



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

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ENERGY AND MINERALS  
DIVISION

OCT 2 1981

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RELEASED

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

The Honorable John Dingell  
Chairman, Committee on Energy  
and Commerce  
House of Representatives



116611

Subject: Status of Strategic Petroleum Reserve Activities--  
September 1981 (EMD-82-7)

This is the ninth and last in a series of status reports requested by members of the Senate Committee on Energy and Natural Resources and the House Committee on Energy and Commerce on the administration's activities to implement title VIII of the Energy Security Act. (See enc. II for the July 23, 1980, letter requesting these reviews.) Title VIII requires the President to fill the Strategic Petroleum Reserve (SPR) at an average rate of at least 100,000 barrels per day for fiscal year 1981 and each succeeding fiscal year.

This report discusses the Government's activities to contract for SPR oil as of September 29, 1981. It also discusses the volume of oil delivered to the Department of Energy's (DOE's) SPR storage facilities and the status of these facilities as of September 21, 1981. The report is based on our review of DOE and Defense Fuel Supply Center (DFSC) program documents, and of publications and studies related to the program. We also interviewed officials in DOE and DFSC. We did not verify the available capacity of SPR storage facilities nor the volume of oil received by DOE.

Our most recent report on the status of SPR fill activities (EMD-81-136, Aug. 28, 1981) noted that, since passage of the Energy Security Act, the Government had issued contracts for about 110 million barrels of oil to be delivered to the SPR during fiscal year 1981 and about 32 million barrels of oil to be delivered during fiscal year 1982. These contracts include

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104 million barrels of oil awarded by the Defense Fuel Supply Center for fiscal year 1981 deliveries and about 38 million barrels of oil awarded by DOE for fiscal year 1981 and fiscal year 1982 deliveries under its August 1981 multi-year contract with Petroleos Mexicanos (PEMEX)--Mexico's State oil company.

As discussed in our August status report, DOE's contract with PEMEX calls for delivery to the SPR of 6 million barrels of a heavy, high-sulfur crude oil referred to as Maya crude, and up to 104 million barrels of a blend of Maya and lighter, lower sulfur Mexican crude oil. At the time of our last report, DOE and PEMEX officials were finalizing delivery arrangements for 24 million of the 110 million barrels which, according to the contract, is to be delivered by December 31, 1981. After that date, DOE will receive oil under the contract at an average rate of about 50,000 barrels per day until August 31, 1986.

Since our August status report, two major events have occurred:

--DFSC has awarded contracts for an additional 12 million barrels of oil to be delivered to the SPR during October 1981. This brings total oil acquired for delivery to the SPR during fiscal year 1982, including oil acquired under the PEMEX contract for fiscal year 1982, to about 44 million barrels. This is equivalent to an average fill rate for the new fiscal year of about 121,000 barrels per day.

--DOE has received its first shipment of Mexican oil acquired under the PEMEX contract. As of September 21, 1981, DOE has received about 2.2 million barrels of crude oil under the contract. About 1.2 million barrels of the oil delivered was a blend of Mexican crude oil. The remaining 1 million barrels of oil delivered was a Mexican crude oil referred to as Isthmus crude. Quality specifications for the Isthmus crude oil indicate that it is a higher quality crude oil than either the Maya crude oil or the blend of Mexican oil acceptable under the PEMEX contract.

According to DOE officials, three tankers scheduled to receive oil under the PEMEX contract during September 1981, were scheduled to receive a blend of 1 million barrels of Isthmus oil and about 480,000 barrels of Maya crude oil. However, at the time the ships arrived, PEMEX officials could deliver only the Isthmus crude oil. DOE accepted the Isthmus oil rather than incur costs associated with keeping the tankers at the PEMEX port awaiting delivery of the Maya oil.

Including the 2.2 million barrels of Mexican crude oil, DOE received about 10 million barrels of oil at SPR facilities during

the first 21 days of September. This is equivalent to an average fill rate, for these 3 weeks, of about 476,000 barrels per day.

As of September 21, 1981, DOE estimates about 195 million barrels of oil is in SPR storage. DOE officials estimate that about 6.5 million barrels of oil will be delivered during the last 9 days of the fiscal year. These deliveries would bring DOE's fiscal year 1981 fill rate to about 300,000 barrels per day and its SPR oil inventory to about 202 million barrels.

