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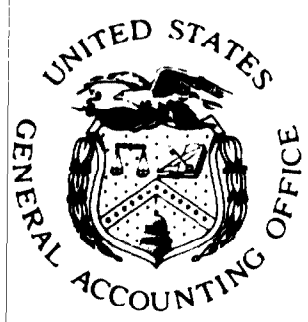
REPORT BY THE U.S.

# General Accounting Office

## Status Of Strategic Petroleum Reserve Activities As Of June 30, 1983

The Department of Energy reported that the Strategic Petroleum Reserve contained 332.5 million barrels of oil on June 30, 1983. During the third quarter of fiscal year 1983, 20.7 million barrels of oil were added for a fill rate of 227,000 barrels per day.

This report discusses a number of significant events which occurred during the quarter and which affected the Reserve. It also discusses the progress being made in filling, developing, and operating the Reserve.



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UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

RESOURCES, COMMUNITY,  
AND ECONOMIC DEVELOPMENT  
DIVISION

B-208196

The Honorable James A. McClure  
Chairman, Committee on Energy and  
Natural Resources  
United States Senate

The Honorable J. Bennett Johnston  
Ranking Minority Member, Committee  
on Energy and Natural Resources  
United States Senate

On March 25, 1982, the Senate Committee on Energy and Natural Resources requested that we report on a quarterly basis, through fiscal year 1985, on the administration's progress in filling the Strategic Petroleum Reserve (SPR) and in complying with the requirements of applicable law. This is the fifth such report issued pursuant to that request.

This report covers SPR activities that occurred during the third quarter of fiscal year 1983. It discusses significant events related to the administration's progress in filling, developing, and operating the SPR. Specifically, it notes that:

- The Congress continues to consider SPR funding for fiscal years 1983 and 1984. Among other matters being considered is an \$800-million deferral of SPR Petroleum Account funds which we reported to the Congress on May 5, 1983. DOE's ability to increase the fiscal year 1983 fill rate above 220,000 barrels per day will be constrained by the amount of oil that can be purchased, delivered, and stored in the remainder of the fiscal year. To assist in these deliberations, we provided an analysis of the cost and timing of various fill rate options.
- A House Government Operations Subcommittee held oversight hearings on the Department of Energy's (DOE's) management of the SPR program. We testified at these hearings on DOE's followup procedures for resolving audit recommendations and efforts to install instrumentation and control systems at several SPR sites.
- The Secretary of Energy announced the reorganization of the SPR management on June 15, 1983.

Project management responsibilities were transferred from the New Orleans SPR Office to DOE's Oak Ridge Operations Office.

- DOE reported that 20.7 million barrels were added to the SPR this quarter, for an average fill rate of about 227,000 barrels per day. This brings the total oil in the SPR to 332.5 million barrels as of June 30, 1983.
- DOE's permanent storage capacity expansion program proceeded during the quarter with 23.9 million barrels of cavern volume being added at Bryan Mound and West Hackberry. No major problems in the capacity development program were reported during the quarter.
- DOE estimated that payments during the quarter for oil acquisition and transportation were about \$238 million, bringing the total payments in fiscal year 1983, as of June 30, 1983, to about \$1.2 billion. About \$2.7 billion remains available to pay for oil deliveries and additional oil purchases.

In addition, this report provides information on the efforts of the Defense Fuel Supply Center (DFSC)--DOE's purchasing agent for much of the SPR oil--to collect overpayments for oil received at the St. James terminal and DOE's actions regarding the 1982 oil leak at Bryan Mound. Appendix I discusses these topics more fully. Appendix II presents supporting figures and tables.

#### OBJECTIVES, SCOPE, AND METHODOLOGY

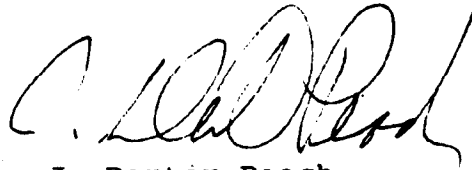
This report is based, in part, on our review of the administration's fiscal year 1984 budget submittal and DOE program documents, publications, and studies. In addition, we interviewed managers and operating personnel responsible for planning and managing activities associated with developing and operating the SPR facilities. We also interviewed personnel from the private contractors that carry out most program activities. We obtained information on the availability and use of oil acquisition funds from both DOE and DFSC. Further, we reviewed information provided by the Defense Contract Audit Agency on its audit of Petroleum Operations and Support Services, Inc., the principal SPR contractor.

Except as noted below, our review was performed in accordance with generally accepted government auditing standards. We did not verify the volumes or quality of oil that DOE received or the available capacity of SPR storage facilities because of the limited time available to conduct the audit work for this report.

We did not obtain official agency comments because of the required timeframes for issuing this report. However, we provided DOE and DFSC program officials a draft of this report and discussed its factual accuracy with them. Based on their comments we made appropriate revisions.

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We plan no further distribution of this report until 7 days after its issue date unless you publicly announce its contents earlier. At that time, we will send copies to the Secretary of Energy and other interested parties and make copies available to others upon request.



J. Dexter Peach  
Director



# C o n t e n t s

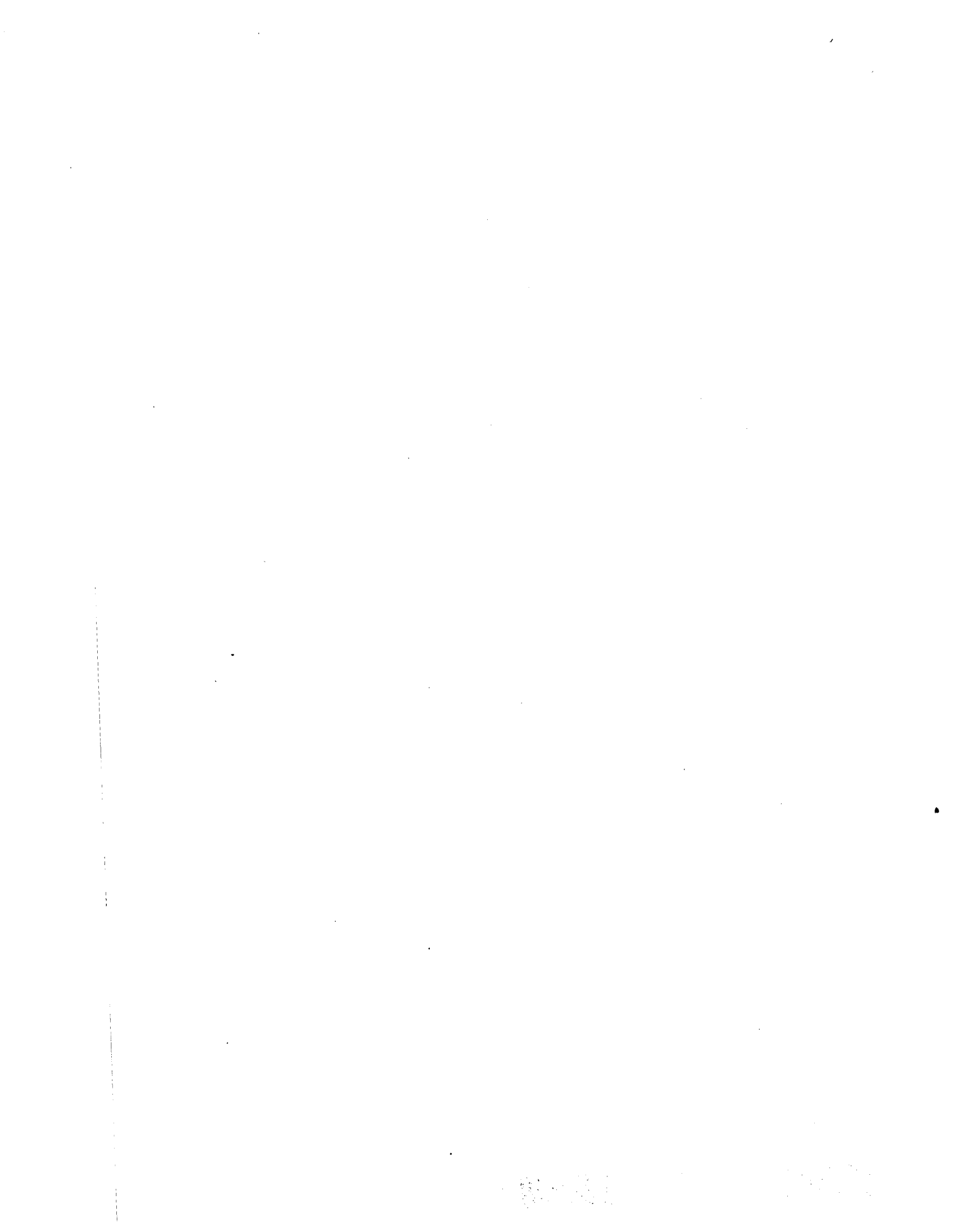
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### ABBREVIATIONS

