr. Secretary, the section 7R litigation and the efforts to reach a settlement with Chevron. As I understand, section 7R was brought into the unit by a determination of the Secretary of the Navy and then the U.S. district court found the terms and conditions the Secretary had applied in bringing it into the unit were fair and equitable.

Now, doesn't the unit plan contract provide that, when additional land is brought under the unit plan contract by a decision of the Secretary upon terms and conditions which are fair and equitable, those terms and conditions, then, are binding on the Government as well as on Chevron?

Mr. LANGENKAMP. The terms and conditions, yes, sir.

Mr. LALLY. The terms and conditions applied by the Secretary in bringing the additional lands into the unit?

Mr. LANGENKAMP. They would be binding on both parties.

Mr. LALLY. Then what would the authority be for settling the section 7R litigation upon terms and conditions which are contrary to, or different from, those applied by the Secretary and found fair and equitable by the court?

Mr. LANGENKAMP. Let me say this: First of all, the settlement would not be an attempt to modify the terms and conditions. The settlement, if it takes place, would be a resolution of the lawsuit.

At the present time, Chevron is maintaining two things at the Ninth Circuit Court of Appeals, one is a very serious item, I think it is a frivolous claim but with serious implications, that the Elk Hills, section 7R is not on the same geological structure that extends underneath the reserve. If that were the case, then the 7R area would be excluded from the reserve. That is a substantial issue.

The other issue is whether or not the Secretary of the Navy, and others, procedurally handled the determination properly, and also there is the issue of the fairness and equity of the terms and conditions.

All these issues are going to be resolved by the court of appeals. They may send it back for further determination.

Our position, up to this point, has been that at some point in time it is in the interest of the United States to look at whether or not a settlement would be to our advantage of that litigation. We have not reached a settlement with Chevron at this point. The parties are still substantially apart. We are not attempting to amend the terms and conditions and/or to amend the unit plan contract. What we are trying to do is resolve a lawsuit on a one-time basis.

Mr. LALLY. What is the approach we are taking on the settlement?

As I understand it, Chevron is not satisfied with the terms and conditions applied by the Secretary and that is the basis for the lawsuit. So that any settlement which might be negotiated is going to have to be based on terms which differ from the Secretary's terms and conditions.

Mr. LANGENKAMP. Not necessarily. I think it is likely that if it is settled, that the terms and conditions would be involved, but you can conceive, Mr. Lally, of the settlement that would involve something other than those terms and conditions; terms and conditions are not the only issues. There is also the issue of whether this area is on the same geological structure.

Mr. LALLY. That issue also was resolved in favor of the Government.

Mr. LANGENKAMP. The Government won across the board at district court level. And any time you settle litigation one of the things you are trying to avoid is the possibility, even if it slim, that there might be a reversal, or in this case a remand.

Mr. LALLY. If a settlement acceptable to Chevron and the United States is achieved, will the settlement proposal be submitted to the Armed Services Committees of the House and Senate for approval?

Mr. LANGENKAMP. Mr. Lally, as I told you in the briefing we had with you earlier, that we fully intend to consult with Congress before any final settlement.

Mr. LALLY. What would the nature of that consultation be?

Mr. LANGENKAMP. We will have a full-dress hearing, if you choose. I think it is your decision, but we do not intend to resolve this litigation without having come before this committee and appropriate committees in the Senate and any other committee that chooses to bring us up and we will answer any questions.

Mr. LALLY. I understand, Mr. Secretary, that officers of Chevron have recently proposed to Secretary Schlesinger that production of NPR No. 1 could be increased from 140,000 to 180,000 barrels per day within a relatively short time. Are you at liberty to discuss the details of that proposal of Chevron?

Mr. LANGENKAMP. We can discuss the details. Suffice it to say that they are a partner and they have a 50 percent vote on the operating committee, which means that over the past years Chevron made many a suggestion to us with which we have agreed and disagreed. They made this proposal and, frankly, at this point we remain unconvinced that this increased production can be accomplished without severely reducing reservoir pressures and violating the MER principle.

We have communicated with Chevron and said if they wish to persuade us that the production rate is low and should be increased and want to present additional data, we will be glad to analyze it. But, up to this point we have analyzed their data, we have looked over their

theories, and we presently conclude that, if we produce these particular reservoirs they are interested in any faster, we would reduce ultimate recovery and we would damage the reservoirs.

We communicated this decision to them. We don't know whether they will continue to press us on this. Historically, Chevron and the NPR staff have not disagreed violently or substantially on production theory and reservoir engineering.

In this case there was a difference of opinion and we have indicated to Chevron that we are not convinced.

Mr. LALLY. I have seen an estimate that, if this proposal were put into effect, the ultimate recovery could be reduced by as much as 100 million barrels or about 10 percent of the remaining recoverable reserve.

Is that an accurate estimate of the reduction?

Mr. LANGENKAMP. I don't recall that figure. When you are dealing with substantial reservoirs, such as these, reasonable men will differ as to how fast they ought to be produced, and each man will come up with his own computer runs and his own analysis as to what the best way to get the maximum number of barrels out.

We concluded that this increased production, unless they have some information that we don't have and we are overlooking something, that their production rate on these particular reservoirs would do damage. I can't remember what the total impact would be.

Mr. LALLY. Any such damage, however, would be contrary to the 1976 law authorizing production of the reserves?

Mr. LANGENKAMP. That is correct. If we concluded, in effect, that there would be damage.

Now, the Chevron personnel that spoke to us were well trained and sincere and I am convinced they actually believe that what they propose will have no adverse effect on the ultimate recovery, but we were not convinced.

Mr. LALLY. Thank you, Mr. Chairman.

Mr. STRATTON. Thank you, Mr. LALLY.

If there are no other questions, I think that will conclude the hearing. We don't have a quorum to vote on the legislation, so, thank you very much, Mr. Secretary and Captain Nelson.

We will stand adjourned subject to the call of the Chairman.
Thank you.

[Whereupon, at 11:45 a.m., the hearing was adjourned.]

