DOE/DR-0001

2004 Annual Report To Congress

Department of Energy Activities Relating to the Defense Nuclear Facilities Safety Board

U.S. Department of Energy - March 2005

DOE/DR-0001

Annual Report To Congress

Department of Energy Activities
Relating to the
Defense Nuclear Facilities Safety Board

Calendar Year 2004

U.S. Department of Energy
Washington, DC 20585

March 2005

The Secretary of Energy
Washington, DC 20585

March 14, 2005

The Honorable Richard Cheney
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

Enclosed is the Annual Report for calendar year 2004, entitled *Department of Energy Activities Relating to the Defense Nuclear Facilities Safety Board*. Section 316(b) of the Atomic Energy Act of 1954 requires the Department of Energy (Department) to submit a written report to Congress addressing the Department's activities related to the Defense Nuclear Facilities Safety Board (Board).

In 2004, significant accomplishments were made in the safety and reliability of the defense nuclear complex. At the Hanford site in Washington, all spent nuclear fuel was removed from the K-Basins and placed in interim dry storage awaiting eventual shipment to a national repository. At the Idaho National Laboratory, operations commenced at the Advanced Mixed Waste Treatment Facility and 209 cubic meters of transuranic waste was shipped to the Waste Isolation Pilot Plant, near Carlsbad, New Mexico. At the Y-12 site in Tennessee, all modifications to the equipment in Enriched Uranium Operations Special Processing were completed and wet chemistry operations commenced.

During 2004, the Department received two new recommendations from the Board. We developed an implementation plan for one recommendation and are evaluating the second. The Department is redoubling its efforts to resolve Board recommendations in a timely manner which should result in improving the Department's safety posture for its workers and the public. These measures are described in the report and include reducing risk through stabilization of excess nuclear materials and maintaining a vigorous Facility Representatives program.

If you have any questions, please contact me or Ms. Jill L. Sigal, Acting Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

Samuel W. Bodman

Enclosure

Executive Summary

The Department of Energy (Department) submits an Annual Report to Congress each year detailing the Department's activities relating to the Defense Nuclear Facilities Safety Board (Board), which provides advice and recommendations to the Secretary of Energy (Secretary) regarding public health and safety issues at the Department's defense nuclear facilities.

In 2004, the Department continued ongoing activities to resolve issues identified by the Board through formal recommendations and correspondence, staff-issued reports pertaining to Department facilities, and public meetings and briefings. Additionally, the Department is implementing several key safety initiatives to address and prevent safety issues: risk reduction through stabilization of excess nuclear materials; the Facility Representative Program; independent oversight and performance assurance; quality assurance activities; and the Federal Technical Capability Program (FTCP). The following summarizes the key activities addressed in this Annual Report.

Activities Pertaining to Board Recommendations

New Board Recommendations

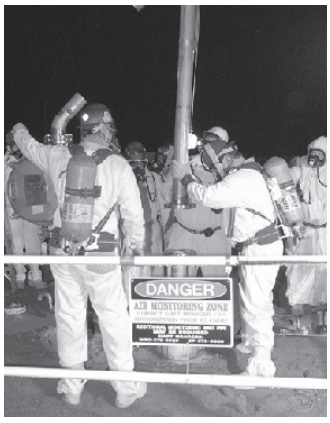
- The Department received two new recommendations during 2004. The Department accepted Board recommendation 2004-1, *Oversight of Complex, High Hazard Nuclear Operations,* and developed an implementation plan to resolve the associated issues. The Department is still evaluating Board recommendation 2004-2, *Active Confinement Systems,* received in December 2004.
- The Department's implementation plan for Board recommendation 2004-1, *Oversight of Complex, High Hazard Nuclear Operations,* is a significant one that will result in enhanced federal safety assurance at defense nuclear facilities. The implementation plan addresses three main areas: (1) enhancing federal safety assurance, including establishment of Central Technical Authorities, (2) learning from internal and external operating experience, and (3) focusing on improvements in implementation of Integrated Safety Management (ISM), especially in the areas of work planning, feedback and improvement, and implementation at DOE federal offices.

Recommendations Closed

- The Board closed no recommendations during 2004.

Recommendations Proposed for Closure

- The Secretary has proposed closure of three other Board recommendations issued prior to 2004: (1) recommendation 92-4, *Multi-Function Waste Tank Facility at the Hanford Tank Farms;* (2) recommendation 94-1, *Improved Schedule for Remediation in the Defense Nuclear Facilities Complex;* and (3) recommendation 98-1, *Resolution of Safety Issues Identified by DOE Internal Oversight*. These three recommendations remain open.



Hanford Tank Farm workers installing a breather stack extension.

Rocky Flats drums.

Other Active Recommendations

- A total of 15 Board recommendations are currently open. The Secretary has proposed closure of three of these recommendations, and the Department has completed all implementation plan deliverables for four others. These seven implementation plans are no longer active.
- The Department has provided implementation plans for all of the open recommendations, except for 2004-2, *Active Confinement Systems*, which the Department is still evaluating.
- The Department is actively working through its remaining implementation plans to resolve the safety issues identified in the Board recommendations.
- Of the seven currently active implementation plans, four have projected completion dates in 2005, one in 2006, one in 2007, and the final one in 2009.
- Reasons for recommendations remaining open vary by recommendation, and include: (1) additional time required to ensure that the safety issue resolutions are fully institutionalized and successful, (2) significant scope and magnitude of effort involved in adequate safety issue resolution, and (3) changes to the resolution approach based on more recent experience.
- Most Board recommendations written since 1994 require multi-year implementation plans to resolve the identified safety issues.

Activities Pertaining to Department Key Safety Initiatives

Risk Reduction Through Stabilization of Excess Nuclear Materials

- The Department has achieved significant gains have been achieved in High Level Waste (HLW) processing, and the path forward includes initiatives to develop at least two proven, cost-effective solutions to every HLW stream.
- The Office of Environmental Management (EM) has eliminated the need for a second vitrification plant at the Office of River Protection (ORP).
- EM has emptied Idaho's pillar and panel tanks and completed the cleaning of two former HLW tanks.
- EM has reduced the volume of Hanford's pumpable liquids in single-shell tanks to less than 40,000 gallons and completed waste removal from Tank C-106.
- EM has eliminated over 2.5 million gallons of liquid waste throughout the complex.
- EM has increased the waste loading in the Savannah River Site (SRS) HLW canisters by over 30 percent. This will reduce the number of HLW canisters to be produced in the future by 30 percent.

Facility Representative Program

- The Department's Facility Representative Program continues to be a centerpiece of the Department's efforts to upgrade Federal technical capabilities. Approximately 200 Facility Representatives across the complex provide real-time oversight of operational activities that are important to mission accomplishment and public safety. The Department requires Facility Representatives to initially qualify on rigorous technical standards and to requalify every three years.
- In 2004, Field Office Managers nominated 14 people for the Department's Facility Representative of the Year award, indicating strong management support for the program and a high level of achievement across the Department.
- The Facility Representative Program is reviewing workload analysis practices to ensure that the number of Facility Representatives is sufficient given the duties and responsibilities assigned to them.

Independent Oversight and Performance Assurance

- The Department's Office of Independent Oversight and Performance Assurance, the single focal point for Department independent oversight, conducted (1) three major inspections of defense nuclear sites, and (2) an investigation of worker vapor exposure and occupational program allegations at the Hanford Site.
- The Department's Office of Independent Oversight and Performance Assurance also conducted a special assistance review at the Los Alamos National Laboratory (LANL) in support of Department efforts to oversee LANL's efforts to resume operations.

Quality Assurance Activities

- The Department established the following six focus areas for improving Quality Assurance (QA) implementation: (1) Leadership, (2) Flow-down of QA requirements, (3) Integration of QA with ISM, (4) Implementation of QA requirements, (5) QA analysis, and (6) QA oversight and assessment.
- The Department continues to vigorously implement its plan for upgrading quality assurance for safety-related software.
- The Department completed development of the new corporate process for the identification, review, dissemination, and action on suspect/ counterfeit and defective items, and has fulfilled all planned activities to upgrade this process.

Federal Technical Capability Program Activities

- The Department developed responsibilities and qualification requirements for new Federal Safety System Oversight personnel, and incorporated these in a revision to the program manual, DOE Manual 426.1-1, *Federal Technical Capability Program.*

Clean-up process at the Hanford Site.

- The Department completed revision of all Functional Area Qualification Standards to improve the technical content and rigor, to assure consistent application, and to incorporate expectations and requirements for Federal Safety System Oversight personnel.

Other Board Interface Activities

- The Department responded to 31 reporting requirements from the Board during 2004.
- The Department issued 15 new or revised safety directives in 2004, each was reviewed by the Board's staff prior to issuance. In addition, another 36 draft safety directives received Board staff review and are being finalized prior to issuance.
- The Department exchanged 119 pieces of correspondence with the Board during 2004.
- The Department hosted 138 site visits by Board members or Board staff members during 2004.

Summary of the Department's Major Safety Accomplishments

Concrete accomplishments over the past year that have contributed to improved safety at Department facilities include:

- The Department completed removal of all spent nuclear fuel (2,106 metric tons) from the K-Basins to interim dry storage at Hanford's Canister Storage Building (October 12, 2004). Out of decades-old water basins just 400 yards from the Columbia River, the fuel is now dried and in inerted containers about nine miles from the river. The containers await eventual shipment to a national repository.

The Plutonium Finishing Plant at Hanford.

- The Department produced 260 canisters of vitrified HLW with higher waste loading at Savannah River — about a 34 percent increase in waste loading per canister. This higher waste loading, the product of technological advances sponsored by EM, will result in almost 1,000 fewer canisters that will need to be produced at the Defense Waste Processing Facility (DWPF) and disposed of at Yucca Mountain, Nevada, at a substantial cost savings to the taxpayer.
- The Department completed demolition of Hanford's first of three Plutonium Concentration Facilities (233-S facility), DOE's first open-air demolition of a highly contaminated plutonium facility.
- The Department completed Mk 16/22 legacy spent nuclear fuel dissolution in Savannah River's H-Canyon.
- The Department removed all Pu-238 from the Mound site and all nuclear material from Fernald.
- In Fiscal Year 2004, the Waste Isolation Pilot Plant (WIPP) completed over 960 waste shipments and disposed of more than 8,800 cubic meters of transuranic (TRU) waste, the most in any fiscal year.
- The Department commenced treatment operations of the Advanced Mixed Waste Treatment Facility at Idaho and shipped 209 cubic meters of TRU waste to WIPP.
- The Department completed stabilization and packaging of all plutonium metal/oxide/polycube/ alloy items (about 11 metric tons) at Hanford's Plutonium Finishing Plant (PFP) into standardized "3013" cans, suitable for long-term storage.

