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NUCLEAR SECURITY

DOE's Office of the Under Secretary for Energy, Science and Environment Needs to Take Prompt, Coordinated Action to Meet the New Design Basis Threat



G A O

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Highlights of [GAO-05-611](#), a report to congressional requesters

Why GAO Did This Study

A successful terrorist attack on a Department of Energy (DOE) site containing nuclear weapons material could have devastating effects for the site and nearby communities. DOE's Office of the Under Secretary for Energy, Science and Environment (ESE), which is responsible for DOE operations in areas such as energy research, manages five sites that contain weapons-grade nuclear material. A heavily armed paramilitary force equipped with such items as automatic weapons protects ESE sites. GAO was asked to examine (1) the extent to which ESE protective forces are meeting DOE's existing readiness requirements and (2) the actions DOE and ESE will need to take to successfully defend against the terrorist threat identified in the October 2004 design basis threat (DBT) by DOE's implementation deadline of October 2008.

What GAO Recommends

To ensure that DOE and ESE protective forces can meet the terrorist threat contained in the 2004 DBT, GAO is making five recommendations to the Secretary of Energy to, among other things, address weaknesses with protective officers' equipment and coordinate ESE efforts to address the 2004 DBT. DOE concurred with the report, accepted GAO's recommendations and provided an update on actions it anticipated taking to address GAO's recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-05-611.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Gene Aloise at (202) 512-3841 or AloiseE@gao.gov.

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What GAO Found

Protective forces at the five ESE sites containing weapons-grade nuclear material generally meet existing key DOE readiness requirements. Specifically, GAO determined that ESE protective forces generally comply with DOE standards for firearms proficiency, physical fitness levels, and equipment standardization and that the five ESE sites had the required training programs, facilities, and equipment. However, GAO did find some weaknesses at ESE sites that could adversely affect the ability of ESE protective forces to defend their sites. For example, despite the importance of training exercises in which protective forces undergo simulated attacks by a group of mock terrorists (force-on-force exercises), DOE neither sets standards for individual protective force officers to participate in these exercises, nor does it require sites to track individual participation. In another example, GAO found that protective force officers at all five of the ESE sites reported problems with their radio communications systems. Specifically, according to 66 of the 105 protective force officers GAO interviewed, they did not always have dependable radio communications as required by the DOE Manual 473.2-2, *Protective Force Program Manual*. Security officials stated that improvements were under way.

To successfully defend against the larger terrorist threat contained in the 2004 DBT by October 2008, DOE and ESE officials recognize that they will need to take several prompt and coordinated actions. These include transforming its current protective force into an "elite force"—modeled on U.S. Special Forces, developing and deploying new security technologies to reduce the risk to protective forces in case of an attack, consolidating and eliminating nuclear weapons material between and among ESE sites to reduce security costs, and creating a sound ESE management structure that has sufficient authority to ensure coordination across all ESE offices that have weapons-grade nuclear material. However, because these initiatives, particularly an elite force, are in early stages of development and will require significant commitment of resources and coordination across DOE and ESE, their completion by the 2008 October DBT implementation deadline is uncertain.

DOE Protective Force Member



Source: DOE.

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Abbreviations

CFR	Code of Federal Regulations
DBT	design basis threat
DOD	Department of Defense
DOE	Department of Energy
EM	Environmental Management
ESE	Energy, Science and Environment, DOE's Office of the Under Secretary for
NNSA	National Nuclear Security Administration

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United States Government Accountability Office
Washington, D.C. 20548

July 15, 2005

The Honorable Christopher Shays
Chairman, Subcommittee on National Security, Emerging Threats
and International Relations
Committee on Government Reform
House of Representatives

The Honorable Charles F. Grassley
United States Senate

The Department of Energy (DOE) has long recognized that a successful terrorist attack on a site containing the material used in nuclear weapons, such as plutonium or highly enriched uranium, could have devastating consequences for the site and its surrounding communities. The risks associated with these materials, which in specified forms and quantities are referred to as Category I special nuclear material, vary but include theft for use in an illegal nuclear weapon; the creation of improvised nuclear devices capable of producing a nuclear yield; and the creation of so-called “dirty bombs,” in which conventional explosives are used to disperse radioactive material.

Because terrorist attacks could have such devastating consequences, an effective safeguards and security program is essential. For many years, a key component for DOE security programs has been the development of the design basis threat (DBT), a classified document that identifies the potential size and capabilities of adversary forces. DOE issued its current DBT in October 2004 in response to recommendations in our April 2004 report,¹ congressional criticism, and a new review of intelligence data. The October 2004 DBT identifies a larger terrorist threat for DOE sites than had previous DBTs. Consequently, DOE is not requiring full compliance until October 2008 in order to allow its sites adequate time to implement measures to defeat this larger terrorist threat. Private contractors, who operate DOE’s facilities, counter the terrorist threat contained in the DBT with a multifaceted protective system. While specific measures vary from site to site, a key universal component of DOE’s protective system is a heavily armed protective force equipped with such items as automatic

¹See GAO, *Nuclear Security: DOE Needs to Resolve Significant Issues Before It Fully Meets the New Design Basis Threat*, [GAO-04-623](#) (Washington, D.C.: Apr. 27, 2004).

weapons, night vision equipment, body armor, and chemical protective gear.

The following two major organizations in DOE are responsible for securing Category I special nuclear material:

- The National Nuclear Security Administration (NNSA), a separately organized agency within DOE, is responsible for the nation's nuclear weapons programs and manages six sites that contain Category I special nuclear material.
- DOE's Office of the Under Secretary for Energy, Science and Environment (ESE) is responsible for DOE operations in areas such as energy research, basic physical science research, and environmental cleanup and manages five sites that collectively contain substantial quantities of Category I special nuclear material.

We reported on security at NNSA sites in May 2003 and April 2004.² We found that NNSA needed to improve the management of its safeguards and security program and that while some action had been taken in response to the terrorist attacks of September 11, 2001, additional action was needed to ensure that DOE's sites were adequately prepared to defend themselves. Since the attacks of September 11, DOE has focused on the security of its NNSA sites more than it has on its ESE sites.³ Consequently, you asked us to determine for the five ESE sites with Category I special nuclear material (1) the extent to which ESE protective forces are meeting DOE's existing readiness requirements and (2) what actions DOE and ESE will need to take to successfully defend against the larger terrorist threat identified in the October 2004 DBT by DOE's implementation deadline of October 2008.

To determine the extent to which protective forces at ESE sites are meeting existing DOE readiness requirements, we reviewed DOE policies and other pertinent literature about the factors that affect the readiness of forces, such as military forces, that are like those defending ESE sites. We

²See GAO, *Nuclear Security: NNSA Needs to Better Manage Its Safeguards and Security Program*, [GAO-03-471](#) (Washington, D.C.: May 30, 2003) and [GAO-04-623](#).

³For example, DOE's Office of Security and Safety Performance Assurance examined five NNSA sites and only a single ESE site in a recent review. See Office of Security and Safety Performance Assurance, *Department of Energy Protective Force Management and Capabilities (U)* (Washington, D.C.: June 28, 2004).

conducted structured interviews with 105 ESE protective force officers at the five ESE sites that contain Category I special nuclear material. While the responses from these interviews are not projectable to the entire universe of ESE protective force officers, we did speak to about 10 percent of the total protective forces at the five sites. Even though not projectable, we randomly selected protective force officers to interview at each site in order to help assure their independence from the views of site management. We asked the officers questions designed to determine their readiness to defend the sites, including questions about their morale, training, and equipment. We also reviewed the training records of the 105 officers to determine if key elements of their training complied with existing DOE training requirements. In particular, we reviewed selected firearms and physical fitness qualifications to determine if these officers complied with existing DOE requirements and regulations. Finally, we reviewed the equipment used by ESE protective forces to determine if it met current DOE requirements. Further details on our interview procedures and random selection methods are found in the scope and methodology appendix at the end of this report.

To determine what actions DOE and ESE will need to take to successfully defend against the new threat identified in the October 2004 DBT by DOE's implementation deadline of October 2008, we reviewed the October 2004 DBT and associated guidance documents. We discussed the October 2004 DBT with officials in DOE's Office of Security and Safety Performance Assurance and with officials in ESE's Offices of Environmental Management; Nuclear Energy, Science and Technology; and Science. Finally, where available, we reviewed documents prepared by ESE officials on how they plan to comply with the October 2004 DBT. Appendix I presents a detailed description of our scope and methodology. We performed our work between March 2004 and July 2005 in accordance with generally accepted government auditing standards.