As discussed in our August status report, the Government anticipates awarding additional contracts for fiscal year 1982 delivery of SPR oil. DFSC expects to announce awards on November 1, 1981, for up to 36.5 million barrels of oil offered in response to its August 1981 solicitation. DOE and DFSC officials also expect to award additional contracts under the February 1981 open continuous solicitation for short-term delivery of oil during the new fiscal year. DOE and DFSC officials expect the next awards under this solicitation will be made on October 13, 1981.

The Omnibus Budget Reconciliation Act of 1981 (P.L. 97-35) requires that the administration seek to fill the SPR at an average annual rate of at least 300,000 barrels per day until the SPR oil inventory reaches 750 million barrels. An average fill rate of 300,000 barrels per day for an entire fiscal year is equivalent to acquiring about 110 million barrels of oil. This is about 66 million barrels more than the fiscal year 1982 contracts which the administration has awarded as of September 29, 1981. However, the new contract awards which the Government anticipates making in October and November 1981, as noted above, conceivably could satisfy that difference.

The outlook for satisfying a 300,000 barrels-per-day annual fill rate is not as optimistic when viewed from the standpoint of storage capacity. As shown in figure 2 (see page 10 of enclosure I), the projected availability of SPR storage capacity indicates that DOE will not be able to maintain that fill rate throughout fiscal year 1982. DOE's December 1980 plan for expanding SPR storage capacity calls for DOE to have about 280 million barrels of storage capacity by the end of fiscal year 1982. The estimated 202 million barrels of oil in the ground as of September 30, 1981, plus the 110 million barrels needed to maintain an average 300,000 barrels per day fill rate during fiscal year 1982 would bring SPR oil inventory at the end of the fiscal year to 312 million barrels--about 32 million barrels more than DOE's estimated storage capacity at that time.

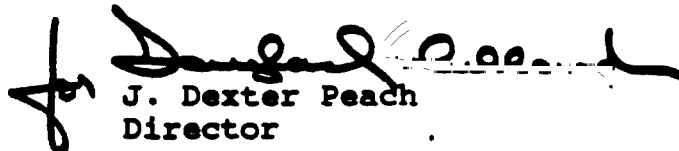
This is an issue we have addressed in past reports and one requiring DOE's constant attention. In our February 1981 status report (EMD-81-49, Feb. 24, 1981) we discussed DOE's storage capacity plan and recommended that the Secretary of Energy (1) ensure that adequate storage capacity is available on a timely basis to meet the needs of an accelerated SPR fill effort and (2) report to the Congress on the costs, advantages, and disadvantages of an accelerated construction program and other storage options.

DOE is revising its plan for expanding SPR underground storage capacity. In addition, during August 1981 DOE provided a report to the Office of Management and Budget discussing the cost, advantages, and disadvantages of options for accelerating development of SPR capacity. We plan to discuss this issue further in our January 1982 comprehensive report on SPR fill activities.

Enclosure I provides additional details on the volume of oil delivered to SPR facilities, the status of storage facilities, contracts awarded for delivery of SPR oil, and funds available to purchase additional oil.

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In order to meet the requested time frames, we did not obtain official agency comments on this report. As requested by your office, we are sending copies of this letter to the Ranking Minority Members of the Senate Committee on Energy and Natural Resources and the House Committee on Energy and Commerce. Unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days after its date of issuance. At that time we will send copies to the Department of Energy and other interested parties and make copies available to others upon request.

  
J. Dexter Peach  
Director

Enclosures - 2

Tables and Graphs on the Status of  
The Strategic Petroleum Reserve

Table

- 1 Summary of SPR contracting activities for FY 1981 and FY 1982
- 2 Contracts awarded under open continuous solicitation
- 3 Volume of SPR oil stored in caverns and other facilities
- 4 Status of Phase I SPR storage capacity
- 5 Status of Phase II SPR storage capacity as of September 1, 1981
- 6 Status of funding for the SPR
- 7 Comparison of sour oil quality specifications (DOE's Type I, VI, VIa crude oils, and Maya crude oil)

Figure

- 1 Projected availability and utilization of SPR stored capacity
- 2 Projected availability and utilization of SPR stored capacity assuming alternative fill rates
- 3 Average daily SPR oil receiving rate

