CHAPTER 7
Security Issues

Without question, DOE nuclear warhead production plants, test facilities, research labs, storage locations … are attractive targets for terrorists.

– House Government Reform Subcommittee on National Security[106]

When the public hears about poorly secured nuclear facilities, often they picture Russia and the former Soviet states. The U.S. government has emphasized its efforts to secure dangerous nuclear facilities and loose nuclear material in the former Soviet Union. Despite this focus away from our homes and communities, U.S. nuclear facilities pose their own significant security risks. In January 2009, DOE inspectors found that the amount of nuclear material that LANL could not account for "exceeded alarm limits."[107] While Los Alamos said there is no suspicion of theft or diversion, if it cannot account for the material properly, it cannot say for certain that the material has not been stolen. Also, in a 2008 performance test, mock terrorists overwhelmed the LLNL guard force, stole mock plutonium and HEU, and showed that they could have easily assembled an improvised nuclear device on-site. LLNL is located in a residential community in the densely populated San Francisco Bay Area. At the Y-12 Site, which houses our nation's repository of HEU, armed guards came close to shooting unarmed mock attackers during a simulated attack when communications broke down. These guards are not federal employees and do not have the benefits and protections of law afforded to federal employees. They are limited in what actions they can take to protect the facilities. Yet, the public is not aware of these on-the-ground realities, since much of the information about the security of the weapons complex is classified.

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For the most part, information about failed security tests and diluted security requirements has been obtained only when concerned insiders have made it available. Without the public and congressional scrutiny that has accompanied such revelations, there would be virtually no accountability regarding DOE and NNSA's security of the weapons complex.

While security of the nuclear weapons complex has improved since 9/11, there are numerous ways to secure the complex further. This includes reducing the number of

106 "Updating Nuclear Security Standards: How Long Can the Department of Energy Afford to Wait?," House Committee on Government Reform, Subcommittee on National Security, H.Rept. 109–435, April 2006.

107 "DOE: Broken System for Protecting Nuclear Material Could Compromise Los Alamos Operations," POGO Press Release, February 26, 2009, www.pogo.org/pogo-files/alerts/nuclear-security-safety/nss-lanl-20090226.html.

sites that house significant amounts of weapons-grade material, known as Categories I and II of Special Nuclear Material (SNM), reducing the amount of SNM, and federalizing the protective guard force.

The Threat

The potential impact of a terrorist attack using nuclear weapons on U.S. soil is too significant to permit the kind of inefficient and ineffective security at nuclear weapons facilities that has persisted for many years. Experts warn that the threat of nuclear terrorism is growing.[108] As the nation learned on September 11, 2001, terrorists can be suicidal.

There are three main scenarios to consider when assessing security against a terrorist attack at nuclear weapons sites:

1. The creation of an improvised nuclear device on site by suicidal terrorists, which only takes minutes to accomplish.[109]
2. The use of conventional explosives on site to create a radiological dispersal device, also known as a dirty bomb.
3. The theft of nuclear materials in order to create a crude nuclear weapon offsite that could be used to devastate a highly-populated U.S. city.

Senator Richard Lugar (R-IN) and former Senator Sam Nunn (D-GA) identified the high priority of securing, consolidating, and eliminating HEU and Pu stating, "The gravest danger, however, and the one requiring urgent attention is the possibility that terrorists could obtain highly-enriched uranium (HEU) or Pu for use in an improvised nuclear device."[110]

How DOE Protects Against the Threat

Recently, DOE issued a new policy on the protection of nuclear weapons facilities that house weapons-grade and weapons-quantity amounts of HEU and Pu. Formerly known as the Design Basis Threat (DBT), this new policy is called the Graded Security Protection (GSP) plan.

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108 "What Are Nuclear Weapons For?" op. cit. Drell and Goodby.

109 An improvised nuclear device is qualitatively different from a "dirty bomb" in that it would use a nuclear chain reaction to cause a large explosion. Terrorists could rapidly improvise such a nuclear device at a number of DOE sites from nuclear weapons or special nuclear materials in bomb-grade quality and quantity. The explosion from the nuclear bomb dropped on Hiroshima was created using a "gun type" method (firing a piece of HEU at another piece to create a critical mass). Using the same technique, terrorists could create a crude device by taking two pieces of HEU and slamming them together with conventional explosives or even by dropping one plate of HEU onto another. This happened on a small scale accidently at LLNL some years ago. One disk of HEU was brought into contact with another, which caused a minor explosion and fire.

110 "The Four Faces of Nuclear Terrorism," Charles Ferguson and William C. Potter, Monterey Institute, Center for Nonproliferation Studies Nuclear Threat Initiatives, 2004, www.nti.org/c_press/analysis_4faces.pdf.