- The Department completed the Interim Stabilization (or "cocooning") of the fourth of eight reactors the 105-D Reactor, in Fiscal Year 2004.
- The Department completed removal of the pumpable liquid from all Single-Shell Tanks (over 3 million gallons to date) at Hanford.
- National Nuclear Security Administration (NNSA) conducted a comprehensive evaluation of lessons learned from the NASA's Columbia Accident Investigation Report.
- NNSA held a workshop to identify lessons learned to improve activity level work planning and control.
- In January 2004, Los Alamos completed roasting and blending of all plutonium oxide items.
- In July 2004, NNSA developed the Comprehensive Nuclear Materials Packaging and Storage Plan.
- In April 2004, Lawrence Livermore reported completion of plutonium metal and oxide repackaging and stabilization of all other Livermore residues.
- In May 2004, the Nevada Site Office (NSO) successfully completed the Armando Sub Critical Experiment.
- The Tritium Facility and Modernization and Consolidation project was successfully completed on September 13, 2004 and is now in operation.
- Y-12 Site Office (YSO) completed all modifications to the equipment in Enriched Uranium Operations Special Processing for return to operation. YSO also completed Enriched Uranium Wet Chemistry first use activities. All wet chemistry processes have been exercised with special nuclear materials present and product produced.
- The Department demolished 32 buildings (approximately 107,000 square feet) at the Y-12 site.

Disposal Operations Personnel Guide a Forklift to Position a Drum Containing Low-Level Waste Within the Pit 9 Grid System at the Area 5 Radioactive Waste Management Site located at the Nevada Test Site.

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I. Introduction

Pursuant to Section 316(b) of the Atomic Energy Act of 1954, the Department of Energy (Department) submits this Annual Report to Congress, which describes the Department's activities for 2004 pertaining to the Defense Nuclear Facilities Safety Board (Board). This report details the Department's key safety initiatives, implementation of Board recommendations, implementation of Integrated Safety Management (ISM), and other Board interface activities.

A. Background

The Board is an independent executive-branch agency established by Congress in 1988 to provide advice and recommendations to the Secretary of Energy (Secretary) regarding public health and safety issues at the Department's defense nuclear facilities. The Board also reviews and evaluates the content and implementation of health and safety standards, and other requirements relating to the design, construction, operation, and decommissioning of the Department's defense nuclear facilities. Figure 1.A provides the locations of the major Department facilities involved in defense nuclear activities across the United States.

The Board communicates with the Department through a variety of mechanisms including formal recommendations, formal reporting requirements, letters requesting action and information, letters providing suggestions, letters providing information such as staff issue reports and trip reports, and Board and the Board's staff requests for information. In addition, the Board communicates with the Department through public meetings, briefings and discussions, and site visits.

Figure 1.A - Location of Major Department Nuclear Facilities

B. Overview of the Department's Policy for Interfacing with the Board

The Department and the Board share the common goal of ensuring adequate protection of public and worker health and safety and the environment at the Department's defense nuclear facilities. To accomplish this goal, the Department's interface policy, which is contained in DOE M 140.1-1B, *Interface with the Defense Nuclear Facilities Safety Board*, is to:

- fully cooperate with the Board;
- provide access to information necessary for the Board to accomplish its responsibilities;
- thoroughly consider the recommendations and other safety information provided by the Board;
- consistently meet commitments to the Board; and
- conduct interactions with the Board in accordance with the highest professional standards.

Completed or Inactive Implementation Plans

- 2000-2, *Configuration Management, Vital Safety Systems*
- 99-1, *Storage of Pits at Pantex*
- 98-1, *Resolution of Oversight Findings* *
- 97-1, *Safe Storage of Uranium-233*
- 95-2, *Safety Management*
- 94-1, *Improved Schedule for Remediation* *
- 92-4, *Multi-Function Waste Tank Facility at Hanford* *

* Secretary has proposed closure.

An aerial view of the H Tank Farm at the Savannah River Site.

C. Overview of the Department's 2004 Activities Pertaining to Board Recommendations

Board recommendations are the most formal and most powerful mechanism the Board uses to prompt action by the Department. As of February 2005, there are fifteen open Board recommendations. Seven of the associated implementation plans are either complete or no longer active. The Department has completed the implementation plan milestones for six of these implementation plans, and transferred all remaining open milestones for the seventh plan to another plan (in the case of recommendation 94-1).

Additionally, the Secretary has proposed closure of three of the 15 open recommendations (as noted with an "*" in the list on page I-1).

In 2004, the Board issued two new recommendations to the Secretary.

Table 1.A – Historical Trend of Open Board Recommendations

Year	Recs. Issued	Recs. Closed	Net Change in Open Recs. for the Year	Open Recs. at Year End
1990	7	0	+7	7
1991	6	0	+6	13
1992	7	8	-1	12
1993	6	1	+5	17
1994	5	1	+4	21
1995	2	6	-4	17
1996	1	4	-3	14
1997	2	1	+1	15
1998	2	0	+2	17
1999	1	9	-8	9
2000	2	0	+2	11
2001	1	0	+1	12
2002	3	1	+2	14
2003	0	1	-1	13
2004	2	0	2	15*

* The Secretary has proposed closure of 3 open recommendations.

The data in Table 1.A and Figure 1.B reflect the evolution of the recommendation process. Initially, Board recommendations addressed specific, highly technical, significant safety issues within the Department's activities. Over time, the Department has addressed these risks and established integrated programs to improve the Department's overall safety management process. Department success in these areas, combined with an increased use of letters and other notification methods by the Board, has led to the issuance of fewer, often more broad-based recommendations in recent years.

Figure 1.B shows the number of new Board recommendations for each year.

Figure 1.C provides the net open Board recommendations at year end from 1990 - 2004.

Figure 1.D shows the number of recommendations closed by the Board each year from 1990-2004.

Table 1.B provides key dates for active Board recommendations.

Table 1.C provides a summary status of Board recommendations.

Figure 1.B New Board Recommendations (1990 - 2004)

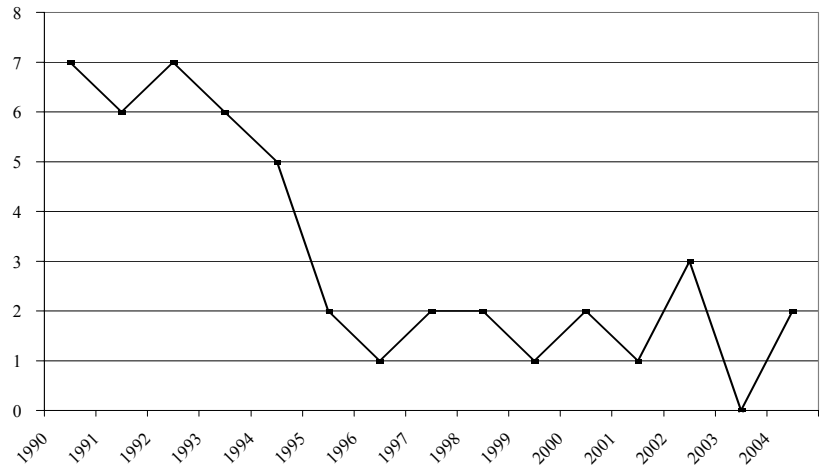


Figure 1.C Net Open Board Recommendation at Year End (1990 - 2004)

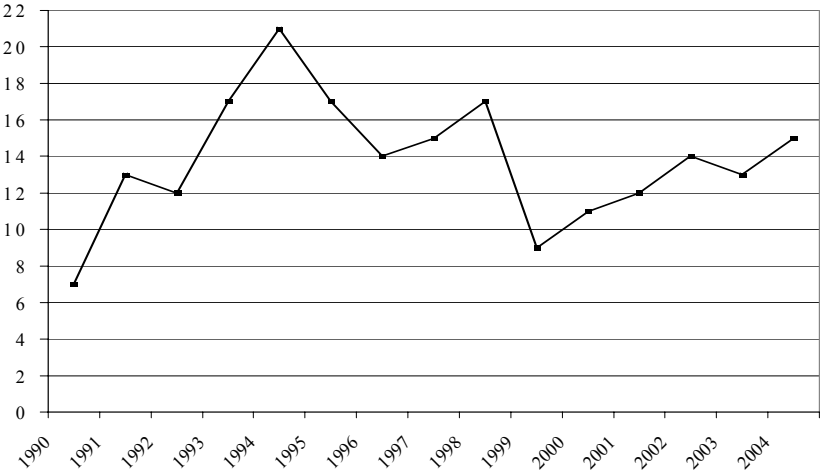
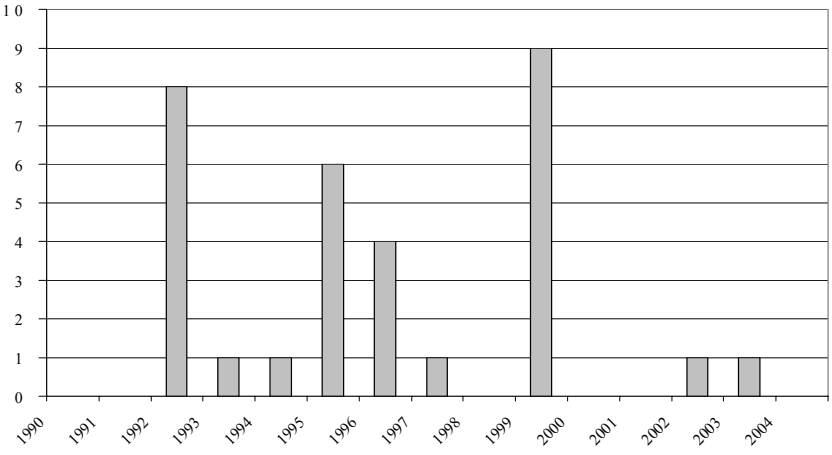


Figure 1.D Recommendation Closures Per Year (1990 - 2004)



Section 315(b) of the Atomic Energy Act of 1954 requires the Secretary to accept or reject, whole or in part, each Board recommendation within 45 days of its publication, unless an additional 45 days is requested and granted. Section 315(e) of the Atomic Energy Act of 1954 requires the Secretary to provide an implementation plan for each accepted recommendation within 90 days of publication of the acceptance, unless an additional 45 days is needed and the Board is notified.

