



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

Audit Report

The Department's Energy, Science,
and Environment Sites' Implementation
of the Design Basis Threat




Department of Energy

Washington, DC 20585

December 14, 2006

MEMORANDUM FOR THE SECRETARY

FROM:


Gregory H. Friedman
Inspector General

SUBJECT:

INFORMATION: Audit Report on "The Department's Energy, Science, and Environment Sites' Implementation of the Design Basis Threat"

BACKGROUND

The Department of Energy uses the "Design Basis Threat" (DBT) process to guide and manage its safeguards and security program throughout the complex. The DBT identifies the most credible threats posed by adversaries to highly sensitive and classified Departmental assets and operations. In essence, the DBT sets the standards that site safeguards and security programs are required to meet in order to protect Departmental operations and assets, including special nuclear material (SNM) and classified information. Post-September 11, 2001, the Department initiated a comprehensive effort to update its DBT to address the new challenges related to those events.

The revised DBT incorporates a two-phased approach with enhanced security requirements that were to be in place, site-by-site, by the end of Fiscal Year (FY) 2006; and, even more stringent requirements to be met by the end of FY 2008. Departmental guidance for implementing the DBT stressed the need for cost-effective and permanent measures, including the increased use of technology to meet security requirements.

Sites engaged in the energy, science, and environmental (ESE) components of the Department's mission are required to comply with the DBT. This is especially important for those ESE sites that have substantial quantities of the most sensitive SNM—referred to as Category I SNM. In October 2005, we found that another component of the Department, the National Nuclear Security Administration, had experienced delays in implementing security upgrades. Because of the special importance of safeguarding Category I SNM, this audit was focused on determining whether those ESE sites with Category I SNM will meet the DBT requirements within the established target dates.

RESULTS OF AUDIT

We found that the ESE sites made significant progress in implementing measures necessary to meet the first phase of the DBT requirements that were due by the end of September 2006. However, the majority of ESE sites with Category I SNM were unlikely to meet the more stringent DBT provisions required by the end of FY 2008.



Specifically:

- One site's strategy for meeting DBT requirements relies on SNM consolidation. We found, however, that it is highly unlikely that this site will be able to ship all of its Category I SNM to the recipient site by the target date.
- Another site had not yet completed its plan for meeting the DBT requirements. In addition, a critical non-security project that was integral to the site's success in this area had been delayed for several years; and, it will not be available to carry out the site's planned approach to meeting the 2008 target date.
- A third site had experienced delays in implementing planned measures due to a lack of funding to support DBT implementation plans. In addition, the site had experienced delays in deploying technologies not previously used at the Department.

Our audit did show that one site was on track to meet the FY 2008 target date for implementing the full requirements of the DBT. Notably, this was being accomplished through the extensive and successful use of proven technologies.

Various factors have limited the progress of ESE sites in meeting the FY 2008 target date requirements. These included (1) delays in resolving legal and public policy issues regarding inter-site consolidation of SNM, (2) an interpretation of the DBT policy that was inconsistent with its intent, and (3) a failure to update security plans to reflect changing conditions and the availability of more effective implementation strategies. For example:

- The Department established a Nuclear Materials Disposition and Consolidation Coordinating Committee to facilitate SNM consolidation. Yet, despite the efforts of this Committee, the Department had made no formal decision regarding material disposition and consolidation.
- Some sites and program offices had interpreted policy guidance to mean that if they eventually plan to remove Category I SNM from the site, they do not have to meet the DBT requirements that are to be implemented by the end of FY 2008 -- even if the material is likely to remain at the site well beyond the target date. This was inconsistent with the intent of the Department's policy, according to responsible Headquarters officials.
- Finally, ESE sites that had experienced delays had not: (i) updated their implementation plans to reflect those delays; and, (ii) identified alternative strategies for meeting the established implementation target date.

