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Fact Sheet for the Chairman, Subcommittee on Environment, Energy and Natural Resources, Committee on Government Operations, House of Representatives

May 1987

OIL RESERVE

Status of Strategic Petroleum Reserve Activities as of March 31, 1987

039291

GAO/RCED-87-135FS

GAO

United States
General Accounting Office
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Resources, Community, and
Economic Development Division

B-208196

May 14, 1987

The Honorable Mike Synar
Chairman, Subcommittee on Environment,
Energy, and Natural Resources
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

In your December 9, 1985, letter, and in subsequent discussions with your office, you requested that we continue to report on a quarterly basis on the Department of Energy's (DOE) progress in developing, operating, and filling the Strategic Petroleum Reserve (SPR) and in complying with the requirements of applicable law.

This fact sheet covers events and activities related to DOE's progress in developing, operating, and filling the SPR during the second quarter of fiscal year 1987. These events and activities are highlighted below. Details are provided in sections 1 and 2 of the fact sheet.

-- As of March 31, 1987, the SPR inventory totaled 520 million barrels of oil. During the quarter DOE added 8.4 million barrels of crude oil to the SPR at an average fill rate of 93,575 barrels per day.

-- During the remainder of fiscal year 1987, SPR plans to purchase crude oil from PEMEX--the Mexican national oil company--and from Transworld Oil U.S.A., Inc.

-- Inspections and tests for pipeline deterioration were completed at the Bryan Mound, Texas, and Bayou Choctaw, Sulphur Mines, and West Hackberry, Louisiana, sites to determine the need for corrective actions, some of which were completed or are currently under consideration.

-- A reliability, availability, and maintainability (RAM) test and exercise to verify equipment operation and failure rate predictions was conducted from February 17 to March 2, 1987, at the Weeks Island, Louisiana, site. A preliminary synopsis indicated that a number of operational problems occurred during the exercise which shut down some and on occasion all of the equipment involved with the test. A full report on the exercise is scheduled for release during the next quarter.

-- From March 6 to 15, 1987, DOE conducted an SPR security exercise at the West Hackberry, Bryan Mound, Weeks Island, and Bayou Choctaw sites. Boeing Petroleum Services, Inc., the management, operations, and maintenance contractor, evaluated the exercise. Of 14 areas evaluated, 2 areas were rated superior, namely the areas of protective force conduct and operational personnel participation; 8 were rated satisfactory; 5 were rated marginally satisfactory; and 1 area was rated marginal. Boeing concluded that from a control standpoint most of the exercise objectives were met. A full evaluation report is to be prepared in a few weeks. After DOE reviews the report Boeing is to prepare a corrective actions plan.

OBJECTIVES, SCOPE, AND METHODOLOGY

By agreement we limited our review to providing primarily statistical information and highlights of major activities that occurred during the period. To obtain this information, we reviewed DOE and contractor program documents, publications, and studies and interviewed DOE managers and operations personnel responsible for planning and managing activities associated with developing and operating the SPR facilities. We did not verify the volume or quality of oil that DOE received or the available capacity of SPR storage facilities. We discussed the information provided in this fact sheet with DOE program officials, who verified its factual accuracy. Their comments have been incorporated in the fact sheet as appropriate.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this fact sheet until 7 days after the date of this letter. At that time, we will provide copies to the

Secretary of Energy and other interested parties and make copies available to others upon request. If you would like further information on this fact sheet, please contact me on (202) 275-8545. Major contributors to this fact sheet are listed in appendix I.

Sincerely yours,

Flora H. Milans
Associate Director

C O N T E N T S

ABBREVIATIONS

ARCO	Atlantic Richfield Company
DOE	Department of Energy
GAO	General Accounting Office
IFB	invitation for bids
NPR	Naval Petroleum Reserve
PEMEX	Petroleos Mexicanos
RAM	reliability, availability and maintainability
RCED	Resources, Community, and Economic Development Division
RWIS	raw water intake structure
SPR	Strategic Petroleum Reserve
UPS	uninterruptible power supply

SECTION 1

STATUS OF STRATEGIC PETROLEUM RESERVE

ACTIVITIES AS OF MARCH 31, 1987

The Energy Policy and Conservation Act (Public Law 94-163, Dec. 22, 1975), as amended, authorized the creation of the SPR to store up to 1 billion barrels of crude oil for use if an oil supply disruption occurred. To meet the act's goals, DOE established a three-phase plan to develop capacity to store 750 million barrels of oil currently scheduled for completion in 1992.[1]

Initially, the plan 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. It also involved additional storage capacity development at the sites; the construction of a marine terminal at St. James, Louisiana; and the development of a new site at Big Hill, Texas.