DCAA	Defense Contract Audit Agency
DFSC	Defense Fuel Supply Center
DOE	Department of Energy
GAO	General Accounting Office
PEMEX	Petroleos Mejicanos
POSSI	Petroleum Operations and Support Services, Inc.
SPR	Strategic Petroleum Reserve





STATUS OF STRATEGIC PETROLEUMRESERVE ACTIVITIES AS OF JUNE 30, 1983

The Energy Policy and Conservation Act of 1975 (Public Law 94-163, Dec. 22, 1975) authorized up to a 1-billion-barrel Strategic Petroleum Reserve (SPR). To meet the act's goals, the Department of Energy (DOE) is implementing a three-phase plan to store 750 million barrels of oil. Phase I of this plan consisted of acquiring and modifying for oil storage existing caverns in salt deposits at Bryan Mound, Texas; and Bayou Choctaw, Sulphur Mines, and West Hackberry, Louisiana; and a salt mine at Weeks Island, Louisiana, as well as construction of an oil receiving terminal at St. James, Louisiana. Phase II involves creating new caverns at three of these sites through a leaching program. The leaching program entails pumping water into salt deposits and removing the salt-saturated water, or brine. DOE injects oil into the top of the cavern as the leaching process creates the storage capacity. Phase III involves creating additional capacity at two existing storage sites and developing a new site at Big Hill, Texas. However, the development schedule for completing the SPR now is uncertain because of proposals made in the administration's fiscal year 1984 budget.

This report discusses the SPR activities which occurred in the fiscal year quarter ending June 30, 1983. Several major events have occurred during this period including:

--Congressional committees continued to consider SPR funding bills for fiscal years 1983 and 1984. Among other matters being considered is an \$800-million deferral of SPR Petroleum Account funds which we reported to the Congress on May 5, 1983. DOE's ability to increase the fiscal year 1983 fill rate above 220,000 barrels per day will be constrained by the amount of oil that can be purchased, delivered, and stored in the remainder of the fiscal year. To assist in these deliberations, we provided an analysis of the cost and timing of various fill rate options.

--A House Government Operations Subcommittee held oversight hearings on DOE's management of the SPR program. We testified at these hearings on DOE's follow-up procedures for resolving audit recommendations and efforts to install instrumentation and control systems at several SPR sites.

- The SPR project management was reorganized with responsibilities transferred from New Orleans to the Oak Ridge Operations Office.
- About 20.7 million barrels of oil were delivered to the SPR, for an average fill rate of about 227,000 barrels per day for the quarter.
- The SPR storage capacity development program proceeded during the quarter with 23.9 million barrels of cavern volume being added at Bryan Mound and West Hackberry. No major problems in the capacity development program were reported during the quarter.
- Payments of about \$238 million were made during the quarter for oil acquisition and transportation, bringing the total payments to \$1.2 billion for fiscal year 1983. This leaves \$2.7 billion available to pay for oil deliveries under existing contracts or for additional oil purchases.

The following sections discuss these events more fully. In addition, information is presented on the status of overpayments at the St. James terminal and DOE's actions on a 1982 oil leak at Bryan Mound.

#### DEBATE CONTINUES ON FISCAL YEAR 1983 AND 1984 SPR FUNDING

The Congress has been debating the SPR fiscal year 1983 and 1984 funding levels during the quarter. As of June 30, 1983, however, neither issue had been resolved.

For fiscal year 1983 funding, the Congress has been considering a deferral of SPR Petroleum Account funds that we reported and a supplemental appropriations for DOE.

On May 5, 1983, we reported an \$800-million deferral in budget authority provided for the SPR Petroleum Account (GAO/OGC-83-11, May 5, 1983). This deferral should have been, but was not, reported by the Executive Branch to the Congress. In summary, our report stated that those funds which would not be used in filling the SPR at the currently planned rate of 220,000 barrels per day in fiscal year 1983 and contracting for the first 6 months of fiscal year 1984 oil deliveries should be considered as being deferred. Based on our estimate of the funds needed to cover these rates, about \$800 million would remain unobligated at the

end of fiscal year 1983. We reported that, if these funds were used, a fill rate of about 288,000 barrels per day could be supported for fiscal year 1983.

A fiscal year 1983 supplemental appropriation for DOE also is being considered. On May 25, 1983, the House passed H.R. 3069. The House bill calls for a fiscal year 1983 SPR fill rate of 220,000 barrels per day, the level which the administration plans to achieve. The Senate, on the other hand, passed its version of the supplemental appropriations bill on June 16, 1983, which contained a provision to overturn the deferral. These and other differences in the two bills will be resolved by a conference committee, which is expected to take up this matter early in the fourth quarter.

The fiscal year 1984 funding level for the SPR is also being debated. The House passed its version of the fiscal year 1984 appropriation (H.R. 3363) on June 28, 1983. It calls for \$1.686 billion in oil acquisition and transportation funds. During the floor debate, it was stated that this funding level is intended to provide for a fill rate of 220,000 barrels per day in fiscal year 1984. This fill rate is higher than the administration's proposed rate of 145,000 barrels per day for fiscal year 1984.

In debating the SPR funding levels, the Congress has considered DOE's ability to reach higher fill rates in fiscal year 1983 and examined the impacts of various fill rate options.

