Defending the SPR:

A Response to the Cato Institute essay "The Case Against the Strategic Petroleum Reserve."

By Bruce Beaubouef, Houston, Texas

ABSTRACT

The Cato Institute article "The Case Against the Strategic Petroleum Reserve," authored by Jerry Taylor and Peter Van Doren, argues that the government should terminate the program, and sell all the oil. Unfortunately, their argumentation and evidence is often flawed and sometimes erroneous; and their conclusion, coming as it does in era of increasing energy insecurity, could not be more misplaced.

INTRODUCTION

After years of neglect, the issue of energy security is back at the forefront of national debate, spurred by record high oil prices, the war in Iraq, and the disruptions caused by hurricanes Katrina and Rita. The Cato Institute study, "The Case Against the Strategic Petroleum Reserve," authored by Jerry Taylor and Peter Van Doren, thus takes on an important topic.[1]

Unfortunately, its methodology and conclusions are seriously flawed. The SPR, created by the federal government in the wake of the 1973-74 Arab oil embargo, is a vital tool for enhancing U.S. energy security, and one that is increasingly relied upon by industry. But the authors argue that the government should terminate the program, and sell all the oil.

Here are their main arguments:

- Drawdowns either come too late or not at all, or are too small to be beneficial.

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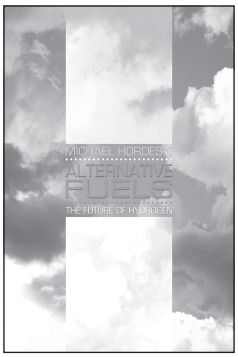

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- Oil shocks are not as deleterious as believed, and, in any case, are "much rarer than many observers believe" (p. 1).
- Benefits from a release "are almost certainly overstated," and the SPR is too costly relative to its benefits (p. 1).
- Public stockpiles (such as the SPR) tend to reduce private inventories, which, if the government would just stay out of the marketplace, will work just fine (p. 1).

Let's examine these arguments in depth.

First, the authors say that while SPR drawdowns could have an impact in mitigating the effects of a disruption, "Our analysis suggests that the SPR has not and probably never will be used in the manner prescribed by [its] supporters" (p. 15)—meaning early in a crisis. "Our experience with the SPR," they write, "suggests that politicians are unlikely to order releases as quickly and as robustly as economists would recommend" (p. 10). In general, they find that the SPR has been tapped "too late to produce significant benefits" (p. 1). For example, following the 1990 disruption, they note that "The SPR was deployed too late to reduce prices, and any economic damage that those prices caused" (p. 10).

There is much truth to this: the SPR has often been used too late, or not used in a timely fashion. After the 1990 disruption, the first Bush administration waited five and a half months before ordering a large-scale drawdown. By then, much of the economic damage had been done. More recently, the second Bush administration has also been reluctant to order a drawdown, despite record high oil and gasoline prices and combined disruptions from Venezuela, Iraq, and Nigeria. It waited nearly two years until the devastation caused by Hurricane Ivan (2004), and then Katrina and Rita (2005), before ordering a release. It should be noted, however, that when the first Bush administration did finally order a large-scale drawdown in January 1991, prices fell by nearly 50 percent, back to their pre-crisis levels. Other releases have also had a dampening effect on rising prices.

But while there is truth to the charge, the authors make the error of taking the Republican reluctance to use the SPR and extrapolating it to all White House policy in general. In general, Democrats are eager to use the tools of government; Republicans are more reluctant. While both Bush administrations have been slow to order a drawdown, it is a mistake to take this to mean that the SPR has no value, and to think that

all future presidents will follow suit. Indeed, the Clinton administration was ready to use the SPR, and did so on a number of occasions. And other times, it sent out hints that it might. Indeed, some conservatives and members of industry criticized the Clinton administration for its quick trigger finger and using the SPR in "non-emergency" situations. Future presidents may use the reserve more readily, whether Republican or Democrat.