The various SPR storage sites are connected by pipeline to three marine terminal complexes for crude oil deliveries during site development and for oil drawdown and distribution during an oil supply disruption:

-- Seaway complex: the Bryan Mound storage site is connected to the Phillips Petroleum Company's terminal--formerly the Seaway Terminal--in Freeport, Texas.

-- Texoma complex: The West Hackberry and Sulphur Mines storage sites are connected to Sun Oil Company's terminal in Nederland, Texas. The Big Hill storage site, when completed, will also be connected to the Sun Oil terminal.

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

The SPR Program Office in Washington, D.C., is responsible for overall program management and planning activities for achieving the goals and objectives of the SPR program. Responsibility for SPR project management and implementation activities is assigned to the Oak Ridge Operations Office in Oak Ridge, Tennessee. These activities, as delegated by the Operations Office, are carried out through the Project Management Office in New Orleans, Louisiana.

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[1]If the Congress approves the proposed fiscal year 1988 SPR budget, all currently planned site completion dates will be extended indefinitely.

Under a 5-year management, operation, and maintenance contract, Boeing Petroleum Services, Inc., provides the necessary qualified personnel and services to run the government-owned SPR facilities. DOE retains responsibility for overall project management and technical direction, while Boeing is responsible for the SPR's day-to-day management.

This fact sheet discusses activities affecting the SPR that occurred during the quarter ending March 31, 1987, including (1) oil-fill activities, (2) the status of the oil acquisition and transportation account, (3) storage site activities, and (4) oil distribution improvement and enhancement activities.

SPR OIL-FILL ACTIVITIES

DOE reported that 8.4 million barrels of crude oil were added to the SPR inventory during the quarter ending March 31, 1987, increasing it to 520 million barrels. The crude oil received this quarter consisted of purchases from PEMEX (the Mexican National Oil Company), Transworld Oil U.S.A., Inc., and the Naval Petroleum Reserve (NPR). About 6.9 million barrels were delivered under the PEMEX contract; about 1.2 million barrels of domestic crude were delivered under the contract with Transworld; and about 265,000 barrels of domestic crude purchased from the NPR in October were delivered to the SPR.

The average fill rate for the quarter was about 93,575 barrels per day (see fig. 2.1 for further information on SPR oil acquisition and fill activities). Of the 520 million barrels of oil in storage, 37 percent is sweet (low sulfur) crude, 52 percent is sour (high sulfur) crude, and about 11 percent is a combination of lower quality (sulphur and gravity) crude oils.

In our last report,[2] we discussed the SPR's various arrangements to purchase crude oil for fiscal year 1987. These arrangements included

-- a 1-year contract between DOE and PEMEX to purchase between 21.4 million and 26.1 million barrels of crude oil;[3]

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[2]Status of Strategic Petroleum Reserve Activities as of December 31, 1986 (GAO/RCED-87-101FS, March 2, 1987).

[3]The PEMEX III contract is for an average crude oil acquisition rate of 65,000 barrels per day but, based on mutual consent, can be increased or decreased by 10 percent. Since December 1, 1986, the beginning of the current PEMEX contract period, the actual average oil acquisition rate under the contract is 69,260 barrels per day.

-- a 1-year contract between DOE and Transworld Oil, U.S.A., Inc., to purchase 3.65 million barrels of West Texas sour crude oil; and

-- a memorandum of understanding between DOE and the NPR for the purchase of crude oil to be delivered by pipeline from the Elk Hills NPR site in California to the SPR.

DOE discontinued purchases of NPR crude oil, however, after a 1-month procurement--about 8,600 barrels per day--in October 1986. Complicated logistics and higher costs as compared with other crude oil purchases were experienced. The NPR oil arrived by pipeline at the SPR in late January and mid-February 1987. The SPR received a net of 264,721 barrels of NPR oil at a cost of $16.13 per barrel. This included a per barrel common carrier pipeline transportation cost of $2.62. The shipment incurred an in-transit loss of .52 percent, or 1,396 barrels, and a tariff deduction of .25 percent or 667 barrels.

DOE's crude oil purchases for the remainder of fiscal year 1987 will be under the PEMEX and Transworld Oil, U.S.A., Inc., contracts.