#### Ability to reach higher rates may be constrained

If DOE is required to fill the SPR at a rate higher than the currently planned 220,000-barrels-per-day rate for fiscal year 1983, DOE will be faced with constraints in (1) making additional purchases, (2) having the oil delivered by the end of the fiscal year, and (3) finding storage facilities for the additional oil. DOE's ability to achieve a higher rate this fiscal year will be determined primarily by the level of additional purchases and the timing of the decision requiring those purchases.

DOE currently plans on filling the SPR at 220,000 barrels per day in fiscal year 1983. As of June 30, 1983, about 54.6 million barrels had been added for an average rate of about 200,000 barrels per day in the fiscal year. To meet the 220,000-barrel-per-day rate for the entire fiscal year, DOE needs to add about 25.7 million barrels, or a fill rate of about 279,000 barrels per day in the fourth quarter.

Establishing a higher fill-rate level for the year would increase these requirements. For example, if DOE were required

to use all available funds for oil purchases and delivery this fiscal year, the average annual fill rate would rise from the planned level of 220,000 barrels per day to over 288,000 barrels per day or about 25 million barrels above the planned level. More importantly, because the 25 million barrels of additional purchases would be concentrated in the last quarter, the fill rate for the quarter would need to rise to about 549,000 barrels per day. Likewise, if the fiscal year 1983 rate were raised to 231,000 barrels per day (the maximum rate that DOE could accommodate using permanent and onsite interim storage capacity) the fourth quarter fill rate would be about 323,000 barrels per day.

To obtain the additional oil, DOE would likely request that the Defense Fuel Supply Center (DFSC), the purchasing agent for much of the SPR oil, increase its purchases under the open, continuous solicitation<sup>1</sup> to accommodate the higher rates. DFSC officials, however, are concerned about their ability to obtain significantly higher amounts of oil than now planned. DFSC currently is scheduled to purchase and have delivered through the open, continuous solicitation about 6.1 million barrels of oil during the last quarter of fiscal year 1983. Meeting higher rates would require increases in these purchases. As noted above, additional purchases of about 25 million barrels would be necessary if DOE were required to use all available funds in fiscal year 1983. DFSC officials believe that purchasing this volume of oil in the last quarter of the fiscal year could cause oil prices on the spot market to increase above current prices. In addition, they noted that arranging for the delivery of this amount of oil on U.S.-flag vessels during the last quarter could be difficult and may result in increased shipping costs.

DOE also could be constrained in locating storage space for higher fill rates. Permanent storage space expected to be available by the end of this fiscal year at the SPR sites is estimated to be enough to accommodate a rate of 220,000 barrels per day. However, DOE estimates that an additional 3.9 million barrels of capacity may be available on a temporary basis by increasing the quantities presently stored in completed Phase II caverns. This would allow for an annual fill rate of about 231,000 barrels per day. If the fill rate is higher, DOE would need to acquire additional storage space.

On May 20, 1983, DOE issued an invitation for bids to purchase up to about 25 million barrels of interim storage services.

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<sup>1</sup>The open, continuous solicitation involves making contract awards without reissuing the solicitation for offers of oil that is available on the "spot," or short-term market.

Initially, the bids were to be received by June 17, 1983, but DOE postponed the opening date to June 24, 1983, to allow more time for responses. However, on June 17, 1983, DOE notified the potential bidders that the opening date had been suspended because the fiscal year 1983 fill rate had not been determined and consequently, the minimum quantity of interim storage capacity needed had not been resolved. When that quantity is known, notice of the new opening date will be made. The new date will allow at least 15 days to receive bids. In this regard, the time required to evaluate the bids and select the facilities could constrain DOE's ability to acquire interim storage capacity this fiscal year. According to DOE, its ability to obtain interim storage this fiscal year will depend on when a decision on a higher fill rate is made.

### Impacts of fill rate options

To assist the Congress we provided information during the quarter on the impacts of various fill rate options. For example, in hearings on May 6, 1983, before the Subcommittee on Energy and Mineral Resources, Senate Committee on Energy and Natural Resources, we testified, in part, that if the fill rates proposed in the administration's fiscal year 1984 budget were followed (220,000 barrels per day in fiscal year 1983, 145,000 barrels per day in fiscal year 1984, and 100,000 barrels per day thereafter), excess permanent storage capacity would become available and reaching the Energy Emergency Preparedness Act's 500-million-barrel goal would be delayed.

In addition to the testimony, we provided an analysis of the impacts of various SPR fill rate options on June 13, 1983, to the Chairman, Subcommittee on Energy and Mineral Resources, Senate Committee on Energy and Natural Resources and the Chairman, Subcommittee on Fossil and Synthetic Fuels, House Committee on Energy and Commerce. We analyzed nine different fill rate options in terms of cost and time impacts on the SPR. These fill rate options ranged from the administration's proposal, which was the slowest, to a fill rate of 288,000 barrels per day in fiscal year 1983 and 300,000 barrels per day thereafter, which was the fastest. We provided information for each option on (1) the fiscal year in which the SPR would reach 500 million barrels and (2) the estimated expenditures needed to reach the 500-million-barrel level using three oil price assumptions and two interim storage price estimates. Our analysis showed, for example, that:

- The time required to fill the SPR to a 500-million-barrel level varies with the fill-rate option used. This level could be reached in fiscal year 1985 at the highest fill rate we considered if commercial interim storage is used. The administration's reduced fill-rate schedule would not achieve 500 million barrels until fiscal year 1987.

- The fill-rate option that minimizes total Government expenditures for a 500-million-barrel SPR varies with the oil price assumptions used. For example, assuming declining oil prices, filling the SPR at the administration's proposed schedule minimizes total expenditures. If rising oil prices are assumed, however, the administration's proposed schedule results in the highest total expenditures of all oil fill-rate options included in our analysis.
- The administration's proposal has the lowest total cost for the oil price scenarios we used, if compared on a present value basis. Present value analysis favors expenditures in later years rather than in early years, and the administration's proposal has the slowest fill rate. The lower cost of the administration's proposal, however, must be viewed as a trade off with the national and economic security benefits, which could result from filling the SPR earlier.
- The fiscal year 1984 appropriation requirements could range from as little as \$38 million, under the administration's proposed fill rates, to as much as about \$4 billion for the highest option included.
- The time required for reaching a 750-million-barrel SPR is impacted heavily by the fill rate. The administration's proposed rate is the slowest of those considered, reaching that level in 1994. The highest fill rate reaches the 750-million-barrel level in 1987.

On June 30, 1983, in testimony before the Subcommittee on Fossil and Synthetic Fuels, House Committee on Energy and Commerce, the Secretary of Energy offered a tentative compromise fill-rate proposal. The Secretary proposed that the fill rate be sustained at 145,000 barrels per day in fiscal year 1984 and subsequent years through completion of a 750-million-barrel SPR. The Secretary noted that, at this rate, the SPR would be nearly complete by the end of calendar year 1990. Figure 1 and table 1 compare the Secretary's proposal with other fill-rate options.

