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Status of Security Measures to Prevent Oil Flow Disruptions

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Subcommittee
Committee on Government Operations
House of Representatives

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Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to discuss our assessment of the Department of Energy's (DOE) security program for the Strategic Petroleum Reserve (SPR), an asset representing an investment by the United States of close to $18 billion. My testimony today is based on some of the unclassified information contained in our August 1988 classified report entitled Oil Reserve: Status of Security Measures to Prevent Oil Flow Disruptions (GAO/C-RCED-88-3), which you requested. While I cannot discuss the classified material presented in our report in an open session, I can highlight some of our findings.

In summary, our work shows that improvements are needed in the security program if it is to accomplish its objective of reasonably ensuring that the SPR maintains the capability to provide crude oil when called upon. DOE established a security program for the SPR that is based on the concept that all facilities cannot be protected against attack. Thus, DOE believes that it is more cost-effective to (1) limit site access to the extent feasible and (2) develop recovery plans that will allow DOE to restore full operational capability within 15 to 30 days, in the event of a disruption. We believe such an approach has merit, but we noted problems with both SPR site security and recovery planning. Specifically, we found that:

-- Inspections and evaluations by DOE's security office and site security exercises continue to identify problems with various aspects of the security measures in place for the SPR.

-- Several areas are insufficiently addressed or not addressed at all in DOE's recovery plans. For example, although SPR pipeline routes cover over 240 miles and are widely dispersed, DOE relies on one contractor to provide personnel and equipment to repair pipeline damage. SPR

officials acknowledge, however, that in an emergency, one or more additional contractors may need to be retained to perform repair work.

-- DOE's objective of restoring the SPR's full drawdown capability within 15 to 30 days of disruption may not be feasible.

We recognize that DOE has taken actions to improve the SPR security program and is planning further improvements; however, some elements of the SPR will likely remain vulnerable. Because it may not be possible or cost-effective to secure all SPR facilities in a way that would preclude damage from attacks, the SPR recovery plan takes on added significance if the SPR is to remain the major national response to an oil disruption. We believe that DOE needs to take additional actions to ensure that recovery efforts will work as intended. These include giving priority attention to implementing certain aspects of the long-term recovery program and maintaining more than one call-out contractor for crude oil pipeline repair work so as to expedite repairs if several pipeline sections in widely dispersed areas are damaged at the same time.

Before I discuss in greater detail the problems we found and the actions we believe are needed to correct them, I will briefly describe the components of the SPR, its importance in mitigating oil disruptions, and DOE's development of an SPR security program.

THE STRATEGIC PETROLEUM RESERVE

During the winter of 1973-74 an oil embargo by Middle East countries interrupted U.S. oil imports. In response to the oil supply interruption, the Congress passed the Energy Policy and Conservation Act (P.L. 94-163, Dec. 22, 1975), which authorized the creation of the Strategic Petroleum Reserve. The SPR is to be

used to supplement industrial stocks if future oil supplies are disrupted, thereby helping mitigate the disruption's effects. The United States has invested close to $18 billion in developing and filling the SPR and expects to spend an additional $5 billion to $6 billion to complete it by the mid-1990s.

The SPR system is operated under DOE contract by Boeing Petroleum Services, Inc., and consists of three basic components, each having an integral role in DOE's ability to withdraw oil during a national emergency. These components include

-- 6 storage facilities, each consisting of a complex system of pumps, pipes, valves, electric power systems, and automated control rooms for handling large volumes of oil, brine, and water;

-- 4 marine terminal facilities where the crude oil is distributed from the sites to commercial customers; and

-- over 240 miles of pipelines connecting the sites and terminals.

SIGNIFICANCE OF THE SPR IN MITIGATING OIL DISRUPTIONS

The SPR was designed to reduce the United States' vulnerability to foreign oil supply disruption and serves as the cornerstone of the domestic energy emergency program. When filled to its 750-million-barrel capacity, the SPR should be capable of providing 4.5 million barrels of crude oil per day for about 167 days. In this regard, the SPR can play a key role in mitigating both economic and geopolitical consequences of an oil supply disruption.