This change, following the 2003 DBT, the 2004 DBT, and the 2005 DBT, is the fourth new security requirement in six years. The DBT describes the level of threat against which protective forces at a nuclear weapons site are required to defend. It is based upon the Postulated Threat, which was developed by the Defense Intelligence Agency (DIA), with input from the FBI, CIA, DOE, and DoD. The DBT contains criteria such as the number of outside attackers and inside conspirators, as well as the kinds of weapons and size of truck bombs that would be available to terrorists. However, the DBT, the GSP, or any other measurement of security requirements is not able to account for the three advantages that adversaries have: surprise, speed, and violence of action.

Within the DBT framework, and presumably the GSP, DOE periodically conducts performance tests of its nuclear facilities' security by staging mock terrorist attacks. These force-on-force exercises, with laser-weapons simulation equipment, make it possible for the Department to simulate what might happen during a real terrorist attack and to assess whether security forces can adequately defend against the attacks.

All numbers related to the security requirements are classified, so we can only talk about them in relative terms. The 2003 DBT, which was to be implemented by 2006, required site protective forces to be prepared to repel fewer than half the number of terrorists engaged in the 9/11 attacks. The 2004 DBT, which was to be implemented by 2008, was created because the 2003 DBT was far too weak. The 2004 DBT had the most robust of the security requirements and required site protective forces to be prepared to repel close to the 9/11-level of 19 attackers. It also specified that the attackers should be expected to carry far more lethal weapons and to use much larger truck bombs than had been assumed in the 2003 DBT. Unfortunately, in November 2005, DOE concluded the 2004 DBT would cost too much to implement, and replaced it with a weaker 2005 DBT. The 2005 DBT, which was to be implemented at most sites by the end of 2008, required the protective forces to be prepared to repel approximately 75 percent of the attackers from 9/11. On January 19, 2006, the NNSA Administrator concluded that even the 2005 DBT could not be achieved, because of White House imposed budget caps.

While details of the GSP are classified, we have heard there will be variations of security requirements from site to site. We understand that Pantex and the Office of Secure Transportation, which assemble and transport nuclear weapons respectively, will still comply with the highest level, comparable to the 2004 DBT. We have also heard there will be a committee of experts who will analyze the security requirements needed at each site. We believe that DOE might reduce the security requirements even below the 2003 DBT at some sites. One matter that concerns us is why different sites use different requirements if they are guarding the same critical and dangerous nuclear materials—HEU and Pu.

Unfortunately, it appears that NNSA is using the GSP as a way to avoid compliance with directions from Congress. For example, NNSA decided that LLNL did not have to meet the 2005 DBT, because it is a "non-enduring site," meaning that the Lab has been slated eventually to remove all Category I and II SNM from the site. Such waivers come in defiance of the Senate Armed Services Committee, which stated in

2007, "Sites that store and use weapons grade fissile materials must meet the defined, rigorous Design Basis Threat (DBT) standards for security."[111]

Numerous security lapses at various sites in the nuclear weapons complex have been well documented. We believe that DOE has not done enough to address the deficiencies they demonstrate and to reduce security risks throughout the weapons complex. We have three principle recommendations for improving security. We recommend that DOE reduce the number of targets, reduce the amount of sensitive material, and federalize its protective forces. Below is a site-by-site analysis of security risks and recent security lapses, followed by a discussion of our three principle recommendations.

Lawrence Livermore National Laboratory

Lawrence Livermore National Lab (LLNL) is the most obvious security problem.

Lawrence Livermore National Lab (LLNL) is the most obvious security problem. No matter how much money is spent to protect against the threat level, LLNL's location makes it impossible to protect its Pu and HEU. Recognizing this fact, after years of delay, NNSA plans to remove all of LLNL's Category I/II SNM by 2012. We believe that this overly relaxed timetable poses an unacceptable security risk and recommend that the material be removed by the end of 2010. This could be accomplished if the DOE Secretary made such a directive and assigned specific responsibilities to particular people. This is how SNM was swiftly removed from Technical Area 18 at LANL, after years of delays before the Secretary stepped in. One of the primary excuses we have heard for not being able to safely prepare and package the SNM from LLNL is the lack of qualified personnel. This obstacle can be overcome by transferring qualified personnel from other sites.