To buttress their point, the authors say that "the SPR has been tapped only three times" (p. 1): in 1991, 2000, and 2005. Here, the authors make another error—there have been more than three drawdowns. The authors fail to take into account the growing use of the SPR through the program's exchange authority—in 1996, 2000, 2002, 2004, and 2005—and the industry's related (and also growing) need and demand for SPR oil. In each case, the industry approached the DOE for short-term supply assistance. Companies that have asked for and received such loans of SPR oil have included Arco, Citgo, Conoco, Shell, and others.

Moreover, they contend that that "none of those three releases were particularly large" (p. 10). Of the 1991 release, they say: "The release was quite modest—21 million barrels" (p. 10). Actually, this figure includes the 3.9 million barrel test sale of September 1990, and the larger 17.3 million barrel drawdown ordered in January 1991. In point of fact, the government initially offered 33.75 million barrels in January, but quickly revised the number (and the type of crude oil) to be more in line with market needs.

However, let's look at the larger picture, at how much oil was drawn down in those cases. In 1990-91, it was 21.2 million barrels; in 2000, it was 30 million barrels; in 2005, the DOE sold 10.8 million barrels of sweet crude oil and another 200,000 barrels of sour crude, and agreed to loan another 9.8 million barrels, placing roughly 21 million barrels on the market. It is hard to imagine any of these drawdowns as "modest." The authors' contention raises the question: How large does a drawdown have to be? (Big enough, one supposes, to deplete the entire reserve.) To take the 1991 case—the release equaled approximately one day's worth of national petroleum consumption (no mean feat), and played a role in bringing prices back to pre-crisis levels. In fact, each of the three releases cited—1991, 2000, and 2005—were significant, and helped lower or mitigate high prices. Some of the other exchanges (1996, 2002, 2004) have been smaller. And in each of those instances, the gov-

ernment sold or loaned as much oil as the market wanted. Drawdowns do not have to be huge to have an impact.

Additionally, Taylor and Van Doren argue that the ambiguity of the drawdown legislation inhibits releases. They cite another study whose authors contend that "part of the problem stems from the legislation governing the use of the SPR in an emergency" (p. 12). There is some truth here, but it is at best a half-truth. It is true that the drawdown language in the original Energy Policy and Conservation Act of 1975 (which created the SPR) was intentionally made vague to afford the president greater discretion in making a drawdown decision. At the same time, the 1975 act did specify that "an interruption in the supply of imported petroleum" was one of the three conditions that could call for a presidential finding of a "severe energy supply interruption." (The other two being a "national energy supply shortage" that was "of significant scope and duration, and of an emergency nature;" and that could have "adverse impact on national safety or the national economy.")[2]

Since then, amendments to the act in 1990 and subsequent legislation in 1992 have widened the drawdown authorities to include different types of disruptions. The 1990 act, for example, stated that the SPR could be drawn down in response to domestic as well as foreign supply disruptions. The legislation also allowed for a drawdown without the finding of a "severe energy supply interruption," while placing limits on such drawdowns and created the program's exchange authority. So the legislation has actually been made more specific in recent years to facilitate drawdowns. Of course, nothing compels the president to order a drawdown.[3]

Truth be told, presidents have had and likely always will have wide discretion over a drawdown decision. Given the legislation, the president can always find a reason to order—or not order—a drawdown. The current Bush administration has largely followed the legislative intent of the 1975 statute, and ignored subsequent legislation that authorizes drawdowns in a wider array of circumstances. Thus, the issue here isn't legislative ambiguity, it's political philosophy.

The authors' second main point is that disruptions are rare, and their impact has been overstated. They diminish the idea that oil price shocks have impacted the economy negatively, arguing that Federal Reserve monetary policy (raising interest rates) has exacerbated and amplified the effects of past disruptions. They also say that the effect of

