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STRATEGIC PETROLEUM RESERVE QUARTERLY REPORT

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***U.S. DEPARTMENT OF ENERGY
ASSISTANT SECRETARY FOR FOSSIL ENERGY
OFFICE OF STRATEGIC PETROLEUM RESERVE
WASHINGTON, D.C. 20585***

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STRATEGIC PETROLEUM RESERVE QUARTERLY REPORT

EXECUTIVE SUMMARY

The Strategic Petroleum Reserve serves as one of our most important investments in reducing the Nation's vulnerability to oil supply disruptions. Its existence provides an effective response mechanism should a disruption occur and a formidable deterrent to the use of oil as a political instrument.

The Strategic Petroleum Reserve was created pursuant to the Energy Policy and Conservation Act of December 22, 1975, (Public Law 94-163) as amended, to reduce the impact of disruptions in supplies of petroleum products and to carry out obligations of the United States under the Agreement on an International Energy Program. Section 165(a) of the Act requires the submission of Annual Reports and Section 165 (b)(1) requires the submission of Quarterly Reports. This Quarterly Report highlights activities undertaken during the second quarter of calendar year 1993, including:

- ▶ inventory of petroleum products stored in the Reserve, under contract and in transit at the end of the calendar quarter;
- ▶ fill rate for the current quarter and projected fill rate for the next calendar quarter;
- ▶ average price of the petroleum products acquired during the calendar quarter;
- ▶ current and projected storage capacity and plans to accelerate the acquisition or construction of such capacity;

- ▶ analysis of existing or anticipated problems with the acquisition and storage of petroleum products, and future expansion of storage capacity;
- ▶ funds obligated by the Secretary from the SPR Petroleum Account and the Strategic Petroleum Reserve Account during the prior calendar quarter and in total; and
- ▶ major environmental actions completed, in progress, or anticipated.

As of June 30, 1993, the Reserve had a total inventory of 582,753,288 barrels of crude oil. Samples of the oil revealed two problems that, although readily correctable, have reduced the availability of some of the oil inventory for drawdown in the near-term. These problems are:

- (1) A higher-than-normal gas content in some of the crude oil, apparently from years of intrusion of methane from the surrounding salt formation; and
- (2) Elevated temperatures of some of the crude oil, due to geothermal heating, that has increased the vapor pressure of the oil.

Investigations are proceeding to determine the extent to which gas intrusion and geothermal heating are impacting the availability of oil for drawdown. Preliminary designs have been developed for systems to mitigate both problems.

I. STORAGE FACILITIES

The Department of Energy has acquired and developed six storage facilities on the Gulf Coasts of Texas and Louisiana for the underground storage of crude oil in salt domes. Five sites, Bryan Mound and Big Hill in Texas, and West Hackberry, Bayou Choctaw, and Weeks Island in Louisiana, have been developed to store 750 million barrels of oil. Due to the high cost of operations, an additional storage site, Sulphur Mines in Louisiana, was decommissioned in 1992 and sold on May 10, 1993. The Department also constructed and operates a marine and pipeline distribution terminal on the Mississippi River in St. James, Louisiana. The following is a summary of the current status of the facilities, their respective oil fill and drawdown/distribution capabilities, and expansion planning activities.

BRYAN MOUND, TEXAS

The Bryan Mound Storage facility, near Freeport, Texas, is available for fill and/or drawdown operations. The site has a storage capacity of 226 million barrels and an inventory of 217 million barrels.

In May 1993, the Department approved an Environmental Assessment and issued a Finding of "No Significant Impact" for the replacement of the deteriorated brine pipeline at the Bryan Mound facility in Brazoria County, Texas. The pipeline construction contract is expected to be awarded in September 1993, and installation of the pipeline is scheduled for completion in August 1994. The condition of the brine pipeline does not impact drawdown capability.

BIG HILL, TEXAS

The Big Hill Storage facility near Winnie, Texas, is only available for fill operations at this time. The site has a storage capacity of 160 million barrels and an inventory of 34 million barrels, including 25 million barrels transferred from the Sulphur Mines Storage facility during 1991 and 1992.

WEST HACKBERRY, LOUISIANA

The West Hackberry Storage facility in Cameron Parish, Louisiana, is available for fill and drawdown operations. The site has a storage capacity of 219 million barrels and an inventory of 205 million barrels.

The brine disposal pipeline deteriorated and was taken out of service in 1991; interim brine disposal is being accomplished using existing brine disposal wells. The maximum brine disposal capability through these wells is approximately 55,000 barrels per day. Additional testing and brine well recompletions to further increase capability are planned for fiscal year 1994.

