Order Code RL33341

CRS Report for Congress
Received through the CRS Web

The Strategic Petroleum Reserve: History, Perspectives, and Issues

April 3, 2006

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The Strategic Petroleum Reserve: History, Perspectives, and Issues

Summary

Congress authorized the Strategic Petroleum Reserve (SPR) in the Energy Policy and Conservation Act (EPCA, P.L. 94-163) to help prevent a repetition of the economic dislocation caused by the 1973-1974 Arab oil embargo. The program is managed by the Department of Energy (DOE). Physically, the SPR comprises five underground storage facilities, hollowed out from naturally occurring salt domes in Texas and Louisiana. The SPR could be drawn down initially at a rate of 4.3 million barrels per day (mbd) for up to 90 days; thereafter, the rate would begin to decline.

The capacity of the SPR was reported to be 727 million barrels in 2005. In addition, a Northeast Heating Oil Reserve (NHOR) holds 2 million barrels of heating oil in above-ground storage. On August 8, 2005, the President signed the Energy Policy Act of 2005 (P.L. 109-58). The act permanently authorized the SPR and required, "as expeditiously as practicable," expansion of the SPR to its authorized maximum of 1 billion barrels. Within one year of enactment, the Secretary of Energy is to select sites — from among those that have been previously studied — for the expansion. Among other provisions, the Secretary is also required to develop procedures for achieving the fill objective without "incurring excessive cost" or placing upward pressure on prices.

EPCA authorizes drawdown of the Reserve upon a finding by the President that there is a "severe energy supply interruption." This is deemed by the statute to exist if three conditions are joined: If "(a) an emergency situation exists and there is a significant reduction in supply which is of significant scope and duration; (b) a severe increase in the price of petroleum products has resulted from such emergency situation; and (c) such price increase is likely to cause a major adverse impact on the national economy." Congress enacted additional drawdown authority in 1990 (Energy Policy and Conservation Act Amendments of 1990, P.L. 101-383), permitting the President to use the SPR for a short period without having to declare the existence of a "severe energy supply interruption" or the need to meet obligations of the United States under the international energy program overseen by the International Energy Agency (IEA). In addition, P.L. 94-163 provided authority for exchanges of SPR oil where oil is loaned and then returned with additional oil as a premium.

There are differences of opinion as to what should be termed a "severe energy supply interruption." A spike in crude and product prices often stirs calls for use of the SPR. However, the SPR is intended by statute to ameliorate discernible physical shortages of crude oil. The sharp rise in prices following Hurricanes Katrina and Rita in 2005 was not a response to any shortage of crude, but to shortages of products owing to the shutdown of major refining capacity in the United States and an interruption of product transportation systems. Demand growth that has strapped refinery capacity has, at other times, quite divorced product prices from crude supply, a departure from the past. It has complicated reconciling developments in markets with possible use of the SPR.

This report will be updated as events warrant.

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History of the SPR

Establishment of the SPR

From the mid-1970s until 2006, world markets have had to absorb roughly five significant spikes in the price of crude oil and petroleum products.[1] Whether driven by disruptions in the physical supply of crude or refined fuels, or by uncertainties owing to international conflicts and instabilities, these price increases can have consequences for the United States balance of trade and, owing to the relative inelasticity of demand for gasoline at prices up to $3.00 per gallon, siphon away disposable income that might be spent to support other economic activity or savings.

The origin of the U.S. Strategic Petroleum Reserve (SPR) stems from the 1973 Arab-Israeli War. In response to the United States' support for Israel, the Organization of Arab Exporting Countries (OAPEC) imposed an oil embargo on the United States, the Netherlands, and Canada, and reduced production. While some Arab crude did reach the United States, the price of imported crude oil rose from roughly $4/barrel (bbl) during the last quarter of 1973 to an average price of $12.50/bbl in 1974. While no amount of strategic stocks can insulate any oil-consuming nation from paying the market price for oil in a supply emergency, the availability of strategic stocks can help blunt the magnitude of the market's reaction to a crisis. More importantly, one of the original perceptions of the value of a strategic stockpile was that its very existence would discourage the use of oil as a political weapon. The embargo imposed by the Arab producers was a stark, politically motivated event intended to create a very discernible physical disruption. This probably explains, in part, why the genesis of the SPR was focused especially on deliberate and dramatic physical disruptions of oil flow.

In response to the experience of the embargo, Congress authorized the Strategic Petroleum Reserve (SPR) in the Energy Policy and Conservation Act (EPCA, P.L.

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[1] These have included the Arab oil embargo (1973-1974), the deposing of the Shah of Iran, followed by the Iranian revolution (1979-1980), the first Gulf War (1990), and OPEC production cuts and a resurgence in world oil demand (early 1999 into the fall of 2000). Since 2003, crude oil and product prices have risen to new nominal highs, owing to a blend of many factors, including international tensions and armed conflicts, as well as worldwide demand. Some of the dynamics behind recent increases owe to factors internal to the United States, including seasonal formulations of gasoline to help meet clean air standards and strains on U.S. refining capacity. Hurricanes Rita and Katrina created havoc and alarm in domestic and world markets.