OVERSIGHT HEARINGS ON DOE'S MANAGEMENT  
OF THE SPR PROGRAM

On May 24, 1983, the Subcommittee on Environment, Energy and Natural Resources, House Committee on Government Operations, held hearings to examine the management of the SPR program. Among others, DOE's Inspector General, the Defense Contract Audit Agency (DCAA), and GAO testified.

The Inspector General testified on some of the major findings contained in reports that his office issued on the SPR program. For example, he discussed the problems related to (1) accounting for oil received and stored in the SPR, (2) accounting for Government-owned property located at SPR contractors, and (3) retrofitting and upgrading construction at the SPR.

DCAA discussed its audits of SPR contractors. DCAA emphasized the weaknesses it has found in the contractors' accounting systems and related management controls such as inadequate cost identification and accumulation, inadequate timekeeping practices, and poor procurement practices. In addition, DCAA noted that DOE should call upon it more frequently to assist in contract negotiations and correcting contractor accounting problems.

Subsequent to its testimony, DCAA released a report on June 22, 1983, which criticized the accounting system used by Petroleum Operations and Support Services, Inc. (POSSI)--the principal SPR contractor. DCAA concluded, in part, that "The contractor's accounting system does not provide adequate assurance that only reasonable, allowable, and allocable costs are claimed for reimbursement under Government cost-type contracts." Because of the inadequacies identified, DCAA recommended, among other things, that DOE suspend approval of POSSI's accounting system and letter of credit financing arrangements. Under the letter of credit, POSSI is allowed to pay its contract expenses from a Government-financed account without using its own funds and provide supporting documentation at a later date. According to DCAA, POSSI is now taking action to correct the deficiencies and plans to revise its accounting system.

Our testimony included a discussion of (1) DOE's follow-up procedures for resolving audit recommendations and (2) DOE's efforts to install instrumentation and control systems at several SPR sites.

In discussing DOE's follow-up to audit recommendations, we noted that our review of 25 of the 180 DCAA reports issued from January 1981 through January 1983 disclosed the following:

- DOE had closed out 15 of the 25 reports in an average time of about 6 months and recovered most of the \$1.7 million in questioned costs.
- The remaining 8 reports with recommendations had been open an average of 371 days and only about \$300,000 of about \$1.5 million in questioned costs had been recovered.

--The current policy of excluding indirect cost and subcontractor audit reports from DOE's Departmental Audit Report Tracking System appears to require that some method be used to track these reports at the SPR.

Subsequent to the hearings, DOE called for monthly meetings with representatives from the Inspector General's office, DCAA, and GAO to discuss SPR audit activities.

We also discussed the status of instrumentation and control systems used to centrally monitor the flow of crude oil, water, and brine into and out of the caverns at the SPR sites. We informed the subcommittee that:

--DOE has expended over \$24 million for automated control systems at the SPR sites. However, the control systems at Bryan Mound and West Hackberry are not operating and work is continuing at additional costs at these and the other sites.

--DOE needs to decide what it is going to do with the present non-operating systems at Bryan Mound and West Hackberry.

--DOE's current effort to develop workable instrumentation and control systems for Phase III caverns needs to be closely monitored to ensure that contractor performance complies with contract requirements.

--DOE's ability to sustain a safe, efficient, and fully successful drawdown could be adversely impacted by the lack of an operable, centrally controlled automated system.

DOE agreed that the central control system at Bryan Mound and West Hackberry do not operate. However, DOE maintained that the system can be safely operated manually because field equipment would shut off automatically if abnormal operating conditions occur.

After the hearings DOE directed POSSI to evaluate the automatic shut off devices on all the pumps used at the sites. POSSI's summary showed that about 55 percent and 21 percent of the total shut-off devices in the pumps at Bryan Mound and West Hackberry, respectively, were inoperable. The report also indicated that nearly all of the shut-off devices at the other sites were operable and that all inoperative devices would be repaired by the end of calendar year 1983.



SPR MANAGEMENT REORGANIZED

The Secretary of Energy announced on June 15, 1983, the reorganization of the management of the SPR. In doing so, the project management was transferred from the SPR office in New Orleans, Louisiana to the Oak Ridge Operations Office, Oak Ridge, Tennessee. According to the Secretary of Energy, the reorganization is consistent with DOE's management structure for other major projects. As part of the reorganization, the Secretary directed the Oak Ridge Operations Office to conduct a full and complete review of all allegations of mismanagement and misconduct that have been made since the inception of the program in 1977, and a comprehensive inventory of all SPR accounts, properties, and products.

It is not yet clear how the reorganization will affect the SPR program. The Oak Ridge Operations Office established a 14-member task force on June 22, 1983, to develop a management approach for the program and to examine the allegations. As time passes, the roles and responsibilities of those involved are expected to be defined and clarified. We will follow the activities in this area and report on them in future reports, as appropriate.

SPR FILL UPDATE

DOE reported that during the quarter ending June 30, 1983, about 20.7 million barrels of oil were added to the SPR for an average fill rate of about 227,000 barrels per day. During the fiscal year, about 54.6 million barrels of oil have been added for an average rate of about 200,000 barrels per day. This brings the total oil in the SPR as of June 30, 1983 to 332.5 million barrels. To reach the planned 220,000-barrel-per-day rate for fiscal year 1983, the fourth quarter fill rate would need to average about 279,000 barrels per day.

The deliveries this quarter were the result of the two contracts with Petroleos Mejianos (PEMEX)--the Mexican State oil company, the contracts from DFSC's open, continuous solicitation, and the long-term contracts awarded by DFSC in fiscal year 1982. The PEMEX deliveries accounted for about 14.1 million barrels of sour crude<sup>2</sup> or about 68 percent of the quarter's deliveries. Of the PEMEX deliveries, 13.3 million barrels were Isthmus crude and

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<sup>2</sup>Sour crude for the SPR has a sulfur content of over 0.5 percent; sweet crude has a maximum sulfur content of 0.5 percent.

0.8 million barrels were Maya crude<sup>3</sup>. The remaining 6.6 million barrels were from deliveries of sweet crude from the long-term contract and from the open, continuous solicitation. Figures 1 and 2 and tables 2 through 6 provide further information on the SPR fill activities.

During the quarter, action was initiated to contract for oil for delivery in fiscal year 1984. On June 3, 1983, DFSC issued a solicitation to purchase 20.5 million barrels of sweet crude, which is to be delivered in the first 6 months of fiscal year 1984. DFSC is assessing the offers received on June 30, 1983, as a result of this solicitation, and it expects to award contracts by September 1, 1983. Additionally, DOE's first contract with PEMEX calls for delivery of 18.25 million barrels of sour crude in fiscal year 1984.

In addition to the activities associated with oil acquisition, DOE issued a request for proposals on April 25, 1983, for an assessment of the SPR's crude oil accountability system and reported inventory level. The request calls for (1) a comprehensive assessment of the current SPR crude oil accountability system to establish its adequacy in terms of accepted U.S. petroleum industry and Government standards and (2) an audit of the SPR crude oil inventory as of December 31, 1983, based on the assessment results, an audit of SPR crude oil accounting records, and a historical review of SPR crude oil accounting practices. The closing date for proposals was June 9, 1983, and DOE expects to award the contract during the next quarter.

