

GAO

Report to the Chairman, Subcommittee on  
Energy and Power, Committee on Energy  
and Commerce, House of Representatives

August 1988

# NAVAL PETROLEUM RESERVE NO. 1

## Examination of DOE's Report on Divestiture



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

**Resources, Community, and  
Economic Development Division**

B-215489

August 25, 1988

The Honorable Philip R. Sharp  
Chairman, Subcommittee on Energy  
and Power  
Committee on Energy and Commerce  
House of Representatives

Dear Mr. Chairman:

In response to your request and subsequent discussions with your office, we critiqued the Department of Energy's (DOE) June 30, 1987, report to the Congress on the divestiture of Naval Petroleum Reserve No. 1, located in Kern County, California, as a basis for congressional deliberations on the sale. We also examined whether DOE could lease the reserve. The report contains recommendations aimed at improving the data and methodology DOE used in its analysis and ensuring that the desired objectives of divestiture are achieved in a competitive environment.

As arranged with your office, unless you publicly announce its contents earlier, we will make no further distribution of the report until 30 days from the date of this letter. At that time, we will send copies to the Director, Office of Management and Budget; the Secretaries of Energy and Defense; and other interested parties.

This work was performed under the direction of Keith O. Fultz, Senior Associate Director. Other major contributors are listed in appendix II.

Sincerely yours,

J. Dexter Peach  
Assistant Comptroller General

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# Executive Summary

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## Purpose

The Naval Petroleum Reserves (NPRS) have generated over \$12 billion in federal revenues since 1976. The administration wants to sell the government's interest in NPR-1 in California and NPR-3 in Wyoming because it believes that they no longer serve a national defense purpose and that owning and operating the NPR is a business, not a governmental activity. In a June 30, 1987, report to the Congress, the Department of Energy (DOE) concluded that immediate cash receipts of about \$3.6 billion to \$4.3 billion could be realized from the sale. DOE estimated that total receipts to the public sector (including federal, state, and local income tax revenues paid during the remaining life of the NPRs) could be as much as \$6 billion, or about \$500 million greater than would be received if the government continues its ownership of the NPRs.

At the request of the Chairman, Subcommittee on Energy and Power, House Committee on Energy and Commerce, GAO critiqued the DOE report. Also, as requested, GAO examined whether DOE could lease, rather than sell, NPR-1.

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## Background

One of three producing NPRs, NPR-1 is the focal point of the proposed divestiture because it accounts for almost all of the remaining recoverable reserves. It is jointly owned by the government (about 78 percent) and Chevron, U.S.A., Inc. (about 22 percent). It has been operated since 1944 through an agreement that specifies how production and expenses are shared. Since 1976, according to DOE, NPR-1 has been produced at the maximum efficient rate of recovery, as mandated by the Naval Petroleum Reserves Production Act.

In preparing its divestiture report, DOE contracted with Shearson Lehman Brothers, Inc. (now Shearson Lehman Hutton, Inc.) to assist it in determining the private sector's value of NPR-1 and developing a marketing plan. After Shearson developed estimated private sector values for the reserve in a sales analysis, DOE used essentially the same assumptions about production, oil prices, costs, taxes, and discount rates to compute an estimated value under continued government ownership and production.

Shearson proposed a multimarket sales approach for NPR-1 assets. Under this approach, DOE would sell (1) 30 to 40 percent to a single industry buyer who would operate the field, (2) 30 to 40 percent in 1-percent increments with a 2-percent minimum purchase (to promote small and independent refiner participation), and (3) the remaining 20 to 30 percent in a public offering. DOE believes this approach has merit but has

included in its proposed sales legislation sent to the Congress in December 1987 a provision for varying this sales approach or even structuring a different approach.

At DOE's request, Shearson updated the marketing plan in 1988. On the basis of financial market changes, Shearson reduced the percentage in the public offering and increased the size of the other ownership categories. Also, the sales date was extended by one year to September 30, 1989.

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## Results in Brief

GAO believes that DOE's divestiture report does not provide enough information to justify selling NPR-1. Among its key problems are

- the lack of accurate, up-to-date reserve data on which critical variables (such as future production schedules and estimated recoverable reserves) are based;
- a methodology that does not provide the Congress with enough information on (1) the value of NPR-1 to the government if it holds the asset and (2) how industry expectations about production, operating costs, and oil/gas prices would affect NPR-1 valuation estimates; and
- no consideration given to the potential for leasing NPR-1 as an alternative to either selling or holding the asset.

DOE's report is also not clear as to how certain factors may affect the multimarket sales objective of maximizing competition to avoid antitrust concerns and obtain a fair market price. These factors include (1) a potential bidding advantage for Chevron arising from its long-term association with NPR-1 and (2) the relatively large up-front purchase price of NPR-1 shares that would be required under the plan, which may affect the participation of small and independent refiners.

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## Principal Findings

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### Lack of Up-To-Date and Accurate Data on Reserves

DOE has never conducted a comprehensive reserve study of all producing pools at NPR-1, although such a study is essential in understanding the financial implications of a sale. Furthermore, the most recent study that included several of these pools at the same time was done in 1980. To compensate for the lack of up-to-date and accurate reserve data needed

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for estimating the value of NPR-1, DOE substituted production data forecasted in the 1987 Long Range Plan through 1993, thus calling into question the validity of the resulting net sales receipts.

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### Assessment of Government's Ownership Interest Not Adequate

DOE did not provide adequate information on the government's ownership interest in NPR-1 because of the methodology it followed. DOE estimated NPR-1's value from industry's perspective rather than that of the government. DOE should have determined the value of NPR-1 to the government under continued ownership using its own production schedules, price forecasts, operating costs, and discount rate and then fully tested the sensitivity of that value to differing industry assumptions about these factors. In GAO's opinion, this approach would have provided decisionmakers with a better basis for assessing the desirability of selling NPR-1 because it would have offered an independent assessment of its value to the government as a benchmark for comparative purposes.

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### Public Policy Issues

Although the DOE report appropriately recognizes that issues such as defense requirements, foreign ownership, and California's claims to certain NPR-1 lands are important, the report does not always completely describe these issues. For example, DOE's divestiture report discounts Department of Defense needs for access to an oil reserve from a national security perspective. DOE has subsequently recognized this omission and has participated in a multi-agency agreement for a Defense Petroleum Inventory that would substitute for NPR-1.

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### Multimarket Approach

GAO questions whether the proposed marketing plan will promote sufficient competition and, as a result, maximize sales revenues. Given Chevron's long-term association with NPR-1 and the fact that it has its own proprietary estimates and projections of the key valuation variables, Chevron may have an advantage that may be difficult for other potential bidders to overcome. Further, because of the 30 to 40 percent of NPR-1 available in minimum 2-percent shares, it is possible that a single large company could buy up most, if not all, of NPR-1. This may occur if, as contended by some industry officials, the relatively large up-front purchase price and the small quantity of oil connected with each 2-percent share would inhibit purchases by small and independent refiners who are current users of NPR-1 oil.

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## Leasing NPR-1

Shearson's marketing plan does not evaluate the potential of leasing NPR-1, although it does propose a lease of the deep rights below the existing field. Although the 1976 act currently prohibits leasing, Department of the Interior officials that administer federal gas and oil leasing programs believe that since NPR-1 is a proven oil field that could continue to yield revenues to the government through royalties, bonuses, and other options, leasing NPR-1 should be studied as an alternative approach for privatization. GAO agrees that leasing should be studied, as it may offer another way to protect the government's interest when there are uncertainties about future oil prices.

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## DOE's Projected Sales Date

DOE's September 30, 1989, sales date that is based on congressional approval of the sale does not appear to allow sufficient time to complete a new reserve study, negotiate the agreement with Chevron, and start and complete the sales process. While achieving a one-time budget deficit reduction may be one objective of divestiture, GAO believes it should not be the driving force that dictates the sales date.

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## Recommendations

GAO recommends that once a comprehensive reserve study is completed, the Secretary of Energy revise the June 30, 1987, report to the Congress first by (1) establishing NPR-1's net present value to the government under present operational constraints using revised DOE production schedules, operating costs, and oil prices and a discount rate that would be based on the government's cost of borrowing and (2) assessing where the private sector's assumptions about these factors would likely differ from the government's hold assumptions. DOE should then develop sensitivity analyses to show the effect of these differences on NPR-1's net present value and identify where private ownership and operation would have advantages.

GAO's detailed recommendations concerning the financial implications of the sale, the public policy issues, DOE's marketing plan, and the leasing potential are contained in chapter 6.

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## Agency Comments

Officials from DOE's Office of Fossil Energy were provided the opportunity to review the draft report and provided preliminary comments. However, in accordance with the requester's wishes, GAO did not obtain written comments on a draft of this report.