Results in Brief

Protective forces at the five ESE sites containing Category I special nuclear material generally meet existing DOE readiness requirements. However, we did find some weaknesses at ESE sites that could adversely affect the ability of ESE protective forces to defend their sites. With respect to current readiness, 102 of the 105 officers we interviewed stated that they believed that they and their fellow officers understood what was expected of them if the site were attacked by a terrorist group. Moreover, 65 of the 105 officers rated themselves as highly ready to defend their site while 20 officers rated themselves as somewhat or moderately ready. Supporting

their views, we found that the five ESE sites we visited had the required training programs, facilities, and equipment, and that the 105 protective force members whose records we reviewed generally complied with existing DOE standards for firearms proficiency, physical fitness levels, and equipment standardization. However, we did identify some weaknesses. For example, despite the importance of training exercises in which protective forces undergo simulated attacks by a group of mock terrorists (force-on-force exercises), DOE does not have a requirement for individual protective force officers to participate in these exercises or a requirement that sites track the individual officers' participation. While 84 of the 105 protective force officers we interviewed stated they had participated in a force-on-force exercise, only 46 of the 84 protective force officers believed that the force-on-force exercises they had participated in were either realistic or somewhat realistic. Additionally, protective force officers often told us that they did not have frequent and realistic tactical training. In another example, 66 of the 105 protective force officers, at all five of the ESE sites, stated that they did not always have dependable radio communications. However, according to DOE Manual 473.2-2 *Protective Force Program Manual*, the radios protective force officers use must be capable of intelligible two-way communications. Site security officials stated that improvements were under way and would be completed this year. Finally, some ESE sites currently do not have the protective force capabilities found at NNSA sites with similar special nuclear material. Specifically, while not a DOE requirement, all NNSA sites with Category I special nuclear material currently operate armored vehicles. However, only one ESE site with Category I special nuclear material equipped protective forces with such vehicles at the time of our review.

To successfully defend against the larger terrorist threat contained in the 2004 DBT by 2008, DOE and ESE officials recognize that they need to take several prompt and coordinated actions. These include the transformation of its current protective force into an elite force, the development and deployment of new security technologies, the consolidation and elimination of special nuclear material, and organizational improvements within ESE's security program. However, because these initiatives, particularly an elite force, are in early stages of development and will require significant commitment of resources and coordination across DOE and ESE, their completion by the 2008 DBT implementation deadline is uncertain. Specifically, the status of these initiatives is as follows:

- *Elite forces.* DOE officials, and 85 of the 105 protective force officers we interviewed, now believe that the way DOE sites, including ESE sites,

currently train their contractor-operated protective forces will not be adequate to defeat the much larger terrorist threat contained in the October 2004 DBT. In response, the department has proposed the development of an elite force that would be patterned after the U. S. military's Special Forces and might eventually be converted from a contractor-operated force into a federal force. However, this proposal is only in the conceptual phase, and completing this effort by the 2008 DBT implementation deadline is unlikely.

- *New security technologies.* DOE is seeking to improve the effectiveness and survivability of its protective forces by developing and deploying new security technologies. It believes technologies can reduce the risk to protective forces in case of an attack and can provide additional response time to meet and defeat an attack. Sixteen of the 105 protective forces we interviewed generally supported this view and said they needed enhanced detection technologies that would allow them to detect adversaries at much greater ranges than is currently possible at most sites. However, a senior DOE official recently conceded that the department has not yet taken the formal steps necessary to coordinate investment in emerging security technologies and that the role of technology in helping sites meet the new threats contained in the 2004 DBT by the department's deadline of October 2008 is uncertain.
- *Consolidation and elimination of materials.* ESE's current strategy to meet the October 2008 deadline relies heavily on the consolidation and elimination of special nuclear material between and among ESE sites. For example, the Office of Nuclear Energy, Science and Technology plans to down-blend special nuclear material and extract medically useful isotopes at the Oak Ridge National Laboratory—an Office of Science site. This action would eliminate most of the security concerns surrounding the material. Neither program office, however, has been able to formally agree on its share of additional security costs, which have increased significantly because of the new DBT. In addition, neither ESE nor DOE has developed a comprehensive, departmentwide plan to achieve the needed cooperation and agreement among the sites and program offices to consolidate special nuclear material as we recommended last year in our April 2004 report. In the absence of a comprehensive plan, completing most of these consolidation activities by the October 2008 DBT implementation deadline is unlikely.
- *Organizational improvements.* The ESE headquarters security organization is not well suited to meet the challenges associated with

implementing the 2004 DBT. Specifically, there is no centralized security organization within the Office of the Under Secretary, ESE. The individual who serves as the Acting ESE Security Director has been detailed to the Office by DOE's Office of Security and Safety Performance Assurance and has no programmatic authority or staff. This lack of authority limits the Director's ability to facilitate ESE and DOE-wide cooperation on such issues as material down-blending at Oak Ridge National Laboratory and material consolidation at other ESE sites.

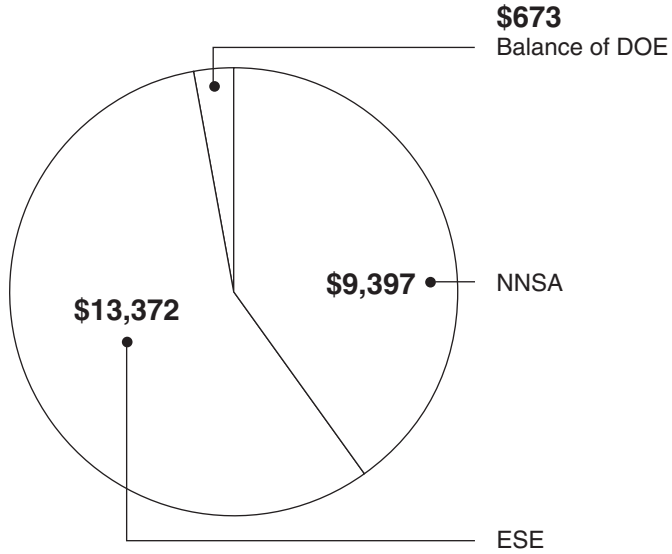
In order to ensure that DOE and ESE protective forces can meet the new terrorist threat contained in the 2004 DBT, we are making five recommendations to the Secretary of Energy to track and increase protective force officer participation in force-on-force training exercises, correct weaknesses with protective force officers' equipment, coordinate implementation of DOE's various efforts designed to meet the 2004 DBT, and create a more effective ESE security organization.

We provided DOE with a copy of our report for review and comment. DOE concurred with the report, accepted our recommendations, and provided an update on actions it anticipated taking to address our recommendations. While we believe that most of DOE's anticipated actions will be responsive to our recommendations, we are concerned about DOE's response to our recommendation that it develop a departmentwide, multiyear implementation plan for meeting the 2004 DBT requirements. Specifically, in responding to this recommendation, DOE cited only individual efforts to address the development of an elite force, the deployment of enhanced security technologies, and the consolidation of special nuclear material, not the development of a comprehensive plan. While each of these efforts is important, we continue to believe that DOE cannot be successful in meeting the requirements of the 2004 DBT by its deadline of October 2008 without an integrated effort that is built around a comprehensive plan.

Background

The Office of the Under Secretary for Energy, Science and Environment comprises nine program offices, including the Offices of Environmental Management; Nuclear Energy, Science and Technology; and Science and accounts for about 57 percent of DOE's fiscal year 2006 budget request (see fig. 1).

Figure 1: DOE Fiscal Year 2006 Budget Request
Dollars in millions



Source: DOE.

ESE has five sites that collectively have substantial quantities of Category I special nuclear material. (See table 1.) For fiscal year 2006, DOE requested over \$300 million for security at these five sites. This represents about 70% of the entire security budget request for ESE. (See table 2.) Contractors operate all of these sites.

Table 1: DOE/ESE Category I Special Nuclear Material Sites

Responsible program office	Site	Location
Office of Environmental Management	Savannah River Site	Aiken, South Carolina
Office of Environmental Management	Hanford Site	Richland, Washington
Office of Nuclear Energy, Science and Technology	Idaho National Engineering and Environmental Laboratory	Idaho Falls, Idaho
Office of Nuclear Energy, Science and Technology	Argonne National Laboratory-West	Idaho Falls, Idaho
Office of Science	Oak Ridge National Laboratory	Oak Ridge, Tennessee

Source: GAO.

Note: The two Idaho sites were consolidated as a single site, now known as the Idaho National Laboratory, in February 2005. In addition, federal oversight of the Idaho National Laboratory has been consolidated at DOE's Idaho Operations Office. Previously, DOE's Chicago Operations Office oversaw Argonne National Laboratory-West.

Table 2: DOE/ESE Relevant Program Offices and Fiscal Year 2006 Funding Requests for Security

Dollars in millions

Program office	Total budget request	Total security request	Security as a percentage of total budget request
Office of Environmental Management	\$6,505	\$287	4%
Office of Nuclear Energy, Science and Technology	511	75	15%
Office of Science	\$3,463	\$74	2%

Source: DOE.

