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REPORT BY THE U.S.

General Accounting Office

Status Of Strategic Petroleum Reserve Activities As Of June 30, 1985

The Department of Energy reported that the Strategic Petroleum Reserve contained 476.6 million barrels of oil on June 30, 1985. During the third quarter of fiscal year 1985, about 15 million barrels of oil were added, for a fill rate of 164,000 barrels per day.

This report discusses the progress being made in filling, developing, and operating the Reserve. It also discusses other events and activities affecting the Reserve that occurred during the third quarter of fiscal year 1985.

127458

GAO/RCED-85-149
JULY 15, 1985

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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 Department of Energy's (DOE's) progress in filling the Strategic Petroleum Reserve (SPR) and in complying with the requirements of applicable law. This is the 13th quarterly report. A list of our prior reports is contained in table 9 in appendix II.

This report discusses events and activities related to the administration's progress in filling, developing, and operating the SPR during the third quarter of fiscal year 1985. Specifically, it notes that during the quarter

--The Congress renewed portions of the 1975 Energy Policy and Conservation Act, extending the basic authority to build, fill, maintain, and use the SPR through June 30, 1989, and for U.S. participation in the International Energy Agency[1] through June 30, 1988. Also, DOE is now required to carry out a drawdown test sale and distri bution of 1.1 million barrels of oil within 6 months of this bill's enactment. The new legislation did not, however, change SPR minimum oil fill requirements. Under the administration's proposed indefinite moratorium on SPR oil fill, therefore, future sales of Naval Petroleum Reserve oil could be restricted since the basic act prohibits the administration from selling or disposing of

[1]The International Energy Agency is a group of oil-consuming nations, including the United States and its allies, that have agreed to coordinate their responses to a future oil supply shortage in order to minimize its impact.

Naval Petroleum Reserve oil other than to the SPR unless the average SPR fill rate for the given fiscal year is at least 100,000 barrels per day until the SPR contains at least 500 million barrels of oil.

--The Congress began considering options on SPR oil fill and construction activities for fiscal year 1986 and subsequent years. These options range from the indefinite moratorium on SPR construction and oil fill to continued construction and fill but at lower fill rates than in previous years.

--DOE added 15 million barrels of oil, bringing the total amount of oil in the SPR to 476.6 million barrels. The oil fill rate averaged 164,000 barrels per day during the quarter.

--DOE paid $331 million for oil acquisition and transportation; had unpaid obligations of about $522 million; and had $827 million in deferred funds, leaving a balance of about $1 million in unobligated funds available for oil purchases in fiscal year 1985.

--The storage capacity development program proceeded without any major problems, generally achieving DOE goals. At the Big Hill site, however, the construction contract for the raw water intake system has been modified because of the proposed moratorium, and all of the equipment purchased for installation will now be stored.

This report also presents information on (1) the implementation of recommendations made in the DOE Oak Ridge Operations Office's reports on its baseline assessment of the SPR Project Office and its review of allegations about mismanagement or misconduct within the SPR program and (2) extensions of contracts for SPR security and management support services, and a new contract for architectural and engineering services. (See app. I for more details and app. II for supporting figures and tables.)

OBJECTIVES, SCOPE, AND METHODOLOGY

We limited our review, because of the time allowed, to providing primarily statistical information and highlights of major activities that occurred during the period covered. To obtain this information we reviewed DOE program documents, publications, and studies and interviewed DOE managers and operating personnel responsible for planning and managing activities associated with the development and operation of the SPR facilities. We also interviewed personnel from DOE contractors and the Defense Fuel Supply Center, DOE's purchasing agent for most of the SPR oil.

Our review was performed in accordance with generally accepted government auditing standards, except that we did not verify the volumes or quality of oil that DOE received nor the available capacity of SPR storage facilities. We did not do this because the effort required was beyond the scope of this report.

We did not obtain official agency comments because of the required time frame for issuing this report. However, we provided DOE and Defense Fuel Supply Center program officials with a draft of this report and discussed its factual accuracy with them. We made appropriate revisions as necessary.

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

J. Dexter Peach
Director

Contents

ABBREVIATIONS

API	American Petroleum Institute
DCAA	Defense Contract Audit Agency
DFSC	Defense Fuel Supply Center
DOE	Department of Energy
EPCA	Energy Policy and Conservation Act
GAO	General Accounting Office
GSU	Gulf States Utilities Company
IEA	International Energy Agency
NPR	Naval Petroleum Reserve
PEMEX	Petroleos Mexicanos
SPR	Strategic Petroleum Reserve

STATUS OF STRATEGIC PETROLEUM RESERVE

ACTIVITIES AS OF JUNE 30, 1985

The Energy Policy and Conservation Act (Public Law 94-163, Dec. 22, 1975) authorized the creation of a Strategic Petroleum Reserve (SPR) to store up to 1 billion barrels of oil for use in the event of an oil import disruption. To meet the act's goals, the Department of Energy (DOE) has been implementing a three-phase plan to store 750 million barrels of oil. However, the administration's fiscal year 1986 budget proposes an indefinite moratorium on SPR oil fill and storage capacity development at the end of fiscal year 1985. At that time the SPR's inventory will have reached approximately 489 million barrels of oil.

Phase I of the SPR plan involved the storage of about 260 million barrels of oil and is now complete. It consisted of acquiring and modifying for oil storage existing caverns in salt deposits at Bryan Mound, Texas; Bayou Choctaw, Sulphur Mines, and West Hackberry, Louisiana; and a salt mine at Weeks Island, Louisiana, as well as constructing a marine terminal at St. James, Louisiana. Phase II, which had been scheduled for completion in 1987, involves creating new caverns through a leaching program at three of the phase I sites to increase SPR capacity to about 550 million barrels. The leaching program entails pumping fresh water into salt deposits and removing the resultant brine. DOE injects oil into the top of the cavern as the leaching process creates the storage capacity. Phase III, which was scheduled for completion in 1990, was designed to create additional capacity to reach the 750-million-barrel goal by expanding three existing storage sites and developing a new site at Big Hill, Texas. Because of the time needed to develop capacity, activities associated with phases II and III had overlapping schedules.

The SPR storage sites are connected by pipeline to three marine terminals for oil fill and for oil drawdown and distribution during an oil-supply disruption:

--Seaway complex: The Bryan Mound storage site is connected to Phillips Petroleum Co.'s terminal (formerly the Seaway terminal) in Freeport, Texas.

--Texoma complex: The West Hackberry and Sulphur Mines storage sites are connected, and the Big Hill storage site was planned to be connected, to Sun Oil Co.'s terminal in Nederland, Texas.

--Capline complex: The Weeks Island and Bayou Choctaw storage sites are connected to DOE's St. James marine terminal.

