



Testimony

Before the Subcommittee on National Security,
Emerging Threats, and International Relations,
Committee on Government Reform, House of
Representatives

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NUCLEAR SECURITY

Several Issues Could Impede the Ability of DOE's Office of Energy, Science and Environment to Meet the May 2003 Design Basis Threat

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Highlights of [GAO-04-894T](#), a testimony to Subcommittee on National Security, Emerging Threats, and International Relations, Committee on Government Reform, House of Representatives

Why GAO Did This Study

A successful terrorist attack on Department of Energy (DOE) sites containing the material used in nuclear weapons, called special nuclear material, could have devastating consequences for the site and its surrounding communities. Because of these risks, DOE needs an effective safeguards and security program. A key component of an effective program is the design basis threat (DBT), a classified document that identifies, among other things, the potential size and capabilities of terrorist forces. The terrorist attacks of September 11, 2001, rendered the then-current DBT obsolete resulting in DOE issuing a new version in May 2003.

GAO examined the issues that could impede the ability of DOE's Office of Energy, Science and Environment to fully meet the threat contained in the May 2003 DBT by the department's fiscal year 2006 deadline.

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What GAO Found

Five Office of Energy, Science and Environment sites contain substantial quantities of Category I special nuclear material, which consists of specified quantities of plutonium and highly enriched uranium. These sites have all developed plans for implementing the May 2003 DBT. However, there are several issues that could make it difficult to implement these plans by DOE's deadline of the end of fiscal year 2006. Specifically:

- Office of Energy, Science and Environment sites approved their DBT implementations plans in February 2004 before the Deputy Secretary of Energy issued his April 2004 guidance on which sites had improvised nuclear device vulnerabilities. As a result, some sites may be required to shift to enhanced protection strategies, which could be very costly. Consequently, the assumptions in the Office of Energy, Science and Environment DBT implementation plans may no longer be valid, and the plans may need to be revised.
- Office of Energy, Science and Environment site plans are based on the May 2003 DBT; however, DOE is now reexamining the May 2003 DBT and may revise it. Consequently, if the DBT is changed in a way that increases security requirements, some Office of Energy, Science and Environment sites may have to revise their implementation plans to reflect the need to provide for a more stringent defense.
- The plan for one Office of Energy, Science and Environment site was under funded. Specifically, officials in the Office of Nuclear Energy, Science and Technology, which is part of the Office of Energy, Science and Environment, told GAO that, for one site, no DBT implementation funding had been requested for fiscal year 2005.
- Finally, full implementation of these plans will require the successful resolution of complex organizational arrangements between various program and security offices.

Consequently, GAO continues to believe, as it recommended in April 2004, that DOE needs to develop and implement a departmentwide, multiyear, fully resourced implementation plan for meeting the new DBT requirements that includes important programmatic activities such as the closure of facilities and the transportation of special nuclear materials.

www.gao.gov/cgi-bin/getrpt?GAO-04-894T.

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

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss our work on physical security at the Department of Energy's (DOE) Office of Energy, Science and Environment (ESE). DOE's Office of Energy, Science and Environment comprises nine offices, including the Offices of Environmental Management (EM); Nuclear Energy, Science and Technology (NE); and Science (SC) and is headed by the Under Secretary for ESE.

DOE has long recognized that a successful terrorist attack on a site containing the material used in nuclear weapons—called special nuclear material—could have devastating consequences for the site and its surrounding communities. This is particularly true at sites that contain Category I special nuclear material, which consists of specified quantities of plutonium and highly enriched uranium in the form of assembled nuclear weapons and test devices, major nuclear components, and other high-grade materials such as solutions and oxides.

Because terrorist attacks could have such devastating consequences, DOE's effective management of its safeguards and security program, which includes developing safeguards and security policies, is essential to preventing an unacceptable, adverse impact on national security.¹ For many years, DOE has employed risk-based security practices. To manage potential risks, DOE has developed a design basis threat (DBT), a classified document that identifies the potential size and capabilities of terrorist forces. DOE's DBT is based on an intelligence community assessment known as the Postulated Threat. DOE requires the contractors operating its sites to provide sufficient protective forces and equipment to defend against the threat contained in the DBT. The DBT in effect on September 11, 2001, had been DOE policy since June 1999. DOE replaced the 1999 DBT in May 2003 to better reflect the current and projected terrorist threats that resulted from the September 11 attacks.