STATUS OF SPR OIL ACQUISITION AND TRANSPORTATION ACCOUNT

According to DOE, its oil acquisition and transportation account provides funds for (1) SPR oil procurement; (2) associated transportation costs such as pipeline, tanker, and marine terminal activities; (3) U.S. Customs duties; (4) Superfund taxes; and (5) miscellaneous costs, such as administrative expenses associated with acquiring and transporting the oil. The Omnibus Budget Reconciliation Act of 1981 (Public Law 97-35, Aug. 13, 1981) provides that if an SPR oil drawdown occurred, this account would also fund the federal cost of withdrawing the oil from the storage caverns and transporting it to the point where private purchasers would take title. Receipts from the sale of oil would also go into this account. During the quarter, DOE made payments of $126 million for oil acquisition and transportation. The SPR Program Office estimated that as of March 31, 1987, DOE had unpaid obligations of about $254 million and unobligated funds of about $145 million.

SPR SITE DEVELOPMENT AND ENHANCEMENT ACTIVITIES

During the quarter, caverns at the West Hackberry site received almost all the oil added to the SPR. Inspections and tests of the condition of various pipelines were done on pipelines at the West Hackberry, Bryan Mound, Bayou Choctaw, and Sulphur Mines sites. A reliability, availability, and maintainability test

and exercise was held at the Weeks Island site to verify equipment operations and failure rate predictions.

West Hackberry

The West Hackberry site received most of the crude oil added to the SPR during the quarter. About 743,000 barrels were received at the St. James Terminal. As of March 31, 1987, 9 of the 16 Phase II caverns at West Hackberry were full, containing 89.5 million barrels; 3 were in a final-fill status containing 26.1 million barrels; 3 were in a leaching status, containing 13 million barrels; and one cavern was ready for leaching. The single Phase III cavern was also in the leaching stage.

The one Phase II cavern now ready for leaching is the cavern that experienced an equipment failure in 1986 while undergoing a test procedure, resulting in some loss of oil and brine. A Boeing engineer told us that the cavern resumed leaching on April 7, 1987, with completion of leaching scheduled for April 1988.

West Hackberry's brine pipeline disposal capacity is currently limited to 360,000 barrels per day because pipeline deterioration resulted in a rupture that required extensive repair. The repair work included replacing over 4,200 feet of the pipeline; patching an additional 40-foot section; and installing an oxygen scavenging system to remove oxygen in the pipeline to inhibit corrosion. DOE has limited the use of the brine line because it believes other sections of this 27-mile pipeline may have corrosion similar to the sections replaced.

The pipeline was subjected to a hydrostatic test between March 15 and 17, 1987, which confirmed that the pipeline capacity should be limited to 360,000 barrels of brine daily. DOE plans to operate the pipeline at the restricted brine disposal rate until completion of West Hackberry leaching in September 1988. DOE officials told us that the delay in completing leaching from May 1988 to September 1988 will not affect the proposed 35,000 barrels per day oil delivery rates for fiscal year 1988.

As discussed in our 1986 reports,[4] the raw water intake structure (RWIS) was to be converted from a manned (manual) to an unmanned (automatic) operation. A Boeing engineer and the head of the DOE readiness review board told us that DOE now has use and possession of the instrumentation for the RWIS and that the RWIS

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[4](GAO/RCED-87-101FS, March 2, 1987); Status of Strategic Petroleum Reserve Activities as of September 30, 1986 (GAO/RCED-87-49, November 17, 1986); Status of Strategic Petroleum Reserve Activities as of June 30, 1986 (GAO/RCED-86-205, July 25, 1986; Status of Strategic Petroleum Reserve Activities as of March 31, 1986 (GAO/RCED-86-151, April 18, 1986).

now functions properly for all technical requirements. According to DOE, the contract has not been closed, however, because the contractor has not submitted all required documentation, including all certified drawings and test procedures manuals. The documentation is needed in order for the DOE Readiness Review Board to evaluate the contractor's work and recommend formal acceptance of the RWIS instrumentation. A delegation of DOE and contractor officials met on March 25 and 26, 1987, to reach a final settlement on any open issues and initiate final steps needed to close the contract. Boeing plans to test the RWIS instrumentation in April 1987.

Our last quarterly report discussed an inspection survey of the West Hackberry crude oil pipeline between the site and the Sun Oil Company Terminal, in Nederland, Texas, and the results of the investigation of five selected points in the pipeline. It was determined that the corrosion was either light or moderate and that no severe corrosion had taken place. An invitation for bids (IFB) has since been issued for a contractor to investigate five additional points on the pipeline. Boeing completed a technical review and evaluation of the bids received under the IFB on March 30, 1987. In April 1987 Boeing plans to provide DOE with the results of its technical review and evaluation and recommend a contractor. A Boeing contract official told us that a notice to proceed will be given to the selected contractor near the end of April and that the contract will have an estimated cost of $100,000 and a 90-day performance period.