94-163) to help prevent a repetition of the economic dislocation caused by the Arab oil embargo. The program is managed by the Department of Energy (DOE). Physically, the SPR comprises five underground storage facilities, hollowed out from naturally occurring salt domes, located in Texas and Louisiana. The caverns were finished by injecting water and removing the brine. Similarly, oil is removed by displacing it with water injection. For this reason, crude stored in the SPR remains undisturbed, except in the event of a sale or exchange. Multiple injections of water, over time, will compromise the structural integrity of the caverns.[2] By 2005, the capacity of the SPR reached 727 million barrels. It held virtually 700 million barrels before Hurricanes Katrina and Rita in 2005. Following the storms, some crude was loaned or sold, leaving the Reserve with 685 million barrels in mid-March 2006.[3]

As already noted, it was hoped that the creation of a significant operational reserve of crude oil would discourage the use of oil as a weapon. In the event of an interruption, introduction into the market of oil from the Reserve was expected to help calm markets, mitigate sharp price spikes, and reduce the economic dislocation that had accompanied the 1973 disruption. In so doing, the Reserve would also buy time — time for the crisis to sort itself out or for diplomacy to seek some resolution before a potentially severe oil shortage escalated the crisis beyond diplomacy. The SPR was to contain enough crude oil to replace imports for 90 days, with a goal initially of 500 million barrels in storage. In May 1978, plans for a 750-million-barrel Reserve were implemented.

SPR oil is sold by competitive sale. A Notice of Sale is issued, including the volume, characteristics, and location of the petroleum for sale; delivery dates and procedures for submitting offers; as well as measures for assuring performance and financial responsibility. Bids are reviewed by DOE and awards offered. The Department of Energy estimates that oil could enter the market roughly two weeks after the appearance of a notice of sale.[4]

The Arab oil embargo also fostered the establishment of the International Energy Agency (IEA) to develop plans and measures for emergency responses to energy crises. Strategic stocks are one of the policies included in the agency

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[2] Oil stored at one SPR site, Weeks Island, was transferred after problems with the structural integrity of the cavern — unrelated to drawdown activity — was discovered in the mid-1990s.

[3] Details and current levels of SPR inventory are updated regularly at [http://www2.spr.doe.gov/DIR/SilverStream/Pages/pgDailyInventoryReportViewDOE_new.html]

[4] [http://www.fe.doe.gov/programs/reserves/spr/spr-facts.html]. For more detail on the sales procedure, see U.S. *Federal Register*, Department of Energy, *Price Competitive Sale of Strategic Petroleum Reserve Petroleum; Standard Sales Provisions: Final Rule*, July 27, 2005, pp. 39363-39382; [http://www.fe.doe.gov/programs/reserves/spr/spr_rule_070705.pdf]. The Department of Energy has a helpful history of SPR drawdowns, sales, and exchanges on the web at [http://www.fe.doe.gov/programs/reserves/spr/spr-drawdown.html].

International Energy Program (IEP). Signatories to the IEA[5] are committed to maintaining emergency reserves, developing programs for demand restraint in the event of emergencies, and agreeing to participate in allocation of oil deliveries among the signatory nations to balance the shortage among IEA members.

While the U.S. SPR holds government held crude oil stocks, some IEA nations require a level of stocks to be held by the private sector or by both the public and private sectors. Including the U.S. SPR, roughly two-thirds of IEA stocks are held by the oil industry, whereas one-third is held by governments and supervisory agencies.[6]

Fill Rates Over the Years

The program fell increasingly behind schedule. By the end of 1978, the SPR was supposed to contain 250 million barrels, but it contained only 69 million barrels. When the Iranian revolution cut supplies in the spring of 1979, purchases were suspended to reduce the upward pressure on world oil prices. Filling of the Reserve was resumed in September 1980 following enactment of the Energy Security Act (P.L. 96-294), which established a minimum fill rate of 100,000 barrels per day (b/d). The Reagan Administration accelerated the fill rate to 292,000 b/d in FY1981, but the rate steadily declined to a low of 34,000 b/d in FY1990.

Filling of the SPR was suspended during 1990-1992 after the Iraqi invasion of Kuwait, but it resumed at a modest rate. Fill declined to 16,500 b/d during FY1994 before being suspended at the end of that fiscal year; by then the SPR held 592 million barrels. Owing to sales of SPR oil during 1996, the level in the Reserve had fallen to 563.5 million barrels by the early spring of 1997. (At the prices prevailing in the late spring of 1998, that inventory would have declined to roughly 542 million barrels had a sale authorized for FY1998 been carried out.)

In mid-November of 2001, President Bush ordered fill of the SPR to 700 million barrels, principally through oil acquired as royalty-in-kind (RIK) for production from federal offshore leases.[7] The program proved controversial, with some arguing that keeping the RIK oil markets during times of increasingly tight supply was placing additional pressure on oil prices. Others argued that the volumes involved in the RIK program were too small to affect prices. Deliveries of RIK oil ended in August 2005.

The debate over RIK fill stirred arguments that have been made over the years that a government-owned and operated strategic stock of petroleum is inappropriate

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[5] IEA member countries are Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Republic of Korea, Luxembourg, The Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States. See [http://www.iea.org/Textbase/about/membercountries.asp].