On April 27, 2004, we testified before this Subcommittee on several key aspects surrounding DOE's development and implementation of its May 2003 DBT.² Specifically, we reported on our examination of (1) the reasons

¹See U.S. General Accounting Office, *Nuclear Security: NNSA Needs to Better Manage Its Safeguards and Security Program*, [GAO-04-471](#) (Washington, D.C.: May 30, 2003).

²See U.S. General Accounting Office, *Nuclear Security: DOE Must Address Significant Issues to Meet the Requirements of the New Design Basis Threat*, [GAO-04-701T](#) (Washington, D.C.: April 27, 2004).

DOE needed almost 2 years to develop a new DBT, (2) the higher threat contained in the new DBT, and (3) the remaining issues that needed to be resolved for DOE to fully defend against the threat contained in the new DBT. With regard to the issues needing resolution for DOE to fully defend against the threat contained in the new DBT, we found that DOE had been slow to resolve a number of significant issues including developing DBT implementation plans and budgets to support these plans. The need to fully resolve these issues may affect the ability of its sites to fully meet the threat contained in the new DBT in a timely fashion. Consequently, we stated that DOE's deadline to meet the requirements of the new DBT by the end of fiscal year 2006 was probably not realistic for some sites.

Subsequently, you asked us to examine in more detail the issues that could impede ESE's ability to fully meet the threat contained in the new DBT by DOE's fiscal year 2006 deadline. To carry out our objective, we interviewed DOE and ESE officials, including EM, NE, and SC headquarters security officials, as well as field security officials. We also reviewed relevant documents these officials provided to us. In addition, we reviewed recent reports from DOE's Office of Independent Oversight and Performance Assurance for the ESE sites that contain Category I special nuclear material. We also relied on our previous work on DOE physical security conducted for this Subcommittee over the last 2 years. We performed our work from May 2004 to June 2004 in accordance with generally accepted government auditing standards.

In summary, ESE sites containing Category I special nuclear material have developed plans for implementing the May 2003 DBT. However, we believe there are several issues that could make it difficult to implement these plans by DOE's deadline of the end of fiscal year 2006. These specific issues are as follows:

- ESE sites approved their implementation plans during February 2004 before the Deputy Secretary of Energy issued his April 2004 guidance on which sites had improvised nuclear device vulnerabilities. As a result, some sites may be required to shift to enhanced protection strategies, which could be very costly. Consequently, the assumptions in the ESE site plans may no longer be valid, and the plans may need to be revised.
- ESE site plans are based on the May 2003 DBT; however, DOE is now reexamining the May 2003 DBT and may revise it. Consequently, if the DBT is changed to increase security requirements, some ESE offices may have to revise their implementation plans to reflect the need for a more stringent defense.

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- While ESE sites have developed implementation plans, even under the old assumptions, the plan for one site was under funded. Specifically, NE security officials told us that for one site no DBT implementation funding had been requested for fiscal year 2005.
 - Finally, full implementation of these plans will require the successful resolution of complex organizational arrangements between various program and security offices.

We continue to believe, as we recommended in April 2004, that DOE needs to develop and implement a department wide multiyear, fully resourced implementation plan for meeting the new DBT requirements that includes important programmatic activities such as the closure of facilities and the transportation of special nuclear materials.³

Background

Five ESE sites collectively contain substantial quantities of Category I special nuclear material. These include the following:

- the Savannah River Site in Savannah River, South Carolina, and the Hanford Site in Richland, Washington, which are managed by EM;
- the Idaho National Engineering and Environmental Laboratory and the Argonne National Laboratory-West which are located in Idaho Falls, Idaho, and are managed by NE; and
- the Oak Ridge National Laboratory in Oak Ridge, Tennessee, which is managed by SC.

Contractors operate each site for ESE. The ESE program offices that oversee these sites—EM, NE, and SC—have requested about \$397 million in fiscal year 2005 for security.