In early 2008, NNSA identified LLNL as a "non-enduring" site, which exempted it from meeting the 2005 DBT. However, even when tested against the less stringent 2003 DBT, LLNL still failed miserably in an April 2008 security test. *TIME Magazine* reported in May 2008 that mock terrorists, who tested Livermore's security, succeeded in two separate scenarios at stealing simulated CAT I/II SNM and in detonating an improvised nuclear device on the spot.[112] That failure cost the contractors almost $16 million in award fees.[113]

In a recent meeting with a high level NNSA official, we were puzzled to hear that, due to recent layoffs, the timeline for removing category I/II SNM from LLNL could not be accelerated, because the lab faces a shortage of staff that can safely package the materials. We are told by NNSA that de-inventorying is a priority. So why did they allow Livermore to lay off the key people who know how to do this work?

Strict oversight of NNSA and LLNL is key in ensuring that SNM is removed from the Lab in a timely manner. In 2007, when the GAO looked into how DOE has progressed in keeping its promises to consolidate SNM, it did not like what it found.

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111 National Defense Authorization Act for Fiscal Year 2008, Senate Armed Services Committee Report 110-77, June 5, 2007, p. 619, http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_reports&docid=f:sr077.110.pdf.

112 www.time.com/time/nation/article/0,8599,1739535,00.html.

113 www.pogoarchives.org/m/nss/nnsa-llnl-fee-20081211.pdf.

According to GAO, "…DOE has spent nearly 2 years developing plans for the consolidation and disposition of special nuclear material, its plans are incomplete; and complex wide consolidation and disposition activities have not begun."[114]

The GAO report also pointed out a great weakness in DOE's implementation plans—a lack of accountability:

> [T]he Pu-239 plan states that the committee's Executive Steering Committee must approve the plan, but does not include any information on which program offices, sites, or other DOE organizations are responsible for carrying out the other actions that the plan identifies as necessary next steps, such as finalizing a schedule for Pu-239 shipments from Hanford, Los Alamos, and Lawrence Livermore.[115]

GAO's conclusions appear to indicate that LLNL will be housing its SNM for much longer than the four years DOE is currently estimating, and at half the protection level deemed necessary by the intelligence community.

Los Alamos National Laboratory

On October 20, 2006, Los Alamos police found classified information from the lab during a drug bust at the home of a former LANL subcontractor employee.

The Los Alamos National Laboratory (LANL) has a bad track record of managing and tracking its sensitive information and material and for allowing breaches of physical security and cybersecurity. On October 20, 2006, Los Alamos police found classified information from the lab during a drug bust at the home of a former LANL subcontractor employee. Police found three memory sticks containing 408 separate classified documents and an additional 456 hard-copy pages of classified documents, including some classified as Secret-National Security Information (pertaining to intelligence) and Secret-Restricted Data (pertaining to nuclear weapons).

The Methedrine drug bust at Los Alamos is just the latest in a bizarre series of incidents involving unauthorized removal of classified information and missing classified data from LANL. For instance, there was the infamous case in 2000 in which computer hard drives holding classified and highly sensitive Nuclear Emergency Search Team (NEST) information went missing. The hard drives mysteriously reappeared weeks later behind a copying machine in a secure room that was previously searched three times. No fingerprints were found on the hard drives and this incident has never been explained. Furthermore, between 2002 and 2004 there was a rapid-fire series of seven instances of missing or mishandled classified computer equipment and classified removable electronic media.

In February 2009, NNSA sent a Special Review Team to assess LANL's Material Control and Accountability (MC&A) program, which keeps track of its huge stocks of Pu and HEU. The Team found inaccuracies in accounting, a lack of adherence to requirements, and that "key personnel in critical positions lacked a basic understanding of fundamental MC&A concepts." In fact, in light of the Team's findings, both government and contractor officials have recently been removed from their positions. According to a February 23, 2009 DOE letter to Los Alamos National Security,

114 "Securing U.S. Nuclear Material: DOE Has Made Little Progress Consolidating and Disposing of Special Nuclear Material," U.S. Government Accountability Office, (GAO-08-72), October 2007, p. 10, www.gao.gov/new.items/d0872.pdf.

115 Ibid. p. 16.

LLC, the operating contractor for the lab, if identified weaknesses remain unresolved it "would impact the ability of the facility to continue operations."

We know for certain that LANL has had serious problems with its MC&A. In the summer and fall of 2008, multiple teams of MC&A experts from DOE headquarters, NNSA, and other nuclear weapons sites visited Los Alamos attempting to reconcile LANL's databases and its physical inventory of the nuclear material. When all of these assessment teams descend on your lab, you know there is a serious problem.