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**Abbreviations**

DOD	Department of Defense
DOE	Department of Energy
GAO	General Accounting Office
MER	maximum efficient rate
NPR	Naval Petroleum Reserve
NPR-1	Naval Petroleum Reserve No. 1
NPR-2	Naval Petroleum Reserve No. 2
NPR-3	Naval Petroleum Reserve No. 3
OMB	Office of Management and Budget
RCED	Resources, Community, and Economic Development Division
SPR	Strategic Petroleum Reserve

# Introduction

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In 1986 and 1987, and again in 1988, the administration proposed to sell the federal government's ownership interests in Naval Petroleum Reserve No. 1 (NPR-1), located in Kern County, California, and Naval Petroleum Reserve No. 3 (NPR-3), located in Natrona County, Wyoming. (Naval Petroleum Reserve No. 2, also located in Kern County, California, was not included in the sale proposal because it is leased.) The Department of the Interior and Related Agencies Appropriations Act, fiscal year 1987, (P.L. 99-591), authorized the Department of Energy (DOE) to use up to \$500,000 to analyze the proposed divestiture. The act and its conference report indicate that if such study were undertaken, a report was to be submitted to the Congress by June 30, 1987.

In order to analyze the proposed divestiture, DOE exercised a contract option on February 26, 1987, to have Shearson Lehman Brothers, Inc. (now Shearson Lehman Hutton, Inc.), develop a marketing plan that would maximize the value the government would receive in a sales transaction. Shearson delivered a marketing plan to DOE on May 10, 1987, and DOE submitted its report, entitled Divestiture of the Naval Petroleum Reserves, to the Congress on June 30, 1987. At the request of the Chairman, Subcommittee on Energy and Power, House Committee on Energy and Commerce, we critiqued DOE's report as a basis for congressional deliberations on the sale of the NPRs. We also examined whether DOE could lease the NPRs.

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## Development of the NPR

The Naval Petroleum Reserves No. 1 and 3 were established by executive orders issued in 1912 and 1915, respectively, to ensure a source of petroleum for the Navy. Except for several years of leased production in the 1920s, production for national defense purposes in World War II, and a period of offset production in the 1950s, NPR-1 and NPR-3 were shut-in or produced at the minimum level necessary to prevent damage to the fields, until 1976, in order to preserve the oil for future use. NPR-2, however, has been produced under lease agreements between the government and private firms since the early 1920s.

Following the Arab oil embargo in 1973-74, the Naval Petroleum Reserves Production Act of 1976 (P.L. 94-258, Apr. 5, 1976) was enacted to authorize NPR crude oil production at the maximum efficient rate (MER) for 6 years.<sup>1</sup> After 6 years, the President could extend production in intervals of up to 3 years after certifying that continued production

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<sup>1</sup>MER is the maximum sustainable daily rate that permits economic development and depletion of the reservoir without detriment to ultimate recovery.

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was in the national interest. In accordance with the act, the President informed the Congress in 1981, 1984, and again in 1987 of his certification that it was in the national interest to continue production of the NPR at the maximum efficient rate for another 3 years. The current 3-year period ends on April 5, 1991.

NPR-1, covering nearly 48,000 acres, is the largest of the three reserves. It is the eighth largest domestic, producing oil field (the fourth largest in California) and is jointly owned by the federal government (about 78 percent) and Chevron, U.S.A., Inc. (about 22 percent). The two owners participate in the operation of NPR-1 through a unit plan contract that specifies how production and expenses are shared. The unit plan contract was signed by the federal government and the Standard Oil Company of California (Chevron's predecessor) on June 19, 1944.

NPR-1 crude oil production comes primarily from two geologic zones—the Stevens Zone (a light, high-quality crude oil) and the Shallow Oil Zone (a heavier, lower quality crude oil). The zones also produce natural gas and natural gas liquids. The government and Chevron initially estimated that about 1.5 billion barrels of oil could be recovered. At the end of fiscal year 1988, NPR-1 was estimated to have remaining about 600 million barrels of recoverable oil. NPR-1's average production for fiscal year 1987 was about 109,000 barrels of oil per day. Actual production for fiscal years 1985 through 1987 and production estimates by DOE for fiscal years 1988 through 1993 are shown in appendix I.

NPR-3 is the smallest of the three reserves, covering about 9,500 acres. The federal government is the sole owner of NPR-3. Field operations began in 1922 and continued until 1927, when the field was shut-in. Major drilling activity did not resume until 1958, when oil wells were reworked and new wells were drilled. Since the field was opened up in July 1976, the total number of wells drilled has nearly tripled. In fiscal year 1986 estimated recoverable reserves amounted to about 5 million barrels of oil. In fiscal year 1987, production averaged about 3,097 barrels of oil per day.

The government's reserve data that are used to estimate NPR-1's original oil-in-place, remaining recoverable reserves, and future production are not up-to-date and accurate. In addition, no comprehensive reserve studies of all producing pools at NPR-1 have been conducted. The last equity agreement that determined the ownership percentage for DOE and Chevron was signed in 1980. The engineering analysis of the reserve that was

done for the equity agreement was limited to selected pools in the Stevens Oil Zone. In January 1988 DOE contracted to have a comprehensive reserve study of the entire field done.

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## Changing Role of the NPR

From their original role as an emergency supply of oil, the NPRs (mainly NPR-1) have evolved over time to income-generating federal business assets. As of September 30, 1987, about 894 million barrels of oil have been produced from NPR-1 and NPR-3. The government's share of oil production to date has generated over \$12.5 billion in revenues, almost all of it since NPR-1 and NPR-3 were opened up for full production in 1976. At current oil prices and production levels, the NPR returns annual net revenues of about \$600 million to the federal government.

From the open-up of NPR-1 and NPR-3 in 1976 through August 1980, the government's share of crude oil production was sold exclusively on the open market. Since then each reserve's oil production has been used by the government and private industry.

Since September 1, 1980, to November 1981, about 100,000 barrels of oil per day from NPR-1 were exchanged competitively for oil delivered to the Strategic Petroleum Reserve (SPR). In February 1982 and again in October 1986, some NPR-1 oil was moved directly to the SPR by pipeline. During the period December 1981 to December 1986, part of the government's share (all in fiscal year 1983) was sold to the Department of Defense (DOD) as a test of DOD's ability to exchange crude oil for finished petroleum products. The remaining crude oil has been sold on the open market. Although the mix of purchasers varies by sale, for the most part buyers have been small and independent refiners in central and southern California whose refinery operations are suited to handle light oil produced at NPR-1. These refiners purchased about 53 percent from November 1981 through March 1987, and at times purchases were as high as 82 percent.

At NPR-3, open market sales of about 3,500 barrels a day continued through June 30, 1981. From July 1981 through January 1986, all crude oil was sold to DOD. Since February 1986, when all contracts with DOD were terminated, the oil has again been sold competitively on the open market.

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## DOE's Divestiture Report

In preparing the June 30, 1987, report to the Congress, DOE contracted with Shearson Lehman Brothers, Inc., to assist it in (1) determining the value of the assets from the private sector viewpoint and (2) developing a marketing plan to maximize the sales proceeds. Shearson reviewed current operating, budget, and financial data and available production and reserve estimates; hired a subcontractor (Babson and Sheppard) to do a reserve estimate for NPR-1 (that ultimately became a production forecast); and designed a computer model for calculating a NPR-1 net present value based on projections of production by reservoir, operating costs, energy pricing, and taxes. It also compiled pricing forecast studies for crude oil and natural gas from sources within the energy industry and in energy-related businesses; analyzed potential buyers from the perspective of both size and financial capacity; and analyzed current market values for publicly traded integrated oil companies, independent producers, royalty trusts, and limited partnerships that might be comparable to NPR-1. Finally, it examined other quantifiable and qualitative factors that would affect the valuation of the reserve.<sup>2</sup>

When DOE transmitted its report to the Congress, it included Shearson's marketing plan. DOE advised the Congress that its report focuses on the public policy issues that arise in considering the divestiture of the federal ownership interest in the reserves. It stated that the report complements the marketing plan and provides a more complete context for decisions by the administration and the Congress.

DOE's report includes (1) background on the establishment and operations of NPR-1 and NPR-3, (2) a discussion of the financial implications of selling or retaining federal ownership in the reserves, (3) a discussion of the energy security implications of private ownership of the NPR in terms of the availability of petroleum supplies to DOD and with respect to permitting ownership of interests by non-U.S. entities; and (4) an analysis of the implications of private ownership on state and local governments, federal employees, and current petroleum purchasers, including independent refiners and producers.

On December 10, 1987, the administration sent the Congress its proposed legislation to sell NPR-1.

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<sup>2</sup>On February 10, 1988, Shearson provided DOE with a marketing plan update. The results of the update reduced the net present value of NPR-1 from the value assigned in 1987. The marketing plan was also revised in accordance with market changes resulting from the stock market decline in October 1987.

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## Objectives, Scope, and Methodology

In his letter of January 29, 1986, the Chairman, Subcommittee on Energy and Power, House Committee on Energy and Commerce, requested that we analyze the administration's initial 1986 proposal to sell the federal ownership interest in NPR-1 and estimate its value. In June 1986, we issued a report on our preliminary analysis of future net revenues from NPR-1 production.<sup>3</sup> After subsequent discussions with the Chairman's office, we agreed in January 1987 that rather than independently estimating NPR-1's value, we would critique DOE's planned 1987 report on its proposal to sell the reserve. In addition, we agreed to examine the potential for leasing the reserve.

The decision to retain or sell the Naval Petroleum Reserves is likely to involve consideration of multiple factors. These factors include the extent of the national defense role of the reserves; the efficiency, market structure, and other economic implications of government involvement in petroleum production; and the amount of return to the taxpayers, including the effects of the sale on both short- and long-term deficit reduction.