Clearly some of the Category I SNM located at ESE sites had been declared excess to national security needs. This did not, however, obviate the need to sustain security efforts to safeguard the material from a national security perspective and to protect the health and safety of employees and the public. Until the requirements of the DBT policy are met at all its sites, the Department lacks assurance that high-risk materials and operations are adequately protected. Furthermore, delays in the material consolidation

process and in planned upgrades may result in additional costs needed to implement interim security measures to compensate for these delays. This includes, specifically, the significantly increased cost of augmenting protective forces, matters that have been the subject of prior Office of Inspector General reports.

To facilitate the Department's implementation of its DBT process, the attached report includes specific recommendations to improve the integration and cost-effectiveness of the DBT activities, particularly at ESE sites.

Due to security vulnerability considerations, the report does not make a direct connection between the specific security findings and the related ESE sites.

MANAGEMENT REACTION

Management officials from the Offices of the Under Secretary of Energy and the Under Secretary for Science concurred with the audit recommendations. Management stated that Energy and Science sites have made significant progress toward meeting the DBT requirements that were to be completed by the end of September 2006 and are taking additional steps to meet the requirements of the next phase of the DBT process, that is, by the end of FY 2008. Management comments are included in their entirety in Appendix 3. In addition, we received technical comments from the Office of Health, Safety and Security and the Office of Nuclear Energy. These comments have been incorporated into the report where appropriate.

Attachment

cc: Deputy Secretary
Under Secretary for Energy
Under Secretary for Science
Administrator, National Nuclear Security Administration
Chief of Staff

REPORT ON THE DEPARTMENT'S ENERGY, SCIENCE, AND ENVIRONMENT SITES' IMPLEMENTATION OF THE DESIGN BASIS THREAT

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Design Basis Threat

Background

The Department of Energy (Department) develops and periodically updates the Design Basis Threat (DBT) policy, which reflects the most credible threats posed by adversary types to Departmental assets and operations. The resulting DBT document provides senior decision makers and site managers with the policy information needed to plan permanent safeguards and security upgrades; identify needed resources; and implement improved programs to successfully protect sensitive Department assets against defined threats, including terrorism.

In the aftermath of the events of September 11, 2001, the Department updated its DBT policy in May 2003 to reflect the new threat environment. The Department clarified the 2003 policy with additional requirements in an April 2004 Annex to the 2003 DBT. As part of this process, the Department established the end of Fiscal Year (FY) 2006 as the goal for fully implementing permanent security changes to site protection programs. The Department again revised its DBT policy in 2004 and 2005, with implementation of the 2005 DBT to be in effect by the end of FY 2008. Implementation of the 2005 DBT builds upon earlier mandated security program changes.

Implementation of the Design Basis Threat

The Department's Energy, Science, and Environment (ESE) sites with the most sensitive special nuclear materials (SNM), called Category I, are working to implement the DBT policy. ESE sites had made significant progress toward implementing the 2003 DBT. However, the sites have made limited progress in meeting the requirements of the 2005 DBT, which is to be implemented by the end of FY 2008.

At the time of our review, half of the sites met the full requirements of the 2003 DBT, including the 2004 Annex. Another site met modified requirements, as approved in an exception to the DBT policy granted by the Deputy Secretary. The final site has not completed all planned physical upgrades but has implemented compensatory measures to meet the 2003 DBT requirements.

Nonetheless, ESE sites have made limited progress toward meeting the 2005 DBT. Although the sites have expended considerable effort, in collaboration with the Office of Health, Safety and Security (HSS), to identify off-the-shelf technologies to improve the effectiveness of their security programs, the majority of the sites are not likely to meet the full requirements of the policy by the end of FY 2008.