In June 1983 DOE reorganized the SPR project management structure. Responsibility for project direction was transferred from the Project Management Office (Project Office) in New Orleans, Louisiana, to the Oak Ridge Operations Office (Operations Office) in Oak Ridge, Tennessee. The SPR Program Office in Washington, D.C., retained responsibility for overall program management and planning.

This report discusses activities that occurred during the quarter ending June 30, 1985, that affect the SPR, including (1) passage of legislation to extend the Energy Policy and Conservation Act, (2) pending congressional legislation to establish future SPR program direction for crude oil acquisition and construction activities, (3) activities associated with adding 15 million barrels of oil to the SPR during the quarter, (4) the status of the SPR oil acquisition and transportation account, and (5) the cavern-leaching program at the SPR storage sites. It also provides information about the implementation of recommendations made in the Operations Office's 1983 baseline assessment of the SPR Project Office and review of allegations concerning mismanagement or misconduct within the SPR program. The report further discusses significant SPR contract extensions or additions for security, management support services, and architectural and engineering services. Appendix II presents supporting tables and figures.

ENERGY POLICY AND CONSERVATION AMENDMENTS ACT OF 1985

Title I of the 1975 Energy Policy and Conservation Act (EPCA)--which contains the basic authority to build, fill, and maintain the SPR--and Title II of the act, which allows U.S. participation in the International Energy Agency (IEA), both expired on June 30, 1985. However, on June 27, 1985, the Congress had completed action on a compromise bill that extended the authorities under Title I until June 30, 1989, and Title II until June 30, 1988.[1] In addition to extending the authorities in the act, the Congress added an amendment to the act that requires DOE to conduct a test sale and distribution of 1.1 million barrels of SPR oil within 6 months after enactment of the bill. This test is intended to demonstrate that SPR oil can be withdrawn from the caverns, sold, and distributed successfully. We analyzed the 1.1-million-barrel test sale in comparison with other drawdown/sale options in a report to the Chairman, Subcommittee on Environment, Energy, and Natural Resources, House Committee on Government Operations, Analysis of Oil Withdrawal and Distribution Tests for the Strategic Petroleum Reserve (GAO/RCED-85-115, May 8, 1985).

[1]The President signed the bill into law on July 2, 1985 (Public Law 99-58).

The report concluded that while selling 1.1 million barrels of oil would test DOE's sales procedures, it would not fully test the SPR's drawdown and distribution capability.

The extension of the EPCA did not change (1) the prior requirement to fill the SPR at an average rate of 300,000 barrels per day for the fiscal year and (2) the restriction on future sales of oil from the Elk Hills Naval Petroleum Reserve (NPR)[2] whenever the SPR is not filled at an average minimum rate of 100,000 barrels per day during the fiscal year until the SPR oil inventory reaches 500 million barrels. As we stated in our March 1985 quarterly report,[3] congressional approval of the administration's budget proposal for an indefinite moratorium--which would limit the SPR size to 489 million barrels of oil--could require changes in the legislation if oil sales are to continue from NPR. We estimated that if no changes are made and DOE is unable to sell NPR oil, revenue losses of up to $5.6 billion for fiscal years 1986 through 1990 could occur. We also pointed out that the cost to increase the SPR to 500 million barrels of oil and meet the act's legislative requirement would be small in comparison with the lost revenue; we estimated a cost of about $6 million to create additional oil storage space and a cost of about $312 million to purchase and deliver 11 million barrels of oil.

PENDING LEGISLATION MAY DECIDE SPR PROGRAM DIRECTION

The Congress is currently considering legislation that may determine the future level of SPR funding activity. Alternative proposals to the administration's indefinite moratorium have been offered in both the House and the Senate. The current House budget resolution assumes a fill rate of 50,000 barrels per day for fiscal years 1986 through 1988; the Senate has gone on record as supporting the administration's proposal to indefinitely curtail all SPR oil fill activities beginning in fiscal year 1986.

However, a recent bipartisan proposal by several Senators to the budget resolution offers a compromise plan whereby the administration's requested moratorium on SPR oil acquisition would

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[2]The Elk Hills Naval Petroleum Reserve, located near Bakersfield, California, is jointly owned by the U.S. government and Chevron, U.S.A., Inc. The government's share was 108,000 of the 138,000 barrels per day of oil produced in fiscal year 1984 and resulted in net revenues of $1.3 billion.

[3]Status of Strategic Petroleum Reserve Activities as of March 31, 1985 (GAO/RCED-85-111, Apr. 15, 1985).

take place during fiscal year 1986, but SPR oil purchases could resume in fiscal years 1987 and 1988 at 35,000 barrels per day. Unless a compromise budget resolution is accompanied by legislation that amends or suspends the minimum SPR oil fill rate requirement in EPCA, House-proposed fill rates would not allow continued sale of NPR oil. Under EPCA, until the SPR reaches 500 million barrels of oil, sale or disposal of NPR oil is tied to an average SPR fill rate of at least 100,000 barrels per day. Both the current House and Senate versions of the pending 1986 budget resolutions and 1985 supplemental appropriation bills contain fill rate proposals that are below the 100,000-barrels-per-day requirement. Accordingly, legislation amending or suspending this tie between the NPR and SPR fill rate will be necessary to permit continued sale or disposal of NPR oil, except to the SPR.

In its fiscal year 1986 budget, the administration proposed deferring about $271 million of SPR construction funds available for obligation in fiscal year 1985 for use in later years. In accordance with the proposed deferral, DOE began phasing down its construction program, particularly at the Big Hill site. However, both the House and Senate, in the pending supplemental appropriation bill, have disapproved the administration's proposed deferral.

In contrast to the current SPR oil fill rates being deliberated by the Congress, figure 1 and table 1 show four alternative fill rates that have been the benchmarks to date for a 750-million-barrel SPR. The average fill rates are based on the 300,000- and 220,000-barrels-per-day average rates cited by the Energy Policy and Conservation Act,[4] the 145,000-barrels-per-day average rate proposed in the administration's fiscal year 1985 budget, and the average rate allowed by the storage capacity development schedule proposed in the administration's fiscal year 1985 budget (the 159,000-barrels-per-day average rate approved in the continuing resolution for fiscal year 1985, Public Law 98-473). If the fill rate is reduced to 50,000 barrels per day, a 750-million-barrel SPR would not be filled until the year 2000.