DOE officials stated that they want to have an independent audit done on the SPR inventory each year because of the high level of investments made in oil and the importance of the SPR in general. In addition, such an audit was recommended in a recent report by DOE's Inspector General (DOE/IG-0188, Dec. 13, 1982).

#### DEVELOPING PERMANENT CAPACITY

During this quarter, the program to develop permanent storage capacity proceeded with no major problems reported at the three active sites--Bayou Choctaw, Bryan Mound, and West Hackberry. In addition, efforts were taken to (1) expand the available capacity at the Weeks Island site, (2) continue filling the Sulphur Mines site, and (3) continue the early development work of the Phase III sites.

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<sup>3</sup>Isthmus crude is a high quality sour crude while Maya crude is a lower quality crude oil.

In total, the capacity development programs at the Bayou Choctaw, Bryan Mound, and West Hackberry sites were about on schedule. The Bayou Choctaw and Bryan Mound sites generally exceeded the baseline schedules during the quarter. The West Hackberry site showed continued improvements over the past periods, approaching its baseline schedules. Table 7 provides further information on the progress of the capacity development programs.

At the Weeks Island site, it was determined that an additional 300,000 barrels of storage capacity could be obtained by reducing the mine pressure through venting and flaring accumulated gas. This additional capacity was filled during the quarter.

Fill operations continued at Sulphur Mines Cavern 2.4.5 during the quarter without any reported problems. Fill operations began on this 13.1 million barrel cavern in January 1983 after it was determined that using a layer of nitrogen would prevent the loss of oil through a small leak at the top of the cavern. As of June 30, 1983, the cavern contained 11.1 million barrels of oil.

Phase III activities also were underway during the quarter at Bryan Mound, West Hackberry, and Big Hill. Pipelines were being connected to four caverns at Bryan Mound while site preparation was initiated at West Hackberry. Phase III leaching is scheduled to begin in October 1983 at Bryan Mound and December 1984 at West Hackberry. Work associated with five caverns at Big Hill continued. Site preparation activities for the caverns were completed and initial drilling operations were begun on 10 wells.

DOE also decided during the quarter, that the \$57.4 million in funds that became available in March 1983, when a deferral in that amount was disapproved by the House of Representatives, would be used at Big Hill to begin site construction activities and to purchase some long-lead time equipment. The pace of development for the Big Hill site is uncertain because funding decisions have not been completed. In this regard, the administration did not include funds in its fiscal year 1984 budget request, which would be sufficient to complete Big Hill by 1989 as previously scheduled. However, the House of Representatives included a provision in DOE's fiscal year 1983 supplemental appropriations bill which would allow the use of \$370 million from the off-budget SPR Petroleum Account for site development. The Senate's version of the bill contained a provision to appropriate an additional \$370 million rather than using SPR Petroleum Account funds. As of June 30, 1983, the matter had not been reported from the conference committee.

STATUS OF SPR FUNDING

DOE made payments of about \$238 million during the quarter for oil acquisition and transportation. This brought the total spent to about \$1.2 billion for the fiscal year. The unpaid obligations as of June 30, 1983, were estimated to be about \$1.8 billion. Of the oil acquisition funds available for fiscal year 1983, about \$873 million remains unobligated by DOE. Table 8 provides further information on the status of SPR funding.

RECOVERY OF OVERPAYMENTS FOR OIL  
DELIVERED TO ST. JAMES TERMINAL

DFSC continued its efforts during the quarter to collect overpayments for oil delivered to the St. James terminal between September 1980 and November 1981. During that period the mathematical tables used to convert the levels of crude oil in storage tanks at the terminal into an equivalent number of barrels were incorrect. According to DFSC, this caused overpayments of about \$13.8 million to 12 suppliers and underpayments of about \$48,000 to 2 suppliers. The underpayments have been satisfied and three of the overpayments totaling about \$1.3 million have been recovered. The status of DFSC's efforts to collect the overpayments is shown in table 9.