Within DOE's Office of Security and Safety Performance Assurance, DOE's Office of Security develops and promulgates orders and policies to guide the department's safeguards and security programs. DOE's overall security policy is contained in DOE Order 470.1, *Safeguards and Security Program*, which was originally approved in 1995. The key component of DOE's approach to security is the DBT, a classified document that identifies the characteristics of the potential threats to DOE assets. A classified companion document, the *Adversary Capabilities List*, provides additional information on terrorist capabilities and equipment. The DBT

has been traditionally based on a classified, multiagency intelligence community assessment of potential terrorist threats, known as the *Postulated Threat*. The threat from terrorist groups is generally the most demanding threat contained in the DBT.

DOE counters the terrorist threat specified in the DBT with a multifaceted protective system. While specific measures vary from site to site, all protective systems at DOE's most sensitive sites employ a defense-in-depth concept that includes the following:

- a variety of integrated alarms and sensors capable of detecting intruders;
- physical barriers, such as fences and antivehicle obstacles;
- numerous access control points, such as turnstiles, badge readers, vehicle inspection stations, radiation detectors, and metal detectors;
- operational security procedures, such as a “two person” rule that prevents only one person from having access to special nuclear material; and
- hardened facilities and vaults.

Each site also has a heavily armed protective force that is often equipped with such items as automatic weapons, night vision equipment, body armor, and chemical protective gear. These protective forces comprise Security Police Officers that are classified into three groups: Security Police Officer-I, Security Police Officer-II, and Security Police Officer-III. Security Police Officer-Is are only assigned to fixed, armed posts. Generally, very few of these officers are used at ESE sites because of the limited roles they can fill. Security Police Officer-IIs generally are assigned to posts such as access control booths, or to foot or vehicle patrols. Finally, Security Police Officer-IIIs are responsible for operations such as hostage rescue and the recapture and recovery of special nuclear material. According to federal regulations, Security Police Officer-IIIs have more demanding physical fitness and training standards than Security Police Officer-Is or Security Police Officer-IIs. At the ESE sites we visited, protective forces work for private contractors and are unionized. The number of qualified Security Police Officer-IIs and Security Police Officer-IIIs at ESE sites is shown in table 3.

Table 3: ESE Protective Force Deployment

DOE site	Security Police Officers (II and III)
Savannah River Site	551
Hanford Site	241
Idaho National Engineering and Environmental Laboratory	149
Argonne National Laboratory-West	48
Oak Ridge National Laboratory	51
Total	1,040

Source: DOE.

Protective force duties and requirements, such as physical fitness standards, are explained in detail in DOE Manual 473.2-2, *Protective Force Program Manual*, as well as in DOE regulations (10 C.F.R. pt. 1046, *Physical Protection of Security Interests*). DOE issued the current *Protective Force Program Manual* in June 2000. Although protective forces are expected to comply with the duties and requirements established in DOE policies, deviations from these policies are allowed as long as certain approval and notification criteria are met. Following are the three types of deviations:

- *Variances*: Variances are approved conditions that technically vary from DOE security requirements but afford equivalent levels of protection.
- *Waivers*: Waivers are approved nonstandard conditions that deviate from DOE security requirements that, if uncompensated, would create a potential security vulnerability. As such, waivers require implementation of what DOE calls compensatory measures. Compensatory measures could include deploying additional protective forces or curtailing operations until the asset can be better protected.
- *Exceptions*: Exceptions are approved deviations from DOE security requirements that create a safeguards and security vulnerability. Exceptions are approved only when correction of the condition is not feasible, and compensatory measures are inadequate.

In addition to complying with these security requirements, DOE protective systems, including protective forces, also must meet performance standards. For example, DOE sites are required to demonstrate that their protective systems are capable of defending special nuclear material

against terrorist forces identified in the DBT. The performance of protective systems is formally and regularly examined through vulnerability assessments. A vulnerability assessment is a systematic evaluation process in which qualitative and quantitative techniques are applied to detect vulnerabilities and arrive at effective protection of specific assets, such as special nuclear material. To conduct such assessments, DOE uses, among other things, subject matter experts, such as U.S. Special Forces; computer modeling to simulate attacks; and force-on-force exercises, in which the site's protective forces undergo simulated attacks by a group of mock terrorists. In addition to their use in evaluating the effectiveness of physical protection strategies, DOE believes force-on-force exercises are the most realistic representation of adversary attacks that can be used to train protective forces.

Through a variety of complementary measures, DOE ensures that its contractors are complying with DOE's safeguards and security policies, including protective force duties and requirements, and that its systems are performing as intended. Contractors perform regular self-assessments and are encouraged to uncover any problems themselves. In addition to routine oversight, DOE orders require field offices to comprehensively survey contractors' operations for safeguards and security every year. DOE's Office of Independent Oversight and Performance Assurance provides yet another check through its comprehensive inspection program. This office performs comprehensive inspections roughly every 18 months at each DOE site that has specified quantities of Category I special nuclear material. All deficiencies (findings) identified during surveys and inspections require the contractors to take corrective action.

Since the terrorist attacks of September 11, 2001, DOE security policies have been under almost constant reexamination and have undergone considerable change. For example, the department's security policies have been undergoing a streamlining process for nearly 2 years. In addition, as we pointed out in our April 2004 report, DOE worked for almost 2 years to develop and issue a new DBT. When DOE issued its first post-September 11 DBT in May 2003, we recommended that DOE reexamine it because, among other things, it contained a terrorist threat that was less than the threat identified in the intelligence community's *Postulated Threat*. DOE agreed to reexamine the 2003 DBT and issued a revised and more demanding DBT in October 2004. The October 2004 DBT significantly increased the terrorist threat to DOE facilities and required enhanced protection strategies for DOE facilities. Under the new DBT, sites with Category I special nuclear material will not have to be fully prepared to defend their sites against the

terrorist threat contained in the new 2004 DBT until October 2008. By July 29, 2005, DOE sites will have to forward 2004 DBT implementation plans to the Deputy Secretary of Energy and, within 3 months, begin submitting quarterly DBT implementation reports. At the time of our review, cost estimates were still preliminary, but security officials at ESE sites said that they may require collectively an additional \$384-\$584 million over the next several years in order for all ESE sites with Category I special nuclear material to meet the 2004 DBT.

Protective Forces at ESE Sites Generally Meet Established DOE Readiness Requirements, but Some Weaknesses in Protective Force Practices Exist

We found that the majority of the 105 protective force members we interviewed at ESE sites generally believe that they currently are ready to perform their mission of protecting the site's special nuclear material. Consistent with that belief, the five ESE sites we visited had the required training programs, facilities, and equipment, and the 105 protective force members whose records we reviewed were generally meeting the readiness requirements contained in the DOE orders and federal regulations. However, we did find some weaknesses at ESE sites that could adversely affect the ability of ESE protective forces to defend their sites. These include protective force officers' lack of regular participation in force-on-force exercises; the frequency and quality of training opportunities; the lack of dependable communications systems; and insufficient protective gear, including protective body armor and chemical protective gear, and the lack of armored vehicles.

Protective Force Officers Are Confident in Their Current Overall Readiness

Readiness is defined by the Department of Defense (DOD) as the ability of forces to deploy quickly and to accomplish specific goals and missions. In particular, DOD believes that a ready force should possess a sufficient number of experienced, trained, and properly equipped personnel. Through realistic and comprehensive training, these personnel are forged into a cohesive unit that can perform its tasks even under extreme conditions. DOE orders and federal regulations establish the framework for ensuring that DOE protective forces are ready to perform their mission.

ESE protective force officers generally believe that they are ready to perform their mission. Specifically, 102 of the 105 officers we interviewed stated that they believed that they, and their fellow officers, understood what was expected of them should the site be attacked by a terrorist group. Moreover, 65 of the 105 officers rated the readiness of their site's protective force as high, while 20 officers rated their protective force as somewhat or

moderately ready to defend the site. Only a minority of the officers (16 of 105) we interviewed rated the readiness of their force to defend their sites as low. Two officers were uncertain of their forces' readiness, and two did not respond to the question.

In addition, the majority of officers we interviewed believed they and the protective force officers with whom they worked on a regular basis formed a cohesive unit that would be able to perform their most essential mission of protecting special nuclear material. Specifically, of the 105 officers we interviewed,

- 86 reported that they were satisfied with their jobs,
- 73 reported that their morale was high or at least moderately high,
- 91 reported that protective force officers had developed the necessary teamwork to defend the site against a terrorist attack,
- 84 officers responded that they had a high degree of confidence in their fellow officers in the event of a terrorist attack, and
- 88 reported that their fellow officers would be willing to risk their lives in defense of their site.

ESE Protective Forces Generally Meet the DOE Training and Equipment Requirements We Reviewed

As called for in DOE's *Protective Force Program Manual*, readiness is achieved through appropriate training and equipment. Each of the five sites we visited had formally approved annual training plans. Each site generally had the training facilities, such as firearms ranges, classrooms, computer terminals, and exercise equipment, which enabled them to meet their current DOE and federal training requirements. Furthermore, each site maintained computerized databases for tracking individual protective force officers' compliance with training requirements. To determine if these programs and facilities were being used to implement the DOE requirements and federal regulations, we focused on three key areas—firearms proficiency, physical fitness, and protective force officer equipment.