Two other organizations are important contributors to DOE's security program. The Office of Security in DOE's Office of Security and Safety Performance Assurance develops and promulgates orders and policies, such as the DBT, to guide the department's safeguards and security programs. The Office of Independent Oversight and Performance

³See U.S. General Accounting Office, *Nuclear Security: DOE Needs to Resolve Significant Issues Before It Fully Meets the New Design Basis Threat*, [GAO-04-623](#) (Washington, D.C.: April 27, 2004).

Assurance in DOE's Office of Security and Safety Performance Assurance supports the department by, among other things, independently evaluating the effectiveness of contractors' performance in safeguards and security. It also performs follow-up reviews to ensure that contractors have taken effective corrective actions and appropriately addressed weaknesses in safeguards and security.

The risks associated with Category I special nuclear materials vary but include the creation of improvised nuclear devices capable of producing a nuclear yield, theft for use in an illegal nuclear weapon, and the potential for sabotage in the form of radioactive dispersal. Because of these risks, DOE has long employed risk-based security practices. The key component of DOE's well-established, risk-based security practices is the DBT, a classified document that identifies the characteristics of the potential threats to DOE assets. The DBT traditionally has been based on a classified, multiagency intelligence community assessment of potential terrorist threats, known as the Postulated Threat. The DBT considers a variety of threats in addition to the terrorist threat. Other adversaries considered in the DBT include criminals, psychotics, disgruntled employees, violent activists, and spies. The DBT also considers the threat posed by insiders, those individuals who have authorized, unescorted access to any part of DOE facilities and programs. Insiders may operate alone or may assist an adversary group. Insiders are routinely considered to provide assistance to the terrorist groups found in the DBT. 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 sensors, physical barriers, hardened facilities and vaults, and heavily armed paramilitary protective forces equipped with such items as automatic weapons, night vision equipment, body armor, and chemical protective gear.

The effectiveness of the protective system 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 performance testing, in which the site's protective forces undergo simulated attacks by a group of mock terrorists.

The results of these assessments are documented at each site in a classified document known as the Site Safeguards and Security Plan. In addition to identifying known vulnerabilities, risks, and protection strategies for the site, the Site Safeguards and Security Plan formally acknowledges how much risk the contractor and DOE are willing to accept. Specifically, for more than a decade, DOE has employed a risk management approach that seeks to direct resources to its most critical assets—in this case Category I special nuclear material—and mitigate the risks to these assets to an acceptable level. Levels of risk—high, medium, and low—are assigned classified numerical values and are derived from a mathematical equation that compares a terrorist group's capabilities with the overall effectiveness of the crucial elements of the site's protective forces and systems.

Historically, DOE has striven to keep its most critical assets at a low risk level and may insist on immediate compensatory measures should a significant vulnerability develop that increases risk above the low risk level. Compensatory measures could include deploying additional protective forces or curtailing operations until the asset can be better protected. In response to a September 2000 DOE Inspector General's report recommending that DOE establish a policy on what actions are required once a high or moderate risk is identified, in September 2003, DOE's Office of Security issued a policy clarification stating that identified high risks at facilities must be formally reported to the Secretary of Energy or Deputy Secretary within 24 hours. In addition, under this policy clarification, identified high and moderate risks require corrective actions and regular reporting.

Through a variety of complementary measures, DOE ensures that its safeguards and security policies are being complied with and are performing as intended. Contractors perform regular self-assessments and are encouraged to uncover any problems themselves. DOE Orders also require field offices to comprehensively survey contractors' operations for safeguards and security every year. The Office of Independent Oversight and Performance Assurance in DOE's Office of Security and Safety Assurance provides yet another check through its comprehensive inspection program. All deficiencies identified during surveys and inspections require the contractors to take corrective action.