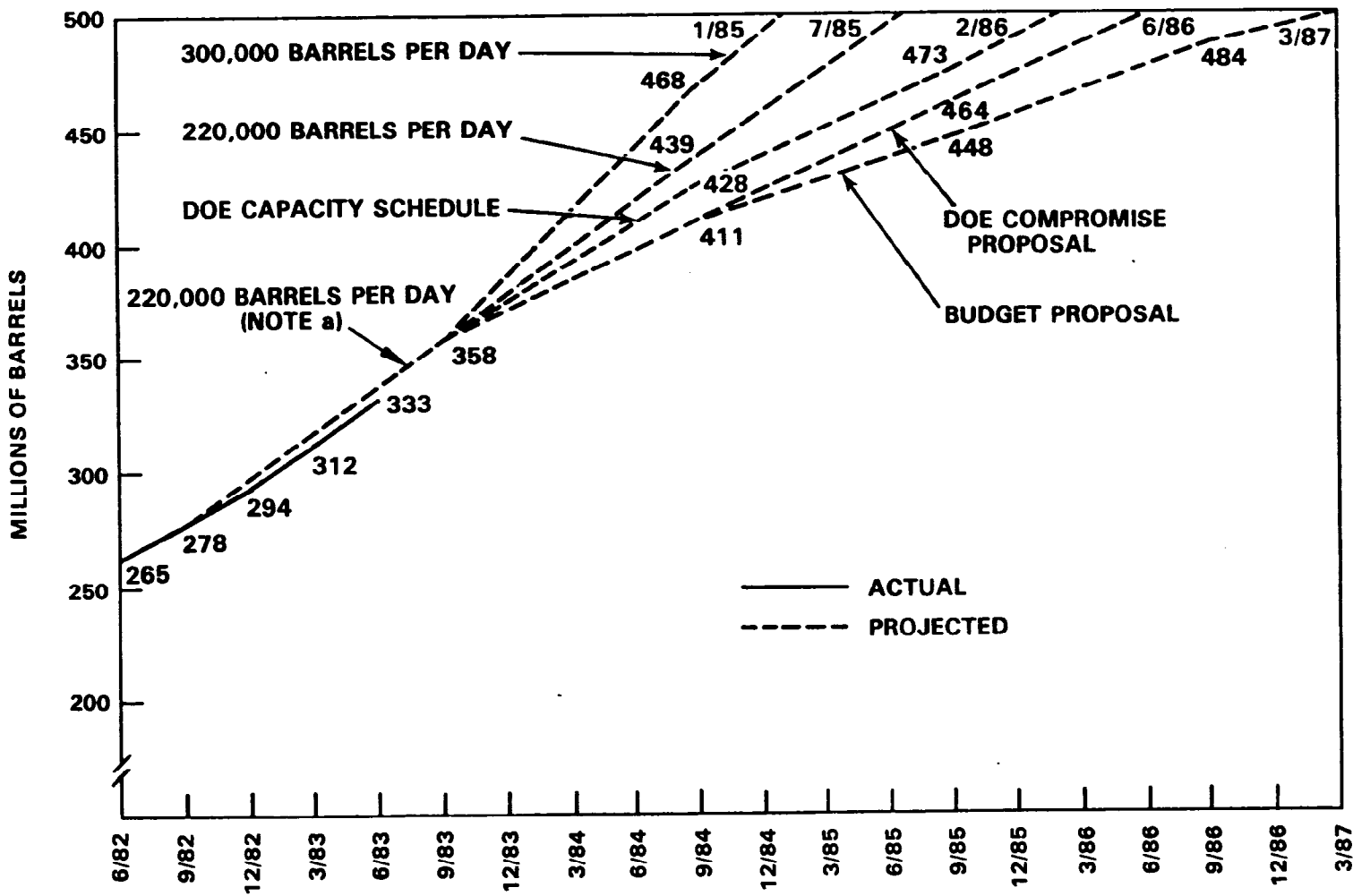
DOE ACTIONS IN RESPONSE TO  
BRYAN MOUND OIL LEAK REPORT

An underground well casing leak was discovered in October 1982 at a Bryan Mound cavern. An investigation was initiated and a report issued in March 1983. The report contained recommendations to correct the leak problem and prevent future incidents of this type. Some actions have been taken and others are underway.

The well casing that caused the leak has been plugged. Two other wells exist to service the cavern. In the area where the oil leak occurred, which is above the plug in the well casing, small quantities of oil continue to drain back into the well casing. As of June 30, 1983, less than 500 barrels had been recovered. DOE officials say that this drainage process could go on for years.

The cavern inventory was reduced by 44,800 barrels in May 1983 to account for the oil lost. However, DOE plans to continue efforts to more precisely determine the amount lost. In addition, DOE has taken steps to monitor and analyze the pressure of filled caverns more closely. Daily pressure readings taken by the operations and maintenance contractor are compiled and analyzed weekly rather than monthly. Further, DOE has initiated actions on two wells for two other caverns, which were judged to have the potential for a leak problem similar to Bryan Mound.

**FIGURE 1: COMPARISON OF FILL RATES IN REACHING 500 MILLION BARRELS**



a/ DOE PLANS CALL FOR FILLING THE SPR AT AN AVERAGE ANNUAL RATE OF 220,000 BARRELS PER DAY IN FISCAL YEAR 1983.

TABLE 1

COMPARISON OF FILL SCHEDULES AND STORAGE REQUIREMENTS

IN REACHING 500 MILLION BARRELS

<u>Fiscal year</u>	<u>Storage capacity (note a)</u>	<u>300,000 barrels per day</u>		<u>220,000 barrels per day</u>		<u>DOE compromise proposal</u>		<u>Administration proposal</u>	
		<u>Oil volume (note b)</u>	<u>Additional storage needed (note c)</u>	<u>Oil volume (note b)</u>	<u>Additional storage needed (note c)</u>	<u>Oil volume (note d)</u>	<u>Excess storage capacity</u>	<u>Oil volume</u>	<u>Excess storage capacity</u>
1983	358.2								
1984	427.5	467.7	40.2	438.5	11.0	411.1	(16.4)	411.1	(16.4)
1985	472.6	500.0	27.4	500.0	27.4	464.0	( 8.6)	447.6	(25.0)
1986	538					500.0	(38.0)	484.1	(53.9)
1987	593							500.0	(93.0)

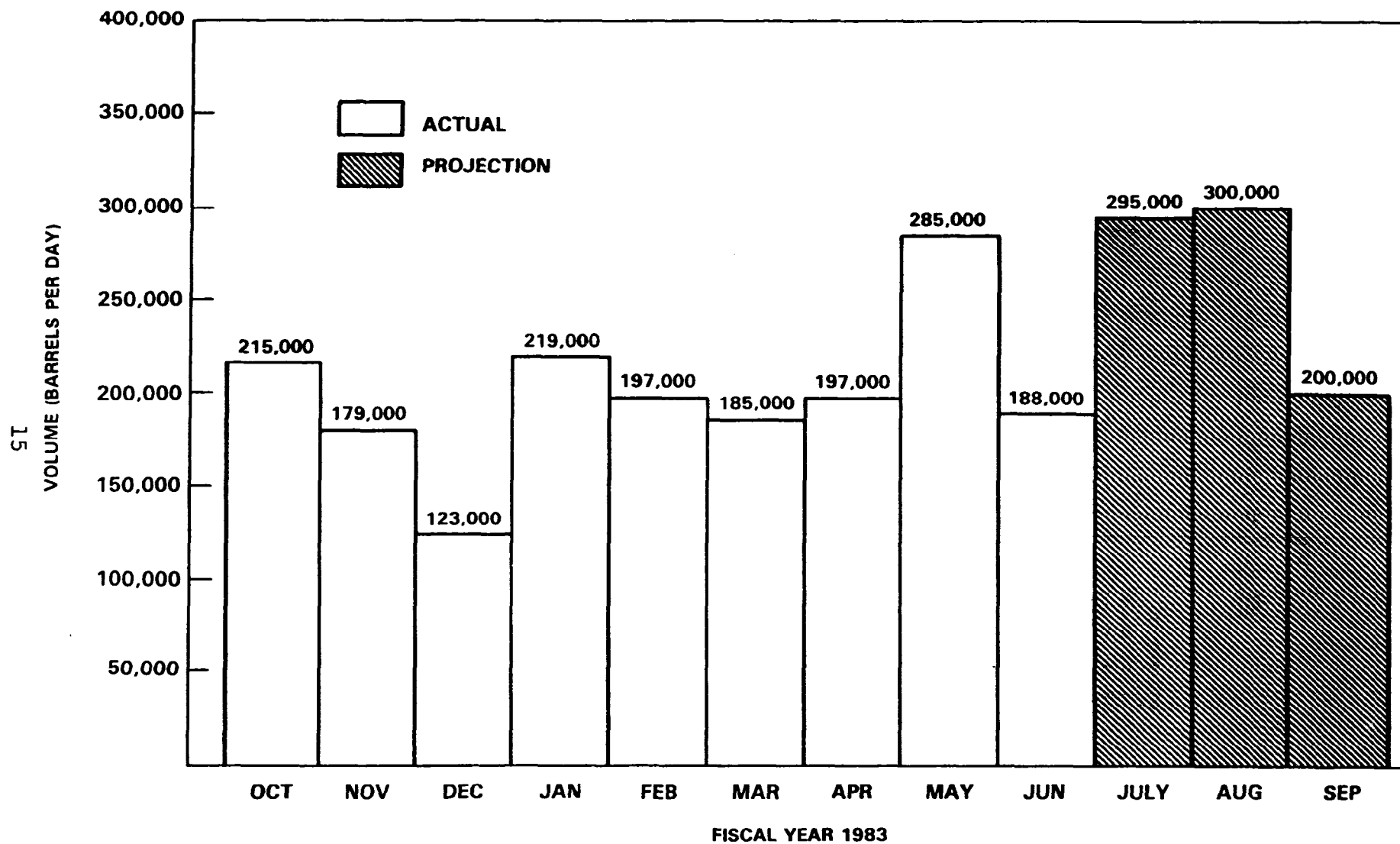
<sup>a</sup>The storage capacity shown is the total amount of permanent space expected to be available by the end of the fiscal year.