Firearms Proficiency

DOE's *Protective Force Program Manual* states that protective force officers must demonstrate their proficiency with the weapons that are assigned to them every 6 months. According to the training records of the 105 protective force officers we interviewed, 79 had met this proficiency

requirement with their primary weapon, the M-4 or M-16 semiautomatic rifle. Of the 26 officers who had not met this requirement within the 6 month time frame, 11 officers were all located at one site with 8 of the 11 officers not meeting the requirement until 2 to 5 months after the required time. According to an official at this site, 7 of the 8 officers could not complete the requirement in a timely fashion because the site's firing range was closed for the investigation of an accidental weapon discharge that had resulted in an injury to a protective force officer. Although the DOE *Protective Force Program Manual* provides guidance that allows for off-site training to meet requirements, officials noted that a stand-down of all firearms training prevented training requirements from being met. We determined that 2 of the 26 officers did not complete the requirement for medical reasons. We were not given reasons why the remaining officers did not meet the requirement.

Physical Fitness

Under DOE regulations,⁴ protective force personnel employed by DOE contractors who are authorized to carry firearms must meet a minimum standard for physical fitness every 12 months. There are two standards for such personnel—Offensive Combative and Defensive Combative. All Security Police Officer-IIIs, which include DOE special response team members, must meet the Offensive Combative standard which requires a 1-mile run in no more than 8 minutes 30 seconds and a 40-yard prone-to-running dash in no more than 8 seconds. All other protective officers authorized to carry firearms must meet the Defensive Combative standard, which requires a one-half mile run in no more than 4 minutes 40 seconds and a 40-yard prone-to-running dash in no more than 8.5 seconds. According to the training records of the 105 protective force officers we reviewed, 103 of the 105 protective force officers had met the standard required by federal regulation for their position. Two officers who did not meet the requirement were on medical restriction. The records for another officer showed him as having met the requirement, but additional records provided by the site showed the officer had completed the run in a time that exceeded the standard. Site officials could not provide an explanation for this discrepancy.

⁴10 C.F.R. pt. 1046, subpt. B, app. A.

Protective Officer Equipment

DOE's *Protective Force Program Manual* sets a number of requirements for protective force equipment. Among these requirements are the following:

- *Minimum standard duty equipment.* All Security Police Officers are required to carry a minimum set of equipment, including a portable radio, a handgun, and an intermediate force weapon such as a baton. In addition, a mask to protect against a chemical attack must be carried or available to them. All Security Police Officer-IIs and Security Police Officer-IIIs must also have access to personal protective body armor.
- *Firearms serviceability.* Firearms must be kept serviceable at all times and must be inspected by a DOE-certified armorer at least twice a year to ensure serviceability. All DOE sites with armed protective force personnel are required to have the services of a certified armorer who is responsible for inspecting, maintaining, and repairing firearms.
- *Firearms inventories.* Issued firearms must be inventoried at the beginning of each shift, and an inventory of all firearms in storage must be conducted weekly. A complete inventory of all firearms must be conducted on a monthly basis.
- *Appropriate equipment to counter the DBT.* In line with DOE's performance standards, DOE protective forces equipment must be tailored to counter adversaries identified in the DBT. To this end, sites employ a variety of equipment including automatic weapons, night vision equipment, and body armor.

In most cases, each site's protective forces carried or had access to the required minimum standard duty equipment. Most sites demonstrated that they had access to certified armorers, and each site maintained the required firearms maintenance, inspection, and inventory records, often kept in a detailed computerized database. We did not, however, conduct a detailed inspection of these records nor did we conduct an independent

inventory of each site's firearms.⁵ The appropriate policies and procedures were also in place for the inventory of firearms. In addition, some sites have substantially increased their protective forces weaponry since September 11, 2001, or have plans to further enhance these capabilities to meet the 2004 DBT. For example, one site provided us with a list of upgrades since September 11, 2001, including new M-4 carbines, grenade launchers, Barrett .50 caliber rifles, armor piercing ammunition, chemical and biological protection suits, and decontamination kits, as well as additional units that use specially trained dogs (K-9 units) and portable X-ray machines to detect explosives.

Some Weaknesses in ESE Site Protective Force Practices Exist

While protective forces at ESE sites are generally meeting current DOE requirements, we identified some weaknesses in ESE protective force practices that could adversely affect the current readiness of ESE protective forces to defend their sites. These include protective force officers' lack of regular participation in force-on-force exercises; the frequency and quality of training opportunities; the lack of dependable communications systems; and insufficient protective gear, including protective body armor and chemical protective gear, and the lack of armored vehicles.

Performance Testing and Training

According to DOE's *Protective Force Program Manual*, performance tests are used to evaluate and verify the effectiveness of protective force programs and to provide needed training. Performance tests can also identify protective systems requiring improvements, validate implemented improvements, and motivate protective force personnel. A force-on-force exercise is one type of performance test during which the protective force engages in a simulated battle against a mock adversary force, employing the weapons, equipment, and methodologies postulated in the DBT. DOE believes that force-on-force exercises are a valuable training tool for protective force officers. Consequently, DOE policy requires that force-on-force exercises must be held at least once per year at sites that

⁵Recent firearms inventories by the DOE-Inspector General have uncovered some problems with DOE and NNSA firearms inventories. For examples, see the following DOE-Inspector General Reports: *Inspection Report: Inspection of Selected Office of Security and Emergency Operations Firearms Inventories*, DOE/IG-0517, August 2001; *Inspection Report: Inspection of Firearms Internal Controls at Los Alamos National Laboratory*, DOE/IG-0587, February 2003; *Inspection Report: Firearms Internal Controls at the Lawrence Livermore National Laboratory*, DOE/IG-0621, September 2003.

possess Category I quantities of special nuclear material or Category II quantities that can be rolled up to Category I quantities.

We asked protective force members whether they had participated in force-on-force exercises during their service at their site and when they most recently had participated. Eighty-four of the 105 protective force officers we interviewed reported that they had participated in a force-on-force exercise, but 8 reported they had never participated during their service at the site, and 13 did not respond to this question. Of the 84 protective force officers that had participated,

- 60 reported participating within 12 months of the interview,
- 10 had participated within the last 2 to 5 years,
- one had participated 13 years ago,
- one could not remember the last force-on-force he had participated in, and
- 12 did not respond to the question.

We were unable to verify whether protective force officers' recollections were accurate because DOE sites are not required to track individual participation in force-on-force exercises. However, DOE's Office of Security and Safety Performance Assurance 2004 review of protective forces found that the average protective force officer is only likely to participate in a force-on-force exercise once every 4 to 6 years. DOE's Office of Security and Safety Performance Assurance has concluded that this frequency is not adequate for the training of protective forces.

DOE's 2004 protective force review also found that the frequency, quality, and rigor of performance tests and training exercises vary widely throughout the complex. Our interviews of protective force officers and protective force managers produced a similar result. For example, we asked protective force members whether they believed the force-on-force exercises they participated in were realistic and challenging. Only 23 of the 84 protective force officers that had participated in these exercises believed they were realistic while 23 stated they were somewhat realistic. In contrast, 38 officers believed that the force-on-force exercises they had participated in were not realistic. Twenty officers did not respond to the question. In addition, 33 of the 84 protective force officers reported that

safety considerations interfered with the realism of the force-on-force exercises with some protective force officers stating that they were limited in the tactics they could employ. For example, some protective force officers stated that they were not allowed to run up stairwells, climb fences, or exceed the speed limit in patrol vehicles. Some protective force officers at one site reported that for safety reasons they were no longer allowed to deploy on the roof of a facility although this position provided a significant advantage over adversaries approaching the facility. Some contractor protective force managers agreed that safety requirements limited the kind of realistic force-on-force training and other forms of realistic training that are needed to ensure effective protective force performance.

More broadly, most of the 105 protective force officers reported some negative attitudes about the training they had received. Specifically, 85 of the 105 protective force officers we interviewed identified a number of deficiencies with their training, especially regarding the frequency and quality of firearms and tactical training. The following deficiencies were identified:

- 43 protective force officers reported that there was a lack of adequate firearms training, with 13 officers noting that the only training they had was when they went to satisfy the semiannual DOE qualification requirements. Some officers also reported that they did not have first priority at firing ranges because other local or federal law enforcement agencies were using them.
- 42 protective force members, including 16 officers who are members of special response teams, reported that tactical training opportunities—where protective force officers move, shoot, and communicate as a unit—at their respective sites were very limited. A review of the standard DOE training curricula for Security Police Officer-IIs showed that these officers currently receive very little tactical training.

Communications Equipment

According to DOE's *Protective Force Program Manual*, protective force officers must have the capability to communicate information among themselves. The radios these officers use must be capable of two-way communications, provide intelligible voice communications, and be readily available in sufficient numbers to equip protective force personnel. In addition, a sufficient number of batteries must be available and maintained

in a charged condition to support routine, emergency, and response operations.