In mid-2008, after prodding from several groups, NNSA admitted that it could not locate a small amount of plutonium. However, officials would not say how much material could not be located. The LANL database indicated that items and quantities of plutonium were in a particular vault, but they could not be found there. A senior DOE official described the situation at LANL as "serious." This has been a long-standing problem and was the subject of a September 2007 DOE Inspector General (IG) report.[116] POGO has obtained a June 20, 2008 memorandum from LANL asking DOE's Los Alamos Site Office (LASO) to cancel a regularly scheduled inventory.[117] After POGO shared the memo with DOE Headquarters, LASO rejected LANL's request.

A 2008 DOE IG report found that many of the underlying problems that led to these breaches, such as "a lack of separation of duties and the presence of unclassified and classified systems operating in the same environment," had "not been addressed in system security plans."[118]

Similarly, the GAO found, in June 2008, "[W]hile LANL's storage of classified parts in unapproved storage containers and its process for ensuring that actions to correct identified security deficiencies have been cited in external security evaluations for years, complete security solutions in these areas have not yet been implemented."[119]

Another DOE IG report concluded, in 2008, "[T]he Department of Energy's Office of Intelligence and Counterintelligence and its subordinate Field Intelligence Elements at Los Alamos National Laboratory and Sandia National Laboratories did not have adequate administrative internal controls over their databases used to track sensitive compartmented information (SCI) access authorizations."[120]

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116 "Material Control and Accountability at Los Alamos National Laboratory," U.S. DOE Office of Inspector General (DOE/IG-0774.), Sept. 2007, www.ig.energy.gov/documents/IG-0774.pdf.

117 Memorandum from Diane Otero-Bell, Security and Safeguards Division, LANL to Lee LeDoux, Security Management Team, LASO; Subject: TA-55 Physical Inventory Variance; June 20, 2008; http://pogoarchives.org/m/nss/inventory-variance-request-20080620.pdf.

118 "Audit Report, Certification and Accreditation of the Department's National Security Information Systems," US DOE Office of Inspector General (DOE/IG-0800), August 2008, www.ig.energy.gov/documents/IG-0800.pdf.

119 "Los Alamos National Laboratory: Long-Term Strategies Needed to Improve Security and Management Oversight," U.S. Government Accountability Office (GAO-08-694), June 2008, p. 8, www.gao.gov/new.items/d08694.pdf.

120 "Internal Controls Over Sensitive Compartmented Information Access for Selected Field Intelligence Elements," US DOE Office of Inspector General (DOE/IG-0796). July 2008, www.ig.energy.gov/documents/IG-0796(1).pdf.

That IG report highlighted an example of an individual who "physically accessed a Los Alamos SCI facility without escort after her SCI access authorization was terminated," and noted that the "Los Alamos Field Intelligence Element officials did not report the security incident to appropriate Office of Intelligence and Counterintelligence officials." In fact, the "Los Alamos Field Intelligence Element had not terminated the SCI access authorizations of 13 individuals whose personnel security clearances had been terminated up to 10 months previously."

Pantex Plant

A 2007 labor strike by the protective force at the Pantex Plant highlighted significant security vulnerabilities at all of the sites in the complex. Shockingly, during the strike, a force of only 200 replacements guarded Pantex. That is far fewer than half the number of officers considered necessary to defend this extremely sensitive site full of warheads and components—primaries and secondaries—containing plutonium and HEU. This replacement force was made up of private security supervisors from various sites around the nuclear weapons complex, as well as federal nuclear transportation couriers. Unlike the private segment of the force, the couriers are federal employees and so could not be supervised by the Pantex contractor, B&W Pantex. As a result, we have been told, federal employees from the Pantex Site Office were re-tasked to supervise the couriers. These supervisors were not trained for this type of work and, worse, were unarmed and ill equipped to deal with a real security situation. In addition, the people newly detailed to Pantex had only one week of training on the unique weapons in use at Pantex, as well as on Pantex's unique tactics and response plans.

The occurrence of a strike and the resulting over-tasked guard force was not a new phenomenon for DOE. Yet, DOE has never implemented any of the possible remedies that have been proposed. In 1997, the security officers at DOE's Rocky Flats Plant went on strike in the hopes of gaining retirement benefits. Although that strike was resolved fairly quickly, some DOE officials attempted to avoid future strikes and to prepare in case they could not be avoided. For example, DOE Deputy Secretary Charlie Curtis developed an improved retirement system for the security officers. However, Defense Programs (the predecessor agency to NNSA) never implemented the system. Similarly, DOE's Office of Safeguards and Security had discussions with a unit of the Marine Corps, trained to protect nuclear weapons, in an attempt to arrange for a back-up force in case the unionized guard forces ever went on strike again. However, as with the retirement system, there was no follow-through and the contingency plan was never implemented.