<sup>b</sup>The Energy Emergency Preparedness Act requires a minimum average annual fill rate of 300,000 barrels per day until at least 500 million barrels of oil are stored. However, the act allows a lower rate if the President finds the 300,000-barrel-per-day rate not to be in the national interest for a particular fiscal year. On December 1, 1982, the President made such a finding for fiscal year 1983. With the finding, the act requires a minimum fill rate of at least 220,000 barrels per day, or the highest practicable fill rate achievable with available funds.

DOE has determined that about 18.25 million barrels of interim storage space may become available at SPR sites by the end of fiscal year 1984. This amount could grow to 22.35 million barrels by the end of fiscal year 1985. Additional storage needed above that amount could require contracting for privately owned space.

<sup>d</sup>On June 30, 1983, the Secretary of Energy proposed a tentative compromise fill rate of 145,000 barrels per day after fiscal year 1983.

Source: DOE and GAO calculations.

**FIGURE 2: AVERAGE DAILY SPR RECEIVING RATE<sup>a</sup>**

a/ DAILY RECEIVING RATES FOR JULY, AUGUST, AND SEPTEMBER ARE BASED ON DOE PROJECTIONS OF FUTURE DELIVERIES AND ARE SUBJECT TO CHANGE.

TABLE 2  
VOLUME OF OIL STORED  
BY FISCAL YEAR 1983 QUARTER

<u>Quarter</u>	<u>Volume of oil at start of quarter</u>	<u>Deliveries</u>	<u>Volume of oil at end of quarter</u>	<u>Average receiving rate</u>	
				<u>For quarter</u>	<u>Since 10/01/82</u>
	- - - - (millions of barrels) - - - -			(barrels per day)	
Oct. 1, 1982 through Dec. 31, 1982	277.9	15.9	293.8	173,288	173,288
Jan. 1, 1983 through Mar. 31, 1983	293.8	18.0	311.8	200,035	186,515
Apr. 1, 1983 through June 30, 1983	311.8	20.7	332.5	226,966	199,998

Source: DOE.



TABLE 3

## SUMMARY OF OIL DELIVERIES FOR FISCAL YEAR 1983

	Oil deliveries for quarter ending 6/30/83	Oil deliveries for FY 1983 as of 6/30/83	Oil under contract as of 6/30/83 (note a)	Oil to be contracted (note b)	Total
----- (millions of barrels) -----					
Open, continuous solicitation (note c)	5.7	8.5	7.7	6.1	22.3
PEMEX contracts	14.1	38.4	18.4	0	56.8
Term contracts					
Exxon International	0	3.8	0	0	3.8
Transocean Gulf	.9	2.7	.9	0	3.6
Citation Oil and Gas	0	1.1	0	0	1.1
Naval Petroleum Reserve	(d)	0.1	0	0	0.1
Consent orders (note e)	-	-	-	-	-
Total	<u>20.7</u>	<u>54.6</u>	<u>27.9</u>	<u>6.1</u>	<u>87.7</u>

<sup>a</sup>Represents the amount of oil that is under contract and to be delivered in fiscal year 1983.

<sup>b</sup>Represents the amount of oil that is expected to be contracted for and delivered in fiscal year 1983.

<sup>c</sup>The open, continuous solicitation involves making contract awards without reissuing the solicitation for offers of oil that is available on the "spot," or short-term market. See table 4 for a listing of companies included.

<sup>d</sup>Includes delivery of Naval Petroleum Reserve oil through a memorandum of understanding with DOE's Office of Naval Petroleum and Oil Shale Reserves. The deliveries under this agreement have been completed.

<sup>e</sup>During the prior quarter, Chaplin Petroleum elected to pay DOE \$3.55 million under a consent order rather than deliver oil valued at that amount to the SPR. An additional \$3.5 million in either oil or cash remains to be delivered by Chaplin this fiscal year. In addition, a consent order with Conoco, Inc., requires a payment of \$11 million in oil or cash by October 25, 1983. No payment has yet been made by Conoco, Inc.

<sup>f</sup>Although the total exceeds the 80.3 million barrels needed to achieve the 220,000-barrels-per-day rate, actual deliveries may be lower because of delivery delays, reductions in contract awards under the open, continuous solicitation and changes in prices for PEMEX oil.

Source: DOE and DFSC.

TABLE 4CONTRACTS AWARDED UNDER THE OPEN CONTINUOUS SOLICITATIONDURING THE QUARTER ENDING JUNE 30, 1983, (note a)

<u>Contract date</u>	<u>Supplier</u>	<u>Total barrels to be delivered</u>
April 15, 1983	Transocean Gulf Oil, Co.	500,000
April 15, 1983	Coral Petroleum, Inc.	<sup>b</sup> 500,000
April 15, 1983	GATOIL International, Inc.	804,022
May 4, 1983	T.W. Oil, (Houston) Inc.	1,500,000
May 4, 1983	Transocean Gulf Oil Co.	500,000
May 17, 1983	Gulf-Tex Resources, Inc.	900,000
May 17, 1983	Shell International Trading Co.	1,000,000
June 1, 1983	Citation Oil & Gas, Ltd.	<sup>c</sup> 1,000,000
June 1, 1983	GATOIL International, Inc.	500,000
June 1, 1983	Coastal States Trading	650,000
June 24, 1983	GATOIL International Inc.	1,000,000
June 24, 1983	T.W. Oil, (Houston) Inc.	1,230,000
June 24, 1983	B P International, Inc.	<u>1,300,000</u>
Total		<u>11,384,022</u>

<sup>a</sup>During the fiscal year, one additional contract has been awarded under the open, continuous solicitation. On March 22, 1983, a contract was awarded to Derby & Co., Inc., for delivery of 2 million barrels of oil. This brings the total fiscal year 1983 open continuous awards as of June 30, 1983, to 13,384,022 barrels. All of these awards have for been sweet crude.

<sup>b</sup>Coral Petroleum defaulted on this contract. Shell International Trading, Co., was awarded a contract to deliver this 500,000 barrels.

<sup>c</sup>Citation Oil & Gas, Ltd., has had difficulties in obtaining about 500,000 barrels of oil for this contract. As of July 1, 1983, Citation was in default on the contract.

Source: DFSC.

TABLE 5  
TOTAL SPR DELIVERIES BY CRUDE  
TYPE AS OF JUNE 30, 1983

	<u>Type I</u> <u>(note a)</u>	<u>Types II-V</u> <u>(note b)</u>	<u>Type VI</u> <u>(note c)</u>	<u>Type VIa</u> <u>(note d)</u>	<u>Maya</u> <u>(note e)</u>	<u>Total</u>
	- - - - - (millions of barrels) - - - - -					
Volume delivered	160.6	113.2	31.4	16.6	10.7	332.5
	- - - - - (percent) - - - - -					
Percentage of total oil delivered	48	34	9	5	3	<sup>f</sup> 100

<sup>a</sup>High-sulfur crude (maximum 1.99-percent sulfur content) with an API gravity range of 30 to 36 degrees. Type I oil includes Arabian Light and Isthmus crudes.