Nuclear Materials Consolidation

One site's strategy for meeting the DBT requirements relies on SNM consolidation. In April 2006, the Department granted the site a three-year exception to the DBT policy requirements, based on the assumption that Category I SNM would be moved to another Departmental site by the end of FY 2009. However, it is unlikely that this goal can be met for several reasons. First, no site has the necessary approval to accept the material. Legal and public policy issues related to the shipping of SNM to another Departmental site cannot be resolved at the site level and have prevented the site from beginning the shipment of its SNM. Second, the Office of Secure Transportation has estimated that shipment of this material could take three to six years to complete, once the site is able to begin shipments, thereby extending the realistic completion of consolidation well beyond the FY 2009 goal.

Implementation of Security and Non-Security Projects

Another site has experienced delays in meeting the FY 2005 DBT requirements. First, this site's strategy to eliminate the Category I SNM from the site depends on implementation of a non-security project. However, several factors make it unlikely that the site can fully implement the current DBT by the end of FY 2008. First, the non-security project has not proceeded as originally planned, has been delayed for at least three years, and does not include contingency to recover scope and schedule. As a result, the site will have to protect Category I SNM until at least FY 2014. Second, the site has not yet completed its plan for meeting the current DBT. The analysis to determine the upgrades needed to meet the 2005 DBT requirements is not scheduled to be completed until early calendar year 2007, which is too late to support a budget request for FY 2008. Third, a detection technology the site planned to use has not fully met expectations, requiring additional analysis of alternatives to meet the requirements. The site is engaged in a collaborative effort with HSS to identify technologies that will meet the site's needs in a cost-effective manner.

Site officials stated that they should not be required to meet the full DBT policy requirements since, according to their interpretation of Departmental guidance, they believe the site is non-enduring as a result of their plan to eventually eliminate the Category I SNM. Consequently, this site has planned to request an exception from some requirements in the 2005 DBT policy.

Implementing Planned Measures

An additional site experienced delays in implementing planned measures. Specifically,

- The site is working to deploy several technologies, such as unmanned aerial vehicles and intrusion detection systems, which have not yet met site expectations. The site is working with HSS and technology manufacturers to address the issues. However, until the operational benefits of the technologies are known, the site cannot determine the number of protective force personnel it will need to meet the DBT requirements.
- As of August 2006, the site did not expect to receive requested funding in FY 2007 for DBT implementation. Therefore, the site reported that it will require two years after funding is received to implement its plan, making the earliest feasible implementation date FY 2009.
- HSS's review of this site's implementation plan questioned the categorization of SNM in several facilities. Program officials report that this issue is the subject of ongoing discussions between the site, program office, and HSS. Depending on how this issue is resolved, the site's DBT implementation plans may require significant changes to provide a higher protection level for the material if it is re-categorized.

Use of Technologies and Analysis

The last site is on track to implement the DBT requirements by the end of FY 2008. This site has relied heavily on technologies proven to be effective at other Departmental sites. In addition, the site has a strong analytical capability which has supported effective planning for implementing the DBT in a timely manner. Moreover, this site has successfully implemented SNM consolidation within the site, allowing it to meet the new requirements without a significant expansion of its protective forces.

**Completion of Planned
Implementation
Measures by the End
of FY 2008**

Delays in resolving barriers to inter-site material consolidation, site and program offices' interpretations of DBT policy and guidance, and a lack of plan updates are preventing sites from meeting DBT requirements. These factors are likely to result in sites asking for repeated exceptions to DBT requirements.

Consolidation Efforts

Although some sites have successfully consolidated SNM within their individual sites, inter-site SNM consolidation efforts have been delayed due to the Department's slow progress with preparing a strategic plan for, among other things, resolving the legal and public policy issues related to material consolidation. As of September 2006, the Department had not made a formal decision regarding material disposition and consolidation. The lack of progress in developing a consolidation strategy has adversely affected sites' plans for meeting DBT requirements. For example, between December 2003 and April 2006, one site was directed multiple times to change the entire basis for its implementation of the DBT. Its original plan to meet the DBT requirements was predicated on shipping the Category I SNM off-site. However, the site was subsequently directed to plan to retain the material through 2035 and, more recently, was directed to again plan on shipping the SNM off-site.