Bryan Mound

The Bryan Mound site received no oil deliveries this quarter. Our prior report discussed the Bryan Mound drawdown exercise held on December 18, 1986. We reported that, according to a Boeing synopsis, all objectives were achieved except for demonstrating the site's maximum projected drawdown rate of 1.3 million barrels per day. On February 27, 1987, Boeing released the Bryan Mound drawdown report.

According to the report, the basic objective of the exercise was to demonstrate the site's capability to move sweet and sour crude oil simultaneously at the design rate of 1.1 million barrels a day. This was successfully demonstrated for the first time since development of the site. The target flow rate of 1.3 million barrels per day could not be achieved, however, because of poor performance of the raw water intake pumps. An engineering study of the raw water injection system hydraulics is currently under way to devise a solution to the suction pressure problem associated with the system's intake pumps. Operations and maintenance problems also prevented continuous use of 10 injection pumps, and the required manual operation of the system valves did not allow for the fine adjustments needed to achieve actual flow rates from the caverns to coincide with the design flow rates. The ability to

achieve higher oil flow rates was also restricted by the limited amount of ullage--storage tank space--available in which to store the oil being drawn from the caverns.

An ongoing contract is also under way which will complete the needed control room instrumentation and control work to provide an automatic system for the site during drawdown to achieve the required flow rates. The engineering study and the control room work is expected to be completed about September 30, 1987.

The Bryan Mound project to improve Cavern 5 and the site's drawdown capability continued during the quarter. Sweet oil was transferred from the lower part of Cavern 5 into three other caverns. A sonar survey is scheduled to define the shape of the cavern and the thickness of the salt web that separates the top and bottom part of the cavern. Additional leaching will be done later to create larger openings between the top and bottom parts of the cavern.

The Bryan Mound crude oil pipeline was inspected in mid-December 1986 by C. E. Vetco Services, Inc., and a report was issued during the quarter. The inspection used an instrumented pig--an electronic survey tool--and included inspection of the 30-inch, 4-mile pipeline between the site and the Jones Creek tank farm.

The survey identified 75 anomalies. Most occurred in the light, or class 1, category--25 percent or less pipe wall corrosion penetration. No severe, or class 3, anomalies--over 50 percent wall penetration--were identified. Moderate, or class 2, anomalies--25 to 50 percent wall penetration--totaled eight. A Boeing engineer told us that Boeing plans to examine further two of the moderate anomalies sometime prior to July 1987.

The site manager told us that the site's annual maintenance shutdown is scheduled for April 25 to May 5, 1987. The last complete maintenance shutdown at the site was completed on November 9, 1985.

Weeks Island

Our prior report discussed DOE's plans for a reliability, availability, and maintainability test and exercise at the Weeks Island storage site. Boeing issued a site RAM test plan and procedures on January 9 and February 6, 1987. Data were to be obtained over an extended period on 6 of the site's 11 crude oil booster pumps, one mainline pump, and the inert gas generator operating in the oil recycle mode for at least 300 continuous hours. The test was to simulate, to the maximum extent practical, oil pumping rates that would be experienced in an actual oil transfer to the St. James Terminal in order to (1) demonstrate their reliability and (2) verify operation and failure rate

predictions. The exercise began on February 17, 1987, and ended on March 2, 1987.

A synopsis of the test and exercise was issued by Boeing on March 4, 1987. A full report on the exercise is scheduled for release during the next quarter. An analysis of the exercise data relative to the RAM test will be published separately by Boeing and DOE at a later date. However, a preliminary assessment of problems encountered is given below.

The test and exercise began at 3:33 p.m., February 17, 1987. The uninterruptible power supply (UPS) that was to provide backup power to the computer that controls the site instrumentation and control system failed on February 16, 1987, prior to the test. However, the Boeing test and exercise director decided to proceed. The UPS was repaired on February 22, 1987, failed again on February 26, and was repaired and placed back on line on February 27 without disrupting the recycle operation.

The inert gas generator was run for 306.8 hours and the backup generator for 3.8 hours. While the inert gas generator was on line, five shutdowns occurred. Two shutdowns were due to the high temperature switch, two were due to excessive cooling water, and one was due to cooling water pressure momentarily dropping below the minimum required for operations. However, in DOE's opinion, the inert gas generators operated adequately to achieve the planned drawdown rate.