While the Preferred Alternative in NNSA's *Final SPEIS on Complex Reconfiguration* called for it to "Consolidate Category I/II SNM at Pantex within Zone 12, and close Zone 4," the December 19, 2008 Record of Decision on Complex Transformation made no reference to that consolidation. Furthermore, NNSA has not provided a schedule for transferring the thousands of plutonium pits stored on the flight path

of the nearby Amarillo airport runway to a more secure location.[121] We believe this should be started immediately and completed as soon as possible.

Y-12 Site

There are several very vulnerable targets at the Y-12 National Security Complex in Oak Ridge, TN. This includes about 400 metric tons (MT) of HEU stored in a wooden storage building and four other World War II-era buildings. During NNSA's 2007 force-on-force exercise, the mock adversaries were successful in a theft scenario; meaning they were successful in removing mock SNM from the site.

In order to bolster security, Y-12 will begin transferring HEU from five obsolete storage buildings to the recently completed Highly Enriched Uranium Materials Facility (HEUMF) in March 2010. NNSA's December 19, 2008 ROD on Complex Transformation also calls for construction of a new Uranium Processing Facility (UPF) at Y-12 to consolidate HEU manufacturing and processing activities. NNSA has claimed that the major mission of this facility is to manufacture new or rebuilt secondaries for warheads, yet the demand for these is not clear. Both the HEUMF and the UPF, currently in the design phase, are aboveground structures. The DOE Inspector General has been critical of the aboveground design on both cost and security grounds. Since DOE Secretary Bodman's granting of a security waiver from the 2005 DBT, Y-12 does not have to hire the additional guards required to protect the multiple aging buildings. Therefore, there are nearly 300 fewer guards protecting the HEU at Y-12 than is required to meet the government's standards, leaving the site at high risk.[122]

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The effects on the population surrounding Y-12 of a terrorist detonating an improvised nuclear device would be devastating. At POGO's request, the Natural Resources Defense Council (NRDC) performed a simulation of the effects of a 10-kiloton nuclear explosion at the approximate location of the HEU storage site at Y-12.[123] NRDC's calculation concluded that the detonation of an improvised nuclear device at Y-12 could cause over 60,000 casualties, including nearly 5,000 fatalities, if the detonation occurred during the day.[124] Casualties were calculated based on the residential population only. That does not include the 13,000 workers at Y-12 and ORNL, who would be killed immediately. The total number of fatalities would likely be about 18,000 people.

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121 One of the authors of this report has personally observed military airborne tankers directly above the Pantex Plant refueling military fighters that use the Amarillo airport for "touch and go" practice landings.

122 "U.S. Nuclear Weapons Complex: Y-12 and Oak Ridge National Laboratory at High Risk," Project On Government Oversight, 2006, www.pogo.org/pogo-files/reports/nuclear-security-safety/Y-12/nss-y12-20061016.html.

123 Matthew McKinzie, Scientific Consultant, Natural Resources Defense Council (NRDC) performed the simulation using the U.S. Department of Defense computer code HPAC (Hazard Prediction and Assessment Capability) version 3.2.2.

124 The calculation assumed that the explosion was caused by a fission reaction and was at ground level at Y-12 on a clear November day with winds blowing eastward at four meters per second. In this scenario, the most intensely radioactive zone in the fallout plume is calculated to extend no more than 10 miles from the explosion site.

Savannah River Site

The Savannah River Site (SRS) has better security than most DOE sites, in part due to its large size and remote location. The facility does have a large amount of Pu, which is stored at the building that once housed the K-Reactor. However, that plutonium has been declared excess to NNSA's nuclear weapons programs and its ownership transferred to DOE's Offices of Environmental Management or Nuclear Energy. While not minimizing the importance of absolute security for SRS' Plutonium, since it is outside of NNSA control, it is beyond the scope of this report.

Nevada Test Site

The only facility at the Nevada Test Site (NTS) with significant amounts of SNM is the Device Assembly Facility (DAF). The DAF, which is mostly underground, is the most secure site in the nuclear weapons complex. Since only a small portion of the DAF is currently being used, NNSA might use the DAF for interim storage of additional excess SNM (including excess pits) or to supplement the existing capacity at Pantex to dismantle warheads. However, such use would increase the number of times that retired warheads and SNM must be transported. Under our plan, we prefer to minimize the transport of nuclear weapons and materials. Hence, we recommend that NNSA dismantle warheads as rapidly as possible, using existing facilities, and that it consolidate and eventually eliminate SNM, without transport for interim storage at the DAF, unless absolutely necessary.