For the purposes of our examination and our presentation in this report, we considered Shearson Lehman's report as an integral part of DOE's June 30, 1987, report and, with a few exceptions, critiqued them as a single DOE document. To respond to the Chairman's request, we evaluated the extent to which the Congress can reliably use DOE's report when considering legislation that would authorize the sale of the NPRs.

Our review was primarily limited to NPR-1, although we looked at data on NPR-3 when appropriate. In examining DOE's report, we reviewed the legislative histories of the various acts discussed in the report, including the legislative history of the Naval Petroleum Reserves Production Act of 1976 as it relates to the current levels of production and the potential for leasing the reserve. We reviewed records and documents that support DOE's report, including production forecasts contained in DOE's fiscal year 1987-93 Long Range Plan and in an April 9, 1987, report prepared by Babson and Sheppard, petroleum engineers. We reviewed previous contract geological and engineering studies for various pools, analyzed decline curve production projections, and examined data from NPR-1's production accounting system. At the request of the Chairman's office, we did not analyze DOE's December 1987 legislative proposal on the NPR sale.

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<sup>3</sup>Naval Petroleum Reserves: Preliminary Analysis of Future Net Revenues From Elk Hills Production (GAO/RCED-86-169BR, June 5, 1986).

We also reviewed records and documents that relate to DOE's report entitled Investigation on the Continued Production of the Naval Petroleum Reserves Beyond April 5, 1988. This report was prepared for the Congress as of September 30, 1987, in support of the President's determination that it is in the national interest to continue production of NPR-1. Our interest in this report was the estimated oil production and projected net present value of NPR-1 under continued government ownership and production.

Although the primary contact for our work at DOE was the Director of Business Operations and External Affairs under the Assistant Secretary for Fossil Energy, we contacted other officials in DOE's Office of Fossil Energy. We also inquired about the potential for leasing the reserves at the Department of the Interior, since it administers onshore and offshore leasing programs.

We interviewed officials at the NPR-1 site in California from DOE; Chevron, U.S.A.; Bechtel Petroleum Operations, Inc., who conduct the day-to-day maintenance, operations, and management of NPR-1 through a contract with DOE; Shearson Lehman Brothers, Inc.; and the West Coast Division of the American Independent Refiners Association. We also interviewed DOD, DOE, and Interior officials in Washington, D.C. In addition to interviewing officials of these organizations, we reviewed pertinent agency files and documents, including reports provided by the oil industry and the state of California.

Our work was performed between March 1987 and April 1988 and was done in accordance with generally accepted government auditing standards. The results of our work are presented in a chapter format that essentially parallels DOE's divestiture report. The following chapters discuss (1) the financial implications of a sale, (2) the public policy issues, (3) the marketing plan for selling NPR-1 and (4) the potential for leasing the reserve. GAO's conclusions and recommendations are included in chapter 6.

# Data and Methodology Are Deficient in DOE's Report

DOE's report states that the government should receive a fair market value for its ownership interest in NPR-1. Although the government does not have up-to-date and accurate reserve data for NPR-1, DOE nevertheless concluded that the government's ownership interest in NPR-1 could be sold by September 30, 1988, for an immediate cash flow benefit estimated to range from \$3.6 billion to \$4.3 billion. Estimated future tax revenues would increase this to a total of \$4.9 billion to \$6.0 billion. Further, DOE believes that if the government retains its ownership interest, the present value of net revenues from production would be about \$500 million less than would be derived from the sales proceeds. DOE used a discounted cash flow analysis in determining these values by converting expected future streams of net income into a single present value estimate of the economic worth of the reserve.

In its sell/hold comparative analyses, DOE developed a very narrow range of possible values. Further, DOE also applied essentially the same values that it assumed industry would place on key valuation factors such as production, operating costs, oil prices, and discount rates to arrive at a net present value of NPR-1 under continued government ownership.

In our opinion, DOE's divestiture report does not provide an adequate basis to justify selling NPR-1. The lack of up-to-date and accurate reserve data for NPR-1 raises questions about the credibility of the expected revenues from an NPR-1 sale. Further, DOE's method of estimating an industry valuation and then assuming that the same value would apply to NPR-1 under continued government ownership is not the most appropriate approach in analyzing sell or hold options. It is also possible that by publishing a presumed industry net present value for NPR-1 based on outdated and inaccurate reserve data, DOE may have adversely affected its effort to maximize potential proceeds in a sales transaction because potential bidders may perceive that the values cited constitute an acceptable price range around which bids can be constructed.

## Financial Implications of an NPR-1 Sale

DOE estimated that the government would realize an immediate cash flow benefit ranging from \$3.6 billion to \$4.3 billion if NPR-1 were sold by September 30, 1988. To determine the total benefits that the public sector would receive from a sale, DOE added estimated federal, state, and local taxes revenues for a total value of \$4.9 billion to \$6.0 billion. The methodology used by DOE in its analyses does not provide the Congress with the most useful information for decision-making because it does

not independently assess the benefits to the government if its retains its ownership in the reserve.

Expected Cash Proceeds  
Under Sell and Hold  
Options

The results of DOE's analysis of the estimated net present value of the cash flows from (1) the sale of NPR-1 to the new owner(s) and (2) the continued production by the government are presented in table 2.1.

**Table 2.1: Estimated Net Present Value to the Government of Selling or Holding NPR-1**

Dollars in billions		
	Babson & Sheppard	DOE/Shearson
<b>Sell analysis</b>		
Cash flow from operations <sup>a</sup>	\$3.4	\$4.0
Cash premium from sale	2	3
<b>Total proceeds</b>	<b>3.6</b>	<b>4.3</b>
Federal income taxes	.8	1.0
<b>Total federal benefits</b>	<b>4.4</b>	<b>5.3</b>
State and local taxes	.5	.7
<b>Total public sector benefits</b>	<b>\$4.9</b>	<b>\$6.0</b>
<b>Hold analysis</b>		
Cash flow from operations <sup>a</sup>	\$3.4	\$4.0
Less operational efficiency savings	-.1	-.1
Assumed tax payments	1.2	1.6
<b>Total government value</b>	<b>\$4.5</b>	<b>\$5.5</b>

<sup>a</sup>The discounted cash flows were based on production forecasts developed by Babson and Sheppard, petroleum engineer consultants to Shearson, and Shearson's modifications to DOE's Long Range Plan, dated April 14, 1987. Oil/gas prices and operating costs (including a \$100-million reduction from operating efficiencies) based on industry expectations were applied to the forecasted production data. A 12-percent nominal discount rate was used in the analyses to calculate the net present values shown.

As the table indicates, a private sector buyer's bid price using the above methodology would be based on an after-tax return of \$3.6 billion to \$4.3 billion.<sup>1</sup> This return includes about \$200 million to \$300 million that DOE expects to receive in sales premiums as a result of the expected competition from the multimarket approach's royalty trust arrangement.<sup>2</sup> According to DOE, the total sale proceeds to the public sector as a whole would range from about \$4.9 billion to \$6.0 billion, when the net present value of future federal income taxes, estimated at about \$800 million to

<sup>1</sup>A February 10, 1988, marketing plan update by Shearson reduced the cash flow benefit by about \$300 million and extended the sale completion date to September 1989.

<sup>2</sup>The royalty trust arrangement would allow for a public offering for shares of ownership. The use of this arrangement in DOE's marketing plan is discussed in chapter 4.

\$1 billion, and state and local taxes, estimated at about \$500 million to \$700 million, are added to the sales price.

In computing a value to the government if it retains and produces NPR-1, DOE assumed that the government would receive the same basic discounted cash flow as was estimated for a private sector owner. However, DOE reduced the expected cash flow in the hold analysis by \$100 million to show the impact of presumed government operating inefficiencies. To make the sell and hold analyses as comparable as possible, DOE added an implicit federal, state, and local tax factor of \$1.2 billion to \$1.6 billion to the discounted cash flows, assuming that the federal government paid these taxes. With these adjustments, DOE calculated the total value of the federal government's ownership interest in the reserve at \$4.5 billion to \$5.5 billion, or about \$500 million less than if it sold the reserve.

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### Methodology Used Does Not Provide Useful Information

We believe that DOE's sell/hold analyses would have been more useful to the Congress had DOE used a different methodology. As explained by DOE in its divestiture report, each NPR-1 bidder would be expected to have its own unique assumptions concerning production levels, oil price forecasts, operating costs, and discount rates. In our opinion, the potentially large universe of bidders with a variety of assumptions makes it extremely difficult, if not impossible, to accurately estimate the likely value a buyer would place on NPR-1. Further, any attempt to do this results in potentially misleading information about the "true" value of the reserve to prospective buyers. We believe, therefore, that DOE should have approached the divestiture issue by first determining the value of NPR-1 to the government under continued ownership using its own assumed production schedules, price forecasts, operating costs, and discount rate. DOE could then have fully tested the sensitivity of that value to differing industry assumptions about production, prices, costs, and discount rates as well as providing its assessment of whether these factors would tend to be higher or lower than the government's. In our view such an approach would provide (1) a better departure point for determining the advisability of selling NPR-1, (2) a more realistic view of how the government's valuation would compare with the way industry might view NPR-1, and (3) greater assurance that DOE would expect to receive full value for the asset.