[6] [http://www.iea.org/Textbase/subjectqueries/keyresult.asp?KEYWORD_ID=4103].

[7] The estimate of a capacity of 727 million barrels followed a reevaluation of the cavern formations and other work. Water injections into caverns when oil has been moved have added capacity, as did completion of a project to remove excess gas from stored petroleum.

under any circumstance — that it essentially has saddled the public sector with the expense of acquiring and holding stocks, the cost for which might have otherwise been borne by the private sector. The existence of the SPR, this argument goes, has blunted the level of stocks held in the private sector.[8] (For additional details on the RIK fill program and controversy, see below.)

If the Administration wishes to resume RIK fill — or any other means of acquiring significant volumes of oil for the SPR — at any time in the future, its decision will be affected by provisions in the Energy Policy Act of 2005 (P.L. 109-58), enacted in the summer of 2005. This law requires the Secretary to develop and publish for comment procedures for filling the SPR that take into consideration a number of factors. Among these are the loss of revenue to the Treasury from accepting royalties in the form of crude oil, how the resumed fill might affect prices of both crude and products, and whether additional fill would be justified by national security. It is likely that these provisions of P.L. 109-58 were a partial consequence of the debate over the wisdom of RIK fill.

The SPR and Hurricanes Ivan, Katrina, and Rita (2004-2005)

Crude oil prices exceeded $50/barrel during October 2004, accompanied by declines in crude and product inventories. A major factor was Hurricane Ivan, which rampaged through the Gulf Coast in mid-September and temporarily interrupted more than 70% of offshore crude production, affecting crude oil deliveries to refineries. On September 23, 2004, the Administration agreed to a request placed to the Department of Energy from a couple of refineries seeking to borrow crude oil from the SPR, to be replaced within a short period of time. Subsequent requests raised the amount of borrowed crude to roughly 5.4 million barrels. The volume of oil returned was greater than the volume borrowed, in keeping with the mechanics of a "swap" of oil conducted in 2002 under comparable circumstances.

Critics claimed that it was a belated and insufficient use of the SPR, and that it even backfired in terms of calming the market. However, because the swap was limited and sharply focused, and represented such a tiny volume of oil, it may have been a misinterpretation to see it as intended to do anything more than it did — which was to provide supply to refiners to whom deliveries of crude were temporarily affected by Hurricane Ivan. As there is provision in law for limited uses of the SPR to mitigate the effects of domestic interruptions in supply, the Administration argued that the decision to loan oil to these refineries was consistent with its overall SPR policy not to suspend fill or to authorize a broader drawdown for the purpose of reducing high prices. The swap was not characterized as a broader market-calming measure. The fact that the price of oil rose even after the announcement was a reflection of much stronger factors and uncertainties then prevailing in world markets than could be offset by such a limited swap.

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[8] See, for example, Taylor, Jerry and Van Doren, Peter, "The Case Against the Strategic Petroleum Reserve," *Policy Analysis*, No. 555, Nov. 21, 2005.

Hurricanes Katrina and Rita in 2005 shut down oil and gas production from the Outer Continental Shelf in the Gulf of Mexico, the source for 25% of U.S. crude oil production and 20% of natural gas output. Katrina, which made landfall on August 29, 2005, resulted in the shutdown of most crude oil and natural gas production in the Gulf of Mexico, as well as a great deal of refining capacity in Louisiana and Alabama. Offshore oil and gas production was resuming when Hurricane Rita made landfall on September 24, and an additional 4.8 million barrels per day (mbd) of refining capacity in Texas and nearby Louisiana was closed.

Combining the effects of both storms, 1.3 mbd of refining — about 8% of national capability — was shut down, reducing the supply of domestically refined fuels commensurately. Much of the refined product shortfall was made up by imports of refined products, some of which were made available by strategic supplies released by International Energy Agency (IEA) member nations on September 2. As part of the IEA drawdown, 30 million barrels of crude oil were made available from the SPR, which holds only crude. Only 11 million barrels was sold from the SPR, in part because limited refinery capacity reduced the call on crude.

Stocks of heating oil proved more than adequate during the winter of 2005-2006. There were no calls for use of the SPR during that winter. More attention was focused on providing economic relief through the Low Income Home Energy Assistance Program to low-income heating oil consumers.

A Change in the Market Dynamics (2005-2006)

As the history of the SPR lays bare, there are differences of opinion over what should be termed a "severe energy supply interruption." A spike in crude and product prices often stirs calls for use of the SPR. However, as already noted, the SPR is intended by statute to ameliorate discernible physical shortages of crude oil. The price of gasoline and other petroleum products rose sharply following Hurricanes Katrina and Rita. However, these price increases were not a response to any shortage of crude, but to shortages of products owing to the shutdown of major refining capacity in the United States and to an interruption of product transportation systems. Demand growth that has strapped refinery capacity even before (as well as after) the hurricanes, has significantly altered the traditional correlation between crude and product prices. During 2005 and 2006, owing to pressure on product supplies and continued international tensions, the price of products has been divorced, in part, from its traditional correlation with crude supply and price. Depending upon future events, this new dynamic may complicate reconciling developments in markets with possible use of the SPR.

Many of the events touched upon in this history are explored in greater detail in subsequent sections of this report.