BAYOU CHOCTAW, LOUISIANA

The Bayou Choctaw Storage facility in Iberville Parish, Louisiana, is available for fill and drawdown operations. The site has a storage capacity of 72 million barrels and an inventory of 52 million barrels.

WEEKS ISLAND, LOUISIANA

The Weeks Island Storage facility in Iberia Parish, Louisiana, is essentially filled to capacity (73 million barrels) and is available for drawdown.

The Department is currently upgrading the service shaft bulkhead separating the oil storage area from the mine manways. Progress is on schedule and the work will be completed later this year.

SULPHUR MINES, LOUISIANA

The Sulphur Mines Storage facility in Calcasieu Parish, Louisiana, was decommissioned in 1992 and sold to Pittsburgh Plate Glass Industries, Inc., in May 1993. Negotiations with other interested parties for purchase of the Department's oil, brine, and water pipelines, are progressing.

ST. JAMES TERMINAL, LOUISIANA

The St. James Terminal, located 45 miles southeast of Baton Rouge on the Mississippi

River, services the storage facilities at Bayou Choctaw and Weeks Island and is available for both fill and drawdown operations.

OIL FILL CAPABILITIES

As of June 30, 1993, the Reserve had a total storage capacity of 750 million barrels and crude oil inventory of 583 million barrels. The oil fill capabilities for all the storage facilities are shown in Table I-1.

TABLE I-1
Strategic Petroleum Reserve Storage Capacity
(Figures in Millions)*

Storage Facility	Storage Capacity		Current Inventory		Capacity Available for Fill	
	(Barrels)	(Cubic Meters)	(Barrels)	(Cubic Meters)	(Barrels)	(Cubic Meters)
Bryan Mound	226	35.9	217	34.4	9	1.4
Big Hill	160	25.4	34	5.4	126	20.0
West Hackberry	219	34.8	205	32.6	14	2.2
Bayou Choctaw	72	11.4	52	8.2	20	3.1
Weeks Island	73	11.6	72	11.4	1	0.2
Tanks/Pipelines	--	--	3	--	--	--
Total	750	119.1	583	92	170	26.9

*Volumes are reported both in barrels and in cubic meters in conformance with the Metric Conversion Act of 1975, the Omnibus Trade and Competitiveness Act of 1988, and the Department's Metric Transition Plan.

DRAWDOWN/DISTRIBUTION CAPABILITIES

The Strategic Petroleum Reserve's current drawdown capability is 3.5 million barrels per day and its distribution capability is 3.9 million barrels per day. At present, the initial drawdown rate is limited to 3.5 million barrels per day because of the temporary problem with the inventory for drawdown at the Big Hill site.

In October 1993, distribution capability will increase from 3.9 million barrels per day to 4.3 million barrels per day. This increase will result from a contract awarded in 1992 to Unocal Corporation for marine distribution at its terminal in Nederland, Texas, and a contract awarded in June 1992 to Texaco Pipeline Incorporated for pipeline distribution to Houston, Texas. Construction required for these services is under way and will be completed by October 1993. Enhancements to increase distribution capability beyond 4.3 million barrels per day will require further analysis to determine the most cost effective method to add distribution capability without major pipeline or terminal construction.

EXPANSION PLANNING

The Energy Policy and Conservation Act Amendments of 1990 (Public Law 101-383) required the Department to amend the Strategic Petroleum Reserve Plan by September 15, 1992, to prescribe plans for the expansion of the Reserve to one billion barrels. In May 1991, the Department announced its intent to prepare an Environmental Impact Statement to address the environmental effects of expanding the capacity of the Reserve. A Draft Environmental Impact Statement was issued in October 1992, for five sites: Big Hill and Stratton Ridge in Texas, Weeks Island and Cote Blanche in Louisiana, and Richton in Mississippi.

In January 1993, the Department received comments on the Draft Environmental Impact Statement requesting consideration of an alternative means of brine disposal which was not covered in the Draft Environmental Impact Statement. To consider reasonable new alternatives, the Department issued a Supplement to the Draft Environmental Impact Statement on June 4, 1993, for Richton, Mississippi, and Cote Blanche, Louisiana. The public comment period for the Supplement closed on July 26, 1993.

A Final Environmental Impact Statement for the candidate expansion sites, the Record of Decision, and the Plan Amendment will be issued in the spring of 1994.

