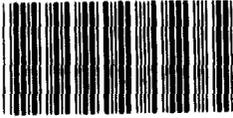


120923  
29505

United States General Accounting Office  
Washington, D.C. 20548



125323

FOR RELEASE ON DELIVERY  
Expected at 10:00 a.m.  
October 3, 1984

Statement of  
F. Kevin Boland, Senior Associate Director  
Resources, Community and Economic  
Development Division  
Before the  
Subcommittee on Fossil and Synthetic Fuels,  
House Committee on Energy and Commerce;  
Subcommittee on Armed Services Investigations,  
House Committee on Armed Services;  
and  
Subcommittee on Mining, Forest Management, and  
Bonneville Power Administration,  
House Committee on Interior and Insular Affairs  
on the  
Production of Naval Petroleum Reserve No. 1

Mr. Chairman and Members of the Subcommittees:

We appreciate the opportunity to appear before you to discuss issues raised in our recent report<sup>1</sup> concerning continuing production at the Elk Hills Naval Petroleum Reserve No. 1. This report was done at the request of the Chairman of the Armed Services Investigations Subcommittee of the House Committee on Armed

---

<sup>1</sup>Naval Petroleum Reserve No. 1--An Assessment of Production Alternatives. GAO/RCED-84-180, July 30, 1984.

030253

Services. We also addressed this topic in 1981, when the last determination on continued production took place.<sup>2</sup>

The Naval Petroleum Reserves Production Act requires a Presidential determination every 3 years as to the necessity for continued production. In conjunction with the current determination, our most recent report examined the issues surrounding four possible options for Elk Hills oil:

- continued production at the maximum efficient rate of 100,000 plus barrels per day;
- a near total shut-in of about 4,000 barrels per day;
- a partial shut-in of 25,000 - 30,000 barrels per day; and
- continued production, but using revenues generated to establish a defense petroleum reserve.

In addition, it identified geologic factors that could influence the appropriate production level under the four options.

We considered each option in terms of its impact on the federal budget, the local economy, and national security, and found that each alternative has advantages and disadvantages.

#### CONTINUED PRODUCTION

In accordance with the President's 1981 determination, NPR-1 presently produces 134,000 barrels of crude oil per day, plus natural gas and natural gas liquids. Production levels are projected to decrease by 9 to 10 percent per year as the field is depleted.

From a Federal budget impact standpoint, we estimate that continued production at the maximum efficient rate would result in

---

<sup>2</sup>Issues Affecting Shutdown or Continued Production of the Elk Hills Naval Petroleum Reserve. EMD-82-14, October 26, 1981.

about \$3.2 to \$3.6 billion in net federal revenues from 1985 through 1987, the time frame for any extension of production. In addition, continued production would not disrupt the local economy where NPR-1 is located.

From a national security standpoint, the pros and cons of continued production are less clear. The Department of Defense (DOD) is primarily concerned about meeting its petroleum product requirements during peacetime oil import interruptions such as occurred in 1973 and 1979. DOD had difficulties in obtaining sufficient oil supplies during these disruptions. For example, as a result of Iran's reduction of its crude oil exports in mid-1978, DOD found that some of its suppliers were not delivering products in accordance with their contracts. Others were reducing the quantities they were offering for sale or declining to offer for sale any products at all. As a result, DOD inventories of petroleum fuels decreased 6 percent or 7.5 million barrels between September 1978 and September 1979. In addition, DOD was forced to draw from its pre-positioned war reserve stocks rather than curtail the training and exercises DOD believes are critical.

DOD is less concerned about wartime scenarios because it believes it would then be allocated sufficient oil supplies under the Defense Production Act.

Military refined product requirements during peacetime are roughly equivalent to 650,000 barrels of crude oil per day, or about 8 percent of the domestically produced supply. Currently,

the government's share of NPR-1 crude oil production is 105,000 barrels per day, or 16 percent of defense needs. The other 29,000 barrels per day of production are allocated to Chevron, which jointly owns the field with the U.S. Government. However, NPR-1's value to the military will decrease in the future as the field is depleted. Assuming production continues at the maximum rate, total production at NPR-1 will decline to about 35,000 barrels per day by the year 2000. The government's share of that production would be 27,000 barrels of oil, or only 4 percent of current peacetime needs.

#### SHUT-IN

Under this scenario the Department of Energy (DOE), in its current study, envisions shutting in all major facilities at NPR-1, except those needed to produce about 4,000 barrels of crude oil per day, and some natural gas liquids. This production would be needed to avoid damage to the field. DOE estimates that it would take 6 months to 1 year to return NPR-1 to full production from shut-in.

From a budget standpoint, we estimate that production of about 4,000 barrels of oil per day would result in \$514 million in net federal revenues over the next 3 years. However, a shut-in would adversely affect the operations of those small refiners in California that use NPR-1 crude oil, since they are currently using about 90,000 barrels of NPR-1 oil a day, and some of them lack alternative sources for this type of light crude oil.

In addition, officials from NPR-1, small refiners, and the two pipeline companies that transport most NPR-1 crude oil told us that they would terminate or lay off 800 employees if a decision is made to shut-in NPR-1.

Finally, a shut-in of NPR-1 would not be of significant assistance to the military in the initial stages of a peacetime oil shortage since at least 6 months would be required to return to full production.