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## Valuation Factors to Determine Sales Proceeds

DOE's report discusses five factors that affect the value of the estimated proceeds from the sale of NPR-1. They are (1) production scheduling, (2) operating costs, (3) oil prices, (4) taxation, and (5) rates of return (discount rates). DOE points out that it is highly likely that the government and each private industry bidder will assume different values for these factors. The relative importance of any one of these factors in assessing a net present value of NPR-1 was not identified in the divestiture report, and the limited sensitivity analysis by Shearson was primarily focused on the discount rate. As a consequence, we examined each of these factors in the order it appeared in the report.

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## Production Scheduling

DOE's report notes that prospective purchasers of the government's ownership interest in NPR-1 will be concerned about both the volume of petroleum expected to be produced within the NPR-1's future economic life and the timing of that production. All other things being equal, the more that is produced and the earlier it is produced, the higher the net present value of the field. DOE acknowledged that a private sector owner would likely produce NPR-1 under a different schedule since the government produces NPR-1 at a maximum efficient rate in accordance with the 1976 act.

According to the divestiture report, DOE did not have up-to-date reserve reports, such as estimated original oil-in-place, remaining recoverable reserves, and the timing and volume of future production at NPR-1—all key variables in valuing the reserve and computing the sales proceeds. In spite of the lack of adequate data, DOE and Shearson proceeded with the analyses. With no accurate reserve data available to use in developing valuation estimates, Shearson used two NPR-1 production forecast reports—a modified fiscal year 1987-1993 Long Range Plan completed by DOE on April 14, 1987, and an April 1987 study performed by Babson and Sheppard, an independent petroleum engineering firm hired by Shearson when NPR-1's marketing plan was being developed. Because the production forecasts were not supported by up-to-date and accurate reserve data, they should not have been used for the valuation analyses.

The production volumes estimated by (1) Babson and Sheppard, (2) Shearson, and (3) DOE in its Long Range Plan are shown in table 2.2.

**Table 2.2: Estimated Government Ownership Share of Total NPR-1 Production**

Petroleum product	Production forecast estimates		
	Babson and Sheppard <sup>a</sup>	Shearson Lehman <sup>b</sup>	DOE <sup>c</sup>
Oil (million barrels)	265	307	324
Gas (billion cubic feet)	889	1,556	1,600
Natural gas liquids (million gallons)	2,060	2,335	<sup>d</sup>

<sup>a</sup>These estimates were done without completing detailed reservoir analyses. They excluded production from some small pools and did not recognize enhanced oil recovery methods, such as steam flooding, that are used to increase the amount of recoverable oil. According to Shearson, Babson and Sheppard assumed that operations would be terminated when well production declined to 10 barrels per day.

<sup>b</sup>These estimates of petroleum products reflect Shearson Lehman's modification of DOE's April 14, 1987, Long Range Plan for operating NPR-1. These modifications include petroleum production based on the use of enhanced recovery methods to economic limits for certain reservoirs.

<sup>c</sup>These estimates of petroleum products from DOE's April 1987 Long Range Plan represent the first attempt by DOE and its unit contractor to schedule production to an economic limit while maintaining a maximum efficient rate of production as required by legislation. After developing NPR-1 production levels for the 5-year period 1989-1993, DOE and its contractor developed estimated production levels through depletion of each individual pool, with the last production occurring in 2036. The potential increase in recoverable reserves from using enhanced oil recovery methods was included in the estimates. Subsequent to issuing its Long Range Plan report, DOE issued a second report in support of the President's determination to continue producing NPR-1 rather than shut in production. This report showed a much higher production forecast—494 million barrels of oil from 1989 through 2010—than the Long Range Plan estimates. Although this forecast is based on what appears to be very optimistic production levels, it more closely reflects the official oil reserve levels for NPR-1 agreed to by DOE and Chevron in 1957.

<sup>d</sup>Amounts were not included in the plan.

The three production schedules reflect differences that are expected when prospective private sector buyers and the government assess the production potential of an oil field. As DOE's report points out, what is relevant to potential buyers and the government are their projections of future NPR-1 production because there is always uncertainty about the amounts that will be produced in the future. Consequently, we believe that DOE erred when it assumed in its valuation analyses that a private buyer and the government share similar expectations about future production.

## Production Costs

DOE's report states that it is difficult to say what prospective purchasers will estimate as the costs to operate the reserves. However, DOE believes that the private sector would operate the NPRs at a lower cost than would the federal government, because of economies-of-scale in combining NPR operations with existing commercial operations and the incentive structure of private management. The divestiture report specifically targets about \$24 million in budgeted fiscal year 1987 costs

that DOE believes would not be considered by prospective buyers in valuing NPR-1.<sup>3</sup> About \$12.6 million was identified as general management, financial, and administrative quality assurance costs. No explanation was given in the plan as to what subcategories of costs this amount includes.

We question whether DOE has an adequate basis for assuming that a private sector owner would necessarily operate NPR-1 at a lower cost than the government. Moreover, as discussed below, DOE's report has not thoroughly analyzed nor supported the claimed reductions.

The \$24 million in costs savings also included about \$5.7 million in NPR-1 operating contract costs. We believe DOE's report should have discussed these costs in more detail, especially how they would be eliminated should the multimarket approach be used to sell the reserve. Under DOE's proposed multiple-owner marketing plan, it appears likely that a unitization agreement would be needed to manage the reserve. This raises a question about whether similar operating contract costs will continue to be incurred by the part-owner selected to operate NPR-1 for the other owners, rather than eliminated, as suggested in the report.

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## Petroleum Prices

DOE's report states that the NPRs' value to DOE and any potential buyer is heavily influenced by the projected prices for the crude oil, natural gas, and natural gas liquids produced. Shearson, for example, identified 39 different oil price sources in 7 forecast groups, including forecasts by the Energy Information Administration and in the energy security report. The report points out that government and prospective purchasers always face major uncertainties because of the significant fluctuations in petroleum prices.

DOE's estimate of the possible sales proceeds was computed by using only one of the numerous oil price forecasts. In doing so, DOE's report does not adequately deal with the major uncertainties of oil prices, nor does it sufficiently explain why only one set of oil prices was used to estimate cash proceeds from a sale. While DOE believes that uncertainties in prices will be shown in the risk factors that go into the selection of a discount rate, we believe that alternative net present values of sales proceeds—using low, medium, and high future crude oil prices—would be more helpful in showing the sensitivity of net present value estimates to changes in oil price expectations.

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<sup>3</sup>The after-tax capitalized value of these savings is estimated by Shearson at about \$100 million.

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## Taxes

According to DOE, unless special tax provisions are enacted by the Congress, the sale of the federal government's interests in the NPRs—which are not currently taxed—will increase tax revenues at the federal, state, and local levels of government. When future federal income taxes from net revenues of the private sector owner(s), estimated at \$800 million to \$1 billion, are added to DOE's estimated cash sales proceeds of \$3.6 billion to \$4.3 billion, the federal government should expect to receive a total of \$4.4 billion to \$5.3 billion, according to DOE's report. It further estimates that the net present value of state and local income, oil and gas assessments, and property taxes paid by the private owner(s) would be about \$500 million to \$700 million.

## Federal Taxes

DOE's divestiture analysis includes an increase in federal tax revenues resulting from NPR-1's sale. The implication is that these taxes would be lost if NPR-1 were not sold. DOE's analysis does not recognize the possibility that at least some of the expected tax increases may accrue to the government even without a sale. Shearson's report pointed out that domestic oil and gas production was expected to generate about \$55 billion in operating cash flow during 1987 on the basis of an \$18-per-barrel oil price. Shearson concluded that this cash flow would provide sufficient capital for potential buyers to acquire new properties. If the private sector has the necessary funds to buy NPR-1 but does not, it is likely that these funds would be invested elsewhere with a commensurate rate of return and tax liability from the net profits of the alternative investment.

## State and Local Taxes

Under DOE's sell/hold comparative analyses, state and local taxes are considered as government revenues for comparative purposes. In making this assumption, DOE's calculations show that the results to the entire public sector will be positive if NPR-1 is sold. However, if the receipt of state and local taxes is not counted as part of the government's revenues, it is not clear whether the net result to the government, if it sells NPR-1, would be positive or negative.

DOE cites for its support the federal policy in OMB Circular A-104 that provides guidelines to federal agencies in lease-versus-purchase analyses of general purpose real estate. In these analyses, the circular requires, for example, that the purchase alternative include such costs as imputed property taxes and that the lease alternative include such costs as federal tax benefits of the lessor. DOE points out that to ensure a fair comparison, the general policy is to attempt to compare alternatives

in a comprehensive fashion so that the sovereignty status of the federal government does not distort the analyses.

DOE further states that the objective of government tax policy in lease or purchase decisions is to provide maximum benefits to taxpayers at minimum cost. While acknowledging that lease or purchase decisions are made nationwide and that NPR-1 affects only a limited number of taxpayers in California, DOE believes that any interstate differentials in revenue benefits from NPR-1 divestiture may, in the long run, be offset by differentials in the case of other federal property transactions.