Reauthorization of the SPR

The authorities governing a drawdown of the SPR are included in the Energy Policy and Conservation Act (EPCA), enacted in 1975. These authorities also

provide for U.S. participation in emergency-sharing activities of the International Energy Agency without risking violation of antitrust law and regulation. The Energy Policy Act of 2005 permanently authorized the SPR. This should avoid the repeat of an episode in the past when the authorities expired and remained so for a number of months. While a legal argument was made that the SPR can be used without its underlying authorities being active (see section below), having the authorities permanently in place will simplify use of the SPR in the future.

The Drawdown Authorities

The Energy Policy and Conservation Act authorizes drawdown of the Reserve upon a finding by the President that there is a "severe energy supply interruption." This is deemed by the statute to exist if three conditions are joined: If "(a) an emergency situation exists and there is a significant reduction in supply which is of significant scope and duration; (b) a severe increase in the price of petroleum products has resulted from such emergency situation; and (c) such price increase is likely to cause a major adverse impact on the national economy."

Congress enacted additional drawdown authority in 1990 (Energy Policy and Conservation Act Amendments of 1990, P.L. 101-383) after the *Exxon Valdez* oil spill, which interrupted the shipment of Alaskan oil, triggering spot shortages and price increases. The intention was to provide for an SPR drawdown under a less rigorous finding than that mandated by EPCA. This section, 42 U.S.C. § 6241(h), allows the President to use the SPR for a short period without having to declare the existence of a "severe energy supply interruption" or the need to meet obligations of the United States under the international energy program.

Under this provision, a drawdown may be initiated in the event of a circumstance that "constitutes, or is likely to become, a domestic or international energy supply shortage of significant scope or duration" and where "action taken ... would assist directly and significantly in preventing or reducing the adverse impact of such shortage." This authority allows for a limited use of the SPR. No more than 30 million barrels may be sold over a maximum period of 60 days, and this limited authority may not be exercised at all if the level of the SPR is below 500 million barrels. This was the authority behind the Bush Administration's offer of 30 million barrels of SPR oil on September 2, 2005, which was part of the coordinated drawdown called for by the International Energy Agency. The same authority may have been the model for a swap ordered by President Clinton on September 22, 2000 (see below). As noted above, agreement on extension of the EPCA authorities was not reached until the final days of the 106th Congress (P.L. 106-469). During the roughly seven months that no formal authorities were in place, the Administration's position was that the existence of an annual appropriation for the SPR conveys the intention of Congress intention to maintain the SPR irrespective of whether the statutes have lapsed. The existence of legislative proposals in both the House and Senate to fund the SPR in FY2001 and to reauthorize the program were also interpreted by DOE counsel as further evidence of congressional intent toward the SPR. As noted previously, the Energy Policy Act of 2005 made the SPR authorities permanent.

Establishment of a Regional Home Heating Oil Reserve

While a number of factors contributed to the virtual doubling in some Northeastern locales of home heating oil prices during the winter of 1999-2000, one that drew the particular attention of lawmakers was the sharply lower level of middle distillate stocks — from which both home heating oil and diesel fuels are produced — immediately beforehand. It renewed interest in establishment of a regional reserve of home heating oil. EPCA includes authority for the Secretary of Energy to establish regional reserves as part of the broader Strategic Petroleum Reserve. With support from the Administration, Congress moved to specifically authorize and fund a regional heating oil reserve in the Northeast. The FY2001 Interior Appropriations Act (P.L. 106-291) provided $8 million for the Northeast Heating Oil Reserve (NHOR). The regional reserve was filled by the middle of October 2000 at two sites in New Haven, Connecticut, and terminals in Woodbridge, New Jersey, and Providence, Rhode Island. The NHOR would provide roughly 10 days of Northeast home heating oil demand.

There was controversy over the language that would govern its use. Opponents of establishing a regional reserve suspected that it might be tapped at times that some consider inappropriate, and that the potential availability of the reserve could be a disincentive for the private sector to maintain inventories as aggressively as it would if there were no reserve. The approach enacted predicated drawdown on a regional supply shortage of "significant scope and duration," or if — for seven consecutive days — the price differential between crude oil and home heating oil increased by more than 60% over its five-year rolling average. The intention was to make the threshold for use of the regional reserve high enough so that it would not discourage oil marketers and distributors from stockbuilding. The President may also authorize a release of the NHOR in the event that a "circumstance exists (other than the defined dislocation) that is a regional supply shortage of significant scope and duration," the adverse impacts of which would be "significantly" reduced by use of the NHOR.

During mid- and late December 2000, the 60% differential was breached. However, this was due to a sharp decline in crude prices rather than to a rise in home heating oil prices. In fact, home heating oil prices were drifting slightly lower during the same reporting period. As a consequence, while the 60% differential was satisfied, other conditions prerequisite to authorizing a drawdown of the NHOR were not.

