



U.S. Department of Energy  
Office of Inspector General  
Office of Audit Services

# Audit Report

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The Department of Energy's Use of  
the Strategic Petroleum Reserve in  
Response to Hurricanes Katrina and  
Rita



## Department of Energy

Washington, DC 20585

December 5, 2006

### MEMORANDUM FOR THE SECRETARY

FROM:

*Greg Friedman*  
Gregory H. Friedman  
Inspector General

SUBJECT:

INFORMATION: Audit Report on "The Department of Energy's Use of the Strategic Petroleum Reserve in Response to Hurricanes Katrina and Rita"

### BACKGROUND

The Department of Energy's Strategic Petroleum Reserve consists of underground caverns currently holding nearly 700 million barrels of crude oil. The Reserve's primary energy security mission is to maintain drawdown readiness to mitigate the impact of a severe crude oil supply disruption. To achieve this goal, the Reserve must be prepared to promptly restore operations and schedule the flow of crude oil to refineries, even in the midst of a major disaster. The Reserve sites are located in the heart of the Gulf Coast region of the United States, an area prone to hurricanes and major storms. In such an environment, continuity of operations is especially challenging.

In August and September 2005, Hurricanes Katrina and Rita devastated the Gulf Coast region. The hurricanes caused significant damage to petroleum industry production platforms, terminals, pipelines, and refineries, leaving many facilities inoperable. The supply levels of gasoline and other refined products were severely impacted, directly affecting recovery efforts. Further, petroleum product prices spiked nationwide. Immediately after learning of Hurricane Katrina's devastating impact, you approved emergency loan requests from crude oil refiners whose scheduled deliveries had been disrupted. In addition, the President issued a Finding of a Severe Energy Supply Interruption, directing the Department to sell oil from the Reserve's stockpile.

Because of the significant impact the hurricanes had on the petroleum industry and the importance of successfully responding to future energy emergencies, we conducted this audit to determine whether the Strategic Petroleum Reserve met its energy security mission in response to Hurricanes Katrina and Rita.

### RESULTS OF AUDIT

We found that the Department used the Reserve and its assets with great effectiveness to address emergency energy needs in the crisis surrounding Katrina and Rita. Despite being in the path of the hurricanes' destruction, the Reserve promptly fulfilled requests for oil from refineries suffering from storm-induced supply shortages. Within four days of Hurricane Katrina's landfall, oil was sent to requesting refineries. Overall, the Reserve provided almost 21 million barrels of crude oil to refiners through loans and sales. To their credit, the Reserve's management and staff reacted magnificently under extremely difficult circumstances.



While the findings of our audit were generally positive, we did identify an opportunity to provide greater assurance that operations could continue in future emergency situations. Specifically, we found that as a result of the hurricanes, the Reserve's business recovery capabilities were impaired when mission-essential computer networks at both the primary and alternate sites were rendered inoperable. The Reserve's primary and secondary facilities are located within 55 miles of each other. As was evident with Hurricane Katrina, both were in Katrina's path and both suffered related service interruptions. While the alternate computer facility's location -- 55 miles northeast of the primary site -- appeared acceptable under most circumstances, the far-reaching impact of Katrina proved that the proximity of the alternate site to the primary facilities was less than optimal. This affected the prompt restoration of computer network services vital to continuity of operations of the Reserve. Given the relative frequency of major hurricanes in the vicinity of the Reserve's primary facility, we concluded that management should consider moving the alternate site to a more remote location. In making this recommendation, we were mindful of the cost of such a move. Yet, a change in the alternate operations site could substantially improve the Reserve's ability to respond to future natural disasters and other emergencies.

During our review, we noted the dedication and perseverance of the Reserve's employees in fulfilling the mission under tragic and difficult circumstances. Many of the employees were personally affected by the disaster, but reported to work not knowing the extent of the human tragedy or if their personal belongings survived the hurricanes. In fact, almost 700 employees were displaced by the storms and over 120 employees were unable to reoccupy their homes because of severe damage. In recognition, you awarded the Reserve the highest honorary award of the Department, the Secretary's Gold Medal, for outstanding achievement in energy security under the extreme conditions after Hurricane Katrina.

This audit was conducted as part of a broader effort by my office to identify ways the Department can improve its emergency response capabilities.

#### MANAGEMENT REACTION

Management agreed with the recommendations and plans to reevaluate the alternate operating facility as part of its planning for emergency conditions. We consider management's comments to be responsive to our recommendations.