SPR OIL FILL ACTIVITIES

DOE reported that 15 million barrels of oil were added to the SPR during the quarter ending June 30, 1985, bringing the total SPR inventory to 476.6 million barrels. The average SPR oil fill rate for the quarter was 164,000 barrels per day. (See fig. 2 and

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[4]The President can determine that the 300,000-barrels-per-day average minimum rate is not in the national interest and set a 220,000-barrels-per-day average minimum rate, or the highest practicable fill rate achievable with available funds.

tables 2 through 5 for further information on SPR oil acquisition and fill activities.) About 4.7 million barrels (31 percent) of the oil delivered in the third quarter of fiscal year 1985 came from DOE's 1981 contract with Petroleos Mexicanos (PEMEX), the Mexican national oil company. About 10.3 million barrels (69 percent) were delivered under contracts that the Defense Fuel Supply Center (DFSC, a Department of Defense agency that serves as the purchasing agent for most SPR oil) had awarded through its open, continuous solicitation.[5]

Of the 476.6 million barrels of oil in storage as of June 30, 1985, 39 percent was sweet (low sulfur) crude, 49 percent was sour (high sulfur) crude, and 12 percent was a combination of lower quality crude oils. (See table 3 for SPR oil quality specifications.) As stated in our March 1985 quarterly report, all DFSC oil procurements for DOE's account between March 1, 1985, and September 30, 1985, will be sweet crude. DOE will, however, continue to purchase sour crude under its PEMEX contract at 50,000 barrels a day through the end of fiscal year 1985. This procurement pattern will result in an SPR mix of about 39 percent sweet and 61 percent sour as of September 30, 1985.

During the quarter DFSC awarded ten contracts totaling 10.2 million barrels through the open, continuous solicitation. On June 19, 1985, DFSC paid $26.95 per barrel for 1 million barrels of "Forties" oil (a sweet crude) delivered to the SPR. According to a DFSC official, the spot market has weakened considerably during the quarter and this "Forties" oil purchase was at a low point of the spot market.

During the fourth quarter of fiscal year 1985, DFSC will be required to purchase only about 1 million barrels of oil by September 30, 1985. (See table 4.) According to a DFSC official, final fiscal year 1985 oil purchases will be made during July 1985. At this point, due to the administration's proposed indefinite moratorium on developing and filling the SPR at the end of fiscal year 1985, DFSC operations committed for the SPR oil acquisition effort will begin to wind down; most DFSC personnel will leave for other positions. Officials from DFSC and the DOE Program Office told us that if DOE requested DFSC to resume purchases, it would take about 3 months until the first oil purchases could be made, assuming that DFSC is able to divert

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[5]The open, continuous solicitation is a mechanism that DFSC uses to purchase SPR oil. It involves the use of a purchasing solicitation that is not reissued but rather remains open, allowing offers of oil to be made about every 2 weeks. The offers usually involve oil that is available on the "spot" (short-term) market.

resources from other programs. Another month would be necessary to move the oil into DOE's storage sites. This estimate is based on a previous occurrence when after a 1-year oil-fill hiatus in 1979 and 1980, DOE requested that DFSC resume its oil-acquisition activities. If the Congress decides that SPR oil fill should continue, DOE could buy up to 50,000 barrels of oil per day from PEMEX until the current contract expires on August 31, 1986.

STATUS OF SPR OIL ACQUISITION AND TRANSPORTATION ACCOUNT

During the quarter DOE made payments of $331 million for oil acquisition and transportation. Program Office personnel stated that as of June 30, 1985, DOE had unpaid obligations of about $522 million and unobligated funds of about $828 million. DOE has proposed deferring $827 million for fiscal year 1985 funds, leaving a balance of about $1 million available for obligation in fiscal year 1985. (See table 6.)

STORAGE SITE ACTIVITIES

During the quarter the phase II storage capacity leaching program proceeded without any major problems, generally achieving DOE goals for capacity development. In addition, phase III leaching began at West Hackberry and continued at Bryan Mound. (See tables 7 and 8.) DOE continued its program to inspect crude oil, water intake, and brine pipelines for corrosion at West Hackberry and Weeks Island. Project Office officials stated that the West Hackberry site instrumentation and control system has been successfully tested and accepted. At Bayou Choctaw the ethane transfer between DOE and Allied Chemical Corporation caverns began in May 1985 with a final ethane transfer and official cavern exchange targeted for the end of fiscal year 1985.[6] In April 1985 DOE signed a $6 million contract with Fluor Engineers, Inc., for architectural and engineering services associated with the SPR distribution enhancement program.

All phase II cavern leaching and related facilities development activities will continue during the rest of fiscal year 1985, enabling DOE to provide oil storage capacity for a

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[6]According to Project Office personnel, in December 1982 Allied Chemical Corp. settled its lawsuit against DOE, which had used federal condemnation procedures to obtain Allied Chemical's land for the Bayou Choctaw SPR storage site. As part of the settlement, DOE agreed to leach a cavern with at least 4.5 million barrels of usable capacity and then exchange it for a 10-million-barrel cavern that Allied Chemical currently uses to store ethane.

489-million-barrel SPR by September 30, 1985. Beginning in fiscal year 1986, activities during the proposed moratorium would center around preparing the SPR sites for standby operations. At the Big Hill phase III site, DOE plans to complete all current contracts by the end of fiscal year 1985 and place the site in a standby condition so that storage capacity development can be resumed in the future. The Big Hill construction contract for the raw water intake system has been modified to place all equipment in storage instead of installing it as planned.

West Hackberry

The West Hackberry leaching program operated without major problems during the quarter, creating about 12.6 million barrels of oil storage capacity. The site was shut down for 1 day in April for maintenance work on the electrical instrumentation and control equipment. Of the 16 phase II caverns, 6 are full, 3 are in the final-fill stage, 3 are in the leach-fill stage, and 4 are in the leaching-only stage. Leaching of the one phase III cavern began on June 18, 1985.

Our March 1985 quarterly report discussed a phase II cavern in the leaching-only stage that was taken out of service because of irregular leaching results and a program to test the cavern's oil storage capability that depended on fiscal year 1985 funds being available. Project Office officials stated that during this quarter, fiscal year 1985 funds were determined to be available, and on June 12, 1985, they authorized a plan of action for Boeing Petroleum Services, Inc.,[7] to test the cavern. The testing program for this cavern is scheduled to begin about August 1, 1985, and will require about 250 days if no problems occur or up to about 400 days if problems are encountered. The test plan includes well modifications that will involve installing special piping to monitor and test cavern pressure and oil and brine levels in the cavern. A Project Office official stated that leaching activity for this cavern could be resumed as early as March 1986 if the tests show no problems and if the moratorium is not approved by Congress.