**Table 1**  
**Summary of SPR Contracting**  
**Activities for FY 1981 and FY 1982**

<u>Activity</u>	<u>Number of contracts</u>	<u>Value of contracts</u> (millions)	<u>Date of contracts</u>	<u>Volume<sup>o</sup> of oil contracted for</u>	<u>Oil delivered as of 9/21/81</u>	<u>Remaining Deliveries (note a)</u>		
						<u>Fourth quarter FY '81</u>	<u>First quarter FY '82</u>	<u>Second Through Fourth quarter FY '82</u>
Competitive Exchange	6	\$1,441.5	9/18/80 to 10/31/80	36.6	36.2	.2	b/ .2	0
Open Continuous Solicitation	32	2,815.2	2/13/81 to 9/29/81	79.1	64.4	2.8	c/ 13.0	0
Petroleos Mexicanos (PEMEX) purchase	1	d/ 433.0	8/20/81	e/ 37.7	2.2	3.5	18.3	f/ 13.5
<b>Total</b>	<b>39</b>	<b>\$4,689.7</b>		<b>153.4</b>	<b>102.8</b>	<b>6.5</b>	<b>31.5</b>	<b>13.5</b>

g/Based on DOE's projections of oil cargoes to be received.

b/For the 6 contracts, oil delivered plus DOE's projection of remaining deliveries is about 40,000 barrels less than the volume of oil indicated on contracts. According to a DFSC official, DFSC has the option of accepting more than the contracted volumes and increasing proportionately the amount paid to the contractor. However, for each contract, if the volume remaining after the last scheduled delivery is less than the volume that can be shipped economically, DFSC may also accept less than the contracted volume and reduce proportionately the amount paid to the contractor.

c/Oil delivered plus DOE's projection of remaining deliveries is about 1,100,000 barrels more than the volume contracted for. The contracts allow companies the options to deliver up to plus or minus 5 percent of their contracted volumes of oil.

d/This represents funds obligated to procure oil under the contract through October 31, 1981. According to the contract, DOE will pay \$28.50 per barrel and \$31.80 per barrel, exclusive of transportation costs, for Maya oil and a blend of Mexican crude oils, respectively, delivered during September 1981. After September 30, 1981, prices may be adjusted by mutual agreement.

e/According to DOE officials, this represents the volume up to October 1, 1982. The contract calls for 24 million barrels to be delivered between September 1, 1981, and December 31, 1981. Beginning January 1, 1982, oil will be delivered at a rate of about 50,000 barrels per day. Total oil under contract through 1986 is 110 million barrels.

f/DOE's projection of deliveries during the last three quarters of fiscal year 1982 is about 150,000 barrels less than the volume contracted for during the period. DOE's delivery projections differ from the volume contracted for because the projections assume that deliveries will be 50,000 barrels per day for 270 days during the 9 months and the volume contracted for assumes deliveries at that rate for the 273 days actually in the period.

**Table 2**  
**Contracts Awarded Under**  
**Open Continuous Solicitation**

<u>Contract date</u>	<u>Supplier</u>	<u>Total barrels to be delivered (note a)</u> (millions)	<u>Annualized daily fill rate</u> (barrels)	<u>Type of oil (note c)</u>	<u>Delivery Dates</u>	
					<u>First</u>	<u>Last</u>
2/13/81 to 8/19/81	Various <u>b/</u>	28.5	78,084	Sweet	3/81	10/81
		38.3	104,967	Sour	3/81	10/81
9/01/81	Exxon International Derby & Co., Inc.	6.0	16,438	Sour	10/81	10/81
		1.6	4,247	Sour	10/81	10/81
		.4	1,233	Sweet	10/81	10/81
9/15/81	Derby & Co., Inc.	.9	2,466	Sour	10/81	10/81
		.1	137	Sour	10/81	10/81
9/29/81	Exxon International	<u>3.3</u>	<u>8,959</u>	Sour	10/81	10/81
<b>Total</b>		<u>79.1</u>	<u>216,531</u>			

a/Rounded to the nearest hundred thousand.

b/Information on individual contracts is presented in our May 4, 1981, June 19, 1981, July 17, 1981, and August 28, 1981, SPR status reports.

c/Sweet crude for the SPR is defined as having less than 0.5 percent sulfur content, sour crude is defined as having between 0.5 percent and 1.99 percent sulfur content.

**Table 3**  
**Volume of SPR Oil Stored in**  
**Caverns and Other Facilities**

<u>GAO reporting period</u>	<u>Volume of oil at start of period</u>	<u>Deliveries</u>	<u>Volume of oil at end of period</u>	<u>Average receiving rate</u>	
				<u>For reporting period</u>	<u>Since 9/23/80 (note a)</u>
		(millions of barrels)		(barrels per day)	
9/23/80 to 8/17/81	91.2	b/ 88.5	179.7	268,997	268,997
8/18/81 to 9/21/81	179.7	15.1	194.8	431,429	284,615

a/DOE completed receiving the first shipment of oil resulting from the fiscal year 1981 competitive exchange on September 23, 1980.

b/Deliveries include 641,490 barrels of Elk Hills Naval Petroleum Reserve oil delivered to the SPR via pipeline by Pacific Refining Company.