#### Attachment

cc: Deputy Secretary  
Under Secretary of Energy  
Under Secretary for Science  
Chief of Staff  
Assistant Secretary, Office of Fossil Energy

**REPORT ON THE DEPARTMENT OF ENERGY'S USE OF THE STRATEGIC PETROLEUM RESERVE IN RESPONSE TO HURRICANES KATRINA AND RITA**

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## RESPONSE TO HURRICANES KATRINA AND RITA

### **Energy Security Mission**

The Strategic Petroleum Reserve (Reserve) met its energy security mission during the response to Hurricanes Katrina and Rita. Despite being in the path of the hurricanes' destruction, the Reserve fulfilled immediate requests for emergency oil from refineries suffering from storm-induced supply shortages. Within four days of Hurricane Katrina's landfall, oil was on its way to requesting refineries. The Reserve's total response was almost 21 million barrels of crude oil being made available to refiners through loans and sales.

#### Emergency Loans

After the hurricanes, the Reserve immediately responded to industry's request to borrow from the stockpile, providing crude oil to refiners whose scheduled deliveries had been disrupted. The Department of Energy (Department) began receiving requests from industry on August 29, 2005, resulting in the approval of six loans for a total of 9.8 million barrels of oil. Oil deliveries commenced on September 2, 2005, four days after Hurricane Katrina's landfall. Without the loans, the refineries faced severe reductions in processing rates or shutdown of their operations. The loans enabled them to continue refining crude oil into products such as gasoline, heating oil, and jet fuel. Recipients are required to return crude oil to the Reserve under the terms of the loan agreements. By the spring of 2006, all but 1.7 million barrels had been returned to the stockpile. In April 2006, the President directed the Department to defer filling the stockpile due to oil market conditions, and as a result, the Reserve now expects to receive the remaining repayment barrels in 2007.

#### Competitive Sales

The Reserve also delivered petroleum by conducting a competitive sales program. On September 2, 2005, the President authorized and directed the Secretary of Energy to draw down and sell crude oil. On September 6, 2005, the Department issued a Notice of Sale, offering 30 million barrels of crude oil for sale. The competitive sales program was conducted online for the first time using the *Crude Oil Sales Offer Program*. The Department evaluated the offers received and determined that five companies had submitted acceptable offers for the purchase of 11 million barrels of crude oil. Although deliveries began on September 26, 2005, and were originally expected to be completed in October, the arrival of Hurricane Rita along the Gulf coasts of Louisiana and Texas on September 24, 2005, caused significant damage to

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refineries, terminals, and distribution systems that hindered companies' abilities to take delivery of the oil. Final deliveries were made on January 4, 2006.

## **Alternate Operating Facility**

While the Reserve responded to immediate requests for emergency oil, we identified an opportunity to improve operations during future emergency responses. The Reserve successfully completed its mission despite the fact that both the primary and alternate computer networks became inoperable. It was our judgment that the effectiveness of future emergency responses could be further assured if the alternate operating facility was located in an area less likely to be impacted if hurricanes strike the Reserve's primary operating facility in New Orleans.

### Continuity of Operations

The Reserve's primary operating facility in New Orleans was evacuated early during Hurricane Katrina's timeline. However, the Reserve could not use its alternate computer facility at the Stennis Warehouse in Mississippi when Hurricane Katrina's landfall required it to be evacuated as well. In accordance with Federal requirements, the Reserve's Continuity of Operations Plan contained the plans, procedures, and responsibilities to ensure the performance of essential functions in the event of an emergency. The Stennis Warehouse, located about 55 miles east of New Orleans at the Stennis Space Center in Mississippi, is designated as the Reserve's alternate operating facility. While the Stennis Warehouse is primarily used to maintain drawdown equipment, it also serves as an alternate Emergency Operations Center, a data systems "warm" site with redundant network restoration capabilities, and an alternate business recovery worksite with a network of over 100 dedicated workstations. Hurricane Katrina's direct hit on the Stennis Warehouse prevented it from being fully utilized for this purpose and forced the Reserve to reestablish its computer network capabilities elsewhere.