A general strike in Venezuela that began in late 2002 resulted, for a time, in a loss of as much as 1.5 million barrels of daily crude supply to the United States. With refinery utilization lower than usual owing to less crude reaching the United States, domestic markets for home heating oil had to rely on refined product inventories to meet demand during a particularly cold winter. Prices rose, and there were calls for use of the NHOR; still, the price of heating oil fell significantly short

of meeting the guidelines for a drawdown.[9] In connection with the FY2004 Interior appropriations, both the House and Senate Appropriations Committees included language in their committee reports directing that DOE advise Congress as to the "circumstances" under which the NHOR might be used. The provision implied that some in Congress were not satisfied with the formula currently in place that would permit drawdown of the NHOR. The language was not included in the final FY2004 Interior appropriations bill. As the sharp increases in home heating oil prices during 2005 are averaged into the five-year rolling average, the price differential needed to trigger use of the NHOR will increase further. However, the President can invoke the authorities for an NHOR drawdown even if the price threshold is not met.

On October 7, 2005, the House passed by a narrow margin (212-210) the Gasoline for America's Security Act (H.R. 3893). Among other provisions, it would expand the NHOR to 5 million barrels.

Purchases of Crude Oil

With the expiration in the late 1980s of an agreement with Petroleos Mexicanos (PEMEX), the Defense Fuels Supply Center resumed making purchases for the SPR on behalf of DOE from the spot market until fill was suspended for a second time after FY1994. The federal deficit was a major concern, and in light of the common interests established between consuming and producing nations during the Gulf War, the Reserve was deemed by a majority in Congress to be sufficiently filled.

Alternatives to the direct purchase of oil for the Reserve were studied and debated during the 1980s. Most alternatives had distinct disadvantages or risks. Among the options examined at length were the sale of oil-denominated bonds with the revenues applied to oil purchases, imposition of SPR-dedicated fees on gasoline or oil imports, and sale of the Naval Petroleum Reserves (NPR) or dedication of NPR revenues to SPR purchases. The only option examined thought to have the same advantages as direct purchases was oil leasing.

In the 102nd Congress, omnibus energy legislation in the House (H.R. 776) included a provision that would have required that refiners of domestic and imported oil be assessed 1% of their domestic and imported crude and products — or the cash equivalent — to provide 150,000 b/d for the SPR. The George H. W. Bush Administration and the industry were opposed to this approach, arguing that a set-aside would be the equivalent of a tax and that it would be borne disproportionately by certain companies. The contentious set-aside language was struck on the House floor, and a similar provision in the Senate was defeated during committee markup.

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[9] During the heating oil season, DOE updates and posts a weekly table that shows the various inputs that go into the calculation to determine the current differential, [http://www.fe.doe.gov/programs/reserves/heatingoil/Sales_Basis_0506.html]. (For additional information on the establishment of the NHOR, see CRS Report RL30781, *U.S. Home Heating Oil Price and Supply During the Winter of 2000-2001: Policy Options*, by Robert L. Bamberger.)

From 1995 until the latter part of 1998, sales of SPR oil, not acquisition, were at the center of debate. However, reduction and elimination of the annual federal budget deficit and the precipitous drop in crude oil prices into early 1999 generated new interest in replenishing the SPR, either to further energy security objectives or as a means of providing price support to domestic producers who were struggling to keep higher-cost, marginal production in service. As an initiative to help domestic producers, Secretary of Energy Bill Richardson requested that the Office of Management and Budget (OMB) include $100 million in the FY2000 budget request for oil purchases. The proposal was rejected. It has also been periodically suggested that it be U.S. policy to purchase domestic oil for the SPR as a means of keeping marginal wells in production. The SPR reauthorization enacted by the 106th Congress (P.L. 106-469) included an amendment authorizing purchase of oil from U.S. wells producing 15 barrels or less (25 or less if there is a high water content to the recovered oil) in the event that the price of crude falls to $15/barrel or below. In September 1998, the Big Hill SPR site in Texas was activated as a foreign trade subzone, which would enable foreign countries to store surplus production in the Reserve without paying customs fees and taxes, but this has never happened.

Royalty-in-Kind Acquisition for the SPR

Another alternative proposed by DOE was to arrange for a portion of the royalties paid to the government from oil leases in the Gulf of Mexico to be accepted "in kind" (in the form of oil) rather than as revenues. The Department of the Interior (DOI) was reported to be unfavorably disposed to the royalty-in-kind (RIK) proposal, but a plan to proceed with such an arrangement was announced on February 11, 1999. (Legislation had also been introduced [H.R. 498] in the 106th Congress to direct the Minerals Management Service to accept royalty-in-kind oil.) Producers have favored institution of such a program because they maintain that the current system for valuation of oil at the wellhead is complex and flawed. Acquiring oil for the SPR by RIK avoids the necessity for Congress to make outlays to finance direct purchase of oil; however, it also means a loss of revenues in so far as the royalties are paid in wet barrels rather than in cash.

Final details were worked out during the late winter of 1999. The ultimate intention was to replace the 28 million barrels that were sold in recent years; it was to take about 10 months to replenish this volume at the anticipated rate of roughly 100,000 b/d. This Clinton program, and the return of oil that was "swapped out" from the SPR in 2000 by the Clinton Administration, was to account for a total of 47 million barrels restored to the SPR. Deliveries of RIK oil ordered by the Bush Administration in 2001 ended in August 2005 when the SPR reached 700 million barrels.

