Testimony of Melanie A. Kenderdine
before the U.S. House of Representatives Select Committee on
Energy Independence and Global Warming
April 24, 2008

Mr. Chairman, Mr. Sensenbrenner, Members of the Committee, thank you for giving me the opportunity to testify before your committee today. Let me start by noting that I am here as the Associate Director of the MIT Energy Initiative, but in the tradition of academic freedom, the views I express today are my own. In addition to my current position at MIT, I worked at the Department of Energy from 1993 through 2001. During that time, I was the Director of the Office of Policy as well as the Senior Policy Advisor on Oil, Gas and Coal to Secretary Richardson; policy aspects of the SPR were included in my portfolio.

I have been asked to address policy issues related to the Strategic Petroleum Reserve and specifically to discuss issues surrounding the Administration's current policy to fill the Strategic Petroleum Reserve utilizing the so-called Royalty-in-Kind or "RIK" program. This program provides a mechanism for the federal government to accept oil in lieu of federal royalty payments for industry oil production from federal lands.

Authorities for Uses of the SPR

The SPR is our primary line of defense in the event of emergency oil supply disruptions. It also provides the U.S. with additional energy security assets over and above this essential function that can be utilized to support other energy policy objectives.

In general, the legal authorities for the use of the SPR include but are not limited to:

- Drawdown in the event of an emergency supply disruption, amount unlimited, Presidential finding required
- Drawdown in anticipation of a supply disruption, 30 million barrels limitation, Presidential finding required
- Test sale, five million barrel limitation, discretionary on the part of the Secretary
- An "exchange of oil to acquire oil", discretionary on the part of the Secretary
- A royalty-in-kind exchange program, administrative action
- Leasing space in the Reserve, administrative action

I highlight these authorities for three reasons.

First, it has been widely represented in the press and public domain that the SPR is to be used *only* in the event of an emergency supply disruption. It is worth repeating here today that this is *not* the case, as demonstrated by this listing of authorities. This misconception has caused us to undervalue a very powerful tool and to inhibit management flexibility that could maximize the value of the SPR to achieve energy and foreign policy objectives.

Second, each of these authorities was either extensively debated or utilized to support broader policy objectives when I was at DOE, and highlights the spectrum of SPR policy options that may be employed under certain oil market or security conditions.

Third, and equally important, these authorities create opportunities for Congress as it seeks to satisfy and balance competing energy policy priorities going forward.

Today's Oil Markets vs. Oil Markets in 1973

To fully appreciate this range of possible uses of the SPR, it is important to recognize the significant changes in oil markets since the time of the establishment of the Reserve.

- *Oil markets have become more efficient.* In 1973, the Nixon Administration had, since 1971, placed US crude and refined products under price and allocation controls. Markets were inefficient and uncertain, leading refiners to hold greater working stocks to meet demand. Today, markets are deregulated and market forces are deemed most appropriate for managing scarcity and risk. Oil supplies are more diversified, robust futures markets have evolved, and inventories are more tightly managed.

- *The energy efficiency of the economy has improved.* Oil intensity (unit of oil per unit of GDP) was relatively high when the SPR was established, but has improved significantly. In 1973, we used 1.45 barrels for each $1000 of GDP and now use 0.67 barrels for each $1000 of GDP – down 54% in 33 years.

- *Oil consuming nations have built collective measures to address energy security.* The formation of the International Energy Agency (IEA) led to the establishment of information collection and policy coordination mechanisms to collectively act on oil matters including a mechanism for a coordinated response to supply disruptions, and the establishment of large strategic reserves, both public and private.

In short, today's robust global oil markets and vehicles for collective action did not exist when the SPR and the authorities for its use were established. One could reasonably argue – and many do -- that in today's markets, in which product and crude moves around the globe, and where markets manage price through scarcity and risk through market instruments, there are no true physical disruptions of oil, just price volatility in response to market conditions, resultant arbitrage, and transaction costs. To illustrate this point, after Hurricane Katrina devastated offshore production facilities, the Director of the Congressional Budget Office noted that "… if rationing is done through the price mechanism alone—energy use will tend to be put to its highest-value uses, and economic activity will not be seriously affected." (see letter from Holtz Eakin to Senate Marjority Leader Frist, September 6, 2005).