From an economic perspective, the SPR can reduce the effects of an oil supply disruption by providing a period of delay between the beginning of a supply interruption and the onset of its effects. Thus, it could help the economy adapt to reduced oil availability in an orderly fashion and avert the possible need for immediate overt action by the United States to restore normal oil supplies. The advantage of this time delay can be seen when viewed in the context of the 1973-74 oil embargo. The resulting shortage had a severe impact on the U.S. economy, including an estimated $35 billion to $45 billion reduction in gross national product and the loss of 500,000 jobs.

From a geopolitical perspective, the SPR can help assure U.S. allies that the United States can meet its International Energy Agency commitments and that it continues to be in their interests to remain allies even under threat of future supply interruptions. Success in this role, however, may require that the SPR be prepared to withstand any adversarial actions that could limit its capability for withdrawing the stored oil as needed.

THE SPR SECURITY MISSION

DOE has established a security program to protect the SPR and provide reasonable assurance that the SPR maintains the capability to provide crude oil when called upon. As the SPR site development program reached the stage where substantial quantities of oil would be injected into the storage caverns (in the late 1970s), DOE initiated a series of studies to assess SPR vulnerabilities to postulated threats and proposed security measures to either protect against or mitigate them. These studies identified the most likely threats to SPR security, the SPR components most vulnerable to attack, and the impact on drawdown if they were disabled. The studies contained recommendations to DOE on actions that should be taken to minimize the risk of not being able to withdraw the oil as needed.

As a result of the studies, DOE implemented a series of security measures to protect the SPR sites. Protective measures taken in response to the studies included the installation of perimeter fences for each site, alarms on gates and fences around critical structures and equipment inside the perimeter, and sensors and surveillance equipment. They also included a protective guard force for controlling site access, monitoring and responding to security alarms, conducting roving patrols, and carrying out property searches and inspections.

Because it cannot guarantee protection of all facilities against attack, DOE has determined that it is more cost-effective to (1) limit site access to the extent feasible and (2) develop recovery plans that will allow it to restore full operational capability within 15 to 30 days in the event of an attack. However, during our review we noted problems with both site security and recovery planning efforts.

STUDIES AND EVALUATIONS REVEAL SITE SECURITY PROBLEMS

Studies of SPR site security, simulated site security exercises, and a previous GAO report[1] have all identified problems with SPR site security measures. For example, in 1982, the Aerospace Corporation completed a vulnerability study of the SPR in which it made various recommendations aimed at improving SPR security. The recommendations included: (1) enhancing the physical protection system relative to critical system components, (2) establishing call contracts for pipeline, electric power, and mechanical repair services, (3) deputizing SPR guards, and (4) protecting tankers and barges from attack during loading.

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[1]Oil Reserve: DOE's Management of the Strategic Petroleum Reserve (GAO/RCED-87-171BR; July 17, 1987).

We found that DOE's response to these recommendations has been slow. For example, in 1986, the SPR contractor reassessed SPR vulnerabilities and found many of the same vulnerabilities identified earlier by Aerospace. The SPR contractor also identified weaknesses in SPR security in a vulnerability assessment it carried out when preparing the 1987 draft Master Security Agreement for the SPR. The Master Security Agreement is intended to address current and future SPR security objectives, vulnerabilities, and risks.

Our review of several security exercises conducted in the fiscal years 1985-87 time frame also showed that while some improvements in securing the sites have occurred, problems still remain. These security exercises are aimed at assessing whether the security system is capable of effectively responding to threats. For example, a 1987 exercise conducted at four SPR sites identified a variety of problems. In this regard, DOE's unclassified summary report on the exercise noted that while mock aggressors were not able to enter the sites, several facilities were damaged or destroyed at and around each site attacked. These include power substations, motor control centers, an emergency operations center, pipeline valves, and a bridge. DOE, in its summary of the exercise, recognized that there was a need for improvement in a number of areas, including (1) more effective perimeter patrols, (2) improved site-level command, and (3) action to avoid "friendly" gunfire. In addition, DOE acknowledged that the SPR has no plan of action to defend against the type of attack used in the exercise.

We noted that DOE's unclassified summary of the 1987 exercise did not address all of the security problems discussed at the unclassified post exercise debriefing. For instance, the ease with which the mock aggressors were able to obtain blueprints, engineering data, and diagrams of the sites from a local university

was omitted from the DOE summary of the exercise. Further, the DOE summary contains no mention of the fact that aggressor forces were able to recruit local dissidents to assist them in attacking the SPR facilities and that the SPR could expect such an underground network to be recruited during a real attack. In addition, there were 53 mock casualties among the SPR, law enforcement, and other personnel defending the sites, 50 percent of which resulted from friendly fire.