### Site Selection

When selecting alternate operating facilities, Federal Preparedness Circular 65 states that organizations should perform an all-hazard risk assessment for any facility considered for Continuity of Operations use. This assessment should consider the distance of alternate operating facilities from the primary facility and from the threat of natural disasters such as hurricanes. However, Strategic Petroleum Reserve planning documents indicated that the alternate operating facility was included as part of a larger plan to relocate

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the Reserve's drawdown equipment from its existing storage site, a warehouse in New Orleans, to the Stennis Space Center in Mississippi. Although examples of cost-savings were included as justification for the plan, we could not locate any documentation to support a risk analysis examining the impact of the distance between the alternate and primary operating facilities and possible consequences in the event of a hurricane. Thus, the use of the Stennis Warehouse as the alternate operating facility was not, in our view, fully justified.

Federal Preparedness Circular 65 also states that alternate operating facilities must be reevaluated for suitability and functionality to ensure that alternate operating facilities continue to meet agency needs. In March 2006, the Reserve identified 66 recommendations in response to lessons learned during the hurricanes. Although the Reserve plans to conduct a feasibility study on the cost of establishing another "warm" site to enable network redundancy in the absence of both the Stennis Warehouse and New Orleans facility capabilities, there were no plans to reevaluate Stennis as an alternate operating facility.

#### Future Emergencies

While the impact of Katrina and Rita was exceptional, hurricanes are fairly routine in the Gulf Coast region. Based on the most recent experience, the Reserve may not be able to rely on the alternate operating facility capabilities at the Stennis Warehouse if another hurricane hits the Gulf Coast region. Although the Reserve took commendable action during Hurricanes Katrina and Rita to reestablish computer network capabilities when both the primary and alternate computer facilities became inoperable, a reevaluation of the alternate operating facility site selection is warranted.

## **RECOMMENDATIONS**

To improve the Strategic Petroleum Reserve's continuity planning and capability to continue essential functions during emergencies such as hurricanes, we recommend that the Project Manager, Strategic Petroleum Reserve:

1. Reevaluate the location of the designated alternate operating facility, factoring in the distance from the primary operating facility and the threat of a hurricane impacting both locations; and,

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2. Based on the results of the evaluation, take appropriate actions regarding the location of the alternate operating facility.

**MANAGEMENT AND  
AUDITOR COMMENTS**

Management agreed with the recommendations and plans to reevaluate its alternate operating facility. Although the Stennis facility suffered only minor damage from Hurricane Katrina, the loss of communications connectivity rendered the computer network inaccessible. Therefore, management agreed that it is entirely appropriate to reevaluate the role of the Stennis facility in its planning for emergency conditions.

Management's comments are responsive to our recommendations and are included in their entirety in Appendix 4.



## Appendix 1

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### **OBJECTIVE**

The objective of this audit was to determine whether the Strategic Petroleum Reserve (Reserve) met its energy security mission during the response to Hurricanes Katrina and Rita.

### **SCOPE**

The audit was performed between January and October 2006. Audit work was conducted at the Department of Energy (Department) Headquarters in Washington, D.C.; the Project Management Office in New Orleans, Louisiana; the Bryan Mound and Big Hill storage sites in Texas; the Bayou Choctaw and West Hackberry storage sites in Louisiana; and, the Stennis Warehouse in Mississippi.

### **METHODOLOGY**

To accomplish the audit objective, we:

- Determined the Reserve's energy security mission and assessed whether the mission was met during the response to the hurricanes;
- Reviewed and analyzed loans and sales transactions;
- Analyzed the Reserve's Continuity of Operations Plan and identified the designated primary and alternate operating facilities;
- Examined Stennis Warehouse planning and justification documents;
- Determined the federal requirements for Continuity of Operations planning;
- Reviewed the lessons learned that were compiled as a result of the Reserve's response during the hurricanes; and,
- Held discussions with the Department and contractor personnel.

We conducted the audit in accordance with generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at

the time of our audit. We did not rely on computer processed data; therefore, we did not conduct reliability assessments on the data. Finally, we assessed the Department's compliance with the Government Performance and Results Act of 1993 and found that performance measures specifically related to the operational readiness of the Reserve had been established.

Management waived the exit conference.

### OTHER MATTERS

#### **Handling of Classified Materials**

In the aftermath of Hurricane Katrina, the Strategic Petroleum Reserve (Reserve) did not adequately secure classified matter or report the security incident to the Department of Energy (Department) Headquarters in a timely manner. Shortly after the hurricane, it became apparent that the facilities housing the classified materials would remain uninhabitable for an extended period of time, and the decision was made to relocate the materials to an alternate Department site. During the relocation, one box of classified documents became separated and was temporarily left unattended in an unclassified area at a different Department location. According to Reserve personnel, the team recovering the classified materials faced difficult and potentially dangerous conditions, including possible criminal activities in the area and the lack of electricity in the building. While these adverse conditions most certainly contributed to the mishandling, the Reserve did not have procedures in place to relocate classified materials during such emergencies. While it cannot be said with absolute certainty, it appears that there was no compromise of classified information.