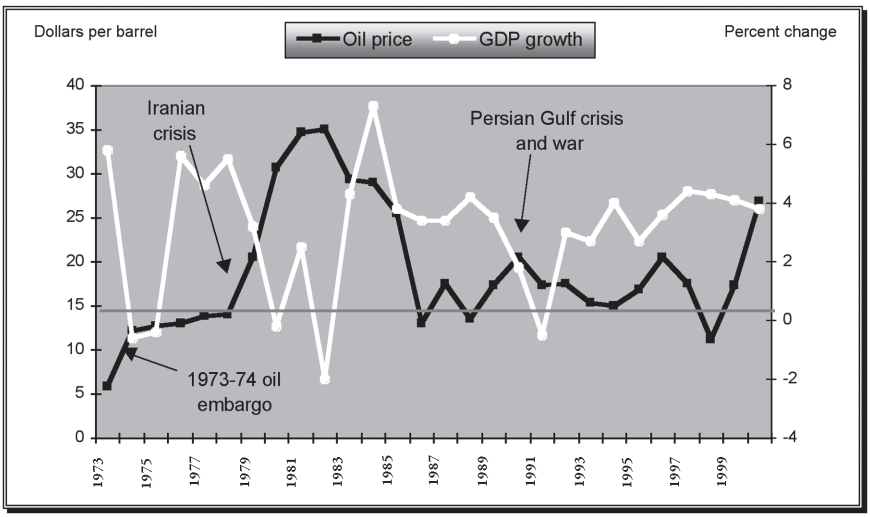
future disruptions "depends on other economic variables" (p. 9) at the time of the disruption, such as surplus world oil production capacity, the level of world oil stocks, the oil intensity of the American economy, and the level of oil price volatility prior to the disruption. Third, they note, "we cannot easily predict the frequency and severity of future supply disruptions" (p. 9).

Additionally, they contend that there has been an "excessive fear" of a supply disruption in the SPR literature. In a 50-year period, they note, "we have experienced 12 supply crises with an average of 5.4 percent reduction in supply" (p. 10). They calculate that "this translates into a 24 percent chance of such a disruption in any given year." (Although a 24 percent chance is hardly inconsequential.) The authors suggest that since analysts predicted that disruptions would happen more frequently, the likelihood of future disruptions is overstated. Further, they argue that politically motivated embargoes will be unlikely in the future; that in fact the Arab oil embargo of 1973-74 was largely "symbolic" and had little impact; and that these "facts" undermine the need for strategic reserves. They then attempt to bolster their arguments by stating that "the U.S. will always have access to Persian Gulf oil, whether OPEC members like it or not…Nobody has ever been denied access to oil: anyone willing to pay the current price could have more than he wanted…oil will always be available to those willing to pay the posted price in global spot markets" (pp. 4-5).

There are several problems with these arguments. The authors' claim that disruptions are rare and mild is astonishing, given that significant recessions have followed every major supply disruption or price shock: in the mid-1970s, following the embargo; in the late 1970s and early 1980s, following the Iranian revolution; and in the early 1990s, following the Persian Gulf crisis. In each case, U.S. GDP growth plummeted following the disruption (Table 1). But the authors ignore or dismiss these facts. Their only concession to the historical record is the unresolved academic dispute over monetary policy, which they admit is open to debate.

Nor have disruptions been rare. The authors say that there have been 12 disruptions—and suggest that this is a low number (p. 10)—but there have in fact been at least 21 world oil supply disruptions in the post-World War Two era. To be sure, not all those disruptions brought recessions, but how many instances of severe economic damage are acceptable? History shows that disruptions are a recurring phenomenon.

Table 1. U.S. economic growth versus energy prices—crude oil prices from Persian Gulf nations, in nominal dollars per barrel, and gross domestic product percent change based on chained 1996 dollars, 1973-2000



Sources: Energy Information Administration, U.S. Department of Energy, Annual Energy Review 2000. Washington, D.C: EIA/DOE, August 2001, 159; "Gross Domestic Product Percent change from preceding period," Bureau of Economic Analysis, U.S. Department of Commerce (*http://www.bea.doc.gov/bea/dn/gdpchg.xls*).

When one accepts the significant, negative consequences that have followed sizable disruptions—as one must, after honestly reviewing the historical record—one realizes that coping with supply disruptions is an appropriate task for the federal government. And over time, both business and government have concluded that a publicly owned strategic reserve system is the best tool for that goal.