Table 4

Status of Phase I SPR Storage Capacity

<u>SPR site</u>	<u>Capacity constructed</u>	<u>Capacity ready to use (note a)</u>	<u>Volume of oil in underground storage as of 9/21/81</u>	<u>DOE's estimated completion date for additional capacity</u>	<u>Brief description of work to be done</u>
	(millions of barrels)				
Weeks Island, LA	75.0	75.0	39.4	Completed	None
Bayou Choctaw, LA	44.2	44.2	39.3	Completed	None
Sulphur Mines, LA	24.6	5.6	3.4	c/ October 15, 1981-- 5.9 million barrels  October 31, 1981-- 13.1 million barrels	Caverns and wells to be recertified in phases. Initial tests of pipes, computer controls, and other equipment to be completed.
West Hackberry, LA	48.8	48.8	44.0	Completed	None
Bryan Mound, TX	<u>64.5</u>	<u>64.5</u>	<u>64.4</u>	Completed	None
Total	<u>257.1</u>	<u>238.1</u>	<u>b/190.5</u>		

a/Storage facilities certified ready to receive oil.

b/Additional 4.3 million barrels of oil is in pipelines, tanks, and Phase II storage caverns. This brings total oil in the SPR system to 194.8 million barrels. About 0.9 million of the 194.8 million barrels is designated for Phase II storage facilities.

c/As of September 30, 1981, DOE had completed recertifying the cavern and associated wells with only welding of above ground pipes to the cavern needed before the cavern can receive oil. Although our previous monthly reports have noted delays in DOE's schedule for completing work at Sulphur Mines, DOE is confident it can complete the above ground work needed to have this cavern ready for oil fill by these revised dates.

**Table 5**  
**Status of Phase II SPR Storage Capacity**  
**As of September 1, 1981 (note a)**  
**(Millions of Barrels)**

<u>SPR site</u>	<u>Total planned storage capacity</u>	<u>Volume of oil injected (note b)</u>	
		<u>Planned</u>	<u>Actual</u>
Bryan Mound, TX	120	.6	.02
West Hackberry, LA	160	(c) 0	0
Bayou Choctaw, LA	<u>10</u>	(d) <u>0</u>	<u>0</u>
<b>Total</b>	<b><u>290</u></b>	<b><u>.6</u></b>	<b><u>.02</u></b>

a/Source: DOE December 1980 baseline leaching schedule and September 1, 1981, monthly report of cavern leaching at Bryan Mound and West Hackberry.

b/DOE is injecting oil into new caverns as capacity becomes available. DOE plans to create capacity by leaching underground salt caverns--a process involving injecting water into a salt formation to dissolve the salt, and removing the salt-saturated water, or brine. However, during leaching, only part of each new cavern can be used to store oil.

c/Leaching began in May 1981. No oil is being injected at this stage of leaching.

d/Drilling of wells which will be used for leaching started March 1981, leaching to begin February 1982.

**Table 6**  
**Status of Funding for the SPR**  
 (billion \$)

<u>Funds available for fiscal year 1981</u>		
--Prior years' funds		\$2.093
--Fiscal year 1981 appropriations		1.383
--Entitlements (earned on fiscal year 1981 deliveries prior to decontrol on January 28, 1981)		.542
--FY 1981 Supplemental Appropriations		<u>1.306</u>
Total funds available for fiscal year 1981 oil purchases		<u>a/ 5.323</u>
<u>Contracts as of September 29, 1981</u>		
--Competitive exchange (36.6 million barrels)	\$1.441	
--Open continuous solicitation (79.1 million barrels)	2.815	
--Petroleos Mexicanos (PEMEX) purchase	b/ <u>.433</u>	
Total value of contracts as of September 29, 1981		<u>4.689</u>
<u>Funds remaining for oil purchases</u>		<u>c/ \$ .634</u>

a/On October 1, 1981, the President signed House Joint Resolution Number 325, which continued appropriations for Federal agencies through November 20, 1981. The continuing resolution generally provides funds for DOE to continue spending at the fiscal year 1981 rate until its fiscal year 1982 appropriations are passed. The Department of Interior and related agencies appropriation bill, which provides for about \$3.9 billion for SPR oil acquisitions during fiscal year 1982, has been approved by the House of Representatives, and is awaiting approval by the Senate.

b/According to DOE officials, these funds have been obligated to procure oil under the contract through October 31, 1981. The funds have been transferred to the SPR project office in New Orleans, Louisiana, which is the contract administration office for the PEMEX contract.