We cannot discuss the results of the security exercises in greater detail because of the classified nature of the material involved. However, in our unclassified report Oil Reserve: DOE's Management of the Strategic Petroleum Reserve (GAO/RCED-87-171BR), we also noted potential security weaknesses. For example, the report discussed an SPR security incident in which two unauthorized individuals docked a small boat at a terminal adjacent to the SPR St. James terminal facility and were able to gain access to the facility. The individuals were detected on the facility and confronted by the guards. But because the guards were uncertain about their authority to involuntarily detain the individuals, the intruders refused to be detained, and left on their own.

PROBLEMS IN RECOVERY PLANNING

Some SPR facilities will likely remain vulnerable because of their remoteness, geographic dispersion, and the commercial nature of the privately owned marine terminals. Because providing full security for such facilities may not be cost effective, DOE's proposed recovery plan takes on added significance.

DOE has tasked Boeing with developing both a Near-Term and a Long-Term Recovery Plan setting forth criteria for the return to full drawdown capability in the event that damage is sustained to SPR facilities or equipment. The Near-Term Plan proposes various options immediately available to recover from an unscheduled event

and still meet drawdown requirements before the Long-Term Recovery Plan is developed. The Long-Term Recovery Plan identifies the most cost-effective means for recovery from damage, provides budget estimates, and confirms the engineering feasibility of various approaches. The plans are intended to restore full operational capability within 15 to 30 days in the event of an attack on the SPR by stocking spare parts at strategic locations and having contractors on call. Long-term planning is based on the loss of no more than one system at any one site. In addition, the Long-Term Recovery Plan does not address the recovery of some facilities critical to SPR drawdown, but not controlled by SPR, such as commercial marine terminals.

The Near-Term Plan has already been developed and includes options that are immediately available. According to the SPR contractor, some aspects of the Long-Term Plan will not be in place until 1992.

During our review of the recovery plans, we noted several areas that were either not addressed or were insufficiently addressed. For instance, DOE is currently relying on one contractor to provide the necessary personnel and equipment for the emergency repair of any of the over 240 miles of pipeline spread over 8 pipeline routes used by the storage sites. Boeing pipeline and procurement officials believe that they could respond to a pipeline emergency without having additional contractors on call. They acknowledge, however, that in an emergency, one or more additional contractors might have to be retained to perform repair work. In our view, maintaining more than one call contractor would better ensure that pipeline repair work is completed expeditiously.

We also believe that the Long-Term Recovery Plan's time frames for restoring full drawdown capabilities after damage is inflicted on SPR facilities is optimistic in that it is based on

the assumption that only one system at one SPR facility will require restoration. As previously mentioned, simulated damage during the 1987 SPR security exercise exceeded this recovery-planning assumption. According to Boeing maintenance officials, the time frames in the recovery plan for emergency pipeline repair are reasonable for the type of damage expected to occur on SPR pipelines. These officials added, however, that pervasive damage may require a recovery period exceeding 15 days.

The SPR has not repaired any pipelines under its emergency repair contract. Further, while DOE has held numerous exercises and drills involving emergency response to damaged facilities, the exercises were terminated following assessment and control of the damage. These exercises were not intended as a test of recovery capability.

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In conclusion, Mr. Chairman, while DOE has taken actions to improve the SPR security program and is planning further improvements, some elements of the SPR will likely remain vulnerable. Because it may not be possible or cost-effective to secure all SPR facilities in a way that would preclude damage from attacks, the SPR recovery plan takes on added significance if this $18 billion investment is to remain the major national response to an oil import disruption.

To help ensure that the SPR meets its mission objectives, we recommended in our August classified report that the Secretary of Energy take actions to strengthen the recovery plan. This includes giving priority attention to implementing certain aspects of the long-term recovery program and maintaining more than one call contractor for crude oil pipeline repair work so as to expedite repairs for two or more damaged areas simultaneously.

We hope, Mr. Chairman, that you and the Subcommittee will strongly encourage the Secretary to implement the recommendations contained in our classified report to you (GAO/C-RCED-88-3). We would be pleased to answer any questions that you or members of the Subcommittee may have.

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