The authors also set up a straw man by minimizing the value of the SPR as an "embargo hedge" (pp. 4-5). Yes, a repetition of a 1973-74 embargo is unlikely. But history shows that disruptions can take many forms. So the fact that a future use of the "oil weapon" is unlikely does not mean that there won't be major disruptions in the future, or that the SPR is without value. Moreover, there are those who argue (as former DOE Secretary Donald Hodel did) that a credibly stocked SPR has helped remove the oil weapon from international diplomacy, rendering this argument moot. Statements made by OPEC officials in

the mid-1970s were testament to the fact that the Arab oil-exporting countries felt threatened by the creation of the SPR, and the other IEA emergency reserve programs. More recent statements by OPEC officials in the wake of the 2000 drawdown showed that these sentiments had not decreased with time.

The authors quote MIT oil economist M.A. Adelman to express "the overwhelming consensus among economists" that "nobody had ever been denied access to oil: anyone willing to pay the current price could have more than he wanted" (pp. 4-5). Notably, the quote is from Adelman's book *The World Petroleum Market*, which was published in 1972—several months before the Arab oil embargo. The statement also suggests that oil is just like any other commodity, a belief that is held by a number of economists. However widely held, any such contention is obviously untrue. Oil is a critical, high-demand resource—the lifeblood of modern society—and one that exists in an increasingly tight market.[4]

In addition, in making this argument, the authors dismiss the significant "tax effect" of higher oil and energy prices. Yes, it may be true that the market usually works to ensure that there is no shortage, but the higher prices take a toll on the economy just the same, by increasing business costs and reducing consumer purchasing power. Higher petroleum costs hit transportation-related businesses especially hard, and this is especially important since transportation accounts for two-thirds of petroleum-related demand, a demand that increased 45 percent between 1973 and 2000. Indeed, the authors cite an Oak Ridge National Laboratory study which estimates that oil price spikes may have cost the U.S. economy an average of $90 billion annually between 1972 and 1991, and a total of $10.22 trillion between 1970 and 1999. The Oak Ridge study also projects that future supply disruptions might reasonably be expected to impose an average of $27.2 billion of annual costs on the economy. But the authors dismiss these numbers, deeming them "highly speculative."[5]

The authors' flawed reasoning is again evident in their analysis of the effects of the 1973-74 embargo. They totally neglect the very real price increases that took place in the days, months, and years that followed. From 1973 to 1981, world crude oil prices—which were then heavily influenced by OPEC—increased nearly ten-fold, from $2.90 per barrel to $31.77 per barrel. Averaged out, that was better than a 100 percent increase every year. These price shocks had the effect of a new tax on oil

consumers, and—as the Oak Ridge study affirms—this so-called "OPEC tax" drained money and spending power out of the American economy. The resulting transfer of wealth meant that Americans had less disposable income to buy goods and services; deficits in balance-of-payments and trade; and, for a while at least, a weaker dollar on the international currency market. Amazingly, the authors ignore or dismiss these facts.

The authors also underestimate the impact of the embargo on the supply side. They rely too much on the quotes of others, and offer no real analysis of their own. The idea that "there was no embargo" (p. 5)—a quote attributed to a former UAE official—is in error. By December 1973, roughly five million barrels per day had been removed from the world oil market. While other producers (including some OPEC members) increased production by 600,000 barrels per day, imports of oil into the United States dropped from six million barrels per day in September 1973 to five million barrels per day in subsequent months. Yes, some of the embargoed oil eventually made its way to the U.S., but not before severe economic damage was inflicted upon the American economy. Companies with downstream operations reported shortages, and prices increased exponentially. It may be true that U.S. regulations at the time (price and supply controls) exacerbated the crisis. But arguments which state that the "the embargo of 1973-74 was a 'sham'" (p. 5) totally discount the very real short-term and long-term impacts of the embargo.

The authors' third main point is that "the benefits from a release are almost certainly overstated" (p. 1). This is probably their least well-defended assertion. Instead of examining the impact of actual drawdowns that have taken place (which the above quote would seem to warrant), the authors instead place their focus on what they describe as the "real benefits of the SPR" (pp. 6-9). They say that there are three key potential benefits of the reserve, then proceed to argue that these benefits are in fact illusory.