We acknowledge that a private sector owner would be required to pay state and local taxes from which the government is exempted and that these taxes would be considered in a bid price. In our opinion, the treatment of state and local tax payments under Circular A-104 requirements in a sell/hold analysis is a policy matter that needs to be considered by the Congress.

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## Discount Rates

DOE's report notes that the discount rate is a very important determinant of the estimated present value of the reserve and that a private buyer's discount rate accurately reflects the economic opportunity cost of having funds withdrawn, by taxation or borrowing, from the private sector for use in federal investments. DOE accepted Shearson's assessment that the private buyer(s) would likely use a nominal discount rate in a range of 11.5 to 12.5 percent. The net present value of its reported sales proceeds was based on a nominal rate of 12 percent.

DOE believes that the appropriate discount rate for computing the value of NPR-1 if it is retained by the government should be the same as the private buyer's nominal discount rate of 12 percent. Further, it believes that the risks of ownership of NPR-1, defined as the uncertainty about the future returns from sale of NPR-1 oil, are the same whether it is owned by the government or by a private firm.

Selecting an appropriate interest rate for discounting in present value analysis has been the subject of some debate. Typically, a range of discount rate values is used in economic analysis. One major purpose of discount rates is to show the opportunity cost of using capital. As a consequence, potential buyers of the government's ownership interest in NPR-1 will have their own discount rate, and it will be reflected in the bid price they offer the government. One key measure of the government's opportunity cost for funds is the government's borrowing rate. A sale of

NPR-1 in principle allows existing government debt to be retired or reduces the additional debt issued. Alternatively, the retention of NPR-1 under government ownership would yield revenues that could be used to offset interest payments on existing federal debt. Therefore, under the assumption that the government will hold and continue to produce NPR-1, DOE's report should have shown what the net present value of NPR-1 would be using the government's borrowing rate as the discount rate. When this discount rate is used, the value of NPR-1 to the government would be more.

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## Summary GAO Observations on DOE's Valuation Analysis

With its NPR-1 reserve data determined to be outdated and inaccurate, DOE used production forecasts for its sell/hold comparative analyses that probably do not reflect the actual amount of recoverable oil and natural gas from the field. This raises questions about the validity of the net present value estimates in the divestiture report and the support for DOE's assertion that NPR-1 should be sold. In addition, DOE's application of the five valuation factors in the analyses has several limitations. First, under the hold analysis, DOE essentially used the same values that the private sector was assumed to place on these factors to arrive at a net present value of NPR-1 under continued government ownership. This included the same production forecasts, oil/gas price forecasts, discount rate, and similar operating costs and tax payments. The analysis would have been of more use for congressional decision-making purposes had it made an independent assessment of NPR-1's value to the government. Second, these analyses disclose a very narrow range of possible values for NPR-1 and do not fully demonstrate the sensitivity of its assumed values by applying different price assumptions, production schedules, and discount rates. Third, DOE's findings concerning production costs and federal, state, and local taxes are not fully supported.

# Public Policy Issues

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DOE believes that owning and operating the NPRs is a business, not a governmental activity, and that selling the government's NPR ownership interest is consistent with the administration's policy of eliminating nonessential government activities by turning them over to the private sector. Further, DOE maintains that private owners are likely to produce and market NPR oil and gas more effectively and efficiently than the government without reducing national preparedness. Besides getting the government out of the oil business, DOE sees the sale as producing non-tax revenues that can provide a significant measure of deficit relief. DOE, in agreement with DOD and OMB, also envisions crediting the sales proceeds to the SPR oil acquisition account and using them to buy additional oil for the Strategic Petroleum Reserve (SPR) and the Defense Petroleum Inventory. This concept has been incorporated in DOE's proposed sales legislation.

DOE approached the question of government versus private NPR ownership from a public policy perspective. In analyzing the issues involved, DOE examined (1) the energy security implications of private NPR ownership and (2) the socioeconomic implications of selling the NPRs. While we believe that this approach appropriately includes the divestiture issues that will be of concern to the Congress, DOE's report omits some potential considerations concerning these issues that would have helped place them in the proper perspective as to their significance in the sell/hold decision.

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## Energy Security

DOE's report concludes that the NPRs are no longer a key part of the national energy security system. It states that federal ownership and operation of the NPRs are unnecessary to the pursuit of National Energy Policy Plan goals and defense requirements. It further states that foreign ownership of the NPRs would not necessarily jeopardize U.S. energy security.

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## National Energy Policy Plan Goals

DOE contrasts the continued government operation of the NPRs, which a number of private firms could assume, with the development of the Strategic Petroleum Reserve, which DOE accepts as a necessary government function in pursuit of National Energy Policy Plan goals. DOE views the NPR as a business operation that needs no government involvement, whereas it views the SPR as an operation with no private sector incentive to own and operate. DOE therefore concludes that the NPRs could be sold.

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DOE's analysis, however, does not address the fact that under private ownership less oil could be produced at NPR-1. Under the Naval Petroleum Reserves Production Act of 1976, DOE is required to produce the NPRs in such a manner that maximum ultimate recovery of oil and gas is achieved. As pointed out in chapter 2, because reserve data are outdated and inaccurate, DOE does not have estimates of original oil-in-place data nor estimates of the oil it expects to recover at NPR-1. In 1980, when the latest equity determinations were made, the planning strategy for some of the larger NPR-1 producing pools estimated oil recovery rates ranging from 40 to 50 percent. It is generally recognized that the government's planning strategy at NPR-1 would ultimately produce a larger amount of oil than would be produced under private ownership.

More production would occur because private operators generally use economic recovery criteria to produce their fields rather than the legislatively mandated maximum efficient rate. This private sector approach maximizes the present value of profits from operations but does not necessarily achieve maximum ultimate recovery. According to a 1984 American Petroleum Institute study, the average ultimate recoveries from producing California fields range from 35 to 44 percent depending on the reservoir drive mechanism. Accordingly, ultimate oil recovery under government ownership could be more than that achieved in the average privately-owned field in California.

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## Defense Requirements

DOE's divestiture report assesses the NPRs in terms of defense requirements and concludes that meeting these requirements is not dependent on NPR oil. In commenting on DOE's draft report the Director, Office of Energy Policy, the Office of the Assistant Secretary of Defense advised the Office of Management and Budget (OMB) that "divestiture does impact the Department of Defense's programs, and it is not correct to unequivocally state otherwise." Further, in a September 21, 1987, letter to DOE, the Secretary of Defense stated that DOD viewed its access to NPR-1 oil as a vital part of its emergency fuel supply planning until an acceptable alternative oil supply of equivalent quantity and availability is provided. Such an alternative supply was provided when DOE, DOD, and the OMB agreed to establish a 10-million barrel Defense Petroleum Inventory for DOD use in conjunction with the SPR and provide funding from NPR sale receipts. This agreement was incorporated in the administration's proposed legislation authorizing the NPR sale sent to the Congress on December 10, 1987. On December 11, 1987, a letter signed by the three agency heads was sent to the Congress in support of the proposed legislation.

The three-agency agreement requires congressional approval before it becomes a reality and an acceptable substitute for NPR is actually provided. Until approval is granted, DOD will continue to rely on NPR-1 oil for defense needs. As a consequence, DOE will have to consider DOD's concerns about oil supply availability in its divestiture plans until an acceptable alternate oil supply is worked out with the Congress.

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## Foreign Ownership

DOE's energy security analyses also discuss the question of allowing foreign ownership of the NPRs. While the report indicates that DOE's preference is for a U.S. company to have controlling interest in the management and operations of the NPRs, DOE also believes that participation by companies of friendly foreign powers should be permitted and encouraged, both to reaffirm the administration's commitment to the open market concept and to ensure that maximum value is received for the assets. DOE also negates the threat of NPR oil exports under foreign ownership on the basis of its belief that adequate controls already exist that provide barriers to any NPR oil exports. Under existing federal laws, NPR-1 petroleum production may not be exported in the absence of a presidential finding that exports of domestically produced oil will not diminish the total quantity or quality of petroleum available to the United States and are in the national interest. Also, the president is authorized to impose general restrictions on the export of domestically produced petroleum.<sup>1</sup>

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## Socioeconomic Implications

DOE's report addresses the socioeconomic implications of a sale from three perspectives—current customers for NPR oil and gas, state and local governments, and federal employees. A final resolution of the issues involved in these three areas will require more information about the timing of the sale and the new owner(s) and some policy decisions.

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## Current Customers for NPR Oil and Gas

Concern has been expressed by some of DOE's current oil customers that an NPR-1 sale would deprive them of their only available source of light oil needed to continue in business. DOE has historically sold a large volume of NPR oil to small and independent refiners in the central California area surrounding NPR-1. Our November 23, 1987, report stated that, from November 1981 through March 1987, small and independent refiners

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<sup>1</sup>Our report *Naval Petroleum Reserve No. 1: Government and Industry Comments on Selling the Reserve* (GAO/RCED-88-43FS, Nov. 23, 1987) reported similar information.

purchased about 53 percent of the NPR-1 crude oil sold by the government, and at times purchases were as high as 82 percent. These volumes of oil were well in excess of the 25 percent that DOE can set aside for small and independent refiners.