Non-NNSA Facilities with NNSA Material

A number of locations possess NNSA-material, but are not NNSA-sites. ***The Nuclear Fuel Services*** (NFS) plant, located in Erwin, Tennessee, ***and the Nuclear Products Division*** in Lynchburg, Virginia, are private facilities, which process tons of HEU annually for the production of naval and research reactor fuel and for downblending it to LEU for power reactors. Both of those facilities are owned by the Babcock and Wilcox (B&W) Company, which also operates the Y-12 Site for NNSA. Those privately-owned facilities are regulated by the Nuclear Regulatory Commission (NRC). The security standards required by the NRC at these two locations are much lower than those required by DOE at Y-12, which handles the same dangerous materials.

The Oak Ridge National Laboratory (ORNL), which like Y-12 is in Oak Ridge, TN, but is several miles away and is operated for DOE by a different contractor, stores approximately a ton of unirradiated uranium-233. This material, which is a legacy of ORNL's 1960s molten-salt breeder reactor program, has a smaller critical mass than HEU and is just as effective in a gun-type improvised nuclear device. However, ORNL is not a NNSA-site and does not have the security systems required for housing weapon-grade materials. In September 2005, one of the authors of this report walked unescorted, for 15 minutes, around the outside of the building that houses the U-233, before there was a response from the guard force. Since then, DOE has sent three teams to ORNL to determine how it might meet the 2003 DBT requirement. In 2006, ORNL spent $12 million to upgrade security at this single building.

As a result of instructions from Congress in 2005, DOE proposes to dilute the U-233 with depleted uranium to less than one percent U-233 enrichment—far below the level where it would be weapon-usable. In its budget request for fiscal year 2008, the DOE Office of Environmental Management states that downblending will not begin until 2012 and estimates that it will cost $355 million. We would like to see DOE begin that downblending sooner and complete it as soon as possible to eliminate this security threat.

How to Improve Security within the Complex

NNSA's plan for Complex Transformation continues a long history of missed opportunities to improve significantly the security of the complex. Following are the major actions that we believe DOE can and should take to improve the security of the complex.

Reduce the Number of Targets

Consolidation is not a new idea. Faced with the huge anticipated costs of the new post 9/11 security requirements, in May 2004, DOE endorsed consolidation of nuclear materials at fewer sites, and in fewer and more secure buildings within existing sites, as a way to both reduce DOE security costs and increase security.

In 1999, a classified report strongly urged construction of consolidated, underground storage facilities for HEU at the Y-12 Site and for plutonium at SRS.[125] A 2001–2002 study of the security of DOE and Defense Department nuclear sites, chaired by former National Security Advisor Brent Scowcroft, also recommended consolidation.[126] The study was deemed so sensitive that it was never released. In fact, key officials in DOE were never able to see a copy.

The Secretary of Energy's Advisory Board (SEAB) Task Force on the Nuclear Weapons Complex recommended, in 2005, that all of the weapon complex's Category I and II quantities of special nuclear materials be removed to a single Consolidated Nuclear Production Center (CNPC) at a remote location, with "as small a total physical footprint as possible."[127] The task force recommended underground facilities to simplify the security problem. However, NNSA has not adopted that approach. NNSA's December 19, 2008 ROD on Complex Transformation would remove Category I and II quantities of SNM from only one facility (LLNL)

125 Study chaired by Roger Hagengruber, former Deputy Director of Sandia National Laboratory. According to several people who read the report, it recommended using the Kirtland Underground Munitions Storage Complex (KUMSEC) at the Kirtland Air Force Base in Albuquerque, New Mexico and the Device Assembly Facility on the Nevada Test Site as design templates for the proposed underground storage facilities.

126 Rep. Edward Markey requested an unclassified version in a Jan. 23, 2002 letter, but, to the best of his staff's recollection, he never received one.

127 "Recommendations for the Nuclear Weapons Complex of the Future," Report of the Nuclear Weapons Complex Infrastructure Task Force, US DOE Secretary of Energy Advisory Board, July 13, 2005, p. 19, www.seab.energy.gov/publications/NWCITFRept-7-11-05.pdf.

and would take four more years to do so, would not speed the elimination of excess HEU, would continue production activities at all four main production sites indefinitely, and would continue to maintain a weapons complex of eight major sites.

A June 2007 report by the House Appropriations Committee's Subcommittee on Energy and Water criticizes NNSA for avoiding meaningful consolidation of its complex:

> Instead of working with the Committee to arrive at a realistic plan that has the possibility of garnering bipartisan political support, the NNSA continues to pursue a policy of rebuilding and modernizing the entire complex in situ without any thought given to a sensible strategy for long-term efficiency and consolidation.[128]

Our proposals, outlined in Chapters 5 and 6 of this report, would consolidate SNM more rapidly and extensively than NNSA's plan. In addition, we would significantly speed up elimination of all excess HEU, would seek to eliminate all excess plutonium, and would consolidate most nuclear weapons activities to only three sites (LANL, Pantex, and SNL) by 2025. Furthermore, we recommend that the B&W HEU-processing activities in Erwin, TN and Lynchburg, VA be relocated to Y-12, as long as the move does not interfere with the downblending of excess HEU. This would consolidate all U.S. HEU-processing activities at a single site. Such a move might be facilitated by the fact that B&W also manages the Y-12 Site for DOE.