Reflecting the post-September 11 environment, the May 2003 DBT, among other things, identified a larger terrorist threat than did the 1999 DBT. It also expanded the range of terrorist objectives to include radiological, biological, and chemical sabotage. Key features of the 2003 DBT included the following:

- *Expanded terrorist characteristics and goals.* The 2003 DBT assumes that terrorist groups are the following: well armed and equipped; trained in paramilitary and guerrilla warfare skills and small unit tactics; highly motivated; willing to kill, risk death, or commit suicide; and capable of attacking without warning. Furthermore, according to the 2003 DBT, terrorists might attack a DOE facility for a variety of goals, including the theft of a nuclear weapon, nuclear test device, or special nuclear material; radiological, chemical, or biological sabotage; and the on-site detonation of a nuclear weapon, nuclear test device, or special nuclear material that results in a significant nuclear yield. DOE refers to such a detonation as an improvised nuclear device.
- *Increased the size of the terrorist group threat.* The 2003 DBT increases the terrorist threat levels for the theft of the department's highest value assets—Category I special nuclear materials—although not in a uniform way. Previously, under the 1999 DBT, all DOE sites that possessed any type of Category I special nuclear material were required to defend against a uniform terrorist group composed of a relatively small number of individuals. Under the 2003 DBT, however, the department judged the theft of a nuclear weapon or test device to be more attractive to terrorists, and sites that have these assets are required to defend against a substantially higher number of terrorists than are other sites. For example, a DOE site that, among other things, assembles and disassembles nuclear weapons, is required to defend against a larger terrorist group. Other DOE sites, such as an EM site that stores excess plutonium, only have to defend against a smaller group of terrorists. However, the number of terrorists in the 2003 DBT is larger than the 1999 DBT number. DOE calls this a graded threat approach.
- *Mandated specific protection strategies.* In line with the graded threat approach and depending on the type of materials they possess and the likely mission of the terrorist group, sites must now implement specific protection strategies for Category I special nuclear material. In addition, sites will have to develop, for the first time, specific protection strategies for facilities, such as radioactive waste storage areas, wastewater treatment, and science laboratories, against the threat of radiological, chemical, or biological sabotage.

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- *Addressed the potential for improvised nuclear device concerns.* The May 2003 DBT established a special team to report to the Secretary of Energy on each site's potential for improvised nuclear devices. Based on the team's advice, in April 2004 the Deputy Secretary of Energy designated whether a site had such a concern. This official designation was intended to help address the general dissatisfaction with previous DOE policies for improvised nuclear devices, knowledge of which was carefully controlled and not shared widely with security officials. For example, some EM sites had no information at all on their potential for this risk.

A Number of Issues May Affect the Ability of ESE Sites to Fully Meet the Threat Contained in the New DBT in a Timely Fashion

When we testified before this Subcommittee in April 2004, we stated that while DOE had issued the final DBT in May 2003, it had only recently begun to resolve a number of significant issues that could affect the ability of its sites to fully meet the threat in the new DBT in a timely fashion. These issues involved issuing additional DBT implementation guidance, developing DBT implementation plans, and developing budgets to support these plans. We noted that fully resolving all of these issues might take several years, and the total cost of meeting the new threats was currently unknown. Consequently, we stated, full DBT implementation could occur anywhere from fiscal year 2005 to fiscal year 2008, well beyond the department's goal of the end of fiscal year 2006. Because some sites would be unable to effectively counter the higher threat contained in the new DBT for up to several years, we stated that these sites should be considered to be at higher risk under the new DBT than they were under the old DBT.

After reviewing ESE's efforts to implement the May 2003 DBT at sites containing Category I special nuclear material, we continue to be concerned about whether DOE can meet its fiscal year 2006 deadline for full DBT implementation. Specifically, while ESE sites that contain Category I special nuclear material have developed plans for implementing the May 2003 DBT, as directed by the Deputy Secretary of Energy, we believe there are four issues that will make it difficult to implement these plans in a timely fashion.

First, ESE sites approved their implementation plans in February 2004 before the Deputy Secretary of Energy issued his guidance on which sites had improvised nuclear device vulnerabilities. As noted previously, the May 2003 DBT created a special team, composed of weapons designers and security specialists to report on each site's improvised nuclear device vulnerabilities. The results of this report were briefed to senior DOE officials in March 2004 and the Deputy Secretary of Energy issued

guidance, based on this report, to DOE sites in early April 2004. As a result, some sites may be required under the 2003 DBT to shift to enhanced protection strategies, which could be very costly. This special team's report may most affect ESE sites, because, in some cases, their improvised nuclear device potential had not previously been explored. In addition, ESE security officials told us that confusion exists about how or if this guidance applies to their sites, and they stated that they are working with officials from DOE's Office of Security to resolve this confusion. The Director of DOE's Office of Security and Safety Performance Assurance agreed that additional guidance will be necessary to resolve this confusion. Consequently, because ESE sites developed their plans well before this guidance was issued, the assumptions in their plans may no longer be valid and the plans may need to be revised.