DOE's report points out that the California crude oil market is dominated by seven major oil companies, while the refining sector is also concentrated, with a substantial share of the market in the hands of eight companies, seven of which are the major crude producers.<sup>2</sup> The major companies account for about 76 percent, while the independents account for about 24 percent, of the state's refining capacity. Small refiners represent about 4 to 5 percent of California's total refining capacity and about 17 to 20 percent of independent refiners' capacity. The report emphasizes that while 4 to 5 percent of the state's refining capacity might be considered low in a more competitive market, a 4- to 5-percent loss in the independent sector would raise a concern about competition in the state's highly concentrated market.

DOE points out in its report that the second and third phases of its multimarket approach could be structured to accommodate an open bid process for some of the crude oil produced from NPR-1 so that independent and small refiners can have the opportunity to buy oil. As discussed in chapter 4, we question whether DOE's objectives will actually be achieved because, as DOE's report states, a single large company could successfully buy most, if not all, of NPR-1. Concerns also exist among small and independent refiners that funds needed to purchase ownership shares may not be available.

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## State and Local Governments

DOE's report recognizes that the state of California's claim against the United States for compensation for two school land sections located in NPR-1 could have an impact on the sale of NPR-1. The two sections at issue here are part of the land which, in 1912, was established as NPR-1 for the exclusive use or benefit of the U.S. Navy. The two sections were the subject of much controversy in the early part of this century. Both California and DOE agree that prior to 1976, title to the land never was vested in California, one reason being that the Congress, by law, refused to extend school land grants to include mineral lands located within reservations of the United States, such as NPR-1. In the years following full production of NPR-1 in 1976, California approached both the Department

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<sup>2</sup>According to the Department of Justice's index of market concentration, California is categorized as an area where it is highly likely that a merger will cause competitive problems.

of the Interior and DOE to see if arrangements could be made to transfer the two sections of land to the state.

California's negotiations were not successful. California now claims title to these two sections of land and seeks recognition of its title or transfer to the state of lands of comparable value, along with an accounting of all revenues collected from these two sections since 1976 and reimbursement to California of all revenues due under the law.

On November 18, 1987, California filed suit against the federal government, naming the Secretaries of Energy, Treasury, and the Interior as codefendants. California argues that the 1976 Act authorizing full production of the NPR and sale of oil and gas produced on the open market, rather than reserving it for naval purposes, effectively revoked the "reserve" status. Consequently, according to California, there is no longer a barrier to its obtaining title to the two sections.

DOE officials do not believe that California's claim will delay the sale. They cite opinions of both the Solicitor of the Department of the Interior and the Deputy General Counsel of DOE stating that the school land sections, not having title vested in the state, remain in federal ownership and may be dealt with as the Congress sees fit. DOE officials stated that the Department of Justice has also agreed with these opinions. DOE believes that unless otherwise stated in divestiture legislation, the school lands will be unaffected by divestiture and the United States may sell these sections.

Although DOE officials do not believe California has a valid claim to the NPR-1 land, they stated that the issue should probably be addressed in the sale authorization. DOE has proposed that the Congress, in legislation authorizing a sale, limit California's claim to an assertion for monetary compensation from the government and authorize DOE to indemnify any purchaser against any claim on liability arising out of the government's ownership of the NPR. DOE believes this will mitigate any anxiety about the claim that a potential buyer might have that could influence the amount bid for NPR-1.

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## Federal Employees

DOE identified about 83 employees directly involved in the management and day-to-day operations of the NPRs. DOE officials recognize the potential impact of divestiture on these employees and plan to provide the

maximum assistance possible in finding alternative employment opportunities for them. Options under consideration by DOE include (1) internal placement, with NPR employees given preference over outside hires; (2) external placement with other federal agencies or possibly the new NPR operators; (3) retirement, if employees are eligible; and (4) employment counseling for all affected employees. We believe that DOE is giving adequate recognition to this concern but will need to continue developing a transition strategy for its NPR employees if the proposed divestiture legislation is approved by the Congress.

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## Summary GAO Observations on Public Policy Issues

Although DOE's report recognizes some of the public policy issues that are associated with selling the NPRs, it omits some key considerations. In addressing energy security matters, DOE's report does not discuss the desirability of extracting the maximum amount of oil from NPR-1, nor does it thoroughly discuss the defense requirement issues. Because private operators generally use economic recovery criteria to produce oil fields, they probably would not produce the same volume of oil as the government.

Since the release of DOE's report, DOE, DOD, and OMB have jointly agreed to propose the establishment of a 10-million-barrel Defense Petroleum Inventory for DOD use in conjunction with the SPR and provide funding from NPR sale receipts. However, the agreement requires congressional approval before it becomes a reality.

In addressing the socioeconomic implications of a sale, we question whether the objectives of protecting current customers can be achieved under DOE's marketing plan when it is possible that a single large company could successfully buy most, if not all, of NPR-1. This issue is discussed at greater length in the following chapter. Further, DOE's report does not discuss whether small and independent refiners could be expected to have sufficient funds to purchase ownership shares in NPR-1.

# DOE's Marketing Plan for Selling the Naval Petroleum Reserves

DOE's marketing plan developed by Shearson analyzes the technical and business characteristics of NPR-1 and the marketplace for the purchase and sale of petroleum-producing properties. The plan identifies critical tasks that need to be completed before a sale can take place and develops a marketing approach that DOE believes responds to possible anti-trust and socioeconomic concerns about a sale. Shearson concluded its analysis by recommending that DOE use a multimarket approach in selling the reserves. DOE has endorsed that recommendation. In our opinion, however, the marketing plan, as currently defined in DOE's divestiture report, may not achieve the desired objectives of a competitive environment and the protection of current customers for NPR-1 oil.

## DOE's Timetable for Marketing NPR-1 May Be Optimistic

DOE's report initially estimated that NPR-1 could be sold by September 30, 1988, providing legislation was passed in 1987. It identified four actions that were needed for the plan to work. The first two actions called for congressional authorizations to approve the sale and to relieve DOE of the \$500,000 ceiling imposed by Public Law 99-591 to study the divestiture. The remaining actions included the need for DOE to contract for a comprehensive reserve report by a nationally recognized independent petroleum engineering consultant and to negotiate the termination of the current unit plan contract and develop a new unit plan contract that can be transferred to the new owners upon divestiture.

DOE started its sales plan on December 10, 1987, when the Secretary of Energy sent to the President of the Senate the administration's legislative proposal titled "Naval Petroleum Reserves Divestiture and Energy Security Enhancement Act." After attempting to start a reserve study in July 1987, DOE awarded a contract for the study on January 22, 1988. DOE now anticipates that an NPR sale could be completed by September 1989, if congressional approval of the sale is granted.

## Comprehensive Reserve Report

Shearson concluded that the most important variable in determining the value of NPR-1 will be the projected production levels and recoverable reserve estimates for the field. Shearson's marketing plan pointed out, however, that the existing estimates of the recoverable reserves at NPR-1 have substantial differences that will have a significant impact on NPR-1's estimated value. Because of the perceived uncertainty on the part of the bidders about a realistic basis for bid prices, Shearson recommended that a comprehensive reserve study be done so that bidders would have the most complete data possible on remaining recoverable reserves and possible production schedules.

On the basis of audit work that we have done at NPR-1, it is clear that there are insufficient up-to-date, accurate data on past production, estimated recoverable reserves, and appropriate production rates on which to base a sale of the NPR. We also believe these data are critical for a prospective buyer's valuation decision and that unless better data are provided, bid prices may be lower than warranted to reflect the uncertainty of what is being offered for sale.

After an unsuccessful attempt to start a reserve study in July 1987, DOE contracted with a petroleum engineering firm on January 22, 1988, to undertake the reserve study recommended by Shearson. The 6-month contract calls for four phases of studies. The first three phases will require work to determine NPR-1 reserve estimates and are scheduled for completion in July 1988. These phases will include zone and reservoir descriptions and engineering, geological, and economic analyses.

DOE must exercise a contract option to undertake phase IV of the study. Phase IV has two parts. Part a is a contingency provision that allows DOE to develop more detailed estimates on individual reservoirs if the estimates developed in phases I through III are not adequate. Part b authorizes a reevaluation of the government's ownership share in NPR-1. As part of that reevaluation, phase IV b will require more detailed geological and engineering analysis of individual wells at NPR-1 and would develop specific geologic interpretations about the nature and extent of individual producing sands and shales at the field. Without this data, DOE would have difficulty in renegotiating its equity position with Chevron if renegotiations on the unit plan contract are deemed appropriate or, as suggested by a DOE official, in an agreement that could be reached separate from a renegotiated unit plan contract. The additional data are also expected to help improve NPR-1 management. DOE expects that it would take at least 12 months to complete this work, with an estimated cost of about \$1.8 million. DOE currently is evaluating whether to exercise this contract option. Delays in implementing the contract option will extend the completion of the option later into fiscal year 1989.<sup>1</sup> In its report to DOE, Shearson estimated that after the reserve study and unit agreement negotiations are completed, it will need at least 7 months to complete the sales process.

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<sup>1</sup>We recommended in a June 1988 report that discusses the same issue that the Secretary of Energy authorize the Director, Office of Naval Petroleum Reserves and Oil Shales, to negotiate an agreement with the contractor to proceed with phase IV b of the current contract. Naval Petroleum Reserve-1: Data Corrections Made but More Accurate Reserve Data Needed (GAO/RCED-88-174, June 28, 1988).