Indeed, the federal government has relied on such market forces to accommodate very large supply disruptions in the recent past. Two of the largest disruptions since the Arab Oil Embargo of 1973 -- the Venezuelan labor strike of 2002-2003, and the first year of the second Iraq war -- resulted in sequential losses starting in December 2002 of 2.6 million barrels per day, followed immediately by a gross peak loss of 2.3 million barrels per day and sustained losses for the remainder of 2003 (See IEA Fact Sheet, DOE Office of Fossil Energy Website). In neither instance did the U.S utilize the SPR to minimize the impacts of these major shortfalls.

What Are the Triggers for use of the SPR?

Historical experience shows that the trigger for using the SPR – based on the definition of what constitutes an emergency supply disruption – has been inconsistently interpreted and used. As noted, a peak loss of 2.3 million barrels of oil per day and a sustained loss of around a million barrels per day for almost a year after the start of the Iraq war in 2003 was deemed an insufficient disruption to trigger the use of the SPR.

Compare this to the response to Hurricane Katrina. According to the Minerals Management Service (MMS), Gulf of Mexico (GOM) oil production was reduced by a relatively modest 837,648 barrels per day, less than half the shortfall of the Iraq war. In this instance however, the President made an emergency finding and the Department of Energy announced an offer to sell 30 million barrels of SPR oil.

Not all oil offered for sale in response to Katrina, however, was actually purchased (only 11 million of the 30 million that was offered) – a clear signal from the market that it did not need the crude oil the SPR was offering. Instead, what was needed was refined product as Katrina was much more devastating to refineries in the Gulf than to regional crude production. The U.S. energy markets were, however, able to essentially swap crude oil for European product, a transaction that hinged on the emergency declaration by the President.

The structure and nature of the Katrina response raises two concerns beyond that of consistent use of triggers for release of oil from the Reserve: the need to revisit the issue of product reserves as originally envisioned in the SPR organic statutes; and the requirements for an emergency declaration by the President. In this circumstance such a declaration was required to effect what was essentially a swap. More response flexibility on the part of

the Secretary could expedite actions and help diminish the counter-productive market psychology reactions that come with Presidential emergency declarations.

SPR Drawdown Capacity Limits Response

It is also important to understand the impacts of key operational features of the SPR as we consider the current RIK program to fill the Reserve. The SPR has a capacity of 727 million barrels of oil and currently holds around 701 million barrels. The DOE recently awarded three contracts to add an additional 17 million barrels of oil to the Reserve through the RIK program.

While the total number of barrels in the SPR or "days of import protection" is the gauge by which the public and policy makers typically measure the amount of import insurance the SPR provides the nation, an additional and critical data point for our emergency response capability is the SPR's *drawdown* capacity. This is currently around 4.4 million barrels per day (an untested number as the systems and commercial interfaces have not been stressed at a rate higher than one million bpd for a sustained period). Because drawdown capacity is fixed, at a certain point, total capacity or "days of import protection" becomes less important as the size of the SPR increases, because drawdown capacity is the limiting factor in our ability to respond to disruptions.

One could argue that in spite of the *drawdown* rate, larger *volumes* in the SPR could enable us to respond to disruptions over greater lengths of time. However, the incremental benefits are smaller because history demonstrates that we are not inclined to authorize a drawdown over long periods of time. Also, the Reserve can only maintain a drawdown rate of 4.4 mbpd for 90 days. After that the rate of production declines precipitously and the SPR inventory will be exhausted within 180 days whether the inventory is 700 million barrels or 727 million barrels.

Requirements for Strategic Oil Stocks

The current case for filling the Reserve utilizing the RIK program, in spite of record high oil prices, hinges in part on the assertion that current capacity offers only 57 days of import protection, when the U.S is required to have 90 days of import protection as a participant in the International Energy Agency. However, the IEA 90-day requirement is based on total level of strategic stocks, including both government-owned reserves as well as privately-held stocks available for use in an emergency. Other IEA countries rely on privately-owned stocks, under varying degrees of government control, to meet some or all of their respective commitments. Indeed, the DOE SPR website indicates that the current U.S. inventory equates to 118 days of import protection as defined by the IEA. These volumes are reported to IEA on a regular basis and IEA periodically reviews them; presumably the 118 day figure on the DOE website reflects this process as well as official U.S. representations to the IEA.

The Administration is also responding to EPACT 2005 which directs that the Reserve be expanded and filled to a capacity of one billion barrels. In this regard however, the statute provides DOE with significant latitude in the timing and manner in which this requirement is met. There are strong supporters for such an expansion, particularly for expanding its storage capacity, myself included. There are however many available tools to achieve this end in ways that avoid potential and real adverse impacts on American consumers.