Our March 1985 quarterly report also discussed DOE efforts to complete installation and testing of West Hackberry's instrumentation and control system and the electrical work planned to convert the raw water intake structure from a manned to a stand-alone (unmanned) operation. According to Project Office officials, Coggins Systems, Ltd., performed a 30-day test of the West Hackberry instrumentation and control system between May 8

[7]The SPR management, operation, and maintenance contractor who assumed responsibility on April 1, 1985.

and June 9, 1985; this system connects all site electrical systems for operation control to a centralized control room. One problem that occurred during this test involved a malfunction to a power supply system that controls the input and output of pumps. This malfunction shut down the test for less than a day and was not serious enough to require that the 30-day test period be restarted. DOE considered the test successful and assumed custody of the instrumentation and control system.

The conversion of the water intake structure from a manned to an unmanned operation will also be performed by the same contractor (Coggins) as an amendment to its current contract effort, which initially was to install and test the West Hackberry instrumentation and control system. The Coggins proposal for this work is being evaluated by the Defense Contract Audit Agency (DCAA). After DCAA completes its investigation, DOE will negotiate a contract price with the contractor. The conversion work is now expected to begin in July 1985.

Our March 1985 quarterly report discussed DOE's plans to investigate two potential problem points in the crude oil pipeline between West Hackberry and the Sunoco marine terminal in Nederland, Texas. A Boeing official stated that bid proposals for this work were submitted up to a closing date of June 25, 1985. Boeing will evaluate the proposals and select a subcontractor for this pipeline work. Actual on-site investigations are expected to begin in August 1985.

The March 1985 quarterly report also discussed an ultrasonic testing program completed in March 1985 by Technical Welding Labs, Inc., for the site's raw water intake and brine pipelines, including the raw intake line and the brine disposal line to the Gulf of Mexico. A Boeing official stated that the test data provided by the contractor will continue to be analyzed; a preliminary assessment, however, indicates no abnormal corrosion in the pipelines.

Bryan Mound

The Bryan Mound leaching program operated without major problems during the quarter, creating about 2.6 million barrels of permanent oil storage capacity. The site was shut down for part of 1 day in April for routine maintenance repairs. Of the 12 phase II caverns, 8 are filled, 3 are in the final-fill stage, and 1 is in the leach-fill stage. Of the four phase III caverns, two are in the leach-fill stage and two are in the leaching-only stage.

Our last quarterly report discussed the past problems with well pad subsidence (sinkage and settlement) of a phase II cavern in the leach-fill stage that had not had leaching activity since

June 1984. This phase II cavern's well pad has been reconstructed to allow heavy equipment (a work-over rig) on the well pad to change the cavern's piping configuration so that leaching can continue. On May 31, 1985, leaching resumed, and Project Office officials stated that the cavern will be completed by the end of fiscal year 1985.

Project Office officials stated that work began on June 4, 1985, on Bryan Mound's instrumentation and control system. A contract to install and test this system was awarded April 22, 1985, to Coggins for about $1.5 million. The work is scheduled for completion in about 15 months, or about September 1986. A Project Office official stated that Coggins' experience in performing similar work at the West Hackberry site may contribute to completing the Bryan Mound work in less than the scheduled 15 months.

The Project Office signed a $6 million cost-plus-fixed-fee contract on April 2, 1985, with Fluor Engineers for architectural and engineering services associated with the pipeline portion of the SPR distribution enhancement program. As discussed in our June 1984[8] quarterly report, a 50-mile 42-inch pipeline will be constructed from Bryan Mound to the Texas City/Baytown/Houston area. The enhancement project will also upgrade the (Phillips) Seaway marine terminal that serves Bryan Mound and connects Bryan Mound to a second marine terminal in the Freeport, Texas, area. The contract period is from April 1, 1985, to March 31, 1987.

Bayou Choctaw

Our last three quarterly reports (September[9] and December[10] 1984 and March 1985) discussed the Bayou Choctaw cavern exchange between Allied Chemical Corp. and DOE. A cavern leached by DOE to 6.1-million-barrels capacity is being exchanged for a 10-million-barrel cavern owned by Allied Chemical that currently contains ethane, which is being transferred between these two caverns.

A Boeing official stated that Allied Chemical initiated the ethane transfer process in May 1985 and is performing the transfer activity at times when it does not conflict with Allied Chemical's

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[8]Status of Strategic Petroleum Reserve Activities as of June 30, 1984 (GAO/RCED-84-182, July 13, 1984).

[9]Status of Strategic Petroleum Reserve Activities as of September 30, 1984 (GAO/RCED-85-40, Oct. 15, 1984).

[10]Status of Strategic Petroleum Reserve Activities as of December 31, 1984 (GAO/RCED-85-58, Jan. 22, 1985).

normal operations. This official further stated that the ethane transfer may take up to 90 days to complete. After the transfer, the cavern that had contained the ethane will need to be certified by DOE as suitable to store crude oil, and another well will need to be drilled into the cavern before oil can be injected. An Office of General Counsel official in DOE's Oak Ridge Operations Office stated that in accordance with the cavern exchange agreement between DOE and Allied Chemical, the ownership titles cannot be transferred until the cavern that had contained the ethane is certified. This official said that although the official exchange is still several months away, it possibly will be completed before the end of fiscal year 1985.

Phase III activity also continued this quarter with the drilling of the second of two wells for the phase III cavern. One well was completed on April 24, 1985. However, as we noted in our last quarterly report, the invitation for bids for construction work on this cavern has been put on hold under the administration's proposed moratorium on further site development.

Our March 1985 quarterly report discussed a planned hydrostatic testing of the 37-mile oil pipeline between Bayou Choctaw and the St. James marine terminal because of extensive corrosion identified in 18 pipeline joints. The previous SPR operations and maintenance contractor, Petroleum Operations and Support Services, Inc., had awarded a contract in January 1985 for this work. Boeing has continued with these plans to test the pipeline; but as one Boeing official stated, additional contracting arrangements were needed before the test could be accomplished. These additional contracts will include provisions for (1) special chemicals for the test, (2) 36-inch emergency pipeline stock, and (3) emergency pipeline repairs. A Boeing official stated that as a result of these DOE-approved additional contract actions, the Bayou Choctaw pipeline test probably will not occur until late August or early September 1985.

During this quarter DOE announced plans for a drawdown exercise at Bayou Choctaw to remove oil from one cavern (sweet crude) for a 48-hour period under a simulated power outage. Therefore, the exercise will not involve use of the electrically-powered raw water intake pumps. Water injection equipment, including diesel-driven pumps and hoses, will be rented for this test. The tentative dates for this drawdown exercise are July 15-19, 1985.

A Project Office official announced a major project planned for Bayou Choctaw during fiscal year 1986. They stated that plans are now being made to upgrade the site's instrumentation and control system equipment because, compared with the Bryan Mound and West Hackberry equipment, the Bayou Choctaw equipment is

outdated. The DOE architectural and engineering contractor--Walk, Haydel, and Associates--is currently making an engineering study for this proposed work.