First, they contend that "the government might make money by buying low and selling high" (p. 6). The authors diminish this possibility, arguing that the SPR's "real" costs—as opposed to DOE's officially stated costs—make it "unlikely that SPR sales revenue would exceed the costs of acquiring and storing oil in the SPR" (p. 6). We'll look at how they determine cost in a moment.

The next possible benefit, they say, is that "SPR releases might dampen oil price hikes during disruptions and, as a consequence, reduce wealth transfers from oil consumers to oil companies during an oil

shock" (p. 6). But rather than examine this premise, they instead focus on the contention that use of the SPR reduces political pressure for more intrusive government measures (e.g., price controls). They criticize this contention, offered by some economists, by saying that "little can be done to test that proposition" (p. 9).

With this critique, the authors believe that they can call into question the dampening effect of a drawdown. But an effective criticism would examine what happened to crude oil and petroleum product prices following previous drawdown announcements. In the 1991, 1996, and fall 2000 releases, prices fell notably, and in some cases, dramatically. Price deflation has also been notable following some of the smaller drawdowns, such as in fall 1990 and summer 2000. But the authors don't address any of these points, and thus fail to make the argument that drawdowns are ineffective, or that their benefits are overstated.

The third possible benefit, they say, is that "the SPR might deter oil speculation during crises and deter producers who might otherwise contemplate politically inspired cutbacks" (p. 9). Appropriately, the authors note that "perhaps the most interesting test of the deterrence value of the SPR came in 1990, when Iraq's invasion of Kuwait temporarily knocked 7.1 percent of the world's oil production off the market" (p. 9). Indeed, the fact that the government held off using the reserve in the fall of 1990 was a source of consternation to many outside the Bush administration. But the authors make a significant error with their next statement: "Oil producers, however, did not increase production despite considerable slack capacity in the market" (p. 9). This is demonstrably untrue. By December 1990, much of the lost supply had been replaced by increased production from Saudi Arabia, the UAE, Mexico, Venezuela, and the Alaskan North Slope. That increased production was a large part of the reason there was no shortage, and why the Bush administration was reluctant—despite significantly higher oil prices—to order a drawdown. And so the authors' subsequent statement is fatally flawed: "The fact that no such thing occurred suggests that oil producers did not believe that the U.S. government would put its inventory onto the market, which further suggests that the reserve's ability to deter producers from squeezing supply at inopportune times is modest at best" (p. 9). This conclusion lacks merit, because production was in fact stepped up significantly. The Arab oil-producing nations may or may not fear the SPR—and there is evidence that it at least concerns them—but the 1990 disruption does not provide a foundation to make that claim, at

least in the way the authors argue.

The authors go even further to discredit the stockpiling concept, saying that "Most supply disruptions [have been] triggered by exogenous events that were not deterrable by the SPR" (p. 9). This statement has some merit, inasmuch as a many disruptions have been the result of accident, human error, or extreme weather, and have not been politically induced. But the fact that some disruptions may not be deterrable does not diminish the value of the SPR as a useful tool for coping with their effects.

The authors' fourth main point is that the SPR has been too costly relative to its benefits. They note that the official DOE numbers indicate that, through 2003, the government has spent nearly $24 billion for oil acquisition, operations, and maintenance on the program. But the "real" cost of the SPR, they argue, is much higher: they estimate a total cost between $41.24 and $50.77 billion in 2004, and a price per barrel cost between $64.64 and $79.58 (pp. 5-6). Thus, they maintain that "the cost of maintaining the SPR exceeds oil prices that were observed even during oil shocks" (p. 14).[6]

The authors modify the DOE calculation by taking into account inflation, and deriving and adding what they calculate to be the market value of the royalty oil in-kind (RIK) contributions, and opportunity cost. This analysis, however, is flawed on a number of fronts. First, with regard to inflation: it is arguably appropriate to adjust for inflation to determine real cost. The problem with this (for the authors' argument) is that it would lower instead of raise the dollar amount. Second, regarding the in-kind oil acquisitions: while it may be useful to determine the market value of the RIK contributions, it is inappropriate to add them to the total cost. The genius of the RIK program (which began in April 1999, not in 1996, as the authors state) is that it avoids outlays for oil acquisition, which have been the most expensive part of the program. It is also inappropriate to add opportunity cost, since the inherent assumption of such a calculation is that the government should liquidate its reserves. The basic value and purpose of the program is to stockpile (i.e., hold) oil over the long term, then release as much as needed in the event of an emergency, or a "severe energy supply disruption." However, it is not surprising that the authors want to add this cost, since by its very definition it supports their conclusion that all the oil should be sold and the program terminated.