Protective force officers at all five of the sites we visited reported problems with their radio communications systems. Specifically, 66 of the 105 protective force officers reported that they did not always have dependable radio communications, with 23 officers identifying sporadic battery life, and 29 officers reporting poor reception at some locations on site as the two most significant problems. In addition, some of the protective force officers believed that radio communications were not sufficient to support their operations and could not be relied on to transfer information between officers if a terrorist attack occurred. Site security officials at two sites acknowledged that efforts were under way to improve radio communications equipment. In addition, some security officials said other forms of communications, such as telephones, cellular telephones, and pagers, were provided for protective forces to ensure that they could communicate effectively.

Protective Body Armor

DOE's *Protective Force Program Manual* requires that Security Police Officer-IIs and -IIIs wear body armor or that body armor be stationed in a way that allows them to quickly put it on to respond to an attack without negatively impacting response times. At one site, we found that most Security Police Officer-IIs had not been issued protective body armor because the site had requested and received in July 2003 a waiver to deviate from the requirement to equip all Security Police Officer-IIs with body armor. The waiver was sought for a number of reasons, including the (1) increased potential for heat-related injuries while wearing body armor during warm weather, (2) increased equipment load that armor would place on protective force members, (3) costs of acquiring the necessary quantity of body armor and the subsequent replacement costs, and (4) associated risks of not providing all Security Police Officer-IIs with body armor could be mitigated by using cover provided at the site by natural and man-made barriers. According to a site security official, this waiver is currently being reviewed because of the increased threat contained in the 2004 DBT.

Special Response Team Capabilities

Security Police Officer-IIIs serve on special response teams responsible for offensive operations, such as hostage rescue and the recapture and recovery of special nuclear material. Special response teams are often assigned unique equipment, including specially encrypted radios; body armor that provides increased levels of protection; special suits that enable officers to operate and fight in chemically contaminated environments;

special vehicles, including armored vehicles; submachine guns; light machine guns; grenade launchers; and precision rifles, such as Remington 700 rifles and Barrett .50 caliber rifles. These response teams are also issued breaching tools to allow them to reenter facilities to which terrorists may have gained access.

Each site with Category I special nuclear material must have a special response team capability available on a continuous basis. However, one ESE site does not have this capability and, instead, relies on another organization, through a formal memorandum of understanding, to provide a special response team. This arrangement, however, has not been comprehensively performance tested, as called for in the memorandum of understanding. Site officials state that they will soon conduct the first comprehensive performance test of this memorandum of understanding.

Chemical Protective Gear

DOE's *Protective Force Program Manual* specifies that all Security Police Officer-II and -IIIs be provided, at a minimum, with protective masks that provide for nuclear, chemical, and biological protection. Other additional chemical protective gear and procedures are delegated to the sites. At the four sites with special response teams, we found that the teams all had special suits that allowed them to operate and fight in environments that might be chemically contaminated. For Security Police Officer-IIIs, chemical protective equipment and expectations for fighting in chemically contaminated environments varied. For example, two sites provided additional protective equipment for their Security Police Officer-IIIs and expected them to fight in such environments. Another site did not provide additional equipment, but expected its Security Police Officer-IIIs to evacuate along with other site workers. Finally, the one site that did not have a special response team expected its Security Police Officer-IIIs to fight in chemically contaminated environments. However, the site provided no additional protective gear for its officers other than standard-duty issue long-sleeved shirts and the required protective masks.

Protective Force Vehicles

DOE's *Protective Force Program Manual* requires that protective force vehicles exhibit a degree of reliability commensurate with their intended functions and enhance the efficiency, speed, and safety of routine and emergency duties under all expected weather conditions. Vehicles must be maintained in serviceable condition, with preventive maintenance performed at intervals that meet or exceed the manufacturer recommendations.

Nearly half (14 of 30) of the protective force officers we interviewed at two sites reported that patrol vehicles were old, in poor physical condition, and not suitable for pursuit and recovery missions. Some reported maintenance as a significant problem, with one officer observing that more vehicles were in the shop than on patrol. Some protective force officers also reported that door handles on patrol vehicles did not work, which made it difficult for them to enter and exit the vehicles. A site security official told us that they had never had problems with the physical condition or maintenance of patrol vehicles, but did note that they had experienced difficulties in acquiring new vehicles.

We also found that ESE sites currently do not have the same level of vehicle protection as NNSA sites that also have Category I special nuclear material. Specifically, while not a DOE requirement, all NNSA sites with Category I special nuclear material currently operate armored vehicles. However, only one of the five ESE sites with Category I special nuclear material operated armored vehicles at the time of our review. One other ESE site was planning to purchase armored vehicles.

DOE and ESE Officials Need to Take Several Prompt and Coordinated Actions to Address the New DBT Requirements by 2008

To successfully defend against the much larger terrorist threat contained in the 2004 DBT by October 2008, DOE and ESE officials recognize that they need to take several prompt and coordinated actions. These include the transformation of current protective forces into an “elite force,” the development and deployment of new security technologies, the consolidation and elimination of special nuclear material, and organizational improvements within ESE’s security program. However, because these initiatives, particularly an elite force, are in early stages of development and will require significant commitment of resources and coordination across DOE and ESE, their completion by the October 2008 DBT implementation deadline is uncertain.

DOE Proposes Creating an “Elite Force” to Protect Its Sites in the New Threat Environment

DOE officials believe that the way its sites, including those sites managed by ESE, currently train their contractor-operated protective forces will not be adequate to defeat the terrorist threat contained in the 2004 DBT. This view is shared by most protective force officers (74 out of 105) and their contractor protective force managers who report that they are not at all confident in their current ability to defeat the new threats contained in the 2004 DBT. In response, DOE has proposed the development of an “elite force” that would be patterned after the U. S. military’s Special Forces.

However, creating this elite force is a complex undertaking and will be a challenge to fully realize by the October 2008 implementation deadline.

Even before the issuance of the 2004 DBT, DOE had become concerned about protective force preparedness because of intense demands placed on protective forces following the September 11, 2001, terrorist attacks. The need to increase security at DOE sites as rapidly as possible following the 2001 attacks meant that DOE protective forces worked extensive overtime. DOE's Inspector General, DOE's Office of Security and Safety Performance Assurance, and GAO reported on the potential for large amounts of protective force overtime to increase fatigue, reduce readiness, and reduce training opportunities for protective forces.⁶

In recognition of this situation, in September 2003, the Secretary of Energy directed DOE's Office of Performance Assurance and Independent Assessment, now a part of the Office Security and Safety Performance Assurance, to conduct a special review to determine the effectiveness of the management of protective forces and protective force capabilities. This classified review, which was issued in June 2004 and covered five NNSA sites and one ESE site, found that the current organization and tactics of DOE protective forces need improvement to deal with possible terrorist threats. Historically, DOE protective forces had been more concerned with a broad range of industrial security and order-keeping functions than with preparation to conduct a defensive battle against a paramilitary attacker, as is described in the 2004 DBT. The June 2004 review recommended a shift to an aggressive military-like, small-unit, tactical defense posture, which included enhanced tactical training standards to allow protective forces to move, shoot, and communicate effectively as a unit in a combat environment. The review also recommended more frequent, realistic, and rigorous force-on-force performance testing and training for the department's protective forces.

Based on this review, the Secretary of Energy proposed transforming DOE's protective force that safeguards special nuclear material into an "elite force" with training and capabilities similar to the military's Special Forces units. Subsequently, in June 2004, the Deputy Secretary of Energy

⁶*Audit Report: Management of the Department's Protective Forces*, DOE/IG-0602, Department of Energy Office of Inspector General, June 2003; *Department of Energy Protective Force Management and Capabilities (U)*, Office of Security and Safety Performance Assurance, (Washington, D.C.: June 28, 2004); [GAO-04-623](#).

directed the formation of a Protective Forces Working Group to formally review missions, standards, and current protective force status as the basis for developing recommendations on policy, training, and equipment that, if enacted, could serve as the basis for creating an elite force. This working group consisted of representatives from DOE's Office of Security and Safety Performance Assurance, NNSA, and ESE's Office of Environmental Management. In August 2004, the working group recommended a set of near-term actions that could be used to elevate protective force capabilities. These included instituting more demanding medical and physical fitness standards, increasing tactical training, and reorganizing protective forces into tactically cohesive units. In October 2004, the working group also recommended considering federalizing DOE protective forces as a long-term option. In January 2005, the Deputy Secretary of Energy endorsed the report's findings and directed that implementation actions begin.