Weeks Island

Our March 1985 quarterly report discussed a pipeline survey made during March 1985 for corrosion in the 67-mile pipeline between Weeks Island and the St. James marine terminal. Boeing's review of this survey report concluded that only one point in the pipeline needed investigation. On June 12-13, 1985, Boeing excavated an 11-foot section of the pipeline and found this suspect portion of the pipeline to be normal. The pipeline survey report was released June 26, 1985.

Big Hill

During the quarter, DOE proceeded with some of the activities associated with development of the phase III Big Hill storage site. Work is proceeding on drilling wells for the last of 14 proposed caverns, and is scheduled for completion in August 1985. However, as we stated in our last report, the administration's fiscal year 1986 budget submission proposed that all current construction activities at Big Hill be brought to an orderly conclusion by the end of fiscal year 1985. At that time the Big Hill site is to be maintained in a condition that would permit resumption of construction at a later date, as oil market and fiscal constraints warrant. Therefore, in light of the transition of the Big Hill site to a standby condition in fiscal year 1986, DOE has renegotiated its power contract, formulated a new site maintenance and monitoring plan, and modified one of the existing construction contracts to place all of the equipment in storage instead of having it installed as planned.

The DOE power contract with Gulf States Utilities Company (GSU) has been renegotiated beginning July 1, 1985, for a 10-year period. It will allow DOE the flexibility to initiate, at any time during this 10-year period, its request for the high-demand power needed to resume site construction and oil fill activities. The contract stipulates that DOE has until June 30, 1990, to request power or be obligated to GSU for minimum power-demand charge payments, estimated by a DOE official to total about $10 million between 1990 and 1995. However, DOE does have the option to cancel its contract with GSU within this first 5-year period, because of a recent arrangement with GSU whereby DOE will pay approximately $1.4 million to cover GSU's costs of building the high-voltage electrical transmission line to the Big Hill site. The original DOE-GSU power contract called for a contribution-in-aid-of-construction arrangement between these two parties to construct the transmission line. DOE had paid about $1.3 million

on its share of the construction, engineering, and design costs when the line was initially built.

During the last quarter of fiscal year 1985, GSU will "energize" or connect the Big Hill electric power substation to the high-voltage transmission line. All existing electric energy needs serviced by a low-voltage electrical distribution line will be terminated. According to a May 1985 Project Office report, Standby Plan for the Big Hill Site, the substation will provide power for acceptance testing of installed equipment as well as power to operate the Big Hill facility during the duration of the moratorium.

The Big Hill standby plan requires that the site construction contractor essentially complete work as planned. Some exceptions to the contract terms have been made, such as not installing equipment at the raw water intake site and the major electronic components of the automated control system. The standby plan also requires the installation of temporary security fences, gates and guard shacks, and modifications to the on-site warehouse and electrical systems that will environmentally protect the equipment in storage.

DOE has projected a Big Hill standby cost of $2.8 million during fiscal year 1986, with the primary costs allocated for site operations, maintenance, and security. According to the Project Office, Boeing will be required to prepare a detailed maintenance plan that ensures that systems survive an extended moratorium and also includes a stringent quality assurance inspection program. DOE plans that a total of 12 operations and maintenance personnel will be needed to maintain the site in a standby condition and to perform such tasks as motor and valve testing and repair, painting, and well-monitoring. The standby plan concludes that even with adequate maintenance and quality-assurance programs during the proposed moratorium, it will take approximately 16 months after construction funds are made available for the site to be in a position to start leaching the first caverns--work that was originally planned to start in December 1985.

OTHER ISSUES

During our review we also obtained information on (1) DOE's implementation of the recommendations made in the Operations Office's baseline report and its report on allegations about mismanagement or misconduct within the SPR program and on DOE's follow-up program and implementation and (2) DOE's major contracting actions for the quarter.

Implementation of Operations Office recommendations

Subsequent to being assigned responsibility for SPR project management and direction in June 1983, the Operations Office evaluated the status of the SPR Project Office and in October 1983 issued a baseline assessment report on the Project Office. This report made 170 recommendations, which predominantly sought to redirect overall SPR priorities, realign Project Office and contractor responsibilities, and implement existing DOE procedures. The Project Office has proposed implementation actions for all 170 recommendations as of June 30, 1985, and the Operations Office has approved these proposed actions.

In March 1984 the Operations Office issued its report on allegations of mismanagement or misconduct in the SPR program. The report made 25 recommendations, which the Project Office is implementing. As of June 30, 1985, the Project Office had proposed implementation actions for all 25 recommendations and the Operations Office had approved the proposed actions. Our June 1984 quarterly stated that the Operations Office modified its follow-up system to indicate whether a recommendation required a discrete action (categorized as A), an immediate action before discrete action could be taken (category B), or was general and therefore not conducive to a quick, clear-cut implementation (category C).

In June 1985 the Project Office published its first monthly and quarterly reports that will be used to track the implementation of the approved proposed actions for recommendations in categories B and C to completion. (The last of the category A recommendations were approved and completed by the Project Office during this quarter). These follow-up reports will track the implementation actions for the remaining 57 recommendations (26 in category B, 31 in category C) from the baseline assessment and the 8 recommendations (2 in category B, 6 in category C) from the allegation report. The information on these reports includes a statement of the recommendation and its identifying number, the name of the person responsible for implementing the approved proposed actions, follow-up findings (progress, problems, status), and any additional recommendations. The general proposed action for each recommendation, however, is not shown, nor are there specified completion dates.

SPR contract changes

The Project Office exercised its option to extend its contract with Wells Fargo Guard Services for another year until September 30, 1986. This extension, which is estimated to cost about $4 million, was signed on May 22, 1985, and is the final 1-year option under this cost-plus-award-fee contract. Our

APPENDIX I

September 1984 quarterly report stated that the Project Office revised the contract's statement of work for the fiscal year 1985 option year to include additional responsibilities for which additional costs of about $4 million were negotiated. A Project Office official said that another negotiation will be required for the fiscal year 1986 option year for the cost of these additional responsibilities and that these negotiations should be completed by September 1985.

Our September 1984 quarterly report noted that the Project Office selected Systematic Management Services, Inc., under the Small Business Administration Section 8(a) program[11] to provide most of the management support services for the SPR. Contract negotiations between Systematic Management Services and the Project Office continued into this quarter, and a cost-plus-fixed-fee contract was signed April 11, 1985. The base contract amount is for about $14.3 million and expires on August 28, 1987. A Project Office official stated that the contract is limited to an overall term of 5 years, which would include the base period and two 1-year option periods.