On February 22, 1987, the six booster pumps automatically shut down when the meter skid valves which control the flow of oil closed. On February 24, 1987, two booster pumps and the one mainline pump shut down when the station control valve closed, restricting system oil flow. All pumps were shut down again on March 1, 1987, when a field interface device circuit board failed after the UPS alarm sounded. A fluctuation in the rate of incoming electric power from Gulf States Utilities, the site power source, is suspected of being the cause of triggering the sequence of events causing the shutdowns.

The RAM test concluded at 12:09 p.m. on March 2, 1987. A total of about 4.8 million barrels of crude oil were circulated during the 300-hour test period.

Bayou Choctaw

Our last report discussed the ongoing site construction work at Bayou Choctaw on the Phase II Cavern 17 and Phase III Cavern 101. Because of inclement weather, the Cavern 101 work of constructing surface piping at the cavern and tying the cavern to existing oil, water, and brine pipelines is now scheduled for completion by the end of July, a delay from the expected May 17, 1987, completion date. Leaching on Cavern 101 is expected to begin

by July 31, 1987. The construction work connecting the Phase II Cavern 17 to the existing system was completed on March 31, 1987, and the cavern is now available for oil fill. Oil shipments were scheduled for the cavern in April 1987.

The procurement process, which will integrate Bayou Choctaw Caverns 101 and 17 into the control room instrumentation and control system, continues. Technical proposals were received in January 1987 which, in DOE's opinion, were not fully acceptable. Clarifications were submitted by the offerors on February 6, 1987. A technical evaluation of the additional data submitted was completed on February 27, 1987. A revised acquisition schedule was issued for bids on March 13, 1987. The bid opening and contract award is planned for the next quarter.

In our 1986 reports, we discussed plans to replace a 30-foot section of the brine disposal line at the site. The contractor, L. S. Womack, Inc., was given notice to proceed with the project on February 10, 1987, at an estimated cost of $71,269. On February 20 and 21, 1987, a diver entered the pipeline to inspect about 500 feet of pipeline near the high-pressure pump pad. Boeing officials told us that the preliminary inspection identified no serious corrosion in the area inspected. The contract work was completed on March 29, 1987.

Our last report also discussed a November 10 to 13, 1986, inspection of the crude oil pipeline between Bayou Choctaw and the St. James Terminal, in which an instrumented pig was used. The contractor, AMF Tuboscope, Inc., also inspected this same pipeline about 3 years ago and identified severe corrosion at 18 joint locations. The AMF Tuboscope report, issued in November 1983, disclosed that about 20 percent of the 5,000 joints in the pipeline had various degrees of corrosion. The cover letter, dated February 13, 1987, and prepared by Boeing for the 1987 AMF Tuboscope report, stated that the survey showed that (1) corrosion did not progress appreciably, (2) anomalies noted are within acceptable tolerance levels, and (3) the line can be operated within the parameters established following the hydrostatic test in September 1985. In October 1985, we reported on the hydrostatic test, noting that there was no drop in pressure or significant leaks.[5] According to DOE officials, the pipeline was qualified to operate at the Phase III drawdown rate of 480,000 barrels per day. A Boeing report, issued in November 1985 and discussed in our January 1986 report, recertified the pipeline's integrity but lowered its maximum operating pressure by over one-half of the original design requirements. However, the Boeing report also restated that Boeing could operate safely to deliver 480,000 barrels per day in a drawdown.

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[5]Status of Strategic Petroleum Reserve Activities as of September 30, 1985, (GAO/RCED-86-37, Oct. 15, 1985).

The current AMF Tuboscope report compares the 1983 anomalies with those of 1986. There were about 1,050 total anomalies in 1983, but in 1986 the total increased to about 1,300. Most of the differences occurred in the Grade 1 classification that includes anomalies with a 15- to 30-percent corrosion penetration of the pipe wall. AMF Tuboscope indicated that the age of the pipeline contributed significantly to the increased deterioration. Plans are being considered to investigate selected anomalies.

Sulphur Mines

The 16-mile long Sulphur Mines crude oil pipeline was placed in service in May 1979. It ties into the West Hackberry crude oil pipeline that connects the West Hackberry site to the Sun Oil Company's terminal in Nederland, Texas. The pipeline was the subject of an electronic pig survey by C. E. Vetco Services, Inc., on November 24 and 25, 1986. The survey was a follow-up to an earlier survey performed by AMF Tuboscope, Inc., on September 10, 1983. A report was issued on February 13, 1987.