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## Unit Plan Contract

The unit plan contract was signed by the Navy and Standard Oil Company of California (Chevron's predecessor) on June 19, 1944, and approved by the President on June 28, 1944. It sets forth the terms and conditions under which NPR-1 would be operated. The contract, in providing for termination by the government, stipulates that the parties shall adjust all rights and obligations on a fair and equitable basis. It does not outline clearly how such a settlement should be reached, but it is generally agreed that it will require extensive negotiations with Chevron.

One of the concerns expressed in our March 1987 data inaccuracies report dealt with a perceived imbalance between oil produced and oil distributed to the partners from the Stevens Zone.<sup>2</sup> Under the contract, production and cost distribution is made on the basis of average zone ownership percentages. However, oil production from the various pools within a given zone—which have individual ownership shares that may be different than the zone average—has not necessarily matched the zone's average ownership percentages. For example, the average ownership of the Stevens Zone is 79.6 percent government and 20.4 percent Chevron. Working with DOE production statistics, we estimated that about 82.6 percent of the Stevens Zone production has come from government-owned shares of the pools. Because some pools naturally produce faster than others, this situation is not abnormal and will generally resolve itself by the time the field is depleted. In view of a proposed sale of the government's share of NPR-1, however, we believe that the 3-percent difference (representing about 12 million barrels of oil) between production and actual distribution reflects a potential imbalance that needs to be settled with Chevron as part of the contract negotiation.

In commenting on our March 1987 report, Chevron refuted the need to settle the Stevens Zone imbalance by citing a largely offsetting imbalance of about 11 million barrels of oil in the Shallow Oil Zone where Chevron-owned areas were produced faster than the DOE-owned areas. We disagree that there is a 11-million-barrel imbalance in the Shallow Oil Zone. We analyzed Chevron's response and found that its methodology for computing the imbalance was inconsistent with the way the government's and Chevron's percent of production ownership is established under the unit plan contract.

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<sup>2</sup>Data Inaccuracies Complicate Production and Ownership Issues (GAO/RCED-87-105BR, Mar. 24, 1987).

As recognized in the divestiture report, negotiations between DOE and Chevron will be required on the unit plan contract. Whether the equity ownership issue is made a part of contract negotiations or considered in a separate agreement, the phase IV work will provide useful data for DOE in redetermining each partner's ownership shares. On the basis of our prior work at NPR-1, we believe that the phase IV option should be exercised by DOE. If DOE concurs, the contract negotiations with Chevron would likely be delayed until the last phase of the reserve study is completed sometime in fiscal year 1989.

The amount of time required to complete negotiations with Chevron is highly uncertain. When DOE and Chevron negotiated the equity issue for some pools in the Stevens Zone in 1980, however, it took 2 years to reach an agreeable solution.

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## Multimarket Approach Has Potential Problems

As discussed in the previous chapter, the California crude oil market is dominated by seven major oil companies. The seven companies also account for about 76 percent of California's refining capacity. As a means of alleviating concerns about potentially anticompetitive consequences from selling NPR-1, Shearson proposed that NPR-1 assets be sold to three separate groups of buyers. Under this multimarket approach, DOE would sell about 30 to 40 percent of NPR-1 reserves and operational control of the surface facilities to a single industry buyer. The buyer of this first share of NPR-1 would operate the field and produce the oil and gas on its own behalf and on behalf of other owners that may buy ownership interests. In the oil industry, the designation of one of the owners as operator of the field is a common practice.

Another 30 to 40 percent of the reserves would be divided into 1-percent increments and sold at a sealed bid auction, with a minimum purchase by any buyer of a 2-percent share. These buyers would take either a share of the profits or oil in kind. DOE would sell the remaining 20 to 30 percent in a public offering through a royalty trust arrangement. Under a royalty trust, shares of stock in the expected profits from NPR-1 production would be offered to the public, and purchasers of these shares would not have direct access to the oil.<sup>3</sup>

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<sup>3</sup>In the February 1988 marketing plan update, Shearson recommended that DOE revise the single buyer percentage to 35 to 40 percent, the fractional share to 50 to 55 percent, and the royalty trust to 10 percent because of changes in the market for oil properties after the stock market decline in October 1987.

DOE believes that the Shearson proposal has merit but has included in its proposed sales legislation a provision for varying this sales approach or even structuring a different approach.

Although the multimarket approach has competitive controls built into its structure, we believe that several possible consequences could occur that raise questions about its ability to provide the competition desired and maximize sales revenues.

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### Potential Effects of the Sale on Proposed Target Customers

Given the domination of the California oil market by seven major companies and its general isolation from other refining areas, it is likely that these companies would constitute the majority of probable bidders for the initial 30- to 40-percent share. DOE's report acknowledges that a sale of NPR-1 to any of the seven producers would raise antitrust concerns; a merger of this size would increase concentration in an already highly concentrated market. However, DOE believes that its marketing plan proposal is flexible enough to allow for the adoption of measures that would meet these concerns. DOE suggested, for example, that if it were to sell 30 to 40 percent of NPR-1 in one block to the highest bidder, it could alleviate antitrust concerns and ensure continued access by current customers by requiring the successful bidder to maintain an open sales policy for the NPR-1 oil for a period of years. This would be similar to what the Federal Trade Commission required in approving the recent merger of Texaco and Getty Oil. Because Getty was an important California producer with large open market sales, the Commission required Texaco to maintain the open sales policy for 5 years, thus allowing independent refiners time to find alternative sources of oil. DOE provided in its proposed sales legislation for an antitrust review by the Attorney General prior to the execution of a sale contract.

DOE has also recognized that a sale would raise concerns regarding the refining segment of California's petroleum industry. The refining segment is also highly concentrated and, in addition, is relatively isolated from the rest of the country. In an attempt to ensure small and independent refiners' access to NPR oil, DOE has structured the sale so that an additional 30 to 40 percent of the NPR would be sold in 2-percent fractional interests. Independent producers who need the light NPR-1 oil to blend with their heavier oil for pipeline transmission would also have the opportunity to ensure a supply of light oil by buying one or more 2-percent shares.

Our work shows, however, that the relatively large up-front purchase price and the relatively small quantity of oil connected with each 2-percent share could limit expected competition. Based on Shearson's private owner production forecasts of about 34 million barrels of oil in 1989, a 40-percent share of this total would amount to about 13.7 million barrels. A 2-percent interest in the 34 million barrels would be about 685,000 barrels annually, or about 1,877 barrels per day. If a small and independent refiner is currently purchasing about 8,000 barrels per day through DOE's present NPR-1 oil sales program, he would need to invest in about 4 of the 2-percent shares, or about \$320 million, to meet his oil needs. According to the Executive Director for the West Coast Division of the American Independent Refiners Association, none of its members buying NPR-1 oil has enough cash reserves to purchase even a 2-percent interest, and it is unlikely that they could borrow enough funds for this large of an investment. He pointed out that the situation of these companies would further be affected since they would still need working capital to buy additional oil to meet operating requirements.

DOE believes that an inability of small and independent refiners to participate in the bidding process will not preclude them from continuing to obtain NPR-1 oil. On the contrary, DOE believes that the marketing plan is flexible enough to ensure sufficient competitive access to NPR-1 oil. DOE's report cites two possible solutions to the small and independent refiners' concerns. The first would be an open sales policy that was used in the Texaco and Getty Oil Company acquisition. The second would pertain to DOE's royalty trust arrangement. Under this arrangement, NPR-1 oil would be sold on behalf of the royalty trust shareholders. This could have the effect of providing additional access to the oil by small and independent refiners.

It is not clear whether, or to what extent, such preconditions to a sale would have an adverse effect on the bid price offered for NPR-1. DOE's report does recognize, however, that rigid restrictions placed on the sales process are likely to be harmful to the level of competition and to the bid prices.

Regarding the possibility of a 5-year open sales policy as the Commission mandated in the Getty Oil Company sale, our November 23, 1987, report disclosed that for some refiners, particularly the landlocked San Joaquin Valley refiners, NPR-1 crude oil has been the largest single source of high-quality light crude oil. Therefore, alternative sources of oil for these refiners may not exist, and after the open sales period expires, the only alternative may be to close the operations.

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## Timing of an NPR-1 Sale Could Affect Bid Prices

While DOE's report does not directly address the question of whether there is a "best" time to sell NPR-1, it implies that NPR-1 should be sold as soon as possible by projecting sales dates. These dates have been conditional since DOE needs congressional approval before NPR-1 can be sold. Although the report points out that the value of the NPR to both the government and to a prospective owner is heavily influenced by forecasted prices for the crude oil and other petroleum products produced, it offers no analyses to show the relationship between current oil prices and the forecasted prices and how these forecasted prices in turn could affect bid prices offered at an NPR sale.

In our June 1986 report on valuing NPR-1, we noted that oil price forecasts are influenced by market conditions when forecasts are prepared.<sup>4</sup> Oil price forecasts prepared in 1985, when current oil prices were in the \$27-per-barrel range, were considerably higher than 1986 oil price forecasts made when oil had dropped to as low as about \$9.25 per barrel. In our work assessing the Department of the Interior's leasing of offshore lands, we examined the relationship among several variables that influence the number of bids received and the prices offered. We found that as oil prices go down, both the number of bids tendered and the per-acre price offered for the offshore tracts also decrease. Conversely, higher oil prices elicit more bids and higher bid prices. We believe that oil prices at the time NPR-1 is offered for sale will likely influence bidders' perceptions of the value of NPR-1 and that timing of the sale is a factor that needs to be considered.