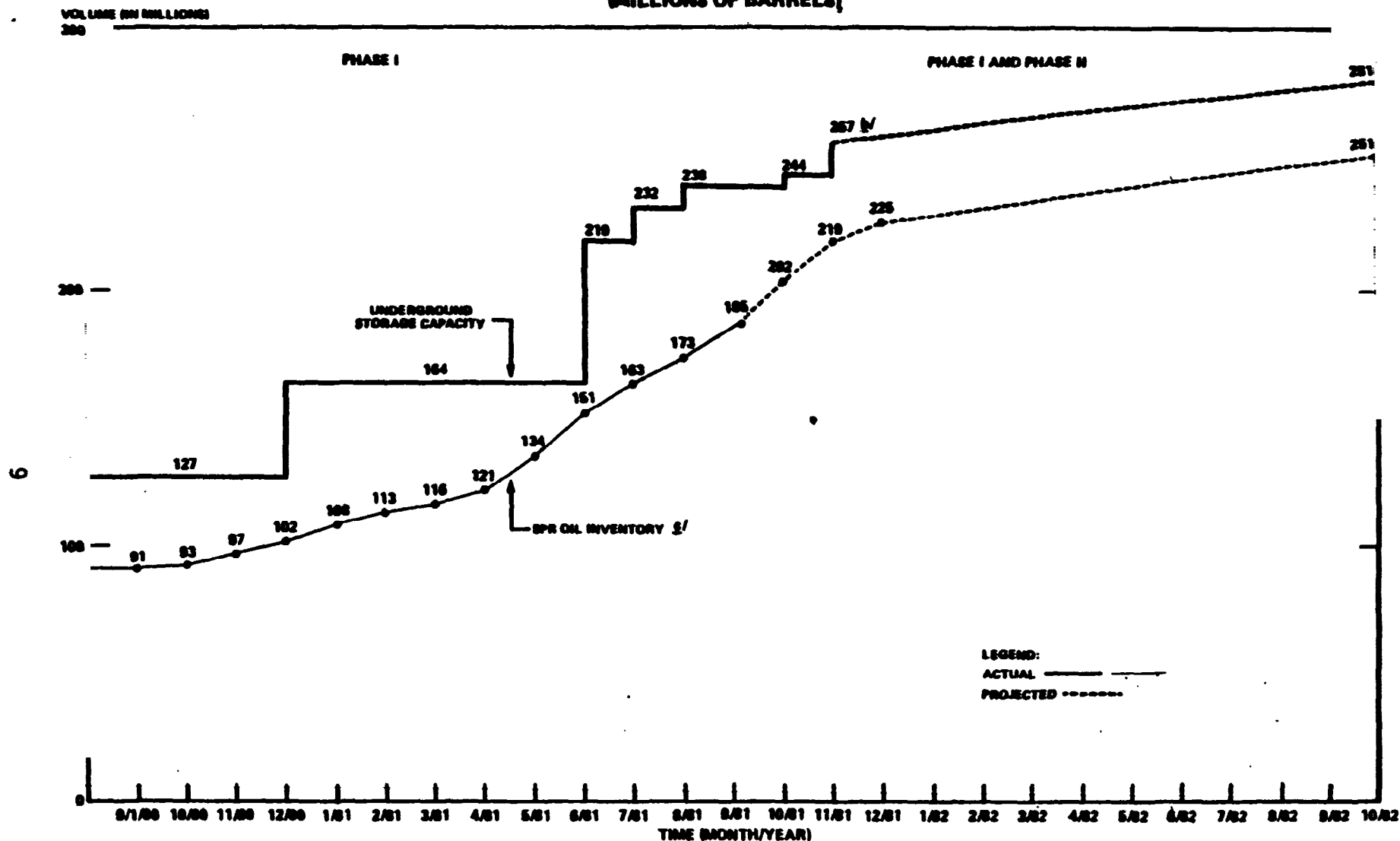
c/As of September 29, 1981, DOE has transferred about \$4.866 million of fiscal year 1981 and prior years' funds to DFSC for SPR oil acquisitions. About \$610 million of these funds remains available for additional oil purchases during fiscal year 1982. DOE has not transferred about \$24 million to BFSC. DOE reprogrammed \$17 million of the \$24 million as contingency funds pending settlement of ongoing court cases which resulted from DOE's condemnation of land for Phase I storage sites. DOE plans to use the remaining \$7 million of the \$24 million for fiscal year 1982 oil acquisitions.