The analysis supporting the DOE Environmental Impact Statement for proposed expansion of the SPR to one billion barrels was conducted prior to the passage of key energy laws which would both increase unconventional domestic oil supplies and reduce oil demand in the future. These new policy tools could have a material impact on the need for SPR expansion or, at a minimum, both the manner and rate at which this expansion occurs.

A Range of Uses of the SPR

I would also like to briefly discuss four actions that utilized the SPR during my tenure at DOE with relevance to today's hearing. These are: the Congressionally-directed sale of $420 million worth of SPR oil in fiscal years 1996-97; the related development and implementation of the original RIK program in 1999; the creation of the

Home Heating Oil Reserve in the Northeastern US and; the exchange of 30 million barrels of SPR oil in September of 2000.

- *Directed sales of SPR Oil.* In appropriations bills in 1996, the Congress directed the sale of $420 million worth of SPR oil in the absence of any market anomaly, disruption or product shortfall; the sole purpose of the directed sales was to generate revenues for purposes not related to energy security. Around 23 million barrels of SPR oil were sold to meet the statutory direction and requirements to sell the oil within a fixed timeframe; as such, SPR managers were constrained in their efforts to get the best value for the taxpayer.

  In that same timeframe, the Weeks Island SPR storage facility showed signs of potential failure and needed to be decommissioned. This occurred after the Administration's budget for the fiscal year was set. To avoid a catastrophic failure of the facility which would have compromised the oil in the cavern and caused environmental harm, the department proposed and the Congress authorized DOE to sell five million barrels of oil to pay for this decommissioning. The combined total of SPR oil sold during calendar year 1996 was around 28 million barrels.

  In addition, in 1997 as part of the appropriation for FY 1998 Congress directed additional sales for the purpose of generating revenue, although this action was effectively overturned (see below).

- *Use of the RIK Program to Prevent Shut-in of Domestic Production.* In late 1998, oil prices hit historic lows, with WTI bottoming out at $8.73 per barrel. The Economist Magazine's cover headline at that time was "$5 Oil Forever?"

  Lower oil prices are good for consumers and the global economy. However prices at extremely low levels such as those in late 1998 force wells to be shut in, discourage necessary investment in research, exploration and production, decimate the workforce and destroy the technical infrastructure of the industry -- impacts that ultimately lead to lower supplies/higher prices in the future. Such impacts were strongly felt in producing regions of the country -- Texas, New Mexico, Louisiana, Alaska, Colorado, Wyoming, etc.

  Congress responded by passing an emergency appropriation act allowing the Department of Energy to stop oil sales from the SPR that had been directed in the FY 1998 appropriations bill, if the President found that the situation was an emergency. President Clinton made the requisite finding and the sale of oil for FY 1998 was cancelled.

  More proactively, the Administration activated the transfer authorities for DOE to take oil owed to the Department of the Interior as royalty from Federal leases. The establishment and implementation of the RIK program in 1999 served two purposes: it provided a market outlet for domestic oil in a global market that was glutted; and it enabled DOE, without the need for new appropriations, to replace the 28 million barrels of oil in the SPR that had been sold two years earlier. At the time of the announcement, the SPR held 561 million barrels of oil; when the RIK exchange was completed, the SPR would have contained around 590 million.

  Direct quotes from the key policy makers at the time of the announcement bear repeating [see DOE press release, January 11, 1999]:

  - Then Energy Secretary Bill Richardson: "*We are taking advantage of today's low oil prices to re-build our strategic oil reserves*…By putting royalty oil in the Strategic Petroleum Reserve today we will get a high rate of return tomorrow - enhanced national energy security, increased strategic assets -- and a very good deal for the American taxpayer." [emphasis added]

  - Then Senate Energy Committee Chairman, Frank Murkowski: "…Buying oil back into the SPR is a win-win-win. It would bolster America's energy security, *it would draw down oil from a*

glutted world market and it would benefit the country's small domestic producers." [emphasis added]

- Senator Bingaman, then-ranking member of the Senate Energy Committee: "*With oil prices at an all-time low, now is the time* to strengthen our national energy security by replacing the oil we've drained from the Strategic Petroleum Reserve." [emphasis added]

Each of these key policymakers emphasized -- in addition to the positive security implications of the program – that a key driver for this program *was taking advantage of low oil prices to get the best deal for the taxpayer* or taking oil off a glutted market, presumably to have some price impact. The major oil trade associations similarly applauded the action as a way to lower the glut of oil on world markets and assist the industry at a time when it was reeling from historically low prices. Current efforts to fill the SPR with RIK oil are occurring under market conditions that ensure the opposite result of the program as it was originally envisioned.