II. OIL ACQUISITION AND FILL

During the second quarter of calendar year 1993 (April 1-June 30, 1993), the Strategic Petroleum Reserve's inventory was increased by approximately 5.1 million barrels of sweet crude oil, including 3.4 million barrels purchased under contracts awarded in the previous quarter by the Defense Fuel Supply Center, the Reserve's purchasing agent.

In addition to crude oil purchased on the open market, 1.7 million barrels were acquired through continued deliveries of crude oil from Naval Petroleum Reserve Number 1 in California (Elk Hills). These deliveries began on June 1, 1992, and will continue through September 30, 1993, via the commercial pipeline system, to Sun Terminal, Nederland, Texas, at a rate of 20,000 barrels per day for storage at the Big Hill site. Decisions on

purchases beyond September 30, 1993, will depend upon bid prices for Elk Hills crude oil received on September 4, 1993, for the sales period beginning October 1, 1993, and the Reserve's outlay authority to purchase oil. As of June 30, 1993, a total of 7,901,059 barrels had been injected into the pipeline system and 6,222,787 barrels had been received at Sun Terminal.

The weighted average price for the 1.8 million barrels of sweet crude oil acquired for the Reserve's terminals during this period was \$20.22 per barrel, excluding Superfund taxes and costs for administration and terminalling. As of June 30, 1993, the total inventory was 582,753,288 barrels. Table II-I summarizes the Reserve's crude oil inventory and delivery statistics.

TABLE II-1
Strategic Petroleum Reserve Oil Inventory and Delivery Statistics
(As of June 30, 1993)

	Barrels	Cubic Meters
Total Strategic Petroleum Reserve Inventory	582,753,288	92,640,290
Amount of Oil in Transit*	1,678,272	266,795
Additional Quantity Available for Delivery During Remainder of fiscal year 1993*	1,840,000	292,505
Fill Rate (per day) for reported Calendar Quarter	56,388	8,964
Fill Rate (per day) for Fiscal Year 1993 to Date	41,403	6,582
Projected Fill Rate (per day) for the next Calendar Quarter**	31,300	4,976

* Naval Petroleum Reserves crude oil.

** Includes Naval Petroleum Reserve crude oil and planned purchases by Defense Fuel Supply Center Center

III. BUDGET AND COST

This section provides the financial information required by section 165(b)(1) of the Energy Policy and Conservation Act, as amended.

FUNDS AVAILABLE FOR OBLIGATION

The Department of the Interior and Related Agencies Appropriations Act, 1993 (Public Law 102-381) provided \$176.2 million for operations and management of the Reserve. The \$176.2 million for operations and management was financed in part by the requested transfer from the SPR Petroleum Account of \$125.6 million derived from funds deposited from the 1991 Desert Storm drawdown and sale. The Appropriations Act also included an outlay cap of \$137 million on funds in the Petroleum Account. Total funds available for obligation in the SPR Petroleum Account in fiscal year 1993, after the transfer of \$125.6 million, are \$532.5 million.

Also for fiscal year 1993, the Congress provided \$125.6 million through the Department of Defense Appropriations Act, 1993 (Public Law 102-396), for the Department of Energy to acquire crude oil for the Department of Defense for storage in the Strategic Petroleum Reserve. The Appropriation Act also allows the Department of Energy to transfer up to \$700,000 to the Strategic Petroleum Reserve Account to pay for costs of operations and maintenance associated with the extra oil acquisition and storage.

OIL ACQUISITION AND TRANSPORTATION (SPR PETROLEUM ACCOUNT)

This activity includes financing for: (1) the Strategic Petroleum Reserve crude oil procurements; (2) associated transportation

costs for pipeline and tanker shipments and terminalling; (3) U.S. customs duties and Superfund taxes; and (4) other miscellaneous costs, such as Defense Fuel Supply Center administration costs associated with acquiring and transporting the oil. During a draw-down and sale, this activity funds the Federal cost of drawing down Strategic Petroleum Reserve oil from storage and transporting it to the point where purchasers will take title.

FINANCIAL TRANSACTIONS, THIRD QUARTER OF FISCAL YEAR 1993

During the third quarter of fiscal year 1993, \$36.7 million was obligated from the SPR Petroleum Account. Net disbursements (outlays) from the Account during the same period amounted to approximately \$100.1 million.

PLANNED USE OF SPR PETROLEUM ACCOUNT FUNDS

Although the SPR Petroleum Account contains \$532.5 million of obligational authority, the Department is controlling obligations in order to limit outlays to the legislated limit of \$262.6 million. Unobligated funds at the end of the fiscal year will support oil acquisition in fiscal year 1994 and beyond.