The results of the follow-up survey were summarized in a February 26, 1987, Boeing cover letter to the Vetco report which showed that erosion had progressed on the pipeline. The 1983 inspection results showed two locations with 15- to 30-percent wall penetration and six unclassified anomalies in the pipeline. No further inspection of the anomalies was made at that time. The 1986 inspection showed three locations having over 50-percent wall penetration classified as severe; 29 locations having 25- to 50-percent wall penetration classified moderate; 91 locations having less than 25-percent wall penetration classified light; and six unclassified anomalies. According to the February 26 Boeing cover letter, a plan and schedule to excavate the pipeline at selected pipeline anomaly locations will be developed to verify the accuracy of the survey data and support a decision on possible corrective actions.

Big Hill

We reported last quarter that DOE and Fruin-Colnon Corporation reached agreement on liquidated damages of $650,000 on the I-B contract for the raw water intake structure and were negotiating a settlement on the I-A contract for site construction. The I-A contract is 99 percent complete. The only open item that remains is delivery of the portable meter prover. Progress on negotiating a liquidated damages settlement has been negligible since the December 3, 1986, meeting between SPR and Fruin-Colnon. According to DOE, Fruin-Colnon attorneys have indicated that if an agreement is not reached on the I-A contract liquidated damages by the end of April 1987, Fruin-Colnon will initiate litigation.

The pipeline contract for the 24.2-mile pipeline from the Sun Oil terminal to the Big Hill site is on schedule--98-percent

complete as compared with a planned 98-percent objective. Work remaining consists of final cleanup and painting of the piping. The contract is scheduled to be completed in June 1987.

The I-C contract for constructing a 14.1-mile brine disposal pipeline, a 5.3-mile raw water line, and an overland power transmission line between the RWIS and the storage site is near completion. As of March 31, 1987, progress in completing the contract was 99 percent as compared with a 99-percent objective. Work remaining consists of pulling electric cable between two transmission towers.

The EBASCO contract for surface construction work at nine caverns at the site, including pipeline tie-ins to connect the caverns to the oil, brine, and water systems, is behind schedule. As of March 31, 1987, progress was measured at 6 percent compared with a 10-percent objective. DOE officials told us that progress on the contract lags significantly behind the approved construction schedule and milestones and that DOE issued a "show-cause" notice on March 2, 1987, to encourage better performance by EBASCO in meeting the planned schedule. EBASCO representatives subsequently met with DOE contract officials and agreed to develop a recovery schedule to get the contract work back on schedule.

The contract for closing and capping the drill-cutting ponds at the site was completed in January 1987.

SPR SECURITY EXERCISE

Between March 6 and 15, 1987, DOE conducted a security exercise at the West Hackberry, Bryan Mound, Weeks Island, and Bayou Choctaw SPR sites. In addition to DOE, Boeing, and Wackenhut, protection services units from the U. S. Army and Coast Guard, Louisiana National Guard, State Police, U. S. Department of Wildlife and Fisheries, and sheriffs' offices from seven Louisiana parishes participated in the exercise. A special operations SWAT team from the Houston, Texas, police department also participated.

The basic objectives of the exercise were to (1) test and assess the adequacy of plans for implementation of SPR protective measures to detect and defeat "high-threat" activities of aggressor forces; (2) develop participatory agencies' capacity for coordinated actions in an emergency; (3) provide realistic training in intelligence, patrol, and defense operations against a high-level opponent; and (4) identify further planning, training, and coordination requirements.

Boeing evaluated the exercise. Of 14 areas evaluated, 2 areas were rated superior, namely the areas of protective force conduct and operational personnel participation; 8 were rated satisfactory; 5 were rated marginally satisfactory; and 1 area was rated marginal. Overall, however, it was concluded that from a control

standpoint most of the exercise objectives were met and that the unstated objective of conducting an exercise of this magnitude without serious incident was achieved. A Boeing official told us that an evaluation report with a classified security information annex will be prepared by Boeing in a few weeks. He told us that after he reviews the report, Boeing is to prepare a corrective actions plan.

SPR OIL DISTRIBUTION IMPROVEMENTS AND ENHANCEMENTS

Our fiscal year 1986 reports discussed various aspects of planned SPR oil distribution enhancements, including plans to rectify problems in the oil distribution system that resulted when Texoma Pipeline Company and Seaway Pipeline, Inc., sold their interstate crude oil pipelines. The objective of the planned enhancements is to increase the SPR crude oil distribution capability to match SPR's 4.5-million-barrel-per-day oil drawdown capability--based on a planned 750-million-barrel reserve. As discussed in our earlier reports, ongoing SPR oil distribution enhancements are under development and planned through 1992. Table 1.1 compares current and planned SPR oil drawdown and distribution capabilities.