It is also important to note here that Secretary Richardson directed the SPR office to defer deliveries to the SPR under the RIK program when prices started to rise sharply. His motivation was concern that pulling even small amounts of oil off the market (at that time, about 100,000 barrels per day) would increase consumer prices.

- *Establishment of a Home Heating Oil Reserve.* The winter of 1999-2000 was mild until a late cold snap placed huge demand on heating oil supplies in the Northeast and New England. The EIA Administrator warned that without a break in the weather the region would run out of heating oil. DOE began daily monitoring calls with the requisite state officials and reviewed curtailment options but beyond this, had very few tools at its disposal to address this potential crisis. Fortunately, the weather broke and the significant heating oil price spike in the U.S. attracted supplies from Europe, which arrived in time to avoid a crisis.

  This vulnerability of the region to supply shortages prompted calls from elected officials and some within the Administration to establish a regional heating oil reserve. The White House ultimately sided with these officials and ordered the creation of the Northeast Heating Oil Reserve in the summer of 2000. The rapid stand-up of this reserve, absent appropriations to do so, was accomplished by using the authorities that allow DOE to "exchange oil to acquire oil."

  I highlight this action for two reasons: first to demonstrate some of the energy policy objectives that can be met through creative application of SPR authorities. Second, it underscores the possible need for additional product reserves. When the SPR was authorized, it contemplated the possibility of product as well as crude oil reserves. At the time of the SPR's first plan, it was determined that product reserves were too expensive, there was a robust refining industry and significant product stocks, and that the real need was for a crude oil reserve. Since that time, the refining industry in the US has operated at a much higher utilization rate, just-in-time inventory practices eschew the holding of product inventories, and imports of refined product have increased fairly dramatically. Product reserves present a range of difficulties as product does not store over time and must be swapped out on are regular basis. As we consider SPR expansion however, it might be worth studying the inclusion of strategically located product reserves as part of any SPR expansion plan.

- *Use of an SPR Time Exchange in September, 2000.* As noted, heating oil inventories were a major concern throughout 2000 and were closely monitored by the federal government. Notwithstanding political charges made prior to the Presidential election in November, a range of options had been discussed within the Administration as early as April of that year.

  While the new heating oil component of the SPR gave the country more emergency stocks in the fall of 2000, commercial inventories of heating oil were still dangerously low. In August, 2000, heating oil inventories in the Northeast Region were around 40% lower than the previous winter (when we faced the prospect of running out); in the New England sub-region, they were 72% lower. In addition, oil

prices were increasing in spite of OPEC's actual or announced production increases of almost three million barrels since March of that year.

After a review of all options, consultation with IEA and other allies, and a determination that refining capacity was sufficient to accommodate additional oil, on September 22nd the President directed Secretary Richardson to utilize SPR exchange authorities to conduct an exchange of SPR oil, in effect loaning the market 30 million barrels of oil, with the potential for loaning an additional 30 million.

The results were immediate, in spite of the fact that oil had not yet moved into the market (demonstrating the psychological impacts on the market when the U.S. signals its intention to act). All of the oil was refined in spite of charges that there was insufficient refining capacity; there were adequate heating oil supplies for the winter. In addition, the exchange backed out cargoes on their way from Europe to the US, in effect, reducing pressure on overheated markets and prices on both sides of the Atlantic. In this regard, oil spot prices dropped almost 20%, from $37.22 to $30.26 a week later. Prices stayed down until the bombing of the Cole on October 12. By the end of the year, actual oil prices had dropped from $30.94 to $20.38 per barrel, a **34%** decrease.

Importantly, as we discuss using SPR authorities to increase the size of the Reserve, the 2000 exchange of 30 million barrels of oil loaned to the market ultimately resulted in a return to the reserve of 35.1 million barrels (after the original 1.35 million barrel premium from the exchange, a series of contract deferrals ultimately brought the total to 5.1 million). This, in effect, represented a 17% interest payment on the loan and, at today's prices, equates to an additional half billion dollars of oil in the Reserve at no cost to the taxpayer.

It is also worth noting that the deferrals involved in this transaction took place over several years; the 2000 time exchange was not completed until 2004. In fact, contract deferrals for SPR oil are common practice. The SPR website notes that:

> "On several occasions, the Energy Department has agreed to reschedule incoming oil shipments to the Reserve at the request of contractors, deferring the deliveries for several months to a year or more. In these instances, companies under contract to deliver crude oil to the Federal Government agree to increase the volume of oil delivered to the Reserve at the later date at no additional cost to the taxpayer. The additional volumes, or premium barrels, are similar to interest payments."