STORAGE FACILITIES DEVELOPMENT AND OPERATIONS AND MANAGEMENT (STRATEGIC PETROLEUM RESERVE ACCOUNT)

Storage Facilities Development and Operations funding provides for the Strategic Petroleum Reserve facilities program, including the construction, operation, and maintenance of the Strategic Petroleum Reserve sites. Management funding pro-

vides for analyses pertinent to major issues concerning the development and use of the Strategic Petroleum Reserve and for the salaries and expenses necessary to plan and manage the Strategic Petroleum Reserve.

FINANCIAL TRANSACTIONS, THIRD QUARTER OF FISCAL YEAR 1993

Obligations of \$230.2 million are available for Storage Facilities Development, Operations and Management in the fiscal year 1993, and \$16.4 million was obligated in the third quarter. Cumulative net obligations for fiscal year 1993 were approximately \$119.1 million at the end of the third quarter.

IV. SPECIAL TOPICS

TIGER TEAM ASSESSMENT

The Strategic Petroleum Reserve has completed 58 of the 250 corrective actions included in the Corrective Action Plan prepared after the Tiger Team Environmental Safety and Health Assessment in 1992. Of the 218 occupational, safety and health noncompliance findings, 208 have been completed and the remainder will be completed by the end of fiscal year 1993.

ENVIRONMENTAL COMPLIANCE/PERMITS

Revised operator designations for the National Pollutant Discharge Elimination system permits were submitted on May 4, 1993. The Reserve's management and operating contractor signed as co-operator with the Department of Energy. This satisfies the Environmental Protection Agency requirement for permit renewal processing.

SECURITY

Due to changes in the global political climate, a vulnerability assessment of facilities was conducted during 1992. As a result, several changes to the security program are being implemented which will result in cost savings from reduced manpower, maintenance, and upgrade requirements. The revised security program will be contained in a new Security Plan that will be completed during the next quarter.

IMPACTS ON DRAWDOWN RATE DUE TO GAS AND HEAT BUILD-UP

In 1992, investigation began on two natural phenomena that potentially impact the drawdown and distribution of crude oil in the Reserve. One is the intrusion of methane gas into the crude oil from the domal

salt, and the other is geothermal heating that has raised the temperature of the oil significantly in some of the caverns. These phenomena produced an increase in the true vapor pressure of the crude oil that could result in emissions that exceed environmental and safe operating limits.

Gas in the Oil: Tests on the crude oil stored at all sites, except Weeks Island Mine, have shown that methane and nitrogen are present in relatively small quantities, probably as a result of intrusion from the salt formation. Investigations are under way to determine whether these gases have produced an increase in the true vapor pressure of the crude oil to a point where emissions could exceed environmental limits and safe operating levels allowed by terminals, pipelines, tankers, and refiners. A true vapor pressure criterion has been established which ensures that the crude oil stored in the Strategic Petroleum Reserve will not exceed these limits during a drawdown. A reassessment is being made of data obtained earlier in order to accurately quantify the amount of oil that may be temporarily unavailable for drawdown.

Increase in Oil Temperature: Heat flux from the salt at the depth at which caverns are developed is causing the temperature of the oil to rise at a rate of approximately 1-2 degrees Fahrenheit per year. Temperature of the oil will continue to rise until it is in equilibrium with the salt formation. These elevated temperatures produce an increase in the vapor pressure of the crude oil, which could also result in emissions exceeding environmental and safe operating limits during a drawdown. This situation poses no safety hazard for stored oil, nor does it

reduce oil quality.

A multi-disciplinary working group is addressing the extent to which crude oil in the Strategic Petroleum Reserve needs to be degassed and cooled and is preparing preliminary designs for accomplishing these processes. Analyses indicate that: (1) separation of the gas from the oil can be accomplished using conventional, portable, oil/gas separators; and (2) relatively simple heat exchangers can be installed on the oil line to allow injection of water to reduce oil temperatures.

The Department has briefed congressional committee staff on these matters and has initiated field testing of methods to mitigate the excess gas problem. The current estimated cost to resolve the excess gas problem is nearly \$35 million. The schedule for the installation of degassing facilities and the start of degassing operations is approximately one year. Total degasification of all the affected oil is anticipated to take approximately three years. Environmental analysis and system design have also been initiated. The current estimated cost to resolve the oil temperature problem is \$25 million.

FINANCING ALTERNATIVES

During the quarter, the Department initiated a review of alternative ways of financing further Strategic Petroleum Reserve development. Consultations were held with congressional committee staff and officials from other Federal agencies. Discussions with representatives from the private sector are planned for the next quarter.

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