The Department established the Nuclear Materials Disposition and Consolidation Coordinating Committee (Committee) to coordinate nuclear materials disposition and consolidation. However, the Committee has not been able to make substantial progress in preparing a plan, in part, because of frequent changes in leadership of the Committee. Additionally, the Department has not developed a report on disposition alternatives for Congress that was due over four years ago, before the establishment of the Committee. This report must be completed before the Department can ship additional materials to a primary candidate site for consolidation. Until progress is made by the Department in resolving how it plans to consolidate SNM, site plans that rely on shipping material off-site to meet the DBT requirements cannot be effective. Therefore, these sites need to develop and implement alternative strategies and plans for meeting the DBT requirements by the established target date.

Interpretation of DBT Guidance

DBT policy requires all sites to meet the full requirements by the established target dates for each policy revision, i.e., the end of FYs 2006 and 2008. However, sites that plan to remove or eliminate the SNM after the target dates may choose to use temporary measures, rather than permanent facility upgrades, so long as those measures fully comply with the policy and are more cost-effective than permanent upgrades. Sites may also request approval to delay implementation of measures but must get approval for such delays from the appropriate senior levels of the Department, if the delays result in increased security risk at the site.

However, we found that sites and program offices have interpreted the guidance to mean that if they plan to eventually remove or eliminate SNM, even if well beyond the FY 2008 target date, they do not have to meet the requirements. As a result, the sites are likely to require an indefinite number of approved deviations from the requirements until the material can be eliminated from the sites. This was inconsistent with the intent of the Department's policy, according to responsible Headquarters officials. For example, one site's officials stated that, since it is a non-enduring site, they should not need to meet the requirements of the 2005 DBT policy and plan to request a deviation from the policy. Nonetheless, the site will have Category I SNM until 2014 or beyond. Another site planned to use a less demanding protection strategy because they also plan to eventually eliminate the material from the site. However, the site is likely to have Category I SNM for at least one to four years after the implementation target date. This site is currently operating under an approved deviation from the DBT requirements which is effective through April 2009. The site will likely require additional deviations since it will have material on-site beyond 2009.

We recognize that it may not be cost-effective for sites to implement permanent upgrades to facilities containing Category I SNM that will eventually be removed or eliminated from the site. However, the two sites discussed above have either not implemented temporary measures or have not determined what, if any, additional measures will be implemented until the Category I SNM is eliminated from the sites, as provided for in the DBT policy.

Plan Updates

Some sites have experienced delays in planning and implementing measures to meet the DBT policy but have not updated their plans to reflect the delays and identify alternative strategies for meeting the established target date for implementation. For example, one site has not updated its plan to show changes in upgrade schedules or measures as a result of delays in a non-security project to eliminate Category I SNM. Additionally, an independent oversight inspection of this site reported in April 2006 that the site lacked the necessary expertise to provide sound analysis of options on which it could base a cost-effective plan to meet the DBT requirements.

Finally, sites have not updated their plans to identify alternative or compensatory measures, such as increased protective forces, to address delays in deploying technologies. While technologies that have not previously been deployed at Departmental sites can provide significant advantages, they require a substantial investment of time to modify them for site-specific conditions, ensure that deployment meets safety standards, and provide protective force officers with the necessary training and procedures to effectively use the technologies. As a result, it has been difficult for sites to predict how long it will take to fully deploy new technologies to meet the DBT requirements.

Unless sites update their plans to identify alternatives for recovering from delays, they are unlikely to meet the established target date for implementing the DBT policy.