There are other flawed assumptions. "There is little evidence that

private oil inventories are suboptimal," the authors write (p. 4). Their basic premise is that private inventories and markets work just fine. And they do, most of the time, when there are no extreme weather or political events that bring disruption. But contrary to their arguments, the main problem with private inventories is not that companies fear government controls—which they perhaps still do—and, for that reason, keep inventories to a minimum. Rather, the private sector has been paring its inventories in recent years due to an increasing cost consciousness, and consequent adoption of the "just-in-time" operating philosophy.

But from a national security perspective, this is less than ideal. In an increasingly tight market, unforeseen supply disruptions—whatever their origin—can jeopardize the supply chain of domestic oil companies, especially those with downstream operations. These trends make the SPR more valuable, and more desired by industry as a source of short-term supply relief. The examples seem to increase each year—Arco in 1996, Conoco and Citgo in 2000, Shell in 2002 and again in 2004, along with Placid Refining, Conoco Phillips, Astra Oil, and Premcor; and many more following the hurricanes of 2005. In each of these cases, the companies approached the DOE with a request for assistance, and found short-term supply relief via the SPR's exchange authority. Granted, industry inventories have reached new highs in recent years, and were a record 20.5 million barrels per day in 2004, according to preliminary EIA data. But will they stay high? Throughout much of the 1990s and the early 21st century, commercial inventory stocks were at their lowest levels in decades. Recent history suggests that they will, at some point in the future, fall below sub-optimal levels. And growing industry interest in borrowing SPR oil on these occasions is testament to the value of strategic stocks.

The authors then go on to make another dubious assertion: that the SPR reduces private inventories. "[E]conomists acknowledge," they write, "that maintaining public stockpiles discourages the accumulation of private inventories and perhaps even [other] public inventories…" (p. 14). But this is a questionable assumption, and the authors even admit that "How much oil is displaced by the SPR is unknown" (p. 14). The authors provide no evidence, and no substantial argument, that the SPR reduces private stockpiling. And the fact that private inventories have reached record levels in recent years would seem to further diminish the claim.

CONCLUSION

The international oil market of the 21st century has achieved an amazing degree of efficiency, given its scale and scope, especially in the movement of products and prices. But the interdependence of that market—of the producing and consuming nations—along with growing world demand, makes it vulnerable to disruption. This is especially true given current market conditions: tight supply, growing demand, and declining domestic production. In this market, even the slightest supply disruption, or possibility of one, has a significant effect on oil prices. And history has shown that rising oil prices have an adverse impact upon the American economy. The price of oil underpins much of our modern economy, affecting the cost of most every form of transportation, as well as manufacturing, heating in the Northeast, medicines, and a wide array of consumer products and packaging.

Thus, the authors' basic mistake—from which all the others flow—is minimizing the consequences of a disruption, and the value that strategic oil reserves can play in mitigating their effects. They fail to fully take into account that the times in which the market—or a sizable portion of it—has been overwhelmed by some extreme event, leaving consumers to face shortage and high prices. This happened in 1973-74, 1979, and in 2005, following the disruption caused by Hurricane Rita. And although no shortage occurred following the disruption of 1990, most everyone agrees that the doubling of oil prices helped create the conditions that led to the recession of 1991-92. And we may now be seeing those same effects on the economy following the recent hurricane-related disruptions and record-high oil prices. The U.S. economy (GDP) grew at a rate of only 1.1 percent in the fourth quarter of 2005, the slowest pace in three years. The slowdown has been attributed to belt-tightening by consumers facing spiraling energy costs.