Most protective force officers we interviewed generally support some of the ideas embodied in the elite force concept. Specifically, most protective force officers (74 out of 105) at the ESE sites we visited reported that they are not at all confident in their current ability to defeat the new threats contained in the 2004 DBT. In particular, some protective force officers believed that they would be outgunned and overwhelmed by the terrorist force identified in the 2004 DBT. In addition, some feared they could be surprised by a large terrorist force because of the sites' security strategy and the physical layout of their sites. Some sites are already responding to the elite force concept by increasing tactical training, and others plan to institute "training relief shifts," which will increase the amount of time protective force officers have available for uninterrupted training. Some sites also have ambitious plans for constructing new facilities to enable increased tactical training.

Nevertheless, despite broad support and some sites' progress, DOE's proposal for an elite force remains largely in the conceptual phase. DOE has developed a preliminary draft implementation plan that lays out high-level milestones and key activities, but this plan has not been formally approved by the Office of Security and Safety Performance Assurance. The draft implementation plan recognizes that DOE will have to undertake and complete a number of complex tasks in order to develop the elite force envisioned. For example, DOE will have to revise its existing protective forces policies to incorporate, among other things, the increased training standards that are needed to create an elite force. This may be a time-consuming effort.

As we reported in April 2004, the DOE policy process emphasizes developing consensus through a laborious review and comment process by program offices. We found that this policy process contributed to the nearly 2 years it took the department to develop DOE's first post-September 11, 2001, DBT. Likewise, DOE has been working on a streamlined overall security policy for nearly 2 years. Once this streamlined policy is formally issued, now scheduled for summer 2005, DOE's draft implementation plans for an elite force call for the new policy to immediately undergo revision to incorporate elements of the elite force concept. DOE's Office of Security has not yet identified a time frame for completing these actions. In addition, DOE officials believe that broader DOE policies will have to be revised. For example, DOE security officials, as well as contractor protective force managers, see some DOE health and safety policies and practices as an impediment because they do not allow the kind of realistic and physically demanding training that is required for an elite force. According to these officials, revising these policies will require broad, high-level support within DOE. Furthermore, some DOE protective force requirements, such as medical, physical fitness, and training standards are mandated by DOE regulations. Changing these regulations, according to a DOE security official, would require DOE to follow rule-making procedures. All these protective force policies and regulations, as well as broader DOE policies are contained in collective bargaining agreements between protective force unions and protective force contractors and in protective force contracts, which also will need to be modified to create the kind of elite force that DOE believes is necessary to defeat the 2004 DBT.

Some site security officials recognize that they will have to carefully craft transition plans for currently employed protective force officers who may not be able to meet the new standards required for an elite force. Some of these officials have expressed concern about the ability of some protective force officers to meet more rigorous physical and training standards that are likely to be part of an elite force. DOE field security officials and contractor protective force managers likewise have expressed concern about finding ways for less capable protective force officers to move into different roles or retire from service with a sense of dignity. Because all the protective forces at the five ESE sites we visited operated, at the time, under separate contracts and separate collective bargaining agreements, there is no uniform benefit or retirement plan for protective forces, and these benefits, according to one contractor security official, differ considerably among sites. Some contractor protective force managers recognized that they needed such mechanisms as early retirement

incentives and more attractive retirement packages to make the effective transition to an elite force. They believed, however, that they would not be able to provide these mechanisms, most of which are quite expensive, without DOE's help. Officials from the one protective force contractor, which had a placement and income protection program for protective force officers who could no longer meet existing DOE requirements, said that payouts from the program have far exceeded contributions and that the program will have to be restructured in the near future.

Given these complexities, DOE security officials recently told us that implementing all the measures associated with the elite force concept will take about 5 years to complete. With this time line, the development of the elite force will be under way by the new DBT's implementation deadline of October 2008, but the full benefit of an elite force, according to DOE's own preliminary plans, will not be realized until fiscal year 2010.

DOE Believes Security Technologies Can Improve the Effectiveness of Protective Forces

DOE is seeking to improve the effectiveness and survivability of its protective forces through the development and deployment of new security technologies. The department believes technologies can reduce the risk to protective forces in case of an attack and provide additional response time to meet and defeat an attack. Many of the ESE sites we visited currently possess some advanced security technology. For example, all sites operate central alarm stations that often integrate hundreds of alarms and dozens of sensors, such as video cameras and infrared and microwave detection systems, as well as redundant communications systems. Some sites also have thermal imaging sensors, which can detect adversaries at long ranges and in all types of weather. Some of these sensors have data links that allow the information to be rapidly shared. One site deploys classified devices that can immobilize or delay the movement of an adversary.

DOE officials believe that additional technology can further enhance site security. The Office of Security and Safety Performance Assurance is assisting sites in identifying and deploying existing technologies to enhance protection systems, principally through the following programs:

- *Technology and Systems Development Program.* DOE has funded this program for many years, although funding has been reduced in recent years. Specifically, DOE provided over \$20 million for this program in fiscal year 2004. However, DOE only requested \$14.5 million for this program in fiscal year 2006—about 1 percent of the entire DOE security program budget. Moreover, the program has had only limited success in

developing technologies that can actually be deployed. The Director of DOE's Office of Security and Safety Performance Assurance recently stated that DOE has not yet taken the formal steps necessary to coordinate investment in emerging security technologies to ensure they are deployed at DOE sites in a timely manner.

- *Site Assistance Visit Program.* Immediately after the issuance of the 2004 DBT, DOE's Office of Security and Safety Performance Assurance embarked on site assistance visits—a targeted effort to encourage the use of technologies that could offset the more costly manpower-intensive approaches needed to meet the more demanding requirements of the DBT. These site assistance visits focus on new and emerging security technologies. Each site visit lasts approximately 2 weeks and consists of exercises and simulations designed to evaluate each site's preliminary plans for meeting the new DBT and to demonstrate how technologies can assist in countering the 2004 DBT in a cost-effective manner. DOE conducted these visits between October 2004 and April 2005. Four of the five ESE sites we examined have received these visits. DOE's Office of Security and Safety Performance Assurance completed the final report on the results of the site assistance visits in May 2005. DOE plans to use the results of these visits to help justify its fiscal year 2007 budget.

Even before the site assistance visits, ESE sites were actively considering advanced security technologies. For example, at least two ESE sites are considering installing automatic weapons that can be operated from remote, secure locations—known as remotely operated weapons systems within DOE. A few ESE protective forces also supported this push toward technology, especially technology that allows more timely detection of adversaries. Specifically, 16 of the 105 protective force officers we interviewed said they needed enhanced detection technologies that would allow adversaries to be detected and engaged at much greater ranges than is currently possible at most sites.

ESE's Strategy for Meeting the New DBT Relies Heavily on the Consolidation of Special Nuclear Materials

ESE's current strategy for meeting the October 2008 deadline for compliance with the 2004 DBT relies heavily on the consolidation and elimination of special nuclear materials between and among other ESE sites. At all five of the ESE sites with Category I special nuclear material, material consolidation and elimination are important goals for the site and the responsible DOE program office and are inextricably tied to security plans. However, neither ESE nor DOE has developed a comprehensive,

departmentwide plan to achieve the needed cooperation and agreement among the sites and program offices to consolidate special nuclear material, as we recommended in our April 2004 report. In the absence of such a comprehensive, coordinated plan, completing some of these significant activities by the October 2008 DBT implementation deadline is unlikely. In particular:

- *Savannah River Site.* Currently, special nuclear material is stored in three separate, widely dispersed areas at the Savannah River Site—an Office of Environmental Management (EM) site. In November 2004, EM directed the site to consolidate all its current and future storage of Category I special nuclear material into a single area by fiscal year 2007. This consolidation will free up over 100 protective force officers who currently guard facilities at the sites' two other areas. It will also allow for a substantially increased protective force presence at the single remaining area and could save the site over \$100 million in expected costs to implement measures to defend the site against the 2004 DBT.
- *Hanford Site.* Hanford, another EM site, had plans to transfer most of its special nuclear material to the Savannah River Site by the end of fiscal year 2006. However, a number of factors threaten to delay this transfer of material. These factors include (1) NNSA's Office of Secure Transportation's shipping and load restrictions on transporting special nuclear material across the United States, (2) the Savannah River Site's inability to store some of Hanford's special nuclear material in its present configuration, and (3) the Savannah River Site's current lack of facilities to permanently dispose of Hanford's special nuclear material. Faced with these challenges, EM decided in February 2005 to postpone shipping material from Hanford until these issues could be resolved. Hanford had begun planning for such a contingency, but the site will now have to expend additional funds of about \$85 million annually to protect these materials against the 2004 DBT.
- *Idaho National Engineering and Environmental Laboratory and Argonne National Laboratory-West.*⁷ Managed by the Office of Nuclear Energy, Science and Technology, the Idaho National Engineering and Environmental Laboratory had removed—by NNSA's Office of Secure Transportation—its currently known Category I special nuclear material

⁷The two Idaho sites were consolidated as a single site, now known as the Idaho National Laboratory, in February 2005.

from its single Category I storage facility in May 2005. Removal will allow a substantial number of its protective forces to transfer to the nearby Argonne National Laboratory-West site, which has a continuing Category I special nuclear material mission. These additional protective forces will be critical to helping the site meet the 2004 DBT. However, a recent DOE site assistance visit suggested that several other facilities at the Idaho National Engineering and Environmental Laboratory may have some previously unrecognized Category I special nuclear material. Site security officials report that they are trying to resolve these issues with DOE's Office of Security and Safety Performance Assurance. If any of these other Idaho National Engineering and Environmental Laboratory facilities do have Category I special nuclear material, they will require additional protection, which could severely damage the current DBT implementation plans for both Idaho sites. In addition, because of its remote location, the robust design of some of its facilities, its large protective force, and extensive training facilities, the Idaho National Engineering and Environmental Laboratory is now being evaluated as a potential future consolidation location for NNSA Category I special nuclear material.