Our September 1984 quarterly report also noted that Walk, Haydel, and Associates would assume responsibility on October 1, 1984, for the architectural and engineering services associated with the SPR sites' modification and upgrade construction work. This program is now called the Capital Improvements Program. The Project Office signed a cost-plus-fixed-fee contract on June 1, 1985, with Walk, Haydel, and Associates for architectural and engineering services in the SPR Capital Improvements Program for 1 year for about $7.3 million, with three 1-year option periods.

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[11]Section 8(a) of the Small Business Administration Act encourages the development of small businesses owned by eligible socially or economically disadvantaged persons.

APPENDIX II

FIGURES AND TABLES ON THE STATUS

OF THE STRATEGIC PETROLEUM RESERVE.

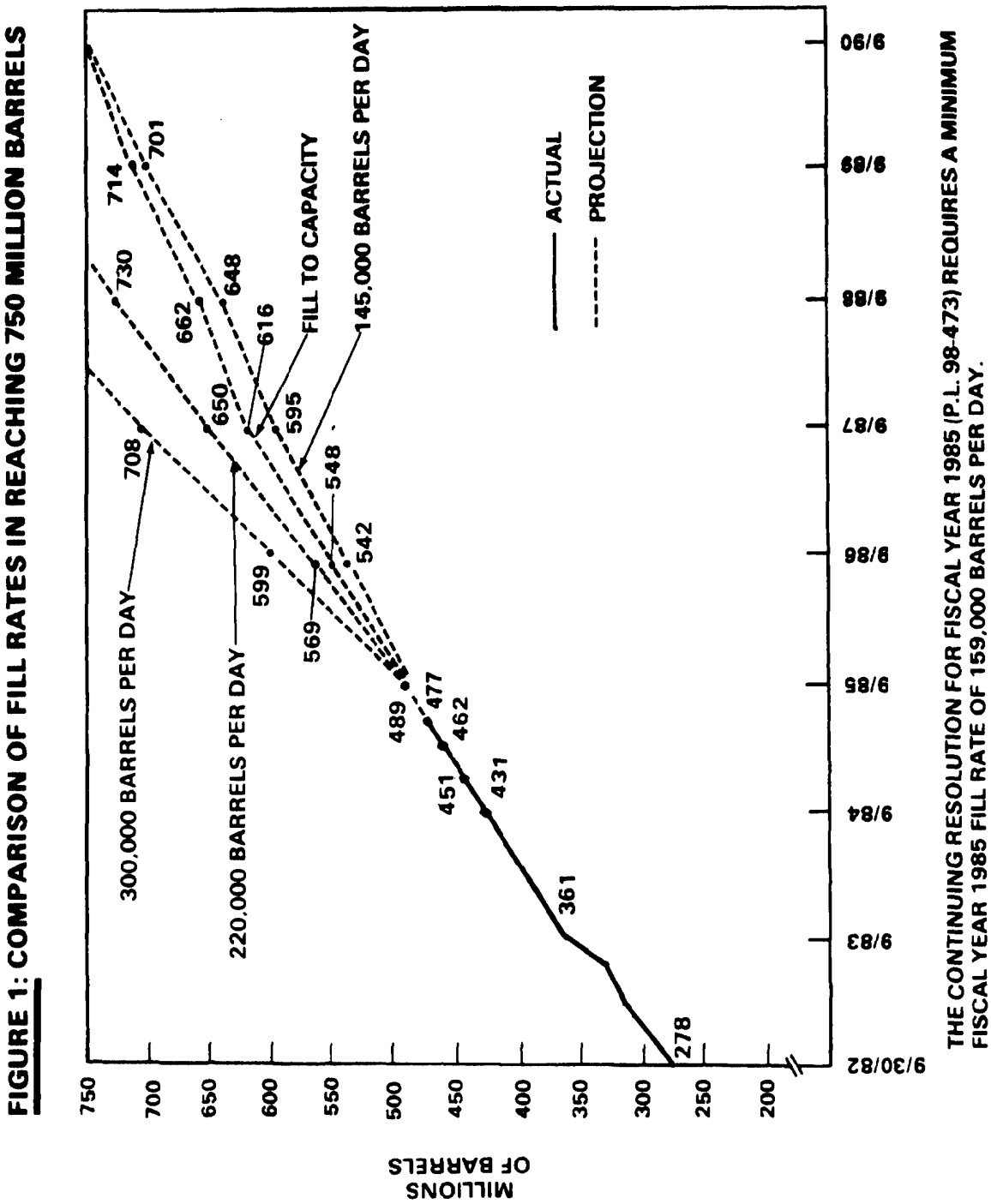

Table 1

Comparison of Fill Rates and
Storage Requirements in Reaching 750 Million Barrels

Fiscal year	Fill to available storage capacity[a]	300,000 barrels per day[b]		220,000 barrels per day[b]		145,000 barrels per day[c]	
		Oil volume	Storage requirements[d]	Oil volume	Storage requirements[d]	Oil volume	Storage requirements[d]
	(millions of barrels)						
1985[e]	489	489	-	489	-	489	-
1986	548	599	-51	569	-21	542	+6
1987	616	708	-92	650	-34	595	+21
1988	662	750	-88	730	-68	648	+14
1989	714	-	-36	750	-36	701	+13
1990	750	-	-	-	-	750	-

[a]The available storage capacity is the amount that the administration's fiscal year 1985 budget shows would have been available at the end of each fiscal year had the SPR development been carried out as planned.

[b]The Energy Emergency Preparedness Act (P.L. 97-229) requires a minimum average annual fill rate of 300,000 barrels per day until at least 500 million barrels of oil are stored. If the President finds that this rate is not in the national interest, the average minimum rate becomes 220,000 barrels per day or the highest practicable fill rate achievable with available funds. After 500 million barrels of oil are in storage, the act requires the President to seek to fill the SPR at the minimum average rate of 300,000 barrels per day until at least 750 million barrels of oil are in storage.

[c]The administration's fiscal year 1985 budget proposed to fill the SPR at the 145,000-barrel-per-day rate until the SPR is filled.

[d]A positive amount indicates excess capacity available, while a negative number indicates that additional storage is needed.

[e]The Continuing Resolution for Fiscal Year 1985 (P.L. 98-473) established the minimum fill rate at 159,000 barrels per day for fiscal year 1985, which would result in an SPR inventory of 489 million barrels at the end of the fiscal year.

Source: DOE and GAO calculations.