Second, the ESE site implementation plans are based on the May 2003 DBT; however, DOE is now reexamining the May 2003 DBT and may revise it. In our April 2004 report, we expressed several concerns about the May 2003 DBT. In particular, we noted that some DOE sites may have improvised nuclear device concerns that, if successfully exploited by terrorists could result in a nuclear detonation. However, under the May 2003 DBT, DOE only required these sites to defend against a relatively small group of terrorists. Because we believed that DOE had not made a persuasive case for defending against a lower number of terrorists, we recommended that DOE reexamine how it applies the DBT to sites with improvised nuclear device concerns. Subsequently, in May 2004, the Secretary of Energy announced that the department would reexamine the DBT. Originally, this reexamination was to be completed by June 30, 2004. However, according to the Director of DOE's Office of Security and Safety Performance Assurance this effort will not be completed until August 6, 2004. In addition, the Director stated that the end result of this effort may only be a plan on how to revise the DBT. Consequently, if the DBT is changed in a way that increases security requirements, some ESE offices may have to revise their implementation plans to reflect the need to provide for a more stringent defense.

Third, in one case ESE does not have adequate resources. Specifically, while ESE sites have developed implementation plans, even under the old assumptions, the plan for one site was under funded. NE security officials told us that for one site no DBT implementation funding had been requested for fiscal year 2005, even though the site recognized that it needed to substantially increase its protective forces to meet the new DBT.

Finally, ESE faces a number of complex organizational issues that could make DBT implementation more difficult. Specifically:

- EM's Security Director told us that for EM to fully comply with the DBT requirements in fiscal year 2006 at one of its sites, it will have to close and de-inventory two facilities, consolidate excess materials into remaining special nuclear materials facilities, and move consolidated Category I special nuclear material, which the National Nuclear Security Administration's Office of Secure Transportation will transport, to another site. Likewise, the EM Security Director told us that to meet the DBT requirements at another site, EM will have to accelerate the closure of one facility and transfer special nuclear material to another facility on the site. Because the costs to close these facilities and to move materials within a site are borne by the EM program budget and not by the EM safeguards and security budget, obtaining adequate funding could be difficult.
- At an Office of Science site, a building that contains Category I special nuclear material is managed and protected by the Office of Science, while the material itself belongs to NE. NE is currently planning to remove the material and process it. After processing, the material will no longer have to meet the protection requirements for Category I special nuclear material. Accomplishing this task will require additional security measures, the planning and funding for which will have to be carefully coordinated between the Office of Science and NE.
- NE sites face similar issues. For example, the NE Security Director told us that EM currently owns all of the Category I special nuclear material stored at an NE site. EM is currently planning to have the National Nuclear Security Administration's Office of Secure Transportation transport this material to several other locations by the end of January 2005. According to the NE site Security Director, NE is counting on the successful removal of this special nuclear material to meet the department's fiscal year 2006 deadline for implementing the May 2003 DBT. To implement the May 2003 DBT, NE also needs to consolidate two of its sites into a single national laboratory, which will, among other things, ensure that it has an adequate number of protective forces. If the EM special nuclear materials are not moved and this consolidation is not achieved, the number of protective forces at this site may not be adequate.

Because of the importance of successfully integrating multiple program activities with security requirements, we continue to believe, as we recommended in April 2004, that DOE needs to develop and implement a departmentwide, multiyear, fully resourced implementation plan for meeting the May 2003 DBT requirements that includes important

programmatic activities such as the closure of facilities and the transportation of special nuclear materials.

Mr. Chairman, this concludes our prepared statement. We would be happy to respond to any questions that you or Members of the Subcommittee may have.

GAO Contact and Staff Acknowledgments

For further information on this testimony, please contact Robin M. Nazzaro at (202) 512-3841. James Noel and Jonathan Gill made key contributions to this testimony. Don Cowan and Preston Heard also made contributions to this testimony.

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