- *Oak Ridge National Laboratory.* Oak Ridge National Laboratory, an Office of Science Site, plans to eliminate its Category I special material. Current plans call for down-blending this material in place to less attractive forms and for extracting medically useful isotopes that may help treat certain forms of cancer. The Office of Nuclear Energy, Science and Technology is responsible for this down-blending program. However, the costs for this program have risen steeply, even without the additional security costs of the meeting the 2004 DBT. In addition, the Office of Nuclear Energy, Science and Technology and the Office of Science have not formally agreed on which program office will bear the brunt of the estimated \$53 million annual security costs required to meet the implementation deadline for the 2004 DBT. If these issues can be resolved, down-blending operations are scheduled to begin in fiscal year 2009 and to be completed in fiscal year 2012. If down-blending operations do not take place, Oak Ridge National Laboratory will face high additional security costs—approaching an additional \$43 million each year, according to preliminary site estimates—as long as the material remains on-site.

ESE's Headquarters Security Organization Is Not Well Suited to Meet the Challenges of the 2004 DBT

ESE's current organization is not well suited to meeting the challenges associated with implementing the 2004 DBT. First, ESE lacks a formally appointed senior security advisor or a centralized security organization. In contrast, NNSA has such a position. Specifically, Title 32 of the National Defense Authorization Act for Fiscal Year 2000, which created NNSA, established the position of Chief, Defense Nuclear Security, to serve as the primary security advisor to the NNSA Administrator. The Chief is responsible for the development and implementation of NNSA security programs, including the physical security for all NNSA facilities. Over the past several years, ESE has recognized the need for such a position and has sought to fill the security advisor role through the use of employees temporarily detailed from other organizations. For example, beginning in 2004, a detailee from the Office of Security and Safety Performance Assurance has served as the Acting Director for ESE Security. The current acting director was preceded by a visiting White House Fellow. However, the position of the Director for ESE Security has no programmatic authority or staff. This lack of authority limits the director's ability to help facilitate ESE and DOE-wide cooperation on such issues as material down-blending at Oak Ridge National Laboratory and material consolidation at other ESE sites.

Second, ESE does not have a consolidated headquarters security office. In April 2005, the recently confirmed ESE Under Secretary stated that ESE was composed of "institutional 'stovepipes'" and that this structure has hampered strategic management within ESE. ESE has explored creating a consolidated headquarters security office, but each of the three program offices we examined continues to maintain its own headquarters security offices. These offices, however, are organized and staffed differently. For example, the Office of Environmental Management's headquarters security office has more than 17 professional security personnel on staff. In contrast, the headquarters offices of Science and of Nuclear Energy, Science and Technology each have only one and two security professionals on staff, respectively. For the Office of Nuclear Energy, Science and Technology this situation is problematic because its security responsibilities are increasing with the consolidation of two of its sites into the Idaho National Laboratory and with the Oak Ridge National Laboratory's down-blending program. Indeed, safeguards and security funding is a much larger percentage of the Office of Nuclear Energy, Science and Technology's total budget—\$75 million out of a total fiscal year 2006 budget request of \$511 million, about 15 percent—than it is for either the Office of Science or the Office of Environmental Management. As a result, according to the EM Security Director and Acting Director, ESE

security, the Environmental Management security office provides informal support to the other ESE programs offices, including the Offices of Nuclear Energy, Science and Technology and Science.

Conclusions

Successfully defending against the increased terrorist threat contained in the 2004 DBT will require a significant coordinated effort by DOE, ESE, and the ESE sites that contain Category I special nuclear material. While ESE sites are not required to meet the requirements of the 2004 DBT until October 2008, we believe that ESE needs to take action to correct weaknesses with its current training and equipment practices. Addressing these issues will put ESE protective forces in a better position to defend their sites, in the short run, while DOE and ESE press ahead on the broader initiatives, such as the elite force concept and materials consolidation that they believe will be necessary to meet the requirements of the 2004 DBT. While we support DOE's and ESE's broader initiatives, we believe that these initiatives cannot be successfully implemented without a more strategic approach. Such an approach will need to include a comprehensive plan for all of the initiatives DOE and ESE are considering and will need to be supported by a sound ESE management structure that has sufficient authority to ensure coordination across all ESE program offices that have Category I special nuclear material.

Recommendations for Executive Action

In order to ensure that DOE and ESE protective forces can meet the new terrorist threat contained in the 2004 DBT, we are making the following five recommendations to the Secretary of Energy:

- Develop a requirement for individual protective force officer participation in force-on-force exercises.
- Require that sites track protective force member participation in force-on-force exercises.
- Take immediate action to correct weaknesses in protective force equipment at ESE sites by providing the following where needed:
 - dependable radio communications,
 - body armor,

-
- chemical protective gear,
 - special response team capabilities, and
 - vehicles that provide enhanced protection for protective forces.
 - Develop and implement a departmentwide, multiyear, fully resourced implementation plan for meeting the new 2004 DBT requirements that includes detailed plans for
 - the creation of an elite force through the revision of existing DOE protective force policies and practices,
 - the development and deployment of enhanced security technologies, and
 - the transportation and consolidation of special nuclear materials.
 - Require the Under Secretary, ESE, to establish a security organization to oversee the development, implementation, and coordination of ESE, and broader DOE efforts, to meet the 2004 DBT.

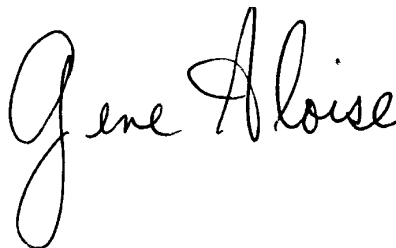
Agency Comments and Our Evaluation

We provided DOE with a copy of this report for review and comment. DOE stated that it concurred with the report and accepted our recommendations. In that context, DOE provided an update on the actions it anticipated would address our recommendations. While we believe that most of DOE's anticipated actions will be responsive to our recommendations, we are concerned about DOE's response to our recommendation that it develop a departmentwide, multiyear, fully resourced implementation plan for meeting the 2004 DBT requirements. Specifically, in responding to this recommendation, DOE cited only individual efforts to address the development of an elite force, the deployment of enhanced security technologies, and the consolidation of special nuclear material, not the development of a comprehensive plan. While each of these efforts is important, as we demonstrated in our report, the success of these efforts requires close coordination across numerous DOE, ESE, as well as NNSA organizations. We continue to believe that DOE cannot be successful in meeting the requirements of the 2004 DBT by its deadline of October 2008 without an integrated effort that is built around a comprehensive plan. DOE also provided three additional technical changes

that we have incorporated. DOE's letter commenting on our draft report is presented in appendix II.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to the Secretary of Energy, the Director of the Office of Management and Budget, and appropriate congressional committees. We also will make copies of this report available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have any questions about this report or need additional information, please contact me at (202) 512-3841 or aloise@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix III.

A handwritten signature in black ink that reads "Gene Aloise". The signature is written in a cursive style with a large, looped initial "G".

Gene Aloise
Director, Natural Resources
and Environment

Scope and Methodology

To obtain an overall perspective on how protective forces are prepared to defend Department of Energy (DOE) sites, we reviewed relevant literature focusing on Special Nuclear Materials, DOE's protective forces, and reports by DOE's Inspector General, as well as previous GAO reports. We conducted multiple rounds of interviews with DOE headquarters officials and conducted document reviews. We also met with DOE and protective force officials at five sites under the oversight of DOE's Office of the Under Secretary for Energy, Science and Environment: Oak Ridge National Laboratory, Idaho National Engineering and Environmental Laboratory, Argonne National Laboratory–West, the Savannah River Site, and the Hanford Site.