Table 1.B– Key Dates for Open Board Recommendations

Rec	Subject	Rec Date	Response Date	Impl. Plan Date
92-4	Multi-Function Waste Tank Facility at Hanford	7/6/92	8/28/92	10/8/97 (Rev. 2)
94-1	Improved Schedule for Remediation	5/26/94	8/31/94	6/8/00 (Rev. 3)
95-2	Safety Management	10/11/95	1/18/96	4/18/96
97-1	Safe Storage of Uranium-233	3/3/97	4/25/97	9/29/97
98-1	Resolution of Safety Issues Identified by Internal Independent Oversight	9/28/98	11/20/98	3/10/99
98-2	Safety Management at Pantex	9/30/98	11/20/98	10/28/02 (Rev. 1 changes)
99-1	Safe Storage of Pits at Pantex	8/11/99	10/12/99	2/1/00
2000-1	Stabilization and Storage of Nuclear Material	1/14/00	3/13/00	2/22/02 (Rev. 2) 5/3/04 (RL) 7/23/04 (LANL)
2000-2	Configuration Management, Vital Safety Systems	3/8/00	4/28/00	10/31/00
2001-1	High-Level Waste Management at the Savannah River Site	3/23/01	5/18/01	5/10/02 (Rev. 2)
2002-1	Quality Assurance for Safety-Related Software	9/23/02	11/21/02	3/13/03
2002-2	Weapons Laboratory Support of the Defense Nuclear Complex	10/3/02	1/8/03	6/4/03
2002-3	Design, Implementation, and Maintenance of Administrative Controls	12/11/02	1/31/03	6/26/03
2004-1	Oversight of Complex, high-hazard nuclear operations	5/21/04	7/21/04	12/23/04
2004-2	Active Confinement Systems	12/7/04		

Table 1.C – Summary Status of Board Recommendations

Rec	Subject	Open	Closed
90-1	Savannah River Operator Training		10/27/92
90-2	Codes and Standards		10/24/95
90-3	Hanford Waste Tanks		5/1/92
90-4	Rocky Flats Operational Readiness Reviews		2/16/95
90-5	Systematic Evaluation Plans		10/24/95
90-6	Rocky Flats, Plutonium in the Ventilation Ducts		10/24/95
90-7	Hanford Waste Tanks – Ferro-cyanide Safety Issue		9/4/96
91-1	Safety Standards Program		10/27/92
91-2	Reactor Operations Management Plan at Savannah River		10/27/92
91-3	Waste Isolation Pilot Plant		10/27/92
91-4	Rocky Flats, Building 559 Operational Readiness Review		5/1/92
91-5	Savannah River K Reactor Power Limits		4/7/93
91-6	Radiation Protection		11/8/96
92-1	Operational Readiness of the HB-Line at Savannah River		10/27/92
92-2	Facility Representatives		9/17/96
92-3	HB-Line Operational Readiness Reviews at Savannah River		2/3/93
92-4	Multi-Function Waste Tank Facility at Hanford	X [1]	
92-5	Discipline of Operations		10/24/95

[1] Secretary proposed closure on December 16, 1998.

Table 1.C – Summary Status of Board Recommendations (Continued)

Rec	Subject	Open	Closed
92-6	Operational Readiness Reviews		10/24/95
92-7	Training and Qualification		11/4/93
93-1	Standards Utilization in Defense Nuclear Facilities		3/25/99
93-2	Critical Experiments Capability		12/30/97
93-3	Improving Technical Capability		11/9/99
93-4	Environmental Restoration Management Contracts		6/28/96
93-5	Hanford Waste Tanks Characterization Studies		11/15/99
93-6	Nuclear Weapons Expertise		4/27/99
94-1	Improved Schedule for Remediation	X [2]	
94-2	Safety Standards for Low Level Waste		12/22/99
94-3	Rocky Flats Seismic and Systems Safety		5/27/99
94-4	Deficiencies in Criticality Safety at Oak Ridge Y-12		3/12/99
94-5	Rules, Orders, and Other Requirements		6/10/99
95-1	Improved Safety of Cylinders Containing Depleted Uranium		12/16/99
95-2	Safety Management	X	
96-1	In-Tank Precipitation System at Savannah River		3/29/02
97-1	Safe Storage of Uranium-233	X	
97-2	Criticality Safety		8/7/03
98-1	Resolution of Safety Issues Identified by Internal Independent Oversight	X [3]	

[2] Secretary proposed closure on June 8, 2000.

[3] Secretary proposed closure on November 13, 2001.

Table 1.C – Summary Status of Board Recommendations (Continued)

Rec	Subject	Open	Closed
98-2	Safety Management at Pantex	X	
99-1	Safe Storage of Pits at Pantex	X	
2000-1	Stabilization and Storage of Nuclear Material	X	
2000-2	Configuration Management, Vital Safety Systems	X	
2001-1	High-Level Waste Management at the Savannah River Site	X	
2002-1	Quality Assurance for Safety-Related Software	X	
2002-2	Weapons Laboratory Support of the Defense Nuclear Complex	X	
2002-3	Design, Implementation, and Maintenance of Administrative Controls	X	
2004-1	Oversight of Complex, High-Hazard Nuclear Operations	X	
2004-2	Active Confinement Systems	X	

Workers at Paducah preparing a Cask from the L-Area to be transported to the E-Area for final disposal.

D. Report Preview

The remaining portions of the annual report are described below:

1. Section II, KEY DEPARTMENT SAFETY INITIATIVES, describes broad-based Department activities that affect environment, safety and health;
2. Section III, IMPLEMENTATION OF BOARD RECOMMENDATIONS, describes Department activities completed in 2004 to implement Board recommendations accepted by the Secretary;
3. Section IV, SAFETY ACCOMPLISHMENTS AND ACTIVITIES AT MAJOR DEFENSE NUCLEAR SITES, describes Department activities at sites and field offices pertaining to safety and safety management; and
4. Section V, OTHER BOARD INTERFACE ACTIVITIES, describes Department activities to maintain communications and improve interaction between the Department and the Board.

II. Key Department Safety Initiatives

This section describes key initiatives that the Department of Energy (Department) is implementing to improve performance in ensuring the public health and safety.

A. Risk Reduction Through Stabilization of Excess Nuclear Materials

The mission of the Office of Environmental Management (EM) is the safe, accelerated risk reduction and cleanup of the environmental legacy resulting from the Nation's nuclear weapons development and government-sponsored nuclear energy research.

Over the last several years, the program has delivered significant risk reduction and cleanup results while ensuring the cleanup is safe for the workers, protective of the environment and respectful of the taxpayer. The program, once focused on managing risk, is demonstrating the success in reducing risk through a focus on safety, meeting commitments, and delivering results. These results are providing important and valuable benefits to the public, the communities and for the generations that will follow.

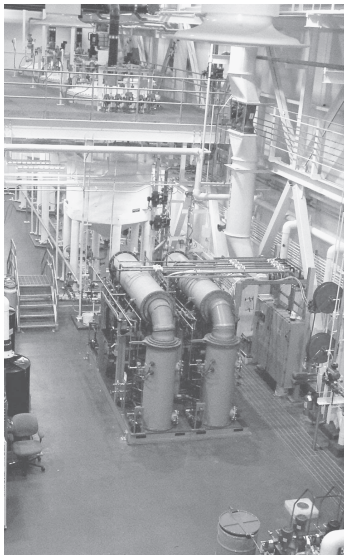
As an established operating cleanup and risk reduction program, EM is demonstrating the importance of remaining firm to operating principles while staying focused on the mission. For example:

- In 2000, the Government Accountability Office reported there was little chance that Rocky Flats would close in 2006. Today, EM will not only complete cleanup in 2006, but is ahead of schedule.
- At Hanford, in 2000, EM had accumulated years worth of spent nuclear fuel and was storing it in degrading basins near the Columbia River. Today EM has removed all spent fuel from those basins and is removing the residual sludge. In addition, EM has retrieved all pumpable liquid wastes from single-shell tanks at Hanford and transferred it to double-shell tanks. As a result of these actions potential risks to the Columbia River from the Hanford site have been significantly reduced.
- At the Savannah River Site (SRS) in 2000, EM stored spent nuclear fuel in multiple water pool basins. Today, the spent nuclear fuel is all consolidated in one robust basin, over 100 excess facilities have been demolished, and over 300 sites have been remediated. Also, more than 1,700 canisters of immobilized highly radioactive waste have been produced (of which approximately 1,000 canisters have been produced since Fiscal Year 2000), removing liquid waste form storage in aging tanks. Removing these contamination sources has reduced the potential risk to the bordering Savannah River.
- At Idaho, in 2000, EM continued to store spent nuclear fuel in water in several basins and liquid radioactive waste in pillar and panel tanks. Today, EM has not only consolidated fuel into the most robust storage basins, but has removed the water from the less robust basins. EM has emptied liquid waste from the pillar and panel tanks. These actions have significantly reduced risks from the Idaho National Laboratory to the underlying Snake River Plant aquifer.

Savannah River has developed instruments to precisely measure quantities of nuclear material used to maintain accountability and control of strategic materials.

- EM has stabilized and consolidated plutonium and other nuclear materials. As a result, seven high-security and expensive-to-maintain storage areas have been eliminated.

These important accomplishments would not have been possible without EM's operating principles that will continue to drive the program through to completion. Of these operating principles, safety remains the utmost priority. The only way EM is able to accomplish its risk reduction and cleanup mission is to do the work safely. EM is committed to instilling this philosophy in every worker's day to day decisions from start to finish of every project. To that end, with these safety standards, the program is demonstrating that EM can improve safety performance and then accelerate work. EM will continue to "raise the bar" and hold itself accountable to the highest standards. The program's ultimate goal is the elimination of accident and injury from the EM work place.



Lawrence Livermore National Laboratory Decontamination and Waste Treatment Facility use evaporators to remove Radioactive and Hazardous Solids from Wastewater.

Within the cleanup program, real risk reduction occurs only when work is completed. Until waste has been permanently disposed, risk must be managed and controlled. A summary of recent accomplishments is provided in Table 2.A.