#### PARTIAL SHUT-IN

Another alternative for NPR-1--which DOE is not currently considering but which we were requested to examine--is a partial shut-in to a production level of 25,000 to 30,000 barrels of crude oil per day. This is the production level at which NPR-1 could be kept in a fairly ready state by operating its major production facilities on a rotating basis. With "mothballing" avoided, NPR-1 production could be substantially increased in 8 days and returned to the maximum efficient rate in 30 to 90 days.

From a budgetary standpoint, we estimate that a partial shut-in would provide about \$884 million in net federal revenues over the next 3 years. However, based on interviews with officials from small refiners and pipeline companies and an analysis of crude oil availability in California, a partial shut-in would also have some adverse effects on their operations.

In terms of national security, a partial shut-in could provide a readily available, long-term source of oil for the military. For example, if production was reduced to 27,000 barrels per day, NPR-1 production levels in the year 2000 could still be increased to about 110,000 barrels per day. The government's share of this amount would be about 86,000 barrels per day, or about 13 percent of current defense peacetime needs.

## DEFENSE PETROLEUM RESERVE

Because of the military's concern about peacetime oil shortages, DOE is considering development of a separate Defense Petroleum Reserve (DPR), containing 100 million barrels of crude oil. Revenues from full production of NPR-1 would be used to establish this DPR. DOE estimated a total DPR cost of about \$5 billion in current dollars from fiscal year 1985 through 1992 for facilities development and oil acquisition. This amount does not include projected operations and maintenance expenses. Over the same time period, assuming current production rates, total net revenues from continued production of NPR-1 would amount to about \$9 billion in current dollars.

We found that a separate DPR has at least two advantages over using NPR-1 as a source of petroleum in peacetime oil shortages. A DPR could be drawn down at any time with little lead-time required, and thus its oil reserves would be immediately available. Second, a DPR could be constructed so that oil could be drawn down at variable rates, depending on the amount needed, and at a much higher rate than normal NPR-1 production. In addition, this option would result in a less drastic reduction of federal revenues than a partial or complete shut-in of NPR-1.

The major disadvantage of a DPR of 100 million barrels, as being considered by DOE, when compared with NPR-1, is its limited amount of reserves. NPR-1, because of its larger total reserves of over 700 million barrels of oil, could provide a stream of oil long after a DPR of 100 million barrels would have been exhausted and, therefore, would be more advantageous in an extended peacetime shortage.

It should be noted that there are a number of alternatives for accomplishing the same purpose of a Defense Petroleum Reserve which we have not had the opportunity to analyze. One of these alternatives would be to designate part of the Strategic Petroleum Reserve for Defense needs.

#### GEOLOGIC CONSIDERATIONS

Lastly, I would like to discuss certain geologic factors that we believe need to be addressed regardless of which production scenario is selected. Of particular importance is the question of whether the current rate of production is set at the appropriate level in terms of ensuring maximum oil recovery, as required by law. Even if a decision is made to shut-in NPR-1, certain actions are needed to prevent movement of oil into areas from which it may not be recoverable. I will only highlight this rather technical subject.

The Naval Petroleum Reserves Production Act of 1976 requires NPR-1 to be produced at the so-called MER--the maximum sustainable rate which will permit economic development of the reservoir without detriment to ultimate recovery of oil. DOE is responsible for determining the level of MER. However, MER is recognized in the petroleum industry as a theoretical concept or as a goal to work toward in managing a field. Therefore, the MER designated for any field is only an estimate based on geologic and engineering data, and the judgment of petroleum engineers.

In October 1983, Chevron officials indicated that DOE was not producing NPR-1 at its maximum potential and that it could be

produced at a higher rate without detriment to ultimate recovery. Chevron recommended that production be increased by about 13 percent. Conversely, in December 1983, the Director of NPR-1 recommended to DOE headquarters that MER be lowered by about 10 percent, to maximize ultimate recovery of oil from the field.

We found, based on a review of available production data and Chevron and DOE studies, that the MER set for NPR-1 is too high. This production level has caused certain geologic problems, and as a result, if corrective action is not taken, ultimate expected recovery of crude oil from the field could be reduced by about 139 million barrels. Some oil most likely has already become nonrecoverable. Regardless of which production option is adopted, DOE could correct the geologic problems by lowering production rates and selectively injecting water or gas into the reservoirs. Corrective actions are necessary even if NPR-1 is shut-in or partially shut-in.

At the time of our study, DOE headquarters had not taken any action to lower MER. However, we were informed that DOE planned to undertake a thorough analysis to better define the appropriate MER before any decision would be made.

- - - - -

In summary then,

--Under continued production, NPR-1 would provide \$3.2 to \$3.6 billion in net revenues to the government, more than

under any other option. It could also provide a significant source of oil to DOD in the short-term, although NPR-1's value to DOD will continually decline in the future as production levels decrease.

--Under a shut-in, NPR-1 would be of little immediate help to DOD in an oil shortage because of the time required to return the field to full production. A shut-in would also disrupt the local economy.

--Under a partial shut-in, NPR-1 could be largely saved for future emergencies while being kept in a state of readiness. Again, some impacts would be felt by the local economy.

--The DPR option would be a more effective means of ensuring adequate amounts of petroleum products for DOD than any of the production options under consideration, although there may be other alternatives for establishing such a reserve including designating part of the Strategic Petroleum Reserve.

--Finally, indications are that MER is too high and, as a result, ultimate recovery could be decreased by 139 million barrels. Thus, regardless of which option is chosen, DOE must work toward a timely resolution of this problem.

Mr. Chairman, that concludes my prepared statement. We will be pleased to answer any questions.