Table 1.1: Current and Planned SPR Oil Drawdown and Distribution Capability

Marine terminal complex	Current capability		Planned capability
	Drawdown	Distribution	Drawdown - distribution
	(barrels per day)		
Seaway	1,100,000	390,000	1,100,000
Texoma	1,400,000	1,200,000	2,330,000
Capline	830,000	730,000	1,070,000
Total	3,330,000	2,320,000	4,500,000

At the Seaway complex, the 40-inch, 46.2-mile pipeline from Bryan Mound to Texas City, Texas, is over 95-percent complete. According to a report by the contractor, Fluor Engineers, Inc., the pipeline will be tied in and ready for oil-fill during the next quarter. Terminal modifications at both the Phillips Petroleum Company and the Atlantic Richfield Company (ARCO) are continuing toward a planned completion in mid-summer 1987.

The Texoma complex work involves the construction of a 30-inch, 12-mile crude oil pipeline from West Hackberry to the Texas Pipeline Company's 22-inch line in the Lake Charles, Louisiana, area and to two Lake Charles terminals. An agreement between DOE and Texas Pipeline Company is scheduled to be signed in July 1987. This project currently is in the design, route selection, mapping, aerial photography, and soils investigation stages. Design work is scheduled for completion in 1988 and completion of construction in 1989. The planned Texoma complex enhancements also include dock expansion in the Beaumont-Port Arthur, Texas, area and modifications to two terminals with completion scheduled for 1991-92.

The Capline work to modify metering and make a direct pipeline connection between the St. James site and the Capline terminals is in the design stage. Pipeline tie-in design is complete and is underway for meter and meter prover (calibrator) modifications. Additional marine terminal distribution services are also to be obtained by contract in the St. James area. A request for proposals for terminal distribution services for the Capline complex was issued on March 4, with responses due April 27, 1987. Pipeline tie-in and metering will be completed in early 1988 with the added terminal services becoming available in early 1989.

CONTRACT CHANGES

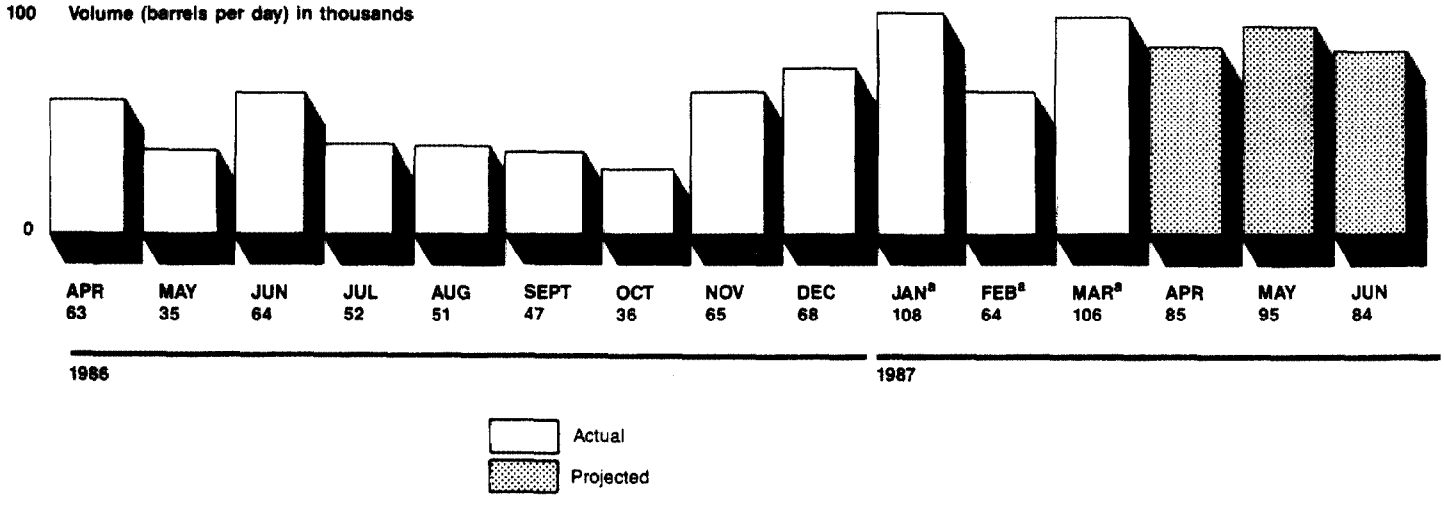
Our last report noted that DOE and PEMEX reached agreement on contract claims settlements for demurrage and quantity differences on the PEMEX I contract under which DOE received crude oil through November 1986. DOE continues to pursue additional claims relating to quantity adjustments for sediment and water in the oil delivered. DOE has not resolved its disagreement with PEMEX on the issue in spite of extensive negotiations. PEMEX insists that the claims have no merit, and DOE officials told us that an appeal to the Board of Contract Appeals is being considered.