HEU is more valuable to terrorists than any other nuclear material, because it is relatively easy to assemble into a crude nuclear weapon.

Reduce the Amount of Sensitive Material

NNSA's plan for Complex Transformation does not set any downblending goals or declare any new HEU excess. Some answers stare NNSA in the face, but the agency looks the other way. Downblending reduces security risks.[129] HEU is more valuable to terrorists than any other nuclear material, because it is relatively easy to assemble into a crude nuclear weapon. There is a major international effort to eliminate HEU by consolidating it and blending it down so that it is not weapon-usable. However, at great costs and risks, NNSA is currently storing about 400 MT of HEU in World War II era buildings at Y-12.

With great fanfare, in 2005, NNSA declared 200 MT of HEU was no longer needed for the weapons program; in addition to the 174 MT it had declared excess in 1994. However, it turned out that 160 MT of it would be stored for future use as fuel for U.S. naval vessels and 20 MT would be reserved for space and research reactors. Thus, only 20 MT would be downblended. Instead of declaring the rest of the HEU inventory at Y-12 excess and downblending it, DOE plans to store it at the HEUMF. If most of the excess HEU were downblended, there would be adequate space in HEUMF to accommodate some processing operations. If this were combined with

128 FY 2008 Energy and Water Development Appropriations Bill, House Appropriations Committee Report, June 11, 2007, pp. 96–97.

129 Downblending of HEU involves mixing it with blendstock that is either depleted uranium, natural uranium, or low enriched uranium (LEU) to produce material enriched to less than 20 percent U-235 (which is the upper limit on LEU). LEU does not pose a serious security risk or require expensive security systems to guard it. Terrorists have little interest in LEU because huge quantities are needed to sustain an explosive nuclear chain reaction.

the reductions in the stockpile of nuclear weapons that we propose, NNSA's proposed Uranium Processing Facility (UPF) could be cancelled, saving about $3.5 billion in construction costs.

B&W's Nuclear Fuel Services plant in Tennessee and its Nuclear Products Division, in Lynchburg, VA have plenty of excess capacity for downblending HEU. However, NNSA has not used the opportunity of Complex Transformation to make better use of that capacity or to set any future goals for downblending.

The Department of Defense claims that large amounts of HEU are needed for naval reactors. However, we believe that much more HEU is being reserved for the Navy than is realistically needed. According to a 2008 report by the International Panel on Fissile Materials, the U.S. uses two tons of weapon-grade HEU annually.[130] Thus, the 160 tons of HEU set aside for the Navy in 2005 should be enough for 80 years in addition to the several decades' worth of HEU that the Navy had previously. There is no rational reason to maintain such a large HEU reserve for naval ships. We believe that over time the Navy can and should switch its fleet to using LEU enriched to 20 percent U-235. This would significantly reduce the amount of HEU the Navy needs to stockpile and would reduce risk of terrorists gaining access to the Navy's fuel stockpile.

A federal force would be easier to select, vet, train, equip, and control leading to better response. Federalized forces, like DoD security forces, would be under the control of DOE directly and not managed through a contract.

Federalizing DOE's Protective Force

The fact that protective force officers at the nuclear weapons sites are being asked to die for their country, but are not given full protections from the government, creates a security vulnerability. Unlike firefighters and other first responders, DOE protective force officers do not receive benefits that ensure they and their families will be taken care of in the event of a serious injury or death. This lack of first responder benefits dampens the protective force officers' willingness to accept high levels of risk, and raises a question about whether they will stay and fight if real bullets fly. Mandated testing of security, performed at all DOE facilities, shows that up to 50 percent of the guard force could be killed while reacting to or trying to prevent the theft or sabotage of nuclear material.[131] This leaves protective force officers asking themselves each time they go to work, "Who is going to look after my family if I am disabled or killed saving the day?"

There are a number of different security contractors protecting DOE's various weapons sites, each with its own standards for personnel, equipment, and benefits. Additionally, the use of civilian contractors and the lack of standardization, leads to DOE's inability to exercise effective command and control over the security forces.