Table 7Comparison of Sour Oil Quality Specifications(DOE's Types I, VI, Via Crude Oils, and Maya Crude Oil)

	<u>SPR Type I oil</u> (includes Arab light oil, Mexican Isthmus oil)	<u>SPR Type VI</u> (includes Alaska North Slope oil)	<u>Maya crude</u> oil as specified in PEMEX contract	<u>SPR Type Via</u> crude oil (blend specified in PEMEX contract)
API gravity (° API)	30°-36°	26°-30°	22° min.	28° min.
Total Sulfur Content (% of weight)	1.99% max.	1.25% max.	3.5% max.	1.99% max.
∞ Viscosity	150 max.	200 max.	1,500 max.	200 max.
Refinery yields				
Naphtha	24-30%	15-20%	10% min.	23% min.
Distillate	17-31%	24-27%	15% min.	22% min.
Gas Oil	26-38%	38-42%	20% min.	32% max.
Residuals	10-19%	15-20%	50% max.	23% max.

FIGURE 1

PROJECTED AVAILABILITY AND UTILIZATION OF SPR STORAGE CAPACITY (Note a)  
(MILLIONS OF BARRELS)



LEGEND:  
ACTUAL ———  
PROJECTED - - - - -

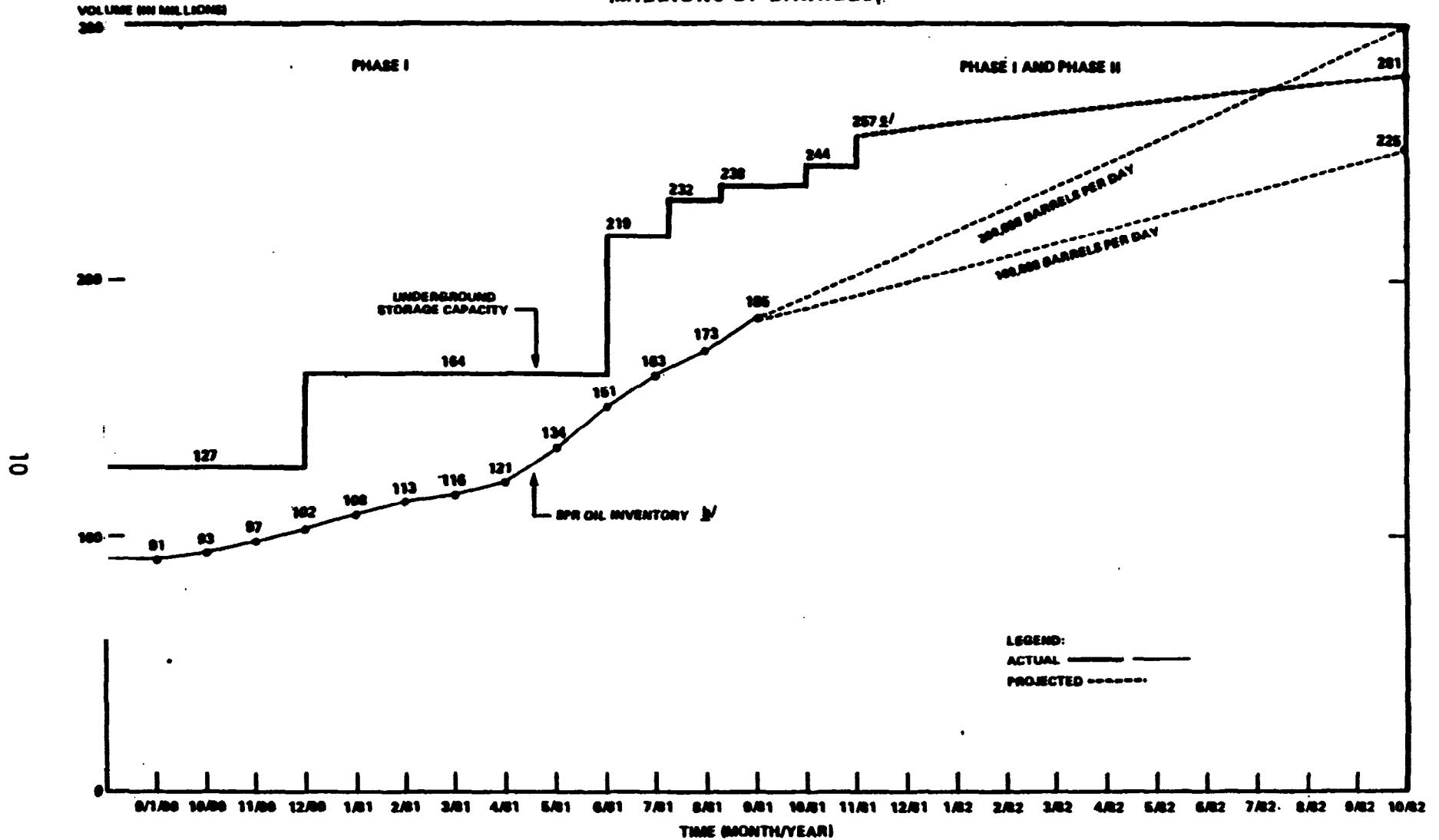
§/ GAO's projections of SPR capability assumes the DOE meets its schedule for bringing Phase I facilities on line and for creating Phase II capacity. Our projection of SPR oil inventory are based on DOE's proposed delivery schedules for existing contracts and DOE's Fiscal Year 1982 budget proposal to fill Phase I storage facilities by October 1, 1982.