Impacts of Current RIK Program

The current RIK program is pulling 70,000 barrels per day off oil markets at a time of record high prices, very tight supply/demand balances, and high geopolitical volatility. Attention to market conditions and the willingness to act in a more flexible and creative manner could afford lower cost options for SPR fill through time exchanges and other measures. Moreover, as I noted earlier in my statement, the current RIK program provides very little incremental insurance value.

I offer several sources of information, anecdotal evidence, and past Secretarial actions for the Committee's consideration.

- The 2000 time exchange is instructive in this regard. While it involved putting oil *on* the market as opposed to taking oil *off* the market, it demonstrated how a very small amount of oil compared to world market totals (30 million barrels into an annual oil market approaching three billion barrels) could have a major impact on price.

- This point was also driven home by Alan Greenspan's testimony before the Senate Finance Committee a year ago in which he noted that: "…the balance of world oil supply and demand has become so precarious that even small acts of sabotage or local insurrection have a significant impact on oil prices."

- When oil prices topped $100 dollars per barrel for the first time, the New York Times article on February 20, 2008, noted from its discussions with traders that "The immediate cause that sent prices up today was the fire at a Texas refinery … [which] will halt processing of about 70,000 barrels per day for several weeks at least."

- The same trade associations that strongly supported the initial RIK program, (a type of exchange) which removed oil from the market when prices were at historic lows, opposed the 2000 exchange which put oil onto the market when prices were relatively high.

- Phillip K Verleger, a well-known petroleum economist, cited Goldman Sachs in testimony on the impacts of the RIK program from 2001-2004, noting that:

> "…..Goldman Sachs economists made the following statement: Government storage builds have lowered commercially available petroleum supplies. OECD strategic petroleum reserves built in excess of 51 mmb during 2003 (40 mmb in the United States alone), which reduced commercially available supplies by the same amount and lowered the inventory coverage ratio. We estimate that these builds alone have supported crude oil prices by $2.25/bbl."

While respected analysts disagree with some of these conclusions, two Energy Secretaries in Democratic and Republican Administrations elected to pursue the path of "do no harm" when confronted with increasing oil prices and an active RIK program. Both Secretary Richardson in 2000 and Secretary Abraham in 2003 chose the path of prudence and deferred deliveries under the RIK program for fear that removing even small amounts of oil from the market would increase prices to consumers.

Future SPR Policy Issues and Options

Expanding the size of the SPR, while an important undertaking, is a very expensive proposition. The current DOE program threatens to place additional and unnecessary burdens on consumers, who are already weighted down by historically high energy prices. The use of RIK oil to fill the Reserve in the current environment calls into question many issues about the SPR, including:

- *Inconsistent Past Practices on SPR Use:* Confusion exists about the size and duration of a given disruption that triggers emergency disruption responses and authorities, raising questions about the need for expansion, certainly about the *urgency* of the need. Clarification of the policy underpinnings for the rapid expansion of the SPR currently being pursued by the Administration is warranted, when the law directing it to do so provides significant latitude in this regard, and triggers for the use of the Reserve are inconsistently applied.

- *The Rate vs. the Length of Drawdown:* The practical as well as security impacts of limited drawdown capacity, its relationship to IEA requirements, and the need for additional import protection are not well understood or appreciated. Is the development of additional drawdown capacity (beyond expected demand increases) an investment worth pursuing?

- *Petroleum Product vs. Crude Oil Reserves:* We have significant evidence of product as opposed to crude disruptions and shortages, as seen in both Katrina and the run-up to the exchange in 2000. Are there changing refining market/industry conditions including increased product imports that point to the need to re-visit and study product reserves as part of any contemplated expansion of the Reserve?

- *Better Leveraging of the SPR as an Asset to Support Energy Policy Objectives:* There appears to be a need for greater Secretarial authority and flexibility to use the SPR in ways that enhance the value of the SPR while minimizing market impacts, taxpayer costs, and consumer burdens. Also, are there reasonable uses of the Reserve that should not require emergency declarations and, if so, do authorities need to be revised?