In addition to EM's material stabilization accomplishments, highlights for National Nuclear Security Administration (NNSA) activities in this area include the following:

- In January 2004, Los Alamos personnel completed roasting and blending of all plutonium oxide items.
- In July 2004, NNSA developed the Comprehensive Nuclear Materials Packaging and Storage Plan. This incorporated and integrated existing stabilization milestones for Los Alamos.
- In April 2004, Lawrence Livermore National Laboratory (LLNL) reported completion of plutonium metal and oxide repackaging, and stabilization and packaging of all other LLNL residues.

Table 2.A - Summary of Environmental Management Accomplishments for 2004

Richland

- Completed removal of all spent nuclear fuel (2,106 metric tons) from the K-Basins to interim dry storage at Hanford's Canister Storage Building (October 12, 2004). Out of decades-old water basins just 400 yards from the Columbia River, the fuel is now dried and in containers containing inert gas, about nine miles from the river. The containers await eventual shipment to a national repository.
- Completed stabilization and packaging of all Board 94-1/2000-1 plutonium metal/oxide/polycube/alloy items (about 11 metric tons) at the Plutonium Finishing Plant (PFP) into standardized "3013" cans, suitable for long-term storage. Material is ready for off-site shipment, enabling a significant reduction of PFP safeguards and security costs, as soon as Headquarters direction is received.
- Began retrieval of transuranic (TRU) waste from trenches in Hanford's 200 West Area burial grounds. The Tri-Party Agreement milestone for removal of 6,000 drums was met four months early.
- Continued acceleration of TRU waste shipments to the Waste Isolation Pilot Plant (WIPP). Through Fiscal Year 2004, 110 shipments were made.
- Completed demolition of Hanford's first of three Plutonium Concentration Facilities (233-S facility), DOE's first open-air demolition of a highly contaminated plutonium facility.
- Installed and activated a new facility to remove hexavalent chromium from the groundwater in the 100-D Area, and performance exceeded expectations.
- Removed and disposed of about 500,000 tons of contaminated soil and waste from Hanford waste sites into the Environmental Restoration Disposal Facility, bringing the total disposed to more than five million tons - about half the total amount of contaminated soil in the Columbia River Corridor.
- Completed the Interim Stabilization (or "cocooning") of the fourth of eight reactors; 105-D Reactor Interim Safe Storage activities completed in Fiscal Year 2004.
- Disposed of 1,877 tons of mixed low level waste to reduce on-site inventory.

River Protection

- Completed approximately 70 percent of the Waste Treatment and Immobilization Plant (WTP) design and engineering.
- Interim closure of tank C-106 completed.
- Completed approximately 30 percent of the WTP construction.
- Completed construction of the AZ-101 retrieval system for the first high-level waste feed delivery to the waste treatment and immobilization plant.
- Initiated construction of the WTP Laboratory Facility.
- Installed the 4 Low Activity Waste Feed Receipt Vessels seven months ahead of the scheduled milestone.
- Completed removal of the pumpable liquid from all Single-Shell Tanks (> 3 million gallons to date).
- Initiate site preparation and preliminary construction of the Hanford Integrated Disposal Facility.
- Completed design of the Immobilized High-Level Waste Interim Storage Facility.

Table 2.A - Summary of Environmental Management Accomplishments for 2004

Rocky Flats

- The Rocky Flats Closure Project is approaching 80 percent completion and is well ahead of schedule and under cost.
- Demolition of the site's former plutonium fabrication buildings is ahead of schedule and under cost with one exception.
- Demolition of Building 771 is complete.
- Demolition of non-plutonium buildings is well ahead of schedule and significantly under cost.
- Waste shipments continue at rates sufficient to support closure activities.

Savannah River

- Produced 250 canisters of vitrified HLW with higher waste loading — about a 34 percent increase in waste loading per canister. This higher waste loading, the product of technological advances sponsored by EM, will result in almost 1,000 fewer canisters that will need to be produced at the Defense Waste Processing Facility (DWPF) and disposed of at Yucca Mountain, Nevada, at a substantial cost savings to the taxpayer.
- Made 144 shipments (4,000 drums) of TRU waste to WIPP. This keeps Savannah River on course to complete shipment of all legacy TRU waste to WIPP by about the end of September 2006.
- Disposed of 10,744 cubic meters of low-level waste/mixed-low-level waste.
- 13 contaminated waste sites were cleaned up or otherwise remediated.
- The Receiving Basin for Offsite Fuels, where offsite radioactive fuel rods have been stored for decades, was successfully decommissioned.
- Initiated construction of the Glass Waste Storage Building II.
- Began remedial action of the Old Radioactive Waste Burial Ground, SRS's highest risk unit requiring remediation.
- Started remedial action on the TNX Operation Unit driving toward complete closure of that area of the site given the substantial decontamination and decommissioning of facilities already completed there.
- Completed remediation of L-Reactor Seepage Basin.
- Began remedial action on the P-reactor Seepage Basin.
- Completed decontamination and decommissioning of 67 excess facilities at various locations around the site.
- Continued operations of FB Line in support of F-Area Closure (package and stabilize plutonium (Pu) material).

Table 2.A - Summary of Environmental Management Accomplishments for 2004

Savannah River, (Continued)

- Initiated F-Canyon de-activation activities.
- Completed Mk 16/22 legacy spent nuclear fuel dissolution in H-Canyon.
- Completed dissolution of Pu residues through the HB-Line.
- Completed preparations and began conversion of neptunium solutions to oxide in HB-Line Phase II.
- Completed design and initiated construction of 3013 container surveillance capability in 235-F.
- Operated L-Basin for safe storage of spent nuclear fuel awaiting disposition.

Ohio

- In Fiscal Year 2004, the Fernald Closure Project placed 609,366 cubic yards in the On-Site Disposal Facility, shipped 612 cubic meters to the Nevada Test Site for disposal, and shipped 150,000 tons of waste pits material to Envirocare for disposal. The site completed the decontamination and decommissioning of six (6) facilities (total of 29 radioactive buildings and 2 industrial buildings).
- All spent nuclear fuel has been removed from the West Valley Demonstration Project site.
- All Pu-238 has been removed from the Mound site and all nuclear material from Fernald.
- Miamisburg closure project shipped 7,243 tons to Nevada Test Site and 51,657 tons of waste to a commercial disposal facility.

Waste Isolation Pilot Plant

- As of November 10, 2004, 3,128 shipments of TRU waste have been received from generator sites across the complex and over 60,000 waste containers with more than 24,000 cubic meters of waste has been disposed at WIPP since it opened in 1999.
- WIPP has developed the capability to receive 34 shipments per week.
- WIPP completed disposal and closure of TRU waste in Panel 1, began waste emplacement in Panel 2, and completed mining of Panel 3.
- In Fiscal Year 2004 WIPP completed over 960 waste shipments and disposed of more than 8,800 cubic meters of TRU waste, the most in any fiscal year to date.

Idaho

- Completed the transfer of all denitrator products to the Savannah River Site and Nuclear Fuel Services.
- Consolidated at Idaho Nuclear Technology and Engineering Center all EM legacy spent nuclear fuel from old wet storage to dry storage at Idaho National Engineering and Environmental Laboratory.

Table 2.A - Summary of Environmental Management Accomplishments for 2004

Idaho, (Continued)

- Commenced operations of the Advanced Mixed Waste Treatment Facility and shipped 342 cubic meters of TRU waste to WIPP.
- Empted and cleaned five pillar and panel vaulted tanks at the Idaho Nuclear Technologies and Engineering Center Tank Farm Facility.
- Completed the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Faci1ity cell one and began accepting soils and debris.
- Completed Pit 9 Glovebox Excavator Method project construction and completed retrieval operations.
- Began construction on the Pit 4 Accelerated Retrieval Project.
- Completed active remediation of Waste Area Group 4 (Central Facilities Area) and 5 (Auxiliary Reactor Area and Power Burst Facility).
- Removed water, sludge and debris from the Materials Test Reactor canal, Test Area North-607 fuel storage pool, and Power Burst Facility storage pool.
- Disposed of over 9,000 cubic meters of mixed low-level waste and low-level waste.
- Demolished 247,245 square feet of EM-owned buildings.

Oak Ridge

- Shipped more than 1800 depleted uranium-floride cylinders from East Tennessee Technology Park to the Portsmouth Gaseous Diffusion Plant in Ohio.
- Processed at the TRU Waste Processing Facility, 429,000 gallons of supernate from the Melton Valley Storage Tanks. The processing was completed in October resulting in 97 shipments to the Nevada Test Site of approximately 29,000 curies of mixed fission products.
- Shipped the last of the spent nuclear fuel to Idaho in December 2003. The shipments of spent fuel constituted a total of more than 110,000 curies of material and were a prerequisite for the Melton Valley Closure Project at the Oak Ridge National Laboratory.
- Achieved hydrologic isolation of Solid Waste Storage Area 4 at the Oak Ridge National Laboratory, significantly reducing the release of radioactive contamination offsite.
- Defueled the Tower Shielding Reactor and the facility was downgraded to less than Hazard Category 3.

B. NNSA Safety Accomplishments

Establishment of a Chief of Defense Nuclear Safety

On September 9, 2003 the NNSA Administrator chartered a Task Force under the leadership of Brigadier General Ron Haeckel, Principal Assistant Deputy Administrator for Defense Programs, to review the Columbia Accident Investigation Board report and provide recommendations. The task force was comprised of NNSA representatives from Headquarters and the site offices, Department personnel, and contractors. NNSA issued its Lessons Learned and Recommendations from Review of NASA's Columbia Accident Investigation Report on February 19, 2004.

The report documents the team's 30 recommendations in the areas of Management and Safety Culture Improvements, Corporate Organizational Improvements and Technical Capability.

One of the recommendations was for NNSA to establish a chief engineer position. While NNSA management was moving forward to establish a Chief of Defense Nuclear Safety position in response to the team's recommendations, the Department was evaluating its response to the Defense Nuclear Facilities Safety Board (Board) recommendation 2004-1, *Oversight of Complex, High Hazard Operations.* The Board's recommendation cited the need for a central technical authority within the Department.

In November of 2004, NNSA filled the position of the Chief of Defense Nuclear Safety. The Chief of Defense Nuclear Safety has filled two positions on his staff and expects to fill three additional safety expert positions in the near future.