A federal force would be easier to select, vet, train, equip, and control leading to better response. Federalized forces, like DoD security forces, would be under the control of DOE directly and not managed through a contract. DOE needs a structure similar to that of DoD, in which policy would come from DOE headquarters and be

130 Global Fissile Material Report 2008, International Panel on Fissile Materials, 2008, p. 13, www.ipfmlibrary.org/gfmr08.pdf.

131 This mandatory testing only reflects "life" or "death" results; it does not indicate how many of the "surviving" protective force officers may suffer significant or career-ending injuries. See the Protective Force and Program Manual M473, p. 2-2.

implemented by subordinate echelons of command. This would rid DOE of the unworkable practice of independent contractors controlling security at the various sites.

Transitioning the protective force officers to federal employee status would standardize front-line medical availability; equipment and training for the protective force; the retirement system and health, disability, life, and other benefits; and prohibit labor strikes, which could seriously undermine the security of the nuclear weapons facility.[132] Federalization would also provide the protective force with law-enforcement authority and the power to make arrests, eliminating a whole raft of jurisdictional and legal barriers. For example, the pre-decisional NNSA-commissioned study on federalization pointed out that:

> Another noteworthy issue that needs to be addressed by the Administration in this regard is that any operations by the Protective Force using deadly force in repelling attack or in recovery operations could cause collateral non-combatant casualties. In light of the incidents in Iraq involving the use of deadly force by Contractors resulting in significant civilian collateral damage and the perception that it may be inappropriate for contractor employees not under the direct supervision of federal personnel to be empowered to use deadly force, it may be appropriate to consider whether any offensive operations by the Protective Force should be conducted by anyone other than federal employees.[133]

In order to gain these benefits, protective forces have resorted to striking for them. Protective force officers at Pantex went on strike during the summer of 2007 for retirement benefits, as did the force at Rocky Flats, in 1997, when they were unable to get their concerns addressed in any other way. As a result, the security at these plants was seriously compromised. This reality was not lost on those tasked with the NNSA federalization study who wrote, "It is the Team's belief that elimination of the potential for protective force work stoppages or even the mitigation of future stoppages is imperative."[134]

Federalizing the protective force would address a number of issues. By doing so, the Department of Energy can resolve authority, equipment, training, benefits, and strike issues. While federalization of the guard force is not yet a reality, its importance has not been lost on DOE. A 2004 NNSA memorandum, "Review Options for the Protective Force: Phase II," concludes,

> In the final analysis, the fundamental argument for federalization is that being asked to die or to kill for one's country should mean having the unmistakable full measure of government involvement and support. Protective force members deserve nothing less.[135]

There is a precedent within DOE for federalizing protective forces. Security guards, who protect truck convoys for DOE's Office of Secure Transportation, are federal

132 "Review Options for the Protective Force: Phase II," Memorandum for Kyle McSlarrow from Linton Brooks and Glenn Podonsky, October 22, 2004.

133 *"Comparative Analysis of Contractor and Federal Protective Forces At Fixed Sites,"* prepared by Systematic Management Services, Inc. for NNSA, March 6, 2008, p. 6.

134 Ibid. p. 1.

135 Ibid.

agents and receive all of the authority, equipment, training, and benefits associated with that status. We recommend that all of the protective forces at DOE sites be federalized.

DOE has shown that it can improve underperforming security forces. One of the best examples of what can happen when resources and attention are focused on the problem is the transformation of DOE's Transportation Security Division, now known as the Office of Secure Transportation. The Transportation Security Division was infamous for its poor results in moving nuclear weapons and weapons-grade uranium and plutonium from site to site across the nation. Guards' weapons were of inadequate range to reach the adversary and guards were caught cheating on their force-on-force tests. However, today they are known throughout the complex as the best-trained, most well-organized security force.

The risk of nuclear terrorism in countries where nuclear materials are poorly secured, such as the former Soviet Union, has been a public concern for some time. The U.S. has been at the forefront of efforts to address these vulnerabilities, spending billions of dollars attempting to secure SNM. However, Congress and the U.S. public have paid much less attention to terrorism risks inherent in nuclear materials in our own country. Harvard University's Matthew Bunn, an expert on the security of nuclear materials in the international arena, has argued that the U.S. should lead by example. He has called for "a fast-paced global effort to remove the potential bomb material from the world's most vulnerable sites and make sure that every remaining cache has security sufficient to defeat terrorist threats. To credibly lead that effort, the United States has to get its own house in order."[136] Our plan would greatly reduce the opportunities for potential terrorist access to U.S. nuclear materials, which is a clear and all important national security imperative.

136 "The Nuclear Campus," Matthew Bunn, *Boston Globe* op-ed, October 20, 2005.