Although Shearson recommended that DOE use the multimarket approach to maximize proceeds from a sale of NPR-1, it pointed out that the uncertainties regarding reserve estimates and future oil prices could be addressed through a phase sale. In this approach, the government could sell a minority percentage of NPR-1 in the form of either net profits interest in a royalty trust to the public or an ownership interest to an industry company that would act as an operator of the field. The government's remaining interest would be structured in a government-chartered corporation in a manner that provided maximum flexibility for a sale as market conditions merited.

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<sup>4</sup>Preliminary Analysis of Future Net Revenues From Elk Hills Production (GAO/RCED-86-169BR, June 5, 1986).

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DOE's June 30, 1987, report did not address the possible need for a flexible approach to selling the NPRs other than Shearson's phase sale proposal. However, in its December 10, 1987, proposed sales legislation, DOE leaves the date and method of sale to the discretion of the President.

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## **Chevron's Data May Give It an Advantage**

A related factor that could influence the extent of bidder participation is the relationship between NPR-1 and Chevron. Chevron's long-term association with NPR-1 and the fact that it has its own proprietary estimates and projections of the key valuation variables may give Chevron an advantage that may be difficult for other potential bidders to overcome. This could effectively reduce the universe of bidders because others might decide that they are at too much of a disadvantage and not bid. Therefore, it will be incumbent upon DOE to provide ready access to all data it has available on NPR-1 operations and geology to all interested parties.

# Legislation Prohibits Leases at NPR-1

With one exception, neither Shearson's marketing plan nor DOE's divestiture report considered leasing the NPRs as an alternative either to selling them outright or to keeping the reserves but removing the government from its operational responsibility. As part of its marketing plan, Shearson did point out that NPR-1 could be geologically segmented whereby the deep rights below the existing unit could be leased on a bonus-bidding basis similar to that used in the government's offshore lease sales. These leases usually are for 5 years, with possible extensions, and the government usually receives a royalty of 16.67 percent if production occurs.

Presently, the Naval Petroleum Reserves Production Act of 1976 (10 U.S.C. 7422 (a)) prohibits the issuance of petroleum leases at NPR-1 and NPR-3. To respond to the Chairman's request about leasing the field, we explored the possibility of leasing NPR-1 with DOE and the Department of the Interior. DOE pointed out that, from 1922 until 1927, portions of the oil and gas reserves in NPR-1 and all of NPR-3 were leased. Most outstanding leases, however, were cancelled after 1927 because of illegal activities found in the programs.

The federal government has administered leases at NPR-2 in California since the early 1920s. DOE's Director of Business Operations and External Affairs said that to develop an economic evaluation for leasing NPR-1 would require an extensive evaluation by a consulting firm specializing in leasing oil fields. This capability does exist in Interior's Bureau of Land Management, which administers the federal onshore oil and gas leasing programs, and Minerals Management Service, which leases offshore oil and gas lands. We interviewed Bureau of Land Management officials about the possibility of leasing NPR-1. They advised us that, in their opinion, a leasing alternative should be studied at NPR-1 before the reserve is sold, primarily because NPR-1 has proven reserves. According to these officials, royalties, bonuses, and other options could amount to large revenues to the government. They said that a new unit agreement could be worked out with Chevron, thus allowing a lessee access to the lands within the unit and its plant and equipment. Without a valuation analysis, Interior could not estimate the rate of return to the government if NPR-1 were leased.

In our opinion, leasing the government's ownership interest in NPR-1 should be studied because it may offer another way to protect that interest when there are uncertainties about future oil prices.

# Conclusions, Recommendations, and Agency Comments

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## Conclusions

In evaluating DOE's report, we looked at both DOE's proposed method for selling NPR-1 and its demonstration of the merits of the sale. We found certain flaws in how DOE proposed to sell NPR-1. More importantly, however, we believe that DOE has not adequately demonstrated that it is in the best interest of the government to divest itself of this revenue-producing asset.

In our opinion, the multimarket approach in DOE's marketing plan may not achieve its objectives of providing maximum competition in order to obtain a fair market price. Ideally, the three-tiered approach, designed to maximize sales receipts and elicit a sufficient number of bidders so as to avoid possible antitrust concerns, requires that (1) all potential bidders for the first incremental share have data on NPR-1 that are comparable to that available to Chevron, (2) potential bidders for the second incremental share have sufficient financial resources to participate, and (3) sufficient interest is generated to ensure good public participation in the royalty trust share. In addition, some restriction on the total share of NPR-1 any single buyer can acquire may need to be imposed. We believe that in addition to an outright sale of NPR-1, DOE should also explore the potential for leasing NPR-1 as another way to protect the government's ownership interest when there are uncertainties about future oil prices.

Preceding any concerns we have about DOE's sales methodology, however, are our concerns about the lack of information provided in the divestiture report that justifies a sale of NPR-1 or that provides an adequate basis for congressional decision-making on the divestiture issue. In our opinion, the lack of up-to-date and accurate reserve data and the use of production forecasts—which may or may not reflect recoverable reserves—in estimating NPR-1 values raise questions about their validity. This in turn raises questions about the sell/hold comparative analyses and the potential effect on bid offers by prospective purchasers.

We believe that congressional decision-making would have benefited had the divestiture analysis focused on the value to the government of retaining NPR-1 versus the benefits that might accrue by selling NPR-1. A secondary assessment of how industry assumptions about NPR-1 production, costs, and financing might affect the government's perception of its value should also have been provided. We also believe that DOE's analysis should have included discussions on (1) the desirability of producing NPR-1 at maximum efficient rate of production versus economic recovery, which would probably result in some oil not being produced;

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(2) DOD's reliance on NPR-1 in its emergency supply planning; and (3) time requirements for negotiating a new unit plan contract with Chevron.

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## Recommendations

To provide better information on whether an NPR-1 sale is in the public interest and on whether a divestiture determination by the Congress could be formulated, we recommend that the Secretary of Energy

- revise the June 30, 1987, report to the Congress by assessing a value to the government of retaining and producing NPR-1 using revised estimates for reserve data, production schedules and operating costs from the comprehensive reserve study, government-generated oil/gas price forecasts, and a discount rate based on the government's borrowing costs;
- assess where the private sector's assumptions concerning the above valuation factors would likely differ and then (1) develop sensitivity analyses to show the magnitude of these differences on NPR-1's net present value and (2) identify the advantages of private versus government ownership; and
- prepare an analysis of the feasibility and the potential benefits to the government of leasing NPR-1 and determine what actions would be required to enter a leasing program.

In the event that the Congress elects to authorize a NPR-1 sale, we further recommend that the Secretary

- ensure that the maximum amount of data DOE has on NPR-1 is available to all potential bidders so as to minimize any advantages that Chevron may have over other bidders in the sales process;
- ascertain the validity of small and independent refiners' claims that they would be excluded from bidding on a portion of NPR-1 and, if the claims are valid, determine (1) how that fact might affect the competitive bid process envisioned and (2) alternate means of ensuring supplies of light oil to these users; and
- examine the impact of the possibility that a single large company could buy all or most of NPR-1, determine what Department of Justice involvement in the sale might do to the timely nature envisioned to complete the sale, and, if necessary, assess the impact on the sale of restricting any one bidder to a certain maximum share of NPR-1.

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## Agency Comments

In accordance with the requester's wishes, we did not obtain written comments on a draft of this report. However, DOE was provided the

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opportunity to review the draft report and provide comments on its factual accuracy. A number of suggested changes were offered by DOE, and these were incorporated where appropriate. DOE also provided some general comments on what it views as analytic and policy differences between GAO and DOE. DOE officials stated, however, that because of the complexity of the topic and the relatively short response time, these comments should be considered as preliminary in nature, reflecting the views of the Office of Fossil Energy only.

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# NPR-1 Actual Production and Estimated Production<sup>a</sup>

Fiscal year	Average production		
	Oil (barrels per day)	Natural gas (million cubic feet per day)	Natural gas liquids (thousand gallons per day)
1985	131,000	369	683
1986	115,525	349	633
1987	109,076	343	631
1988 (est.)	120,555	415	609
1989 (est.)	121,580	418	615
1990 (est.)	117,565	413	610
1991 (est.)	115,308	403	596
1992 (est.)	115,250	391	580
1993 (est.)	104,991	365	541

Note: The estimated petroleum production figures are based on normal MER production declines adjusted for the application of enhanced oil recovery methods where appropriate. If the enhanced oil recovery applications are not as successful as envisioned or are not utilized because of budget constraints, NPR-1 production will decline at a faster rate than estimated. In that case, fiscal year 1993 oil production is estimated to be about 56,000 barrels per day on the basis of DOE's fiscal year 1985 Long Range Plan.

<sup>a</sup>Production figures for fiscal years 1985, 1986, and 1987 are actual. Production figures for fiscal years 1988 through 1993 are estimates made by DOE in its fiscal year 1987 Long Range Plan.

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