The NNSA Chief of Defense Nuclear Safety will provide the necessary technical expertise to support the NNSA central technical authority. In 2005, the Department will proceed with its implementation of Board recommendation 2004-1 and continue developing the roles, responsibilities, authorities and associated staffing to support the central technical authorities.

Work Planning and Activity-level Safety Management

On May 21, 2004 the Board sent a letter to NNSA to address issues regarding documentation and practices associated with activity level work planning at NNSA sites. To address the Board's concerns, the Deputy Administrator for Defense Programs tasked the NNSA site offices to perform a self-assessment on work planning activities and prepare to present the findings and path forward at a subsequent workshop. In October 2004, the NNSA site offices and contractor personnel, NNSA headquarters, Office of Environment, Safety and Health (EH) personnel, EM personnel, and the Board staff gathered to discuss findings and lessons learned. EM personnel shared lessons learned on two recent fatalities at the EM sites. After hearing the site input and discussing lessons learned, NNSA developed some future corrective actions that would be integrated with the Department's efforts on Board recommendation 2004-1. These corrective actions to improve activity level work planning and control will continue in 2005.

Specific Safety Highlights

- NNSA led the Department's response to Recommendation 2004-1, with the Deputy Manager for the Y-12 Site Office leading a large team comprised of headquarters and site personnel from seven different program offices.
- NNSA will provide the Departmental lead on behalf of the responsible managers and in support of the Department's implementation of recommendation 2004-1.
- The Department-wide 2003 Facility Representative of the Year Award was presented to an NNSA employee of the Los Alamos Site Office.
- In January 2004, Los Alamos completed roasting and blending of all plutonium oxide items.
- In July 2004, NNSA developed the Comprehensive Nuclear Materials Packaging and Storage Plan.
- In April 2004, Lawrence Livermore National Laboratory reported completion of plutonium metal and oxide repackaging and stabilization of all other Livermore residues.
- Lawrence Livermore National Laboratory completed actions associated with Board recommendation 97-1, *Safe Storage of U-233.*
- In May 2004, the Nevada Site Office successfully completed the Armando Sub Critical Experiment.
- The Pantex Site Office has repackaged greater than 2,400 pits during Fiscal Year 2004, in support of Board recommendation 99-1.
- In June 2004, the Pantex Site Office successfully received startup authority for the W78 weapon system.
- The Tritium Facility and Modernization and Consolidation project was successfully completed September 13, 2004 and is now in operation.
- Since December 2003, on two separate occasions at the Y-12 plant, more than 3,000,000 hours were worked without a Lost Workday Away case.
- Y-12 successfully launched the Conduct of Operations Representatives Program.
- Y-12 completed all modifications to the equipment in Enriched Uranium Operations Special Processing for return to operation. Completed Enriched Uranium Wet Chemistry first use activities. All wet chemistry processes have been exercised with special nuclear materials present and product produced.
- Y-12 completed all major construction on the Purification Facility Project.
- Y-12 demolished 32 buildings (approximately 107,000 square feet).
- Several sites conducted successful readiness assessments and approved and implemented documented safety analyses and technical safety requirements for facilities.

C. Facility Representative Program Activities

The Department's Facility Representative Program is a centerpiece of Department efforts to upgrade federal technical capabilities. Facility Representatives are highly trained Department employees who provide effective day-to-day oversight of contractor operations at the Department's most hazardous facilities. Approximately 200 Facility Representatives around the complex provide oversight of operational activities important to mission accomplishment and public safety. The Department's standard, *DOE-STD-1063-2000, Facility Representatives*, defines the duties, responsibilities, and qualification for Department Facility Representatives. The Facility Representative Program supports Department managers in ensuring Facility Representatives are competent and technically qualified to perform their job. Key components of the program include:

- Complex-wide performance indicator reports provided to the Department's senior managers every quarter since 1999 for evaluation and feedback to improve the program;
- Designated Facility Representative Steering Committee Members and Sponsors at each Field and major Headquarters program office to serve as management advocates for Facility Representatives;
- Monthly conference calls of the Facility Representative Steering Committee to discuss program development and operational oversight issues;
- Annual Facility Representatives Workshop to promote the sharing of lessons learned from Facility Representative Programs across the complex; and
- Facility Representative web site <https://www.hss.doe.gov/deprep/facrep> to provide information on the Facility Representative Program, qualification standards, vacancy announcements, and other useful information for the Department's Facility Representatives.

Facility Representative of the Year

The Facility Representative Program experienced several notable achievements in 2004. A total of fourteen Facility Representatives were nominated for the Facility Representative of the Year Award by their field offices. The award is provided annually to a Facility Representative who consistently demonstrates exceptional performance and who makes significant contributions to the safe and efficient operation of Department facilities. A panel of senior field and headquarters personnel selects the overall Department winner of the award from the field nominees. The fourteen nominees from field offices demonstrated continued strong management support for the program and exceptional performance from the Facility Representatives.

The nominees for the Facility Representative of the Year Award.

Annual Workshop

The 2004 Annual Facility Representatives Workshop was held in Las Vegas, Nevada, from May 18-20, 2004. A total of 132 people attended, representing every major program and field office. Included in the total were sixty-four Facility Representatives, representing one-third of the Department's Facility Representative community. Brigadier General Ronald J. Haeckel, Principal Assistant Deputy Administrator for Military Applications, NNSA, gave the keynote address. The theme of the address was "NNSA Evaluation of Columbia Accident Investigation Board Report (CAIB)." General Haeckel discussed the lessons learned and the recommendations from the three sub-teams. John T. Conway, Chairman, Defense Nuclear Facilities Safety Board, provided remarks about the need for continued improvements in the Facility Representative Program. He further discussed areas noted in the Board's May 14, 2004, letter to the Department where improvements can be made to the Facility Representative Program – especially in staffing and training on specific hazards. Actions in response to the letter are described below. Finally, Major General John L. Barry (USAF-Ret.), a member of the CAIB, made a detailed presentation on the Board's final report. He discussed both the technical and organizational causes of the accident.

Also at the workshop, the Department-wide 2003 Facility Representative of the Year Award was presented to an employee of the Los Alamos Site Office (LASO). Her noteworthy accomplishments included serving as a board member on the Department Type B Accident Investigation of the multiple plutonium-238 uptake event at Los Alamos, participating as a team member on the Department Operational Readiness Review for Wet Chemistry Operations at Y-12, and establishing significantly increased formality in facility operations at the Los Alamos Radiochemistry Facility.

Continuous Improvement

On May 14, 2004, the Board sent a letter to the Secretary regarding the Facility Representative Program in NNSA. The Board noted issues with Facility Representative staffing and activity-specific training at some NNSA sites. In response to these issues, the NNSA Administrator responded on July 13, 2004, by committing to several actions. The first was to develop a more rigorous staffing analysis methodology based on DOE-STD-1063-2000, *Facility Representatives* and that also incorporated improvements suggested in the Board's letter and discussed at the May 2004 Federal Technical Capability Panel meeting. Improvements included: (1) providing staffing analysis guidance for nuclear facilities that are below hazard category 3 as well as hazardous non-nuclear facilities, and (2) adding a workload analysis step ensuring that the number of Facility Representatives is sufficient given the duties and responsibilities assigned to them. The second action was to develop corporate guidance for the identification and conduct of activity-specific hazard training. The objective of the guidance was to ensure that Facility Representatives are aware of and properly trained on significant new hazards or activities they may encounter during the performance of their oversight duties. Finally, a third action was to develop an NNSA corporate pipeline, of which Facility Representatives would be a major part, to ensure that talented candidates are ready to fill expected vacancies at NNSA sites. All actions are ongoing. New staffing analyses have been

conducted at NNSA sites based on the new methodology. Activity-specific guidance has been developed and incorporated into NNSA site procedures. Site reviews are planned for 2005 to ensure consistent implementation.

Conclusion

Oversight performed by Facility Representatives provides Department line managers with accurate and objective information on the effectiveness of contractor work performance and practices, including implementation of Integrated Safety Management (ISM). The Department's experience has shown that when personnel are dedicated to this function, the information that they provide can be used proactively to ensure that work is completed in a safe and environmentally responsible manner. Further, Facility Representatives have obtained a strong understanding of the technical operations needed to successfully perform in positions of increased responsibility throughout the Department.

D. Independent Oversight and Performance Assurance

In December 2003, the Secretary created the Office of Security and Safety Performance Assurance (SSA), which includes the Office of Security (SO) and the Office of Independent Oversight and Performance Assurance (OA). OA provides an independent assessment of the effectiveness of policies and programs in safeguards and security; cyber security; emergency management; environment, safety and health (ES&H); and other critical functions of immediate interest to the Secretary, the Deputy Secretary, or the Administrator of the NNSA. OA reports to the Director of the SSA, who reports directly to the Secretary.

During 2004, the OA conducted three major inspections of defense nuclear sites, and an investigation of worker vapor exposure and occupational medicine program allegations at the Hanford Site that included evaluations of selected aspects of worker safety and health systems. All findings were entered into the corrective action system in accordance with the Department's response to Board recommendation 98-1, *Resolution of Safety Issues Identified by Internal Independent Oversight.*

Lessons Learned Report

During 2004, OA issued a Lessons Learned Report based on 2003 ES&H inspection results to provide feedback to line organizations on the overall strengths and weaknesses identified during the inspection activities. The report determined that many aspects of the Department's ISM system policy have been effectively implemented and have resulted in work hazards being identified and controlled such that work is being performed safely. However, improvements are needed in two key components of ISM: (1) the identification and implementation of hazards controls, particularly the rigor of working within established controls, and (2) Department line management oversight and contractor feedback and improvement programs. In addition, OA found significant weaknesses in the design of safety systems at several sites that could render the systems unable to perform their safety function for some design basis accidents, indicating a need for improvement in the rigor and attention to detail of the design and design review processes for safety systems.

Emphasis Areas

OA Emphasis Areas

(1) Implementation of Controls.

(2) Safety System Functionality.

(3) Oversight, Self-Assessment, and Corrective Actions.

OA ES&H inspections continued to emphasize three key ISM areas. The first area of emphasis was implementation of controls to protect workers, the public and environment during work activities. The second area was maintaining the functionality of safety systems at hazardous facilities to protect the workers, public and the environment; the emphasis in this area is consistent with the Department implementation plan for Board recommendation 2000-2, *Configuration Management, Vital Safety Systems*. The third area was feedback and improvement including the Department oversight of contractors, Department and contractor self-assessment, and corrective action management.