DBT Implementation Costs and Concerns

The DBT establishes protection standards that security programs at Department sites must meet to successfully protect Departmental operations and assets, including Category I SNM, from adversaries such as terrorists. Timely implementation of these protection standards by the established target dates is of key importance to ensure that national security assets and operations are sufficiently protected. At those ESE sites that do not meet the full requirements of the DBT policy, the Department's assets could be at risk. Further delays in consolidating materials and in implementing permanent upgrades and technologies may also increase the overall cost of meeting the DBT requirements by requiring the use of costly interim measures, such as an increased protective force presence.

RECOMMENDATIONS

To aid ESE sites in meeting DBT requirements, we recommend that the Under Secretary of Energy, as a Co-Chair of the Committee's Executive Steering Committee, ensure that the Nuclear Materials Disposition and Consolidation Coordinating Committee has leadership continuity in the future and expedites the completion of its work to finalize a Departmental approach to materials consolidation.

We also recommend that the Under Secretaries of Energy and Science ensure:

1. Consistent and accurate interpretation of DBT guidance;
2. Timely resolution of material categorization issues between HSS, program offices, and sites; and,
3. Timely updating of site plans, as appropriate, to account for delays in meeting DBT requirements.

Finally, we recommend that the Under Secretary for Science ensure the availability of adequate analytical resources to plan for cost-effective approaches to meeting the DBT requirements.

**MANAGEMENT
COMMENTS**

Management officials from the Offices of the Under Secretary of Energy and the Under Secretary for Science concurred with the audit recommendations. Management stated that Energy and Science sites have made significant progress toward meeting the DBT requirements that were to be completed by the end of September 2006 and are taking additional steps to meet the requirements of the 2005 DBT by the end of FY 2008. In addition, we received technical comments from the Office of Health, Safety and Security and the Office of Nuclear Energy.

AUDITOR COMMENTS

Management's comments are responsive to our recommendations. We made changes to the report, as appropriate, to address technical comments from the Office of Health, Safety and Security and the Office of Nuclear Energy.

Appendix 1

OBJECTIVE

The objective of our audit was to determine whether the Department's Energy, Science, and Environment (ESE) sites will meet the Design Basis Threat (DBT) requirements within the established target dates.

SCOPE

The audit was performed between September 2005 and August 2006. We conducted fieldwork at various field locations. In addition, audit work was performed at the Department of Energy (Department) Headquarters with the Office of the Under Secretary of Energy; the Under Secretary for Science; the Office of Health, Safety and Security; the Office of Nuclear Energy; and, the Office of Environmental Management.

METHODOLOGY

To accomplish the audit objective, we:

- Reviewed applicable Public Laws, Departmental orders, other Departmental guidance, related correspondence, and contracts;
- Analyzed prior Office of Inspector General and Government Accountability Office reports;
- Reviewed compliance with the Government Performance and Results Act of 1993;
- Analyzed key documents related to site plans to implement the 2003 and 2004 DBT policies, including quarterly reports;
- Reviewed Office of Health, Safety and Security activities related to the implementation of the DBT, including Office of Security Evaluations inspections; and,
- Interviewed key headquarters, field, and contractor personnel.

The audit was conducted in accordance with generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the objective of the audit. Accordingly, we assessed the significant internal controls and performance measures established under the Government

Performance and Results Act of 1993. We found that the Department does not have sufficient internal controls to ensure that program offices follow Departmental security orders and guidance. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We determined that controls over computer-processed data were not integral to meeting the objectives of this audit. We discussed the findings with the Director of Security in the Office of the Under Secretary for Energy and senior security officials of the Offices of Environmental Management, Science, and Nuclear Energy in September 2006. Management waived the exit conference.