¶/ DOE cover tests of storage capacity at Phase I facilities indicates Phase I capacity is 257 million barrels.

§/ This represents oil in underground storage facilities plus oil in tanks and pipelines.

FIGURE 2

PROJECTED AVAILABILITY AND UTILIZATION OF SPR STORAGE CAPACITY ASSUMING ALTERNATIVE FILL RATES (Note a)  
(MILLIONS OF BARRELS)

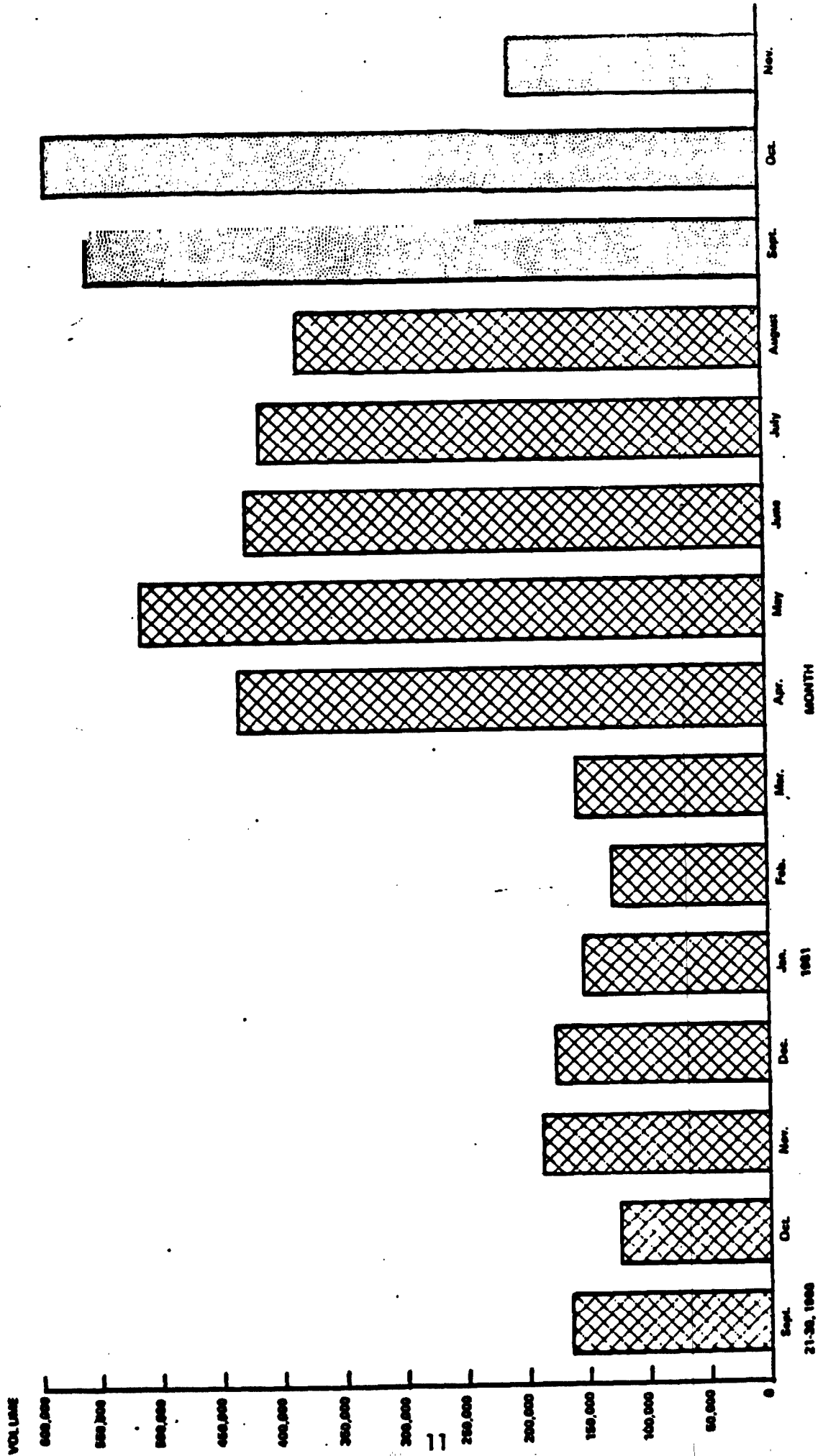


<sup>1/</sup> GAO's projections of SPR capability assumes that DOE meets its schedule for bringing Phase I facilities on line and for creating Phase II capacity.

<sup>2/</sup> This represents oil in underground storage facilities plus oil in tanks and pipelines.

<sup>3/</sup> Does not include any Phase II storage capacity.

FIGURE 3  
AVERAGE DAILY SPR OIL RECEIVING RATE<sup>2/</sup>  
(BARRELS)



<sup>2/</sup> DAILY RECEIVING RATES FOR SEPTEMBER, OCTOBER, AND NOVEMBER CALCULATED FROM DOE PROJECTIONS AS OF SEPTEMBER 22, 1981

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## United States Senate

COMMITTEE ON  
 ENERGY AND NATURAL RESOURCES  
 WASHINGTON, D.C. 20510

July 23, 1980

ROBERT A. BREYER, STAFF DIRECTOR  
 D. MICHAEL HARVEY, STAFF COUNSEL  
 STEVEN S. HERRIN, STAFF DIRECTOR FOR THE MINORITY

Honorable Elmer B. Staats  
 Comptroller General of the United States  
 GENERAL ACCOUNTING OFFICE  
 441 G Street, N.W.  
 Washington, D. C. 20548

Dear Mr. Staats:

On June 30, 1980 the President signed the Energy Security Act (Public Law 96-294). Title VIII of this Act is intended to provide for a resumption of purchases by the United States government of crude oil for the Strategic Petroleum Reserve authorized in 1975 by the Energy Policy and Conservation Act. Purchases of oil for this purpose have been suspended for well over a year, despite the fact that the present level of the SPR is clearly inadequate insurance against any contemplated interruption in petroleum imports.