At its inception, the RIK plan was generally greeted as a well-intended first step toward filling the SPR. However, it became controversial when crude prices began to rise sharply in 2002. Some policymakers and studies asserted that diverting RIK oil to the SPR instead of selling it in the open market was putting additional pressure on crude prices. Deposit of 40 million barrels into the SPR during 2002 was criticized in a report released on March 3, 2003, by Senator Levin, representing the

minority on the U.S. Senate Permanent Committee on Investigations. The study argued that this increment of fill had been a major contributor to oil price increases during that year. A number of industry analysts quickly dismissed the study, arguing that the quantity of SPR fill was not enough to have driven the market. On August 5, 2003, Senator Levin reiterated his charges in a letter to Secretary of Energy Abraham, requesting that DOE suspend acquisitions for the SPR until crude prices decline.[10]

In light of tightness in world oil markets and increasing prices, the Bush Administration agreed to delay deliveries scheduled for late 2002 and the first months of 2003. The Administration had intended to boost deliveries to the SPR to 130,000 barrels per day during April 2003, a total of 3.9 million barrels. But, on March 4, 2003, DOE delayed delivery of all but 15,000 b/d of RIK oil. With the declared end of the military phase of the war in Iraq and little effect on oil markets, deliveries of RIK oil were resumed, as well as delivery of oil still owed from a "swap" held in 2000 (see below).

Efforts in the 108th Congress to compel suspension of RIK fill were unsuccessful. An amendment to the FY2005 Interior Appropriations bill (H.R. 4568) to suspend RIK deliveries and cap the SPR at 647 million barrels was defeated on the House floor (152-267) on June 17, 2004. Another effort to suspend RIK deliveries to the SPR occurred on September 14, 2004, during debate on H.R. 4567, the FY2005 Department of Homeland Security appropriations bill. Senator Byrd proposed suspension of RIK fill in order to provide $470 million in additional funding for homeland security purposes. The amendment was set aside. Despite the continued opposition to RIK fill of some policy makers, the Administration continued with it until August 2005, when the SPR held virtually 700 million barrels. As noted previously, provisions in the Energy Policy Act of 2005 will require review of the potential impact of removing RIK oil from the market if there is intention to resume RIK fill in the future.

Drawdown of the Reserve

Drawdown Capability

The SPR could be drawn down initially at a rate of roughly 4.3 mbd for up to 90 days; thereafter, the rate would begin to decline. Although fears were expressed periodically during the 1980s about whether the facilities for withdrawing oil from the Reserve were in proper readiness, the absence of problems during the first real drawdown in early 1991 (the Persian Gulf War) appeared to allay much of that concern. However, some SPR facilities and infrastructure were beginning to reach the end of their operational life. A Life Extension Program, initiated in 1993, upgraded or replaced all major systems to ensure the SPR's readiness to 2025.

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[10] The study was posted online at [http://www.access.gpo.gov/congress/senate/pdf/108hrg/85551.pdf].

Debate Over When to Use the Reserve

A debate during the 1980s over when, and for what purpose, to initiate a drawdown of SPR oil reflected the significant shifts that were taking place in the operation of oil markets after the experiences of the 1970s, and deregulation of oil price and supply. Sales of SPR oil authorized by the 104th Congress — and in committee in the 105th — renewed the debate for a time.[11] The intended use of the SPR became an issue again, beginning with the rise in home heating prices during the winter of 1999-2000.

The SPR Drawdown Plan, submitted by the Reagan Administration in late 1982, provided for price-competitive sale of SPR oil. The plan rejected the idea of conditioning a decision to distribute SPR oil on any "trigger" or formula. To do so, the Administration argued, would discourage private sector initiatives for preparedness or investment in contingency inventories. Many analysts, in and out of Congress, agreed with the Administration that reliance upon the marketplace during the shortages of 1973 and 1979 would probably have been less disruptive than the price and allocation regulations that were imposed. But many argued that the SPR should be used to moderate the price effects that can be triggered by shortages like those of the 1970s or the tight inventories experienced during the spring of 1996, and lack of confidence in supply availability. Early drawdown of the SPR, some argued, was essential to achieve these objectives.

The Reagan Administration revised its position in January 1984, announcing that the SPR would be drawn upon early in a disruption. This new policy was hailed as a significant departure, considerably easing congressional discontent over the Administration's preparedness policy, but it also had international implications. Some analysts began to stress the importance of coordinating stock drawdowns worldwide during an emergency lest stocks drawn down by one nation merely transfer into the stocks of another and defeat the price-stabilizing objectives of a stock drawdown. In July 1984, responding to pressure from the United States, the International Energy Agency agreed "in principle" to an early drawdown, reserving decisions on "timing, magnitude, rate and duration of an appropriate stockdraw" until a specific situation needed to be addressed.

Use of the SPR in the Persian Gulf War (1990). This debate was revisited in the aftermath of the Iraqi invasion of Kuwait on August 2, 1990. The escalation of gasoline prices and the prospect that there might be a worldwide crude shortfall approaching 4.5-5.0 million barrels daily prompted some to call for drawdown of the SPR. The debate focused on whether SPR oil should be used to moderate anticipated price increases, before oil supply problems had become physically evident.