Requested Reviews

At the direction of the Secretary, OA conducted an investigation at the Hanford Site to evaluate allegations of deficient safety and medical practices and to determine whether additional actions were needed to protect workers against vapor exposures at the Hanford Site Tank Farms. While there are no known instances of exposures above regulatory limits, the results of the investigation identified long-standing deficiencies in the characterization of the Tank Farm vapors and industrial hygiene program, such that the site cannot adequately assure that all exposures are below regulatory limits. The site responded by initiating a number of appropriate immediate, near-term, and longer-term actions.

Also during 2004, at the direction of the Deputy Secretary of Energy, OA conducted a special assistance review at Los Alamos National Laboratory (LANL) in support of LASO efforts to oversee LANL's efforts to resume operations. Most LANL work activities had been suspended because a number of security and safety events caused LASO and LANL management to conclude that LANL had significant and urgent weaknesses in complying with requirements. During the review, OA focused on safety-related aspects of the resumption effort, including work control processes and related management systems (for example, assessments and authorization bases). Consistent with the intent of the special assistance review, OA provided real time feedback on processes and performance and identified opportunities for improvement in activity-level and institutional work control systems, ES&H programs, and the resumption processes. The observations and opportunities for improvement identified by OA were shared with LASO and LANL personnel on a real time basis for their consideration. An OA, ES&H inspection of LANL previously scheduled for August-September 2004 was deferred so that LASO and LANL could focus on the resumption effort and OA could perform the special assistance review for the overall benefit of the Department. The deferred inspection has been rescheduled for late 2005.

National Training Center (NTC)

As a result of the Secretary's decision to designate SSA's, NTC in Albuquerque as the "Center of Excellence in Security and Safety Professional Development" for the Department, training services were formally expanded to include safety, which establishes a new programmatic mission at the NTC. Furthermore, the Secretary directed that Departmental Headquarters and field offices coordinate all of their Security and Safety Career Development Programs and Training activities with the NTC. Expanding the scope of NTC training programs to support safety is being accomplished in a two-phased implementation approach with support

from OA, the NNSA Administrator, EH, and the Federal Technical Capabilities Panel. The first phase will focus on identification of fast track courses that can produce an immediate positive impact on the Department's safety programs. The second phase will focus on establishing a comprehensive career development and professional curricula to ensure long-term Safety program continuity. Ensuring that the Department maintains sufficient technical capability and appropriate experience for effective safety oversight has been the subject of numerous Board recommendations, including Board recommendation 93-3, *Improving Technical Capability,* and more recently Board recommendation 2004-1, *Oversight of Complex, High Hazard Nuclear Operations.*

E. Quality Assurance Activities

EH's, Office of Quality Assurance Programs serves as the Department's corporate focal point for quality assurance programs, processes, and procedures. The Office is also responsible for identifying and resolving Departmental crosscutting issues and for supporting line management implementation of policy and requirements for the design, procurement, fabrication, construction, and operation of Department facilities.

The Office has identified and briefed the Board on the following six focus areas that are being addressed to improve quality assurance across the Department.

- Quality Assurance Leadership
- Flow-down of Quality Assurance Requirements
- Integration of Quality Assurance with ISM
- Implementation of Quality Assurance Requirements
- Quality Assurance (QA) Analysis
- Quality Assurance Oversight and Assessment

These focus areas were identified through a review of Board documents, Department line management assessments of their QA performance, nuclear safety regulation enforcement actions (Price-Anderson Amendments Act QA rule, 10 CFR 830 Subpart A), Department contractor assessment reports, and direct interaction with organizations implementing the QA requirements. The actions taken on the focus areas will be coordinated with Department line management and the Energy Facility Contractors Group.

In addition, two ongoing quality assurance initiatives continue to receive considerable attention since the Office of Quality Assurance Programs was established in 2003. Each initiative described below involves implementing improved quality assurance processes.

Software Quality Assurance (SQA)

The Department continues its efforts to establish a rigorous and effective SQA program. This is being accomplished through the Department's 2002-1 implementation plan. The scope of the implementation plan includes safety software at the Department's defense nuclear facilities. Safety software includes both safety system software and safety analysis and design software.

Significant progress has been made in the following four areas to ensure the quality and integrity of safety software at defense nuclear facilities:

- Roles and Responsibilities – Roles and responsibilities and authorities for all aspects of SQA have been identified, documented, and

communicated. This was initially completed using a Department Notice and is now being incorporated in updated directives, the Functions, Responsibilities, and Authorities Manual, and related documents.

- In addition, Federal personnel, both Headquarters and field elements, with SQA responsibilities have been identified. Software quality engineering training has been provided and personnel are required to satisfy the competency requirements identified in the Safety Software Quality Assurance Functional Area Qualification Standard.

- Computer Codes - Safety software has been assessed to determine its current status along with the effectiveness of SQA programs. Corrective actions have been identified to ensure that safety software comply with appropriate SQA requirements.

  Safety analysis and design "toolbox" codes that are commonly used across the Department have been identified. Guidance documents identifying special conditions when using the "toolbox" codes have been developed and will be used until the codes are upgraded to SQA requirements. A Central Registry has been developed to facilitate maintenance, technical support, configuration management, training, and notification to users of problems and revisions to these codes.

- Requirements and Guidance - Requirements and guidance for safety software quality assurance have been identified based on existing industry or Federal agency standards. These requirements and guidance are being developed and will be sufficiently rigorous to ensure the reliability of safety software at defense nuclear facilities based on their risk and complexity.

- Continuous Improvement - Continuous improvement started with the formation of the Office of Quality Assurance Programs in 2003 and the identification of SQA experts from across the Department. An SQA Knowledge Portal has been established to promote continuous improvement and the sharing of knowledge of SQA across the Department complex. It consolidates information and contains links to subject matter experts, procedures, training material, program descriptions, good practices, and lessons learned. The Portal also provides capabilities for member collaboration in product development and threaded discussions.

Suspect/Counterfeit and Defective Items

The Department is committed to implementing a process to ensure that Suspect/Counterfeit (S/CI) or defective items are quickly identified, and that S/CI actions are taken to ensure safety at Department facilities. EH has assumed a corporate leadership role, and is responsible for ensuring the effective implementation of this process. Actions taken to further improve the Department's S/CI process include:

- S/CI Training – EH conducted a series of S/CI training sessions for the Department. Three job specific training sessions were designed and presented to (1) Department and contractor senior managers; (2) crafts, material handlers and quality control personnel; and (3) engineers and procurement personnel. Each training session included hands-on training and a discussion on the Department's S/CI policy, process, and expectations. To date,

approximately 2,600 individuals across the Department complex have received the S/CI training.

- S/CI Directives - The Department developed a new Guide, DOE G 414.1-3, *Suspect and Counterfeit Items Guide for use with 10 CFR 830 Subpart A, Quality Assurance Requirements* and DOE Order 414.1B, *Quality Assurance*. The Guide incorporates the EH S/CI process and updates other S/CI information.

- S/CI Process Guide - EH finalized the S/CI Process Guide that is being used to implement the S/CI process and approved it for use. This completed the final action/ commitment outlined in the Secretary's August 25, 2003, report to the Board on additional actions taken to ensure that items and components heat treated by Temperform USA are not installed in safety-related or mission-sensitive applications affecting defense nuclear facilities.

- Safety & Health Hazards Alerts – As part of the Department's S/CI process, EH issues Safety & Health Hazards Alerts to advise the Department of potential S/CI or defective items. Two alerts were issued in 2004. One concerned the removal of a supplier from the approved vendor list for allegedly falsifying certifications for stainless steel material. The other alert concerned defective scaffold clamps that could lead to a catastrophic failure.

- Hunt Valve Investigation – At the request of the Deputy Secretary, the Department completed a review to determine whether any non-conforming valves or components supplied by Hunt Valve Company, Inc. are in use at Department facilities. The Deputy Secretary also requested that Department managers at all sites use this non-conforming valves issue as an opportunity to verify that the Department's S/CI processes are effectively implemented at their facilities. Department managers verified that an S/CI process is implemented at their sites and that it is effective. EH reported that the corporate S/CI process is effective in the identification and disposition of such items.

F. Federal Technical Capability Program (FTCP)

FTCP Manual

A major revision of the FTCP Manual (DOE Manual 426.1-1), last updated in 2000, was initiated in late Fiscal Year 2003 and completed in spring 2004. The revision resulted in a streamlined, more concise description of the FTCP. Most notable of the changes was the addition of a Safety System Oversight Personnel (SSOP) chapter which defined duties and responsibilities, technical competencies, and provided a basis for a uniform implementation of safety system oversight throughout the Department.

Functional Area Qualification Standards (FAQSs)

The Department's implementation plan for Board recommendation 2000-2, *Configuration Management, Vital Safety Systems*, included a commitment to update the FAQSs in the Technical Qualification Program (TQP). The commitment called for DOE to revise TQP standards or processes for safety system expertise. During the past two years, the decision was made to develop a chapter for the FTCP Manual specifically addressing the expectations and requirements for the Department's

Safety System Oversight personnel. It was determined that the FAQSs still needed to be enhanced to improve the technical content and rigor, and assure consistency in application across the complex. During the process, 30 FAQSs in the areas of nuclear safety, construction management, facility management, technical training, and civil engineering were reviewed and/or revised. In August 2004, the FTCP completed that effort with approval of the final FAQS, DOE-STD-1185-2004, *Nuclear Explosive Safety Functional Area Qualification Standard.*

Workforce Staffing

The FTCP Manual requires that Managers annually conduct a workforce analysis of their organizations and develop staffing plans that identify technical capabilities and positions to ensure safe operations at defense nuclear facilities. Recently, the FTCP Panel reviewed past staffing plans to determine whether FTCP Manual requirements were being met, and found that the analyses were not developed in a consistent manner that would allow identification of DOE-complex status/needs, and that a common methodology could be useful. Agents worked with Los Alamos staff to develop guidance/methodologies for preparation of the workforce analysis for determining Facility Representative and Safety System Oversight personnel staffing. NNSA is using the Facility Representative methodology during their effort to verify and improve Facility Representative staffing.