The Congress attaches a high priority to the timely implementation of the provisions of title VIII. Both the language of the Act and the accompanying joint statement of managers are very emphatic on this matter. Accordingly, we are asking that you assist Congress in monitoring implementation of this title by the Executive Branch.

In particular we request that the General Accounting Office report by letter on a monthly basis to the Senate Committee on Energy and Natural Resources and the House Committee on Interstate and Foreign Commerce describing the activities taken by the Executive Branch under the provisions of title VIII of the Energy Security Act. This report should include GAO's evaluation of these activities in relation to the clear intent of Congress, expressed in the Act, to resume as soon as possible the filling of the SPR. These monthly reports should continue through October, 1981. We are further requesting that GAO provide Congress by January 1, 1982 with a comprehensive report on activities of the Executive Branch under title VIII for the period July, 1980 through October, 1981.



Honorable Elmer B. Staats  
Page Two  
July 23, 1980

Please let us know if the Senate Committee on Energy and Natural Resources or the House Committee on Interstate and Foreign Commerce can be of assistance in carrying out this request.

Sincerely yours,

*Harold O. Staggers*  
Harold O. Staggers  
MEMBER OF CONGRESS

*W. Bennett Johnston*  
W. Bennett Johnston  
U. S. SENATOR

*John D. Dingell*  
John D. Dingell  
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