In the days immediately following the Iraqi invasion of Kuwait, the George H. W. Bush Administration indicated that it would not draw down the SPR in the absence of a physical shortage simply to lower prices. On the other hand, some

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[11] These were sales ordered by Congress as deficit-reduction measures. For a chronology of these sales, see [http://www.fe.doe.gov/programs/reserves/spr/spr-drawdown.html].

argued that a perceived shortage does as much and more immediate damage than a real one, and that flooding the market with stockpiled oil to calm markets is a desirable end in itself. From this perspective, the best opportunity to use the SPR during the first months of the crisis was squandered. It became clear during the fall of 1990 that in a decontrolled market, physical shortages are less likely to occur. Instead, shortages are likely to be expressed in the form of higher prices as purchasers are free to bid as high as they wish to secure scarce supply.

Within hours of the first air strike against Iraq in January 1991, the White House announced that President Bush was authorizing a drawdown of the SPR, and the IEA activated the plan on January 17. Crude prices plummeted by nearly $10/barrel in the next day's trading, falling below $20/bbl for the first time since the original invasion. The price drop was attributed to optimistic reports about the allied forces' crippling of Iraqi air power and the diminished likelihood, despite the outbreak of war, of further jeopardy to world oil supply. The IEA plan and the SPR drawdown did not appear to be needed to help settle markets, and there was some criticism of it. Nonetheless, more than 30 million barrels of SPR oil was put out to bid, but DOE accepted bids deemed reasonable for 17.3 million barrels. The oil was sold and delivered in early 1991.

The Persian Gulf War was an important learning experience about ways in which the SPR might be deployed to maximize its usefulness in decontrolled markets. As previously noted, legislation enacted by the 101st Congress, P.L. 101-383, liberalized drawdown authority for the SPR to allow for its use to prevent minor or regional shortages from escalating into larger ones; an example was the shortages on the West Coast and price jump that followed the Alaskan oil spill of March 1989. In the 102nd Congress, omnibus energy legislation (H.R. 776, P.L. 102-486) broadened the drawdown authority further to include instances where a reduction in supply appeared sufficiently severe to bring about an increase in the price of petroleum likely to "cause a major adverse impact on the national economy." The original EPCA authorities permit "exchanges" of oil for the purpose of acquiring additional oil for the SPR. Under an exchange, a company borrows SPR crude and later replaces it, including an additional quantity of oil as a premium for the loan. There have been seven exchanges from 1996 through 2005, the most recent ones following Hurricanes Katrina and Rita.

A new dimension of SPR drawdown and sale was introduced by the Clinton Administration's proposal in its FY1996 budget to sell 7 million barrels to help finance the SPR program. While agreeing that a sale of slightly more than 1% of SPR oil was not about to cripple U.S. emergency preparedness, some in the Congress vigorously opposed the idea, in part because it might establish a precedent that would bring about additional sales of SPR oil for purely budgetary reasons, as did indeed occur. There were three sales of SPR oil during FY1996. The first was to pay for the decommissioning of the Weeks Island site. The second was for the purpose of reducing the federal budget deficit, and the third was to offset FY1997 appropriations. The total quantity of SPR sold was 28.1 million barrels, and the revenues raised were $544.7 million.

Reconciling Market Conditions and Use of the SPR: Two Examples from 1999-2000

What follows is a brief history of two incidents in 1999-2000 when there were calls for use of the SPR. A review of these events captures the difficulty of reconciling market developments with the authorities that govern an SPR drawdown.

Calls for a Drawdown: Home Heating Oil, Winter 1999-2000

Since 1999, there have been frequent calls by some policymakers for use of the SPR. At the start of 2000, reducing the federal budget deficit was no longer the argument for a sale of SPR oil. Some argued that a leap in home heating oil prices from the winter of 1998-1999 to the winter of 1999-2000 was a rationale for drawing down the SPR. As the price increases generalized to diesel fuel, heating oil, and gasoline, the calls for an SPR drawdown began to multiply. At issue during the winter of 1999-2000 was whether the price for home heating oil had reached a level severe enough to stir a shift in policy governing SPR use — and whether the SPR could be any sort of remedy. Though the price of heating oil and other petroleum products is inextricably tied to oil supply, policy governing SPR use has generally been that SPR oil is to be used primarily to ameliorate oil supply shortages and their consequences (including higher prices), but not to be used to explicitly regulate prices.

In addition, some argued that a drawdown of the SPR would not alleviate the problem. The Clinton Administration's contention was that high prices were the consequence of a number of temporary factors that could not be resolved any faster by intervention. This was because the tight supply of home heating oil in the Northeast was due in part to idle refinery capacity and refiners' drawdown of stocks during a period when crude prices were escalating. Refiners preferred to use lower-cost inventory rather than purchase higher-priced crude. Prolonged freezing temperatures also had made certain ports less accessible, adding to distribution problems. The Administration argued that the high prices prevailing would encourage increased production of home heating oil, a shift of refined product stocks to the Northeast, and additional product imports that would arrive in due course. Though it would take some weeks for these effects to take hold, the argument was that these developments would alleviate the supply problem long before a drawdown from the SPR could help. In the meantime, some governors received additional funds from LIHEAP, the Low-Income Home Energy Assistance Program administered by the Department of Health and Human Services.