DOE issued a Notice of Intent on February 13, 1987, to Systematic Management Services, Inc. (SMS), to exercise the first-year option on the SMS contract. The contract, which is a cost-plus-fixed-fee contract for management support services, expires on August 28, 1987.

SECTION 2

DATA ON THE STATUS OF THE STRATEGIC PETROLEUM RESERVE

Figure 2.1: Average Daily SPR Oil Receiving Rate[a]



[a]Daily receiving rate for April, May and June 1987 based on DOE projection of future deliveries and is subject to change.

Source: DOE.

Table 2.1: Status of SPR Oil Acquisition and Transportation Funds as of March 31, 1987[a]

Funds made available	Amount (millions)
Fiscal year 1977 to 1981 appropriations[b]	$ 6,665
Fiscal year 1982 appropriations	3,684
Fiscal year 1983 appropriations	2,074
Fiscal year 1984 appropriations	650
Fiscal year 1985 appropriations	2,050
Total	$15,123
Funds used or committed	
Fiscal year 1977 to 1981 payments	$ 4,859
Fiscal year 1982 payments	3,687
Fiscal year 1983 payments	1,641
Fiscal year 1984 payments	2,329
Fiscal year 1985 payments	1,621
Fiscal year 1986 payments	397
Estimated fiscal year 1987 payments[c]	188
Estimated DOE unpaid obligations as of March, 1987[d]	254
Total	$14,976
Estimated unobligated funds at DOE	$ 145

[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]Includes lapsed funds of $1.93 million.

[c]Amount consists of DOE's actual reported payments through February 1987 and DOE's estimated payments for March 1987.

[d]Unpaid obligations primarily represent funds that have been obligated for oil deliveries under the third PEMEX contract and the Transworld contract for the purchase of domestic oil, or are obligated to Defense Fuel Supply Center for PEMEX oil transportation costs. The Supply Center estimated that $4.85 million had been obligated as of March 31, 1987, for future costs.

Source: DOE and Defense Fuel Supply Center.

Table 2.2: Status of SPR Underground Capacity for Crude Oil Storage as of March 31, 1987

Storage facilities	Gross volume planned	Gross volume completed	Permanent capacity planned[a]	Capacity available	Capacity filled
	(millions of barrels)				
Phase I sites:					
Bayou Choctaw	48.5[b]	48.5	46.0[b]	46.0	46.0
Bryan Mound	75.0	73.4	69.5	69.5	45.3
Sulphur Mines	27.3[b]	27.3	26.0[b]	26.0	25.9
Weeks Island	73.0	73.0	73.0	73.0	72.6
West Hackberry	50.4	50.4	47.7	48.2	47.4
Total	274.2	272.6[c]	262.2	262.7	237.2
Phase II sites:					
Bayou Choctaw	11.3	11.3	10.0	10.0	--
Bryan Mound	134.4	139.2	124.6	124.6	131.2
West Hackberry	179.2	165.6	160.7	133.9	129.3
Total	324.9	316.1	295.3	268.5	260.5
Phase III sites:					
Bayou Choctaw	11.2	--	10.0	--	--
Bryan Mound	36.8	36.8	31.9	31.9	19.1
West Hackberry	11.2	3.2	10.6	--	--
Big Hill	156.8[b]	--	140.0[b]	--	--
Total	216.0	40.0	192.5	31.9	19.1
Tank and pipelines	--	--	--	--	3.2
Total for SPR	815.1	628.7	750.0	563.1[d]	520.0

[a]Permanent capacity for oil storage is less than gross volume planned because a certain volume of unoccupied capacity must be provided for water, sediment, and anhydrites that settle out of the oil and brine.

[b]The final authorized permanent storage for this site is different than shown on this table. DOE plans to decommission the 26-million barrel Sulphur Mines site in the 1990s and expand the Bayou Choctaw Phase I caverns by 6 million barrels and the Big Hill Phase III site by 20 million barrels.

[c]DOE acquired and modified existing caverns and a mine containing this gross volume. No leaching was required.

[d]The total capacity available is currently reduced by 30 million barrels pending the completion of the Bryan Mound Cavern 5 storage configuration enhancement project.

Source: DOE.

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