Related to the last point, GAO convened a group of policy experts to analyze the size and uses of the SPR, including fill policy and made a series of recommendations on SPR size and fill; many of these bear repeating. Specific to RIK, they indicated that the current "steady volume approach of the RIK program" has effectively cost the taxpayer an additional $590 million for the same amount of oil. They recommended instead that we "fill the SPR more cost-effectively, including acquiring a steady *dollar* value of oil for the SPR over the long term, rather than a steady *volume*, to ensure a greater volume of fill when prices are low and a lesser volume of fill when prices are high." In essence, the GAO is suggesting that application of a "dollar cost averaging" investment philosophy would increase its longer-term value to consumers [See GAO Report 06-872].

They also suggested greater flexibility in the RIK program, giving industry the ability to delay deliveries in tight, backwardated markets (backwardation is the condition under which the price of future deliveries for the commodity is below the price for present (or spot) deliveries. Especially relevant to many of the issues raised in this testimony, they recommend that we "periodically reassess the appropriate size of the SPR in light of changing oil supply and demand in the United States and the world."

Reassessing the Value of Additional SPR Insurance in a Changing Energy Future

This takes me to my closing points. Policy and research leaders are increasingly faced with the need to balance competing energy concerns: the need for energy security that comes, in part through the insurance provided by the SPR; as well as providing for an energy future in which such insurance will no longer be required (or required to a lesser degree).

Specifically, the Energy Independence and Security Act of 2007 established the foundation for alternative energy security pathways. Indeed, the Renewable Fuels Standard and new CAFÉ requirements have the potential to significantly reduce oil imports, in effect reducing pressures on the SPR as the only option for ensuring oil security. Conservative estimates provided by the Secure America's Energy Coalition show that this new law would reduce net oil imports by 1.75 million barrels per day by 2020, increasing to 2.26 million barrels per day in 2022 and rising thereafter. These estimates represent roughly half of the theoretical SPR drawdown capacity of 4.4 million barrels per day. They also increase the number of days of protection afforded by a given quantity of oil in the Reserve. Thus, the new Energy bill could, over time, increase the insurance value of the SPR, even if the actual inventory level is frozen or slightly decreased.

We also need new ways to finance the research, development and demonstration of key technologies to enhance our energy security and sustainability and mitigate the impacts of climate change. The GAO has documented that DOE's total budget authority for energy R&D dropped by over 85 percent (in real terms) from 1978 to 2005. While Congress continues to authorize new and expanded critical energy research programs, it is apparent that the current Administration will not pay for these programs, and has opposed efforts by Congress in the last appropriations cycle to increase energy R&D investment levels.

As I noted earlier, the Congress has to balance the energy security interests met by the SPR against other equally compelling energy imperatives. I am not here today as an advocate of the options I will outline below. I would note again however that the policies that guide how we manage the SPR were essentially established in the late 1970s and have little relevance to today's global oil markets. I would like to provide the members with some food for thought as to how some creative management of the SPR could take advantage of these markets and enable a range of longer term energy options that could ultimately eliminate the need for an SPR. I urge the members to consider the following:

- An outright sale of 40 million barrels of oil from the SPR would generate almost $4.5 billion in new revenues, sufficient to pay for much of Congressman Inslee's so-called Apollo Project for example. This would have the added benefit of lowering prices to consumers. For those who say we would diminish our energy security by so doing, I would point out that this would reduce the amount of oil in the SPR to around 660 million barrels, roughly 60 million barrels *more* than was in the Reserve when we invaded Iraq when, presumably, this level of oil insurance was deemed sufficient to protect our energy security interests during a war in the Middle East.

- Simply suspending the current RIK program in ways that result in a positive budget score could provide a new source of funding of at least a billion dollars for key research programs such as carbon sequestration demonstrations or efficiency programs that have strong policy, analytical and bi-partisan support.

- Finally, exchanging 50 million barrels of light sweet crude in the Reserve for heavy oil in the open market, if done correctly, would net $500 million without reducing the overall volume of the Reserve. This, combined with the roughly $550 million in the Petroleum Account from the sale of oil during Katrina, would also provide an additional $1 billion for energy research at no cost to the taxpayer.

Each of these options, if exercised, could be expected to temporarily drive down oil prices without appreciably reducing the insurance value of the SPR in the near term. Their long term and lasting value, however, would be in generating the critical energy research revenues we need to make the SPR a quaint anachronism.

In short, we need a clearer articulation of the value of a larger SPR relative to other policy options such as increased efficiency or the introduction of alternative fuels that would reduce oil consumption. I hope that this testimony has provided some food for thought about SPR management and look forward to the Committee's questions.

Thank you.