<sup>b</sup>High-quality crudes with a low-sulfur content (maximum 0.5-percent sulfur content) and an API gravity range of 30 to 45 degrees. These types include some North Sea and West African crudes.

<sup>c</sup>Type VI was established for Alaskan North Slope crude, an intermediate-sulfur crude (maximum 1.25-percent sulfur content) with an API gravity range of 26 to 30 degrees.

<sup>d</sup>Type VIa was established for the Maya/Isthmus blend under the PEMEX contract. The blend is a high-sulfur mixture with an API gravity of at least 28 degrees.

<sup>e</sup>Maya crude is a lower quality oil, which has a maximum sulfur content of 3.5 percent, and an API gravity of at least 22 degrees.

<sup>f</sup>Does not add due to rounding.

Source: DOE.

TABLE 6STATUS OF SPR UNDERGROUND CAPACITYAS OF June 30, 1983

<u>Phase I sites</u>	<u>Permanent capacity available</u>	<u>Capacity filled</u>
	(millions of barrels)	
Bayou Choctaw	45.7	43.8
Bryan Mound	65.0	64.4
Sulphur Mines	26.3	22.7
Weeks Island	73.0	73.0
West Hackberry	48.7	48.1
Total	<u>258.7</u>	<u>252.0</u>
 <u>Phase II sites</u>	 <u>Planned capacity</u>	 <u>Capacity filled</u>
Bayou Choctaw	10.0	(a)
Bryan Mound	120.0	59.8
West Hackberry	160.0	17.9
Total	<u>290.0</u>	<u>77.7</u>
 Total for SPR	 <u>548.7</u>	 b <u>329.7</u>

<sup>a</sup>A newly leached cavern with 4.5 million barrels of usable capacity will be exchanged for an existing 10-million-barrel cavern owned by Allied Chemical Corporation at the Bayou Choctaw site after leaching is completed. DOE currently expects to complete leaching in August 1984. As of June 30, 1983, 2.3 million barrels had been leached.

<sup>b</sup>An additional 2.8 million barrels of oil is in pipelines and surge storage tanks. This brings the total oil in the SPR system to 332.5 million barrels.

Source: DOE.

TABLE 7  
SUMMARY OF LEACHING ACTIVITIES  
FOR QUARTER ENDING JUNE 30, 1983

	<u>Brine disposal</u>		<u>Cumulative cavern volume</u>		<u>Cumulative oil fill</u>	
	<u>Baseline</u> <u>(note a)</u>	<u>Actual</u>	<u>Baseline</u> <u>(note b)</u>	<u>Actual</u>	<u>Baseline</u> <u>(note b)</u>	<u>Actual</u>
	(thousands of barrels per day)		----- (millions of barrels) -----			
Bryan Mound:						
April	900	924	84.2	92.0	40.1	54.1
May	900	954	94.6	95.7	56.9	57.5
June	900	885	98.2	99.3	60.5	59.8
West Hackberry:						
April	1000	931	60.6	61.1	17.5	11.5
May	1000	948	64.3	64.8	15.0	15.4
June	1000	953	67.4	69.0	18.3	17.9
Bayou Choctaw:						
April	(b)	64	(b)	2.0		
May	51.4	49	2.0	2.0	(c)	
June	51.4	53	2.2	2.3		

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<sup>a</sup>To meet the baselines for cumulative cavern volume a brine disposal rate of 90 percent of the baseline is needed.

<sup>b</sup>In May 1983, the baselines for cumulative cavern volume and oil fill were increased. In addition, baselines for Bayou Choctaw were established.

<sup>c</sup>The leaching activities at Bayou Choctaw are directed at creating a cavern with 4.5 million barrels of usable capacity. This cavern will not be used to store oil but will be exchanged for an existing 10-million-barrel cavern owned by Allied Chemical Corporation. This cavern is expected to be completed in August 1984.

Source: DOE.

TABLE 8  
STATUS OF THE SPR PETROLEUM ACCOUNT  
AS OF JUNE 30, 1983 (note a)

<u>Funds made available</u>	<u>Amount</u> (millions)
Carryover from fiscal year 1981	\$1,806
Fiscal year 1982 appropriations	3,684
Fiscal year 1983 appropriations	<u>2,074</u>
Total available	<u>\$7,564</u>
 <u>Funds used or committed</u>	
Fiscal year 1982 payments	\$3,687
Estimated fiscal year 1983 payments as of 6/30/83 (note b)	1,205
DOE's unpaid obligations as of 6/30/83 (note c)	<u>1,799</u>
Total used or committed	<u>6,691</u>
Unobligated funds at DOE	<u>\$ 873</u>

<sup>a</sup>The SPR Petroleum Account was established in October 1981 to pay for petroleum acquisition and transportation.

<sup>b</sup>Amounts of DOE's actual reported payments through May 31, 1983, and DOE's estimated payments for June 1983.

<sup>c</sup>Unpaid obligations represents funds that have been committed to pay for future oil deliveries under the first PEMEX contract, or are obligated to DFSC for upcoming oil deliveries or purchases, and expected transportation costs. DFSC reports that of the funds obligated to it, about 910.7 million is available for future purchases.

Source: DOE and DFSC.

TABLE 9STATUS OF DFSC COLLECTION EFFORTS

<u>Contractor</u>	<u>Claim amount</u>	<u>Status</u>
Amerada Hess Corporation	\$ 944,508.94	No appeal made. Efforts to collect in process. (note a)
Amoco Oil Company	275,693.70	Collected.
ARCO Petroleum Products Company	201,400.60	Appealed to Armed Services Board of Contract Appeals on January 12, 1983.
Chevron U.S.A., Inc.	150,448.20	Collected \$159,339.87 (including interest).
Coastal States Trading, Inc.	523,755.04	Appealed to Armed Services Board of Contract Appeals on January 7, 1983.
Coral Petroleum, Inc.	412,477.17	Appealed to Armed Service Board of Contract Appeals on June 28, 1983.
Derby & Company Inc.	4,930,251.52	Appealed to Armed Service Board of Contract Appeals on June 28, 1982.
Exxon U.S.A.	911,405.09	Collected.
Houston Oil and Refining	1,893,773.61	Appealed to Armed Services Board of Contract Appeals on January 3, 1983.
Listo Energy, Inc.	592,232.36	No appeal made. Action to collect in process.
U.S.A. Petrochem Corporation	364,948.03	No appeal made. Action to collect in process.
U.S. and S.A. Enterprises, Inc.	2,628,350.76	Appealed to Armed Services Board of Contract Appeals on December 23, 1982.

<sup>a</sup>If a company disagrees with DFSC's determination, it has 90 days in which to appeal to the Armed Services Board of Contract Appeals and a year to appeal to the U.S. Claims Court.

Source: DFSC.

(001729)







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