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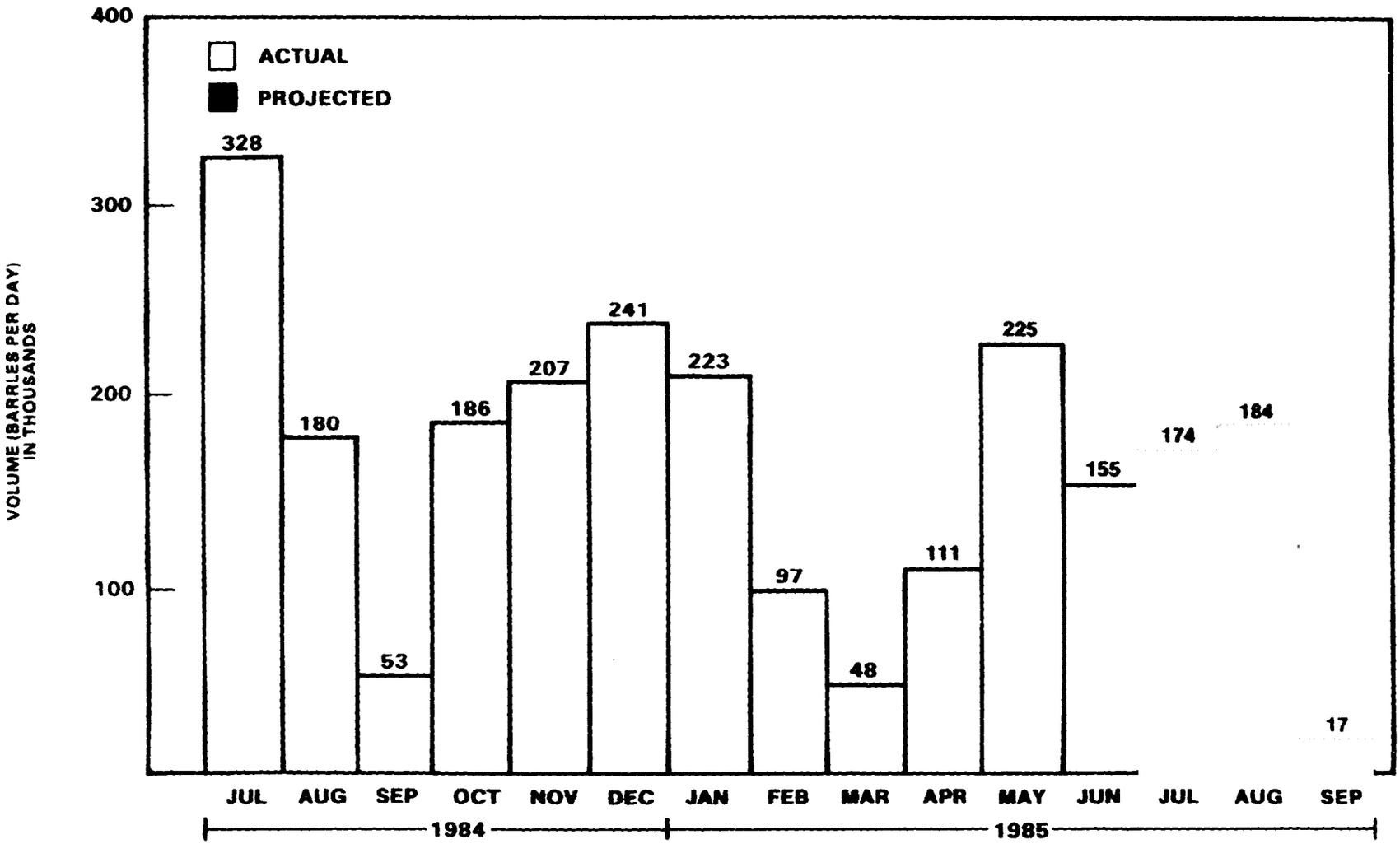
FIGURE 2: AVERAGE DAILY SPR OIL RECEIVING RATE [a]



[a] DAILY RECEIVING RATES FOR JULY, AUGUST AND SEPTEMBER 1985 ARE BASED ON DOE PROJECTIONS OF FUTURE DELIVERIES AND ARE SUBJECT TO CHANGE.

APPENDIX II

APPENDIX II

Table 2

SPR Oil Deliveries
by Fiscal Year 1985 Quarter

Quarter	Oil volume at start of quarter	Deliveries	Oil volume at end of quarter	Average receiving rate For quarter	Average receiving rate Since 10/1/84
	(millions of barrels)			(thousands of barrels per day)	
Oct. 1, 1984 through Dec. 31, 1984	431.1	19.1	450.1	211.3	211.3
Jan. 1, 1985 through March 31, 1985	450.5	11.1	461.6	123.5	167.8
April 1, 1985 through June 30, 1985	461.6	15.0	476.6	164.3	166.7

Source: DOE.

Table 3

SPR Oil Deliveries by Crude Type
as of June 30, 1985

	Type I[a]	Types II-V[b]	Type VI[c]	Type VIa[d]	Maya[e]	Total
	(millions of barrels)					
Volume delivered	232.6	184.4	31.4	16.6	11.6	476.6
	(percent)					
Percentage of total oil delivered	49	39	7	3	2	100

[a]High-sulfur crude (from 0.5 to 1.99 percent sulfur content) with an American Petroleum Institute (API) gravity range of 30 to 36 degrees. Type I oil includes Arabian Light and Isthmus crudes. The oil industry uses degrees of API gravity to measure an oil's specific gravity. API gravity measures the mass of a fluid relative to water and ranges from 10 degrees for very heavy crude to 45 degrees for very light crudes.

[b]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.

[c]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.

[d]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.

[e]Maya crude is a lower quality oil having a maximum sulfur content of 3.5 percent and an API gravity of at least 22 degrees. As of April 1984, Maya crude was no longer being acquired as part of the PEMEX contract.

Source: DOE.

Table 4

Summary of Oil Acquisition Activities for Fiscal Year 1985

	Oil deliveries for quarter ending 6/30/85	Oil deliveries for FY 1985 as of 6/30/85	Oil under contract as of 6/30/85[a]	Oil to be contracted[b]	Total
	(millions of barrels)				
Open, continuous solicitation[c]	10.3	31.4	7.2	1.0	39.6
PEMEX contract	4.7	14.1	4.4	-	18.5
Total	15.0	45.5	11.6	1.0	58.1

[a]Represents the amount of oil that is under contract and to be delivered in fiscal year 1985.

[b]Represents the amount of oil that remains to be contracted for and delivered in fiscal year 1985.

[c]The open, continuous solicitation involves making contract awards without reissuing the solicitation for offers of oil that is available on the "spot" (short-term) market. (See table 5 for individual contract awards.)

Source: DOE and DFSC.