PRIOR REPORTS

Office of Inspector General Reports

- *The National Nuclear Security Administration's Implementation of the 2003 Design Basis Threat* (DOE/IG-0705, October 2004). The National Nuclear Security Administration (NNSA) has experienced delays in implementing changes to site protection programs required to meet 2003 Design Basis Threat (DBT) policy. Delays in implementing the planned upgrades to meet the 2003 DBT safeguards and security performance requirements occurred primarily because NNSA did not have sufficient time to fully integrate security planning and budgeting and execute a coordinated effort to identify and evaluate cost-effective, permanent upgrades, including new technologies.
- *Management of the Department's Protective Forces* (DOE/IG-0602, June 2003). Although improvements have been made in the management of the protective force program, the Department of Energy (Department) still faces a number of challenges. Among the challenges were morale and potential retention problems due to mandatory overtime and declining training opportunities, and significant increases in unscheduled overtime costs.

Government Accountability Office (GAO) Reports

- *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* (GAO-04-894T, June 2004). Full implementation of site DBT plans will require the successful resolution of complex organizational arrangements between various program and security offices. Several sites must consolidate special nuclear material (SNM) within or between sites, requiring actions by multiple program offices. In some cases, one program office owns material that is stored at a site reporting to a different program office. If the SNM is not moved and consolidation is not achieved, the sites may not be able to meet the DBT requirements by the target date of the end of Fiscal Year 2006.




DEPARTMENT OF ENERGY
Washington, DC 20585

OFFICE OF THE SECRETARY

November 13, 2006

MEMORANDUM FOR GEORGE W. COLLARD
ASSISTANT INSPECTOR GENERAL
FOR PERFORMANCE AUDITS

FROM: ROBERT J. WALSH 
DIRECTOR OF SECURITY
OFFICE OF THE UNDER SECRETARY OF ENERGY

SUBJECT: Response to the Draft Report on "The Department's Energy
Science and Environment Sites' Implementation of the Design
Basis Threat"

Thank you for the opportunity to review and comment on your draft report regarding the status of design basis threat (DBT) implementation at Department of Energy (DOE) sites under the organizational responsibility of the Under Secretary of Energy.

As noted in your report, Energy and Science sites have indeed made significant progress in implementing measures necessary to meet design basis threat requirements which were issued in May 2003 and were required to be completed by September 2006. All sites under the purview of the Under Secretary of Energy are currently in compliance with DOE policy. Likewise, all our sites are taking appropriate steps to meet requirements set forth in the revised design basis threat policy issued in November 2005. As noted in your review, these revised requirements are not scheduled to be achieved until the end of Fiscal Year 2008.

Finally, we concur with the recommendations in this report.


cc: Glenn Podonsky, HISS
Maurice Daugherty, EM
Carl Klee, NE
Ines Triay, EM
Dennis Miotla, NE
George Malosh, SC
Mark Thornock, SC



Department of Energy
Office of Science
Germantown, MD 20874

November 14, 2006

MEMORANDUM FOR: GEORGE W. COLLARD
ASSISTANT INSPECTOR GENERAL
FOR PERFORMANCE AUDITS

FROM: MARK THORNOCK, TEAM LEADER 
SECURITY MANAGEMENT STAFF
OFFICE OF LABORATORY POLICY & INFRASTRUCTURE

SUBJECT: Response to the Draft Report on "The Department's Energy
Science and Environment Sites' Implementation of the Design
Basis Threat"

Thank you for the opportunity to review and comment on your draft report regarding the status of Design Basis Threat (DBT) implementation at Department of Energy (DOE) sites under the organizational responsibility of the Under Secretary for Science.

We agree with your report that observed Energy and Science sites have indeed made significant progress in implementing measures necessary to meet Design Basis Threat requirements which were issued in October 2003 and were required to be completed by September 2006. The applicable site under the purview of the Under Secretary for Science is currently in compliance with DOE policy. As noted in your review, the revised requirements are not scheduled to be achieved until the end of Fiscal Year 2008. This office looks forward to continuing to work towards an increasingly secure, safe, and efficient environment to further science while safeguarding required material and information.

In general, we concur with the recommendations in this report and will coordinate within the Department as appropriate.

Cc: Linda Crowder IG
George Malosh, SC
Van Nguyen, SC
Janet Venneri SC
Jim Lint, SC

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