Safety System Oversight

During 2004, the Panel defined the technical qualification standards for Safety System Oversight personnel. These personnel are a key technical resource qualified to oversee contractor management of safety systems at defense nuclear facilities. Unlike Facility Representatives, who are responsible for monitoring the safety performance of the Department's defense nuclear facilities and day-to-day operational status, staff members assigned to safety system oversight are responsible for overseeing assigned systems to ensure that they will perform as required by the safety basis and other applicable requirements. Safety System Oversight Program requirements are now included in the recently revised FTCP Manual. Briefings were provided to the major program offices and field office managers of both EM and NNSA. In January 2004, a meeting was held in Washington, D.C. with leads from each program and site to share key expectations and milestones for implementation. For the first time, a separate meeting for program personnel was held in conjunction with the Facility Representatives Workshop at Las Vegas, Nevada, in May 2004. Initial assessments focusing on program implementation, which includes the qualification process and staffing, were held at 4 sites: the Office of River Protection, Savannah River Operations Office, Richland Operations Office, and the Idaho Operations Office. The objective is to complete initial assessments of all applicable sites by December 2004. Final assessments to determine whether sites have trained, qualified, and capable Safety System Oversight personnel performing their roles will be performed in 2005.

Implement Software Quality Assurance

The Secretary of Energy committed to implement a software quality assurance program as part of the Department's implementation plan in response to Board recommendation 2002-1, *Quality Assurance for Quality-Related Software*, approved in March 2003. The Panel developed and issued a Safety Software Quality Assurance FAQS for Federal

personnel who provide assistance, direction, guidance, oversight, or evaluation of safety software. This includes safety software used for consequence analysis for potential accidents and design basis events, design for structures, systems and components, instrumentation and controls, and similar software, such as databases used for safety management functions.

Enhance Authorization Basis Capability

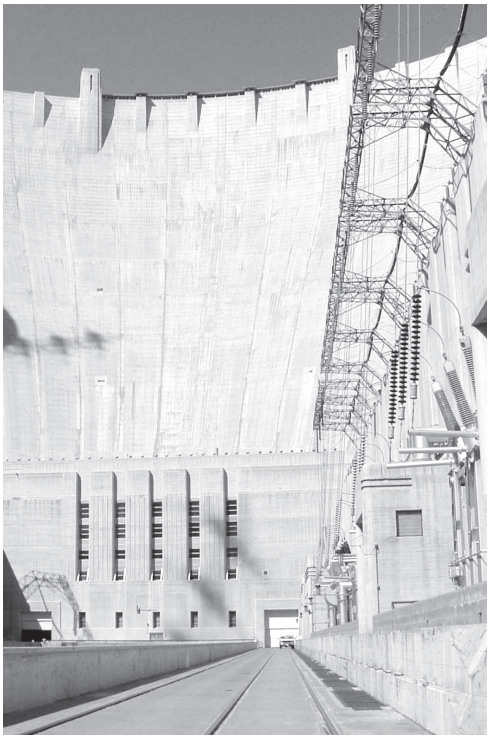
The Department efforts to upgrade the Federal technical workforce are centered on personnel performing four functions: (1) Senior Technical Safety Managers; (2) Facility Representatives; (3) Safety System Oversight personnel; and (4) Authorization Basis (AB) personnel. The Panel has devoted considerable attention to the first three groups of personnel. Therefore, the Panel determined that it was necessary to enhance the capability of the Federal personnel performing AB work due to the importance and technical difficulty of the work, and its foundation to all safety management activities. During 2004, the Panel formed a working group of FTCP personnel and AB experts representing a cross-section of the Department complex. The working group divided into three sub-teams: (1) Review best practices and lessons learned; (2) Investigate methods to attract and retain AB personnel; and, (3) Develop roles and responsibilities for AB personnel. Several teleconferences and one face-to face meeting were held during the year. Additionally, sub-teams one and two developed surveys which were distributed throughout the complex. The results of the surveys were used to develop sub-team one and two reports. Sub-team work is completed. The team is preparing a plan to enhance the capability of the Federal personnel performing AB work.

Measuring Performance

In 2003, the FTCP established quarterly performance measures to focus line manager's attention on achieving the key Department goals related to upgrading the Department's Federal technical work force. The collection and dissemination of quarterly performance data has proven to be useful in focusing management to improve weak areas. During 2004, the Panel raised the bar of acceptable site performance from 75 percent to 80 percent fully qualified rate for all personnel in the Technical Qualification Program. As of September 30, 2004, 19 Offices and Headquarters organizations meet the 80 percent qualified goal. The Department's qualification rate now stands at 85 percent. In addition, NNSA established a Task Force, consisting of training specialists from all NNSA offices, to promote consistency in implementation of the qualification program. This activity has improved communication and information exchange between the sites.

Program Assessments

In an effort to continually improve the program, the Panel reviewed existing requirements, guidance, and criteria for program assessments in DOE M 426.1-1A, Chapter IX; the FTCP Independent Assessment of June 2000; and the NNSA Columbia Accident lessons learned for applicability to FTCP-related initiatives and responsibilities. The first activity was to review the role of Program Assessments, including the existing requirements, guidance, and criteria for program assessments in the FTCP Manual and make recommendations for potential improvements/refinements. The working group proposed recommendations for revising the existing guidance and emphasized the importance of sharing the results of site/headquarters and independent assessments for lessons learned. Another key activity was to review the FTCP Independent Assessment of June 2000 for completion of findings and recommendations. The working group reported that "there were many strengths within individual organizations at Sites and Offices across the Department ....There was awareness and generally a positive atmosphere toward the Technical Qualification Program and Senior Technical Safety Manager Programs, and a basic receptivity to continuous improvement within the technical qualification processes."



Tour of the Hoover Dam Power Plant during the Facility Representative workshop.

III. Implementation of Board Recommendations

The Defense Nuclear Facilities Safety Board (Board) issues recommendations to the Secretary of Energy (Secretary) on issues or circumstances that need to be resolved to ensure adequate protection of the public health and safety. The Secretary is required to respond to each Board recommendation within forty-five days of publication of the recommendation in the *Federal Register.* In addition, the Secretary must submit an implementation plan to the Board within ninety days of publication in the *Federal Register* of the Secretary's acceptance of the recommendation. The Department of Energy's (Department's) policy is to begin implementation plan development in parallel with the development of the Department's response as outlined in DOE M 140.1-1B, *Interface with the Defense Nuclear Facilities Safety Board.*

The Board has issued forty-seven recommendations to the Secretary since the Board was established in 1988. The Secretary has accepted forty-three of the Board's recommendations in their entirety, accepted three with minor exceptions and clarifications and is currently evaluating the latest Board recommendation. For each accepted recommendation, the Secretary has approved the Department's implementation plan. Thirty-two of the Board's recommendations are now closed. Fifteen recommendations remain open, of which, the Secretary has proposed closure for three and the Department has completed all implementation plan activities for four more. The Department is actively taking steps to resolve the safety issues from the remaining recommendations.

A. Recommendation Closures

The Board closed no recommendations in 2004.

B. Recommendations Previously Proposed for Closure

The Department proposed closure of three recommendations prior to 2004:

- Recommendation 98-1, *Resolution of Safety Issues Identified by Internal Independent Oversight*;
- Recommendation 94-1, *Improved Schedule for Remediation*; and
- Recommendation 92-4, *Multi-Function Waste Tank Facility at Hanford*.

These three recommendations remain open.

Recommendation 98-1, *Resolution of Safety Issues Identified by Internal Independent Oversight*

On September 28, 1998 the Board issued recommendation 98-1 concerning specific weaknesses in the Department process to effectively address and resolve findings identified by its internal independent Office of Oversight. The Secretary accepted the recommendation on November 20, 1998, and approved the Department's implementation plan for establishing a systematic system for developing, tracking, reporting, and effectively resolving Office of Oversight identified findings on March 10, 1999. The implementation plan outlined specific actions, deliverables and milestones for establishing a consistent and disciplined process to improve the Department's corrective action process. It included establishing clear roles, responsibilities, and authorities; a process for elevation of disagreements up to the Secretary; senior management involvement; corrective action tracking and reporting; and verification of corrective action closure. The Department completed all implementation plan commitments as of September 2000.

The Department submitted a Final Report to the Board on recommendation 98-1 in November 2001. The report outlined a summary of actions taken to resolve the issues in the Board's recommendation and provided a basis for closure of the recommendation. In January 2002 the Board acknowledged these accomplishments, but indicated that an update to three program-specific Functions, Responsibilities, and Authorities (FRA) documents would be required for Board closure. Subsequently, these three organizations – the National Nuclear Security Administration (NNSA), Office of Independent Oversight and Performance Assurance (OA), and the Office of Environment, Safety and Health (ES&H) – issued their FRA documents. All of these FRA documents have now been updated. The conditions outlined in the Board's January 2002 letter have been met. The Department issued the last of these FRA documents in October 2003.

The Department's Corrective Action Management Program has continued to coordinate and assist line managers in improving the tracking, reporting, and effective completion of 4,800 corrective actions in response to 900 findings reported by OA in ES&H and the Office of Environmental Management (EM) assessments; Type A Accident Investigations; and other assessments as directed by the Secretary and Deputy Secretary. Major accomplishments to enhance and institutionalize the Department's 98-1 implementation plan during 2004 included:

- Publication of the Department's revised Corrective Action Management Program requirements and responsibilities for program implementation in DOE Order 414.1B, *Quality Assurance*.
- Revision of the Department Corrective Action Tracking System (CATS) to enhance the security and serviceability of the database used to track and report the status of implementation.
- Revision of the Department CATS User's Guide which provides detailed instructions and guidance for accessing CATS, entering and viewing data, linking data, and searching for information.
- Revision of the Department Corrective Action Management Plan Web Site <http://www.eh.doe.gov/camp/index.html> which outlines the program requirements, reports, and references.
- Continued coordination of the Department Corrective Action Management Team, a chartered cross organizational working group of representatives for the Department Headquarters and field elements, and the fifty CATS database registered editors located throughout the Department complex to inform, exchange information, assist, and receive feedback on Corrective Action Management Plan activities and direction.
- Continued coordination, information and assistance to the Department Headquarters and field element managers and assessing organizations on program activities.

The Department believes that the actions taken in response to this Board recommendation are fully implemented and fully institutionalized. The Department intends to continue the performance of these activities in the future. The Department knows of no issues that need to be addressed relative to these activities. The Department continues to consider this recommendation to be complete.