To determine the extent to which protective forces at Office of the Under Secretary for Energy, Science and Environment sites are meeting DOE's existing readiness requirements, we reviewed DOE policies to determine current requirements. We also reviewed pertinent literature about the factors that affect the readiness of military forces. We conducted structured interviews with 105 ESE protective force officers at the five ESE sites. We took several steps to ensure that we selected protective force officers independently and interviewed protective force officers with varying levels of experience. We interviewed a nonprobability sample of protective force officers from all five ESE sites.¹ Even though we are not generalizing to the population as a whole, at each site we randomly selected the protective force officers to interview. Random selection protects against selection bias and helps assure that the officers we interviewed were independent of site management. Specifically, we obtained a complete roster of all protective force officers at each site, which included the name, position, area assignment, and length of service for each protective force officer and identified the dates and potential time slots for the interviews during our site visits. We submitted modified rosters to the security contractor with the potential interview time slots, and the contractor resubmitted this roster with the availability of each protective force officer. We then stratified protective force officers by position, rank, and length of service and assigned them random numbers from a random number table. We also assigned random numbers, in sequence from the random number table, to protective force officers at each site, eliminating random numbers to ensure that no random number

¹Results from a nonprobability sample cannot be used to make inferences about a population because in such a sample some elements of the population being studied have no chance or an unknown chance of being selected as part of the sample.

was ever used twice. The random numbers assigned to protective force officers were placed in chronological order and officers were selected based on the lowest random number assigned, their availability during the prescribed time slots, position, area assignment, and length of service. Lastly, we informed the security contractor at each site of those protective force officers we wished to interview prior to our site visit. The structured interviews were administered by two-person teams to Security Police Officer-IIs and Security Police Officer-IIIs. We asked the officers questions designed to determine their readiness to defend the sites, including questions about their morale, training, and equipment. We also reviewed the training records and physical fitness qualifications of the 105 officers to determine if key elements of their training complied with existing DOE training requirements. In particular, we reviewed selected firearms and physical fitness qualifications to determine if these officers complied with existing DOE requirements and federal regulations.

Finally, we reviewed the equipment ESE protective forces use to determine if it met current DOE requirements. For example, we reviewed the minimum standard duty equipment that was employed at each site. We also checked to ensure that most sites' armorers were certified as required by DOE and, for most sites, we inspected armories, inspection records, as well as firearms inventory procedures. Finally, we reviewed the types of equipment that some sites are evaluating and/or planning to purchase.

To determine what actions DOE and ESE will need to take to successfully defend against the new threat identified in the 2004 DBT by DOE's implementation deadline of October 2008, we reviewed the 2004 DBT and associated guidance documents. We discussed the 2004 DBT with officials in DOE's Office of Security and Safety Performance Assurance and with officials in ESE's Offices of Environmental Management; Nuclear Energy, Science and Technology; and Science. Where available, we reviewed documents prepared by ESE and contractor officials on how they plan to comply with the 2004 DBT. We discussed DOE's initiative to transform its current protective force into an elite force with DOE's Office of Security and Safety Performance Assurance and security officials at all five of the ESE sites with Category I special nuclear material. We also discussed site assistance visits and their concentration on security technology with DOE security officials. Furthermore, we reviewed recent DOE congressional testimony on the role of security technology and reviewed the relevant portion of the fiscal year 2006 DOE budget submission. In addition, we discussed plans for special nuclear material consolidation with ESE program security officials and site security officials. Finally, we discussed

Appendix I
Scope and Methodology

ESE's security organization with DOE's Office of Security and Safety Performance Assurance, ESE's Acting Security Director, and ESE program security offices. We also reviewed congressional testimony given by the Under Secretary of Energy at his recent confirmation hearing.

Comments from the Department of Energy



DEPARTMENT OF ENERGY
Washington, DC 20585

OFFICE OF THE SECRETARY

July 1, 2005

Mr. Gene Aloise
Director, National Resources and Environment
U.S. Government Accountability Office
Washington, DC

Dear Mr. Aloise:

This is in response to your correspondence of June 21, 2005 requesting Department of Energy (DOE) comments on the Government Accountability Office's (GAO's) draft report GAO-05-611 titled "DOE's Office of Energy, Science and Environment Needs to Take Prompt Coordinated Action to Meet the New Design Basis Threat."

The Department appreciates the results of GAO's efforts with regard to this review and concurs in and accepts each of the recommendations as provided.

We would also like to take this opportunity to provide a brief update on DOE's current and anticipated actions which, we believe, will address the recommendations set forth in the report.

GAO Recommendation: Develop a requirement for individual protective force officer participation in force-on-force exercises.

DOE Response: DOE's Office of Security and Safety Performance Assurance (SSA) is in the process of revising several elements of DOE's protective force policy. SSA advises that these revisions will include specific requirements and standards for individual officer participation in force-on-force exercises. SSA expects these revisions to be entered into the DOE Directives System for Departmental review in December 2005.

GAO Recommendation: Require that sites track protective force member participation in force-on-force exercises.

DOE Response: The Office of Security and Safety Performance Assurance (SSA) advises that, as appropriate sections of DOE policy are revised to establish individual training and exercise participation standards, requirements for appropriate recording, tracking and review of individual officer participation will, likewise, be included. These revisions will also be targeted for a December 2005 submission into the DOE Directives System.



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GAO Recommendation: Take immediate action to correct weaknesses in protective force equipment at ESE sites by providing where needed:

- dependable radio communications
- body armor
- chemical protective spray
- special response team capabilities, and
- vehicles that provide enhanced protection for protective forces.

DOE Response: ESE will survey each site and ensure that protective force equipment is compliant with current DOE policy in each case.

GAO Recommendation: Develop and implement a department-wide, multi-year, fully resourced implementation plan for meeting the new DBT requirements:

DOE Response: Site implementation plans setting forth how each site plans to implement the requirements of the October 2004 Design Basis Threat are scheduled to be submitted by the end of July 2005.

GAO Recommendation: The implementation plan should include:

- The creation of an elite force through the revision of existing DOE protective force policies and practices.

DOE Response: The Office of Security and Safety Performance Assurance has advised that policy revisions regarding this initiative are scheduled to be completed for final Departmental approval no later than the end of December 2005.

- The development and deployment of enhanced security technologies.

DOE Response: To facilitate the Department's efforts to develop and deploy enhanced security technologies, the Office of Security and Safety Performance Assurance (SSA) conducted a series of Site Assistance Visits (SAVs) at key field sites to explore and recommend the use of new security technologies that could off-set more costly manpower-intensive approaches to meet the current DBT requirements. In addition, SSA has established a Center of Excellence for Technology Deployment to further ensure that new and recently developed technologies are rapidly deployed to help improve the effectiveness and efficiency of the Department's protection program.

- The transportation and consolidation of special nuclear materials.

DOE Response: In February 2005, the Secretary established the Nuclear Materials Disposition and Consolidation Coordinating Committee (NMDCC) which is chartered to identify opportunities for materials disposition and consolidation. Chaired by the

Secretary's National Security Advisor, the NMDCCC is charged with considering all aspects of material consolidation to include impacts on operations, transportation assets and realistic schedules.

GAO Recommendation: Require the Under Secretary, ESE, to establish a security organization to oversee the development, implementation, and coordination of ESE, and broader efforts, to meet the 2004 DBT.

DOE Response: The Under Secretary of Energy for Energy, Science, and Environment recently established the position of Director of Security for ESE. This position is responsible for overall management, oversight, and coordination of ESE security programs.

We would also like to take this opportunity to point out three areas of the report which we believe should be revised for greater accuracy:

1. Page 7 under "*Consolidation and Elimination of Materials*" the report states that neither the Office of Nuclear Energy, Science and Technology (NE) nor the Office of Science (SC) "has been able to agree on its share of security costs (at ORNL) which have increased significantly because of the new DBT."

DOE believes that it is clearly understood by both programs that SC is responsible for basic security needs at Oak Ridge National Laboratory and that NE is expected to fund any additional security requirements associated with the proposed down-blending project.

2. Page 12, paragraph 1, - "DOE believes force-on-force exercises are the most realistic representation of adversary attacks that can be used to evaluate the effectiveness of physical protection strategies and train protective forces."

With regard to training, DOE does believe that force-on-force training is the most realistic experience we can provide to protective force members and to tactical leaders to prepare them to meet an actual attack. However, with regard to evaluating the effectiveness of physical protection strategies, DOE employs a combination of force-on-force performance tests together with computer simulations, other performance testing and expert judgment to determine overall effectiveness.

3. Page 32, under "*Idaho National Engineering and Environmental Laboratory and Argonne National Laboratory – West*" – GAO may wish to reflect that these two sites were officially combined in February 2005 to form the Idaho National Laboratory (still under the management oversight of NE) and that the material cited to be removed by June 2005 was actually removed in May 2005.

Appendix II
Comments from the Department of Energy

4

Once again, thank you for the opportunity to comment on the draft report. Should you have any questions or need further clarification, please do not hesitate to contact me at 202-586-7700.

Sincerely,



Robert A. Walsh
Director of Security for
Energy, Science and Environment

GAO Contact and Staff Acknowledgments

GAO Contact

Gene Aloise (202) 512-3841

**Staff
Acknowledgments**

In addition to the individual named above, Don Cowan, Joyce Evans, Doreen Feldman, Jonathan Gill, Preston Heard, James Noel, Joe Oliver, and Carol Hernstadt Shulman made key contributions to this report.

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