As gasoline and diesel fuel prices began to increase in the late winter of 2000, the calls for an SPR drawdown began to come from sections of the country other than the Northeast. The Administration continued to oppose a drawdown, investing its efforts instead in a number of trips by then-Secretary Richardson to the Middle East and elsewhere to talk with the Organization of Petroleum Exporting Countries (OPEC) oil ministers and the oil ministers of other oil-exporting nations. Following OPEC's commitment on March 28, 2000, to boost production, crude prices began to decline from the upper twenties to the mid-twenties. The pressure for an SPR

drawdown had subsided by the first week of April 2000; however, it resumed in June 2000 when gasoline prices began to reach and breach $2.00/gallon in the Midwest.

September 2000: A Swap Is Announced

As the summer of 2000 ended, crude oil prices continued to escalate, despite boosts in production by the OPEC cartel. Stocks of home heating oil had been at historic lows, and concern was growing about the fresh pressure that escalating crude prices, colder weather, and anticipated refinery maintenance might have on home heating price and supply during the winter. On September 22, 2000, President Clinton announced a swap of 30 million barrels of oil from the SPR, and contracts were awarded on October 4. Interested parties bid to borrow quantities of not less than 1 million barrels. Contracts were awarded on the basis of how much oil bidders offered to return to the SPR between August 1 and November 30, 2001. In effect, bidders based their offers on their best models of what it would cost them to acquire replacement crude, weighed against the benefit to them of having additional supply at the beginning of the winter. Although there were reports that interest in the swap was thin, this proved not to be the case. DOE awarded 24 million barrels of sweet crude and 6 million barrels of sour. Under the contracts accepted by DOE, a total of 31.5 million barrels were to be returned to the SPR in 2001.

Over the course of the days between announcement of the swap and the day after the awards were made, crude prices softened from $37 to less than $31/bbl. It was arguable how much of this was attributable to the swap, or whether, absent the escalation in Middle East tensions during the week of October 9, 2000, the decrease would have been maintained anyway. It may have been that U.S. willingness to use the SPR temporarily took the wind out of a speculative element in the futures market. Some argued that the Administration announcement was a calculated political gesture to affect price, that the circumstances did not merit a drawdown of SPR oil, and that adding crude to the market would do little to boost home heating oil supply because refineries were operating at near capacity. Others contended that there was a legitimate need to call upon SPR supply, because it would increase supply and exert some stabilizing influence.

The preponderant risk in the transaction was borne by the oil companies and refiners who placed bids. The volume a refiner promised to return, and the price at the time the refiner acquired the replacement crude, determined the refiner's effective return on participating in the swap. However, in the absence of congressional appropriations to acquire oil for the SPR in recent years, the Reserve received under the swap a net acquisition that it would not have otherwise had. In that sense, it is not especially material whether or not the quantity of oil returned to the SPR was at price parity with the quantity originally borrowed. Criticism of the swap was renewed when three bidders awarded a total of 10 million barrels of sweet crude were having difficulties securing letters of credit. Two were unable to meet the deadline; on October 14, 2000, DOE awarded the 7 million barrels they controlled to three firms who had been successful bidders in the initial solicitation.

The peculiar circumstances surrounding some of the original bidders spurred fresh criticism and congressional hearings into the swap, as did reports that higher prices for home heating oil in Europe were likely to draw product refined from the

SPR crude to overseas market. Senator Frank Murkowski, Chairman of the Senate Energy and Natural Resources Committee, issued a press release on October 6, 2000, underscoring the irony that oil from the U.S. SPR might relieve European, rather than domestic, markets. While it can be argued that, in a world market, it does not greatly matter where the product goes, a principal issue here appeared to be the reluctance among some European nations to draw upon their own strategic stocks. Some European officials called for a coordinated stock drawdown by the European Union in light of the U.S. action, but opinion was divided among the membership. An advantage of any European drawdown is that stocks are held in the form of both refined products and crude; product would reach markets faster. European Union distillate stocks were reported to cover 100 days' demand. In October 2000, several domestic refiners indicated to DOE that they would temporarily cease exporting home heating oil.

On March 29, 2001, the repayment schedule was renegotiated to allow five companies to return nearly 24 million barrels of the swapped oil between December 2001 and January 2003. To compensate for the extension of the schedule, DOE received additional oil, bringing the total projected repayment to 33.54 million barrels. Some assert that the schedule was renegotiated to keep pressure off crude markets and to keep this volume of oil in the private sector, where it could be tallied in industry stocks going into the winter of 2001-2002. Delivery of the last 5.9 million barrels to be replaced was renegotiated in December 2002 and again at the end of January 2003 as the fall in crude exports from Venezuela contributed to a tightness in world oil markets. Obligations were fully satisfied by January 2004.

As has been noted, a new unpredictability in the correlation between crude supply and price with petroleum product prices has introduced further complexity in reconciling incidents in markets with possible use of the SPR. If future disruptions in oil markets are anything like the past, there will likely be differences over what constitutes a "severe energy supply interruption," and the capacity of the SPR to ameliorate the economic and supply consequences. Should a majority of Congress stay committed to the notion that it is appropriate for the federal government to maintain a strategic stockpile of crude oil, SPR policy will likely continue to prove controversial during periods of price and supply volatility