Further, while the authors argue that the government should be removed from the marketplace entirely, they ignore the fact that energy policy has already moved away from the intrusive policies of the 1970s toward a more passive, market-conforming approach, and that the SPR fits in perfectly with that approach. In the wake of the 1973 embargo, business, government, and the American public at large decided that there should be some national tool for coping with oil supply disruptions. Over time, the SPR has become that tool. It would be the height of folly to eliminate the reserve now that the program has found a

cheap and reliable way of acquiring oil, storage is nearing capacity, and efficient drawdown mechanisms have been established.

The authors also fail to take into account the growing industry demand for the program, and the numerous times the reserve has been drawn down to assist supply-short operators (Table 2). The overwhelming bulk of the industry has supported a government-owned and financed strategic reserve since its inception. Industry groups may object to the release of SPR oil in a non-disrupted market, as they did in 1996 and 2000. But the fact that many oil companies—including some of the large, integrated majors—have been approaching the DOE in recent years with requests to borrow SPR oil shows that the reserve is not just accepted but needed, by the American oil industry and the American public at large.

Fortunately, the proponents of strategic oil stockpiling outnumber

Table 2. SPR sales and exchanges

Sales
• 2005 Hurricane Katrina Sale – 11 million barrels • 1996-97 total non-emergency sales – 28 million barrels • 1990/91 Desert Shield/Storm Sale – 21.2 million barrels (3.9 million in August 1990 test sale; 17.3 million in January 1991 drawdown) • 1985 Test Sale – 1.1 million barrels
Exchanges
• Sep/Oct 2005 – exchanged 9.8 million barrels of sweet and sour crude due to disruptions in Gulf of Mexico production and damage to terminals, pipelines and refineries caused by Hurricane Katrina. • Sep/Nov 2004 – exchanged 5.4 million barrels of sweet crude due to disruptions in the Gulf of Mexico caused by Hurricane Ivan. • Sep/Oct 2004 – exchanged 5.4 million barrels in response to physical shortages of crude oil supplies in the Gulf of Mexico following Hurricane Ivan. • Oct 2002 – exchanged 296,000 barrels with Shell Pipeline Co. to secure Capline storage tanks in advance of Hurricane Lili. • Sep/Oct 2000 – exchanged 30 million barrels in response to concern over low distillate levels in Northeast. • July/August 2000 – exchanged 2.8 million barrels of crude oil for first-year tank storage and stocks for 2 million barrel Northeast Home Heating Oil Reserve. • June 2000 – exchanged 500,000 barrels each with CITGO and Conoco, due to blockage of the Calcasieu ship channel that allowed incoming crude oil shipments to those refineries. Action taken in order to avert temporary shutdown of both refineries. • August 1998 – exchanged 11 million barrels of lower quality Maya crude in SPR with PEMEX for 8.5 million of higher quality crude more suitable for U.S. refineries. • April/May 1996 – exchanged 900,000 barrels of SPR crude with ARCO to resolve company's pipeline blockage problem.

U.S. Department of Energy, *Strategic Petroleum Reserve – Quick Facts and Frequently Asked Questions* (http://www.fossil.energy.gov/programs/reserves/spr/spr-facts.html).

the detractors. Entering the 21st century, the value of strategic oil stocks has gained greater acceptance. The United States is filling its reserve to capacity, and the European Union and the Philippines have announced plans to increase their strategic stocks. The governments of Russia, China, India, Nigeria, and Malaysia have announced their intention to create strategic reserves in their respective countries. Interestingly, there was more criticism of the SPR in the latter 1990s, when a number of financial analysts and economists argued that strategic reserves were no longer needed. But that world was awash in surplus oil. The early 21st century is proving to be very different, and the value of strategic oil reserves is no longer in doubt.

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5. David Greene and Paul Leiby, "The Social Cost to the U.S. of Monopolization of the World Oil Market, 1972–1991," ORNL-6744, Oak Ridge National Laboratory, March 1993; David Greene, Donald Jones, and Paul Leiby, "The Outlook for U.S. Oil Dependence," ORNL-6873, Oak Ridge National Laboratory, May 11, 1995; David Greene and Nataliya Tishchishyna, "Costs of Oil Dependence: A 2000 Update," Oak Ridge National Laboratory, May 2000. Taylor and Peter Van Doren convert the Oak Ridge cost estimates to 2005 dollars, see their notes 59-61, p. 19.
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