During our review, the Reserve updated its Classified Matter Emergency Plan to include relocating procedures and provided the required reporting documentation of the incident to Department Headquarters. In addition, the Department's Office of Special Operations is conducting an inquiry and will provide a report of its findings to the Reserve. Therefore, we did not pursue additional audit work in this area.

### RELATED AUDIT REPORTS

#### Office of Inspector General Reports

- *Follow-Up Review of The Department of Energy's Response to Hurricanes Katrina and Rita* (DOE/IG-0733, July 2006). The follow-up review found that the Department of Energy (Department) had made significant progress toward implementing prior Office of Inspector General recommendations to enhance its Emergency Support Function-12 mission capabilities. Specifically, the Department clarified communications processes, addressed responder equipment needs, and augmented staffing levels. The review also found that the Department could improve its efforts to identify emergency response assets in advance of events such as natural disasters.
- *The Department of Energy's Response to Hurricanes Katrina and Rita* (DOE/IG-0707, November 2005). The review found that the Department met its responsibilities under the National Response Plan by taking aggressive actions to restore energy systems in response to Hurricanes Katrina and Rita. While the Department's response mechanism was effective, the review identified opportunities to improve the Department's response in future Emergency Support Function-12 missions. These opportunities include: streamlining communications, leveraging Department assets, adequately provisioning emergency response teams, and determining appropriate emergency support staffing levels.
- *The Department's Continuity Planning and Emergency Preparedness* (DOE/IG-0657, August 2004). This report concluded that five field sites had not developed comprehensive plans to continue essential functions during an emergency and had not corrected a number of weaknesses identified during prior emergency preparedness exercises. Specifically, these sites had not fully identified essential functions or alternate facilities in case of an emergency. Additionally, the Department did not specifically require sites to validate the effectiveness of corrective actions for addressing recognized emergency preparedness weaknesses or to share complex-wide lessons learned about common problems. As a result, the Department may face increased risks to its operations, employees, and surrounding communities during an emergency situation.

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United States Government

Department of Energy

# memorandum

DATE: November 8, 2006

REPLY TO:  
ATTN OF: FE-445 (RKallauner)

SUBJECT: COMMENTS ON THE DRAFT AUDIT REPORT ON "AUDIT OF THE DEPARTMENT'S USE OF THE STRATEGIC PETROLEUM RESERVE IN RESPONSE TO HURRICANES KATRINA AND RITA"

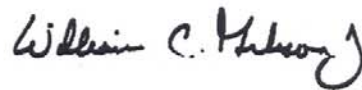
TO: George W. Collard, Assistant Inspector General for Performance Audits, Office of Inspector General, IG-32

Thank you for the opportunity to comment on this draft report. We concur with the two recommendations in the report regarding the Strategic Petroleum Reserve's (SPR's) Stennis facility.

The Stennis facility serves three main purposes. It provides safe and secure storage for certain equipment items. It also serves as one of several alternate emergency operations centers. Lastly, it functions as a continuity of operations alternate work site, housing approximately 100 work stations and the backup computer network for the SPR. While the four SPR oil storage facilities located in Louisiana and Texas can also serve as alternate emergency operations centers and alternate work sites, Stennis is the only backup to the SPR computer network.

Although the SPR's Stennis facility suffered only minor damage from Hurricane Katrina, the loss of communications connectivity external to Stennis rendered the computer network inaccessible. Therefore, we think that it is entirely appropriate that we reevaluate the role of Stennis in our planning for emergency conditions.

Should you have any questions about this response, please contact Randy Kallauner, the SPR Audit Liaison Coordinator, at (504) 734-4327.



William C. Gibson, Jr.  
Project Manager  
Strategic Petroleum Reserve

cc:  
Team Leader, Audit Liaison Team, CF-12  
Office of Budget and Financial Management, FE-3  
Audit Liaison, Fossil Energy, FE-3  
Audit Liaison, Office of Petroleum Reserves, FE-46  
Audit Liaison, SPR, FE-445

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