Table 5

Open, Continuous Solicitation Awards for Quarter Ending June 30, 1985

Contract date	Supplier	Oil type[a]	Total barrels (millions)
4-11-85	BP Oil Development, Ltd.	Sweet	2.00
4-25-85	Amerada Hess Trading Co.	Sweet	.65
5-09-85	BP Oil Development, Ltd.	Sweet	.50
5-09-85	BP Oil Development, Ltd.	Sweet	.50
5-10-85	Phibro Energy, Inc.	Sweet	1.95
5-24-85	T.W. Oil, Inc.	Sweet	1.10
5-24-85	Phibro Energy, Inc.	Sweet	1.30
5-24-85	Mitsui & Co. (USA), Inc.	Sweet	.60
6-06-85	Internorth Int'l. Oil, Inc.	Sweet	.60
6-19-85	Internorth Int'l. Oil, Inc.	Sweet	1.00
Total			10.20

[a]DOE established quality specifications for SPR oil, including a range from 0.5 percent to 1.99 percent sulfur content for sour crudes and a maximum of 0.5 percent sulfur content for sweet crudes.

Source: DFSC.

Table 6

Status of the SPR Oil Acquisition and Transportation Funds as of June 30, 1985[a]

Funds made available	Amount (millions)
Carryover from fiscal year 1981	$1,806
Fiscal year 1982 appropriations	3,684
Fiscal year 1983 appropriations	2,074
Fiscal year 1984 appropriations	650
Fiscal year 1985 appropriations	2,050
Total made available	$10,264
Funds used or committed	
Fiscal year 1982 payments	$3,687
Fiscal year 1983 payments	1,641
Fiscal year 1984 payments	2,329
Estimated fiscal year 1985 payments[b]	1,257
Estimated DOE unpaid obligations as of 6/30/85[c]	522
Total used or committed	$9,436
Estimated unobligated funds at DOE[d]	$ 828

[a]The Omnibus Budget Reconciliation Act of 1981 (Public Law 97-35, Aug. 13, 1981) established the SPR Petroleum Account, effective October 1981, to pay for petroleum acquisition and transportation. This is an off-budget account.

[b]Amount consists of DOE's actual reported payments through May 1985 and DOE's estimated payments for June 1985.

[c]Unpaid obligations represent funds that have been committed to pay for fiscal year 1985 oil deliveries under the first PEMEX contract, or are obligated to DFSC for upcoming oil deliveries or purchases and expected transportation costs. DFSC estimates that of the funds obligated to it, about $37 million is available as of June 30, 1985, for future purchases.

[d]DOE has proposed deferring $827 million for fiscal year 1985, leaving a balance of approximately $1 million available for obligation during fiscal year 1985.

Source: DOE and DFSC.

Table 7

Status of SPR Underground Capacity
as of June 30, 1985

Storage facilities	Permanent capacity planned	Capacity available	Capacity filled
Phase I sites:	----------(millions of barrels)---------		
Bayou Choctaw	46.3	46.0	45.5
Bryan Mound	66.1	67.1	64.3
Sulphur Mines	26.4	26.4	26.1
Weeks Island	73.0	73.0	73.0
West Hackberry	48.2	49.2	47.3
Total	260.0	261.7	256.2
Phase II sites:			
Bayou Choctaw	10.0	0	(a)
Bryan Mound	120.0	118.5	118.2
West Hackberry	160.0	102.4	96.1
Total	290.0	220.9	214.3
Phase III sites:			
Bayou Choctaw	10.0	-	-
Bryan Mound	40.0	2.8	3.1[b]
West Hackberry	10.0	-	-
Big Hill	140.0	-	-
Total	200.0	2.8	3.1
Tanks and pipelines	-	-	3.0
Total for SPR	750.0	485.4	476.6

[a]A newly leached cavern with 4.5 million barrels of usable capacity should be exchanged for an existing 10-million-barrel cavern owned by Allied Chemical Corp. at the Bayou Choctaw site by the end of fiscal year 1985.

[b]Includes oil in interim storage.

Source: DOE.

APPENDIX II

Table 8

Summary of Leaching Activities
for Quarter Ending June 30, 1985[a]

	Brine disposal[b]		Cumulative oil capacity[c]		Cumulative oil fill	
	Baseline	Actual	Baseline	Actual	Baseline	Actual
	(thousands of barrels per day)		(millions of barrels)			
Bryan Mound:						
April	421	409	118.1	120.0	118.1	118.4
May	570	555	119.4	120.8	120.4	120.3
June	725	758	124.1	121.3	121.4	121.2
West Hackberry:						
April	842	886	89.0	92.2	88.8	87.7
May	763	796	90.6	96.0	93.0	92.0
June	803	832	93.4	102.4	97.3	96.4

[a]This table compares the actual leaching activities with baselines that have been established for the SPR contractor. To allow for contingencies, the contractor baselines are more stringent then the overall baselines established for the SPR program.

[b]According to Project Office officials, the brine disposal baseline rate has been revised since last quarter to reflect a decline in leaching activities.

[c]Cumulative oil capacity represents the amount of cavern volume available for storing oil.

Source: DOE.

Table 9

Prior GAO Quarterly Reports

1. Progress in Filling the Strategic Petroleum Reserve Continues, but Capacity Concerns Remain (GAO/EMD-82-112, July 15, 1982).

2. Status of Strategic Petroleum Reserve Activities as of September 30, 1982 (GAO/RCED-83-29, Oct. 15, 1982).

3. Status of Strategic Petroleum Reserve Activities as of December 31, 1982 (GAO/RCED-83-93, Jan. 14, 1983).

4. Status of Strategic Petroleum Reserve Activities as of March 31, 1983 (GAO/RCED-83-136, Apr. 15, 1983).

5. Status of Strategic Petroleum Reserve Activities as of June 30, 1983 (GAO/RCED-83-203, July 13, 1983).

6. Status of Strategic Petroleum Reserve Activities as of September 30, 1983 (GAO/RCED-84-11, Oct. 14, 1983).

7. Status of Strategic Petroleum Reserve Activities as of December 31, 1983 (GAO/RCED-84-92, Jan. 13, 1984).

8. Status of Strategic Petroleum Reserve Activities as of March 31, 1984 (GAO/RCED-84-148, Apr. 13, 1984).

9. Status of Strategic Petroleum Reserve Activities as of June 30, 1984 (GAO/RCED-84-182, July 13, 1984).

10. Status of Strategic Petroleum Reserve Activities as of September 30, 1984 (GAO/RCED-85-40, Oct. 15, 1984).

11. Status of Strategic Petroleum Reserve Activities as of December 31, 1984 (GAO/RCED-85-58, Jan. 22, 1985).

12. Status of Strategic Petroleum Reserve Activities as of March 31, 1985 (GAO/RCED-85-111, April 15, 1985).

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