Recommendation 94-1, *Improved Schedule for Remediation*

The Secretary proposed closure of 94-1 in a June 8, 2000 letter to the Board. This recommendation addressed the hazards and risks involving the storage of nuclear materials within the Department's defense nuclear facilities complex. The most urgent safety issues described in the recommendation have either been corrected or had compensatory measures put in place to protect workers and the public until stabilization can be completed. To re-emphasize the urgency the Board placed on the remaining nuclear material stabilization activities, in January 2000 the Board issued recommendation 2000-1, *Stabilization and Storage of Nuclear Material*. The Department continues to view the scope of the 2000-1 recommendation as essentially the same as the remaining 94-1 activities. In the Department's 2000-1 implementation plan, the Department included all remaining 94-1 activities. Accordingly, with the approval and delivery of the 2000-1 implementation plan in June 2000, the Secretary proposed closure of 94-1 to the Board.

Recommendation 94-1 is essentially redundant to recommendation 2000-1, which is being satisfactorily worked.

Recommendation 94-1 is now of value from a historical perspective only. This recommendation remains open while the Board monitors progress on 2000-1 plan implementation.

Recommendation 92-4, *Multi-Function Waste Tank Facility at Hanford*

The Secretary proposed closure of 92-4 in a December 16, 1998, letter to the Board. This recommendation addressed safety issues at the Tank Waste Remediation System Multi-Function Waste Tank Facility project at the Hanford Site. The recommendation identified three areas of concern:

- Project management structure;
- Design bases (systems engineering) for the Multi-Function Waste Tank Facility; and
- Technical and managerial competence.

In developing an implementation plan to address these issues, the Department expanded the scope of its response to apply an integrated systems approach to define, plan, control, and execute the overall Hanford mission. While implementing this approach, the Department re-evaluated the need for the Multi-Function Waste Tank Facility project, canceled the project, and altered other Tank Waste Remediation System projects.

The Department completed thirty-eight plan milestones, including all program management and site systems engineering commitments, in the original implementation plan and all milestones in revision one to the implementation plan. The final implementation plan deliverable was completed and provided to the Board in July 1998.

The Board has identified no additional activities it believes the Department needs to take in relation to the safety issues of this recommendation. The Department is unaware of any additional actions that need to be taken to close this recommendation, which was issued over twelve years ago, and proposed for closure more than six years ago.

Workers at the Hanford Site.

C. New Recommendations

Recommendation 2004-2, *Active Confinement Systems (2004-2)*

The Board issued recommendation 2004-2 on December 7, 2004. The Board calls for the Department to change its safety policy to require active confinement ventilation systems for all new and existing Hazard Category 2 and Hazard Category 3 defense nuclear facilities with the potential for a radiological release. The Board calls for the Department to change associated Department directives and standards, and to evaluate all new and existing facilities in light of the new requirements.

The Secretary has until March 17, 2005, to either accept or reject, in whole or in part, the Board's recommendation. If the Secretary accepts all or part of the recommendation, the Department will develop an associated implementation plan.

Recommendation 2004-1, *Oversight of Nuclear Operations (2004-1)*

The Board issued recommendation 2004-1 on May 21, 2004. In its recommendation, the Board noted concerns regarding a number of safety issues, including delegations of responsibility, technical capability, central technical authority, nuclear safety research, lessons learned from significant external events, and integrated safety management.

The Secretary accepted the recommendation on July 21, 2004, and approved the associated implementation plan on December 23, 2004. The Department's implementation plan which defines the actions that the Department will take in response to this recommendation, identified three broad areas for improvement:

- Strengthening Federal Safety Assurance
- Learning from Internal and External Operating Experience
- Revitalizing Integrated Safety Management (ISM) Implementation

To resolve the identified issues within these areas, the Department has established a number of end-state commitments, described in this plan, including the following:

- Establish two Central Technical Authorities (CTAs) with adequate technical support.
- Implement and strengthen the Department Oversight Model.
- Establish and implement a nuclear safety research function.
- Complete technical staffing and qualification of federal safety assurance personnel.
- Establish and verify implementation of the new processes and criteria for safety delegations.
- Establish and implement the Department Operating Experience Program, an element of the ISM "feedback and improvement" function.
- Complete field element action plans to improve work planning and work control.
- Complete the Department actions to improve implementation of the ISM "feedback and improvement" function.

For each commitment, the Department has identified the set of intermediate milestones necessary to achieve the end-state commitments, as well as the verification activities to ensure that actions taken are effective to resolve the

original issues. Overall execution of this implementation plan is the responsibility of the 2004-1 responsible managers, the Principal Deputy Administrator of the NNSA and the Assistant Secretary, Environment, Safety and Health.

This plan will require more than one year to complete due to the magnitude and complexity of the issues being addressed. Complex and lasting change in large organizations requires multiple years to implement and verify. The last formal commitment contained in the 2004-1 implementation plan has a 2007 completion date.

D. Other Open Recommendations

Department progress for the remaining implementation plans for open Board recommendations is described below.

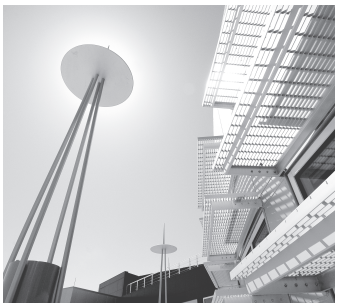
Recommendation 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls (2002-3)*

The Board issued recommendation 2002-3 on December 11, 2002. The recommendation addressed the need to improve the requirements related to the design, implementation, and maintenance of administrative controls important to nuclear safety. The Board's recommendation included two specific sub-recommendations; one related to clarifying expectations for administrative controls, and the other related to reviews to ensure implementation is consistent with expectations.

On January 31, 2003, the Secretary accepted the recommendation. The Department developed an implementation plan describing how the identified issues will be resolved, and provided the plan to the Board on June 26, 2003.

Central to the effort of improving the rigor associated with administrative controls was the completion of a new technical standard, DOE-STD-1186-*2004, Specific Administrative Controls*. The draft standard was issued for review and comment in December 2003 and comments were successfully resolved prior to issuance of the final document in August 2004. The new standard provides additional guidance for the identification, implementation and maintenance of administrative controls that perform specific safety functions, and incorporates concepts from the Nuclear Safety Technical Position. The new standard will be referenced in DOE-STD-3009-94, *Preparation Guide for U.S. DOE Nonreactor Nuclear Facility Safety Analysis Reports*, and DOE-STD-3011-94, *Guidance for Preparation of Basis for Interim Operation Documents.* These Department standards are referenced as acceptable methods (safe harbors) to implement the requirements of the Department's nuclear safety basis rule, 10 CFR Part 830, Subpart B.

In 2004, the Department provided several deliverables to the Board. Implementation plan commitment 4.3 calls for EH to develop appropriate training materials suitable for contractor personnel responsible for selecting, developing, implementing and maintaining critical administrative controls. In addition, the commitment included development of training materials for the Department's safety basis reviewers and oversight personnel to describe methods for identifying the critical administrative controls, methods of assuring their dependability and effectiveness, and how they should be treated in technical safety requirements. Initial training materials were provided to the Board in February 2004. An updated version of the training materials based on the new DOE-STD-1186-2004 were provided to the Board staff in August 2004.



Sandia Joint Computational Engineering Lab.

Implementation plan commitment 4.4 calls for NNSA and EM to ensure the completion of initial training for relevant Department, NNSA, and contractor organizations on the materials developed under commitment 4.3 and to ensure that the training is captured in the appropriate contractor and Department training programs. The original projected completion date was October 29, 2004. Due to the extended period of time needed to successfully address and resolve comments on DOE-STD-1186-2004 and develop appropriate training materials based on the final standard, a new due date of May 31, 2005, was established by the Secretary. An initial training session on DOE-STD-1186-2004 occurred on October 21, 2004, at the Energy Training Complex in Albuquerque, New Mexico. Approximately sixty Department and contractor nuclear safety professionals attended. Course materials were provided to Department sites to be used in updating site training plans. Sites will then conduct further training to complete commitment 4.4.

Implementation plan commitment 4.6 calls for NNSA and EM to review field implementation of existing critical administrative controls to ensure that they are developed, implemented and maintained in accordance with the Department's expectations as part of normal safety basis implementation or operational oversight. Deliverable 4.6.1 of the commitment was to prepare schedules for implementation reviews and implementation review reports. Schedules were provided to the Board for NNSA sites in February 2004 and in April 2004. (A schedule was provided to the Board for EM sites in February 2004.) Department personnel are in the process of conducting these reviews in accordance with the schedules provided.

Implementation of 2002-3 will require more than one year to complete due to the magnitude and scope of the actions, including site assessments and revising Department standards and directives. The Department currently projects completion of the 2002-3 implementation plan in 2006.

Recommendation 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex* (2002-2)

The Board issued recommendation 2002-2 on October 3, 2002. The recommendation addressed the Board's concerns that the number of nuclear weapons experts is declining and the focus of remaining experts is being diverted to other areas. The Board recommended action to change this trend and to re-emphasize the primary role and obligation of the weapons laboratories to support the Department's nuclear weapon-related activities, including the formal training and development of new experts.

The Secretary accepted the recommendation in January 2003 and provided an implementation plan on June 4, 2003 to address the Department's need to re-emphasize the policy that the nuclear weapons program is the top priority among all activities at the weapons laboratories [i.e. Los Alamos, Lawrence Livermore, and Sandia]; identify senior weapons point-of-contact at each Laboratory and their responsibilities; and identify a Federal function at each site office managing a weapons laboratory contract to ensure that requirements related to safety of operations of the defense nuclear weapons complex are being tracked and met.

The Department made moderate progress in 2004 in executing the 2002-2 implementation plan. The progress for the two remaining milestones is summarized as follows:

- DOE Order 5600.1 has been revised to address the Board's recommendation to reflect and emphasize national laboratory support of the nuclear weapons program relating to current functions and responsibilities. This directive was delayed due to applicability language which has since been resolved. A memo was signed by the Office of Management, Budget and Evaluation in January 2005 to resolve this issue. The directive now is expected to be released in early 2005.

- The Board recommendation for the laboratories to transmit descriptions of weapons points of contact roles, responsibilities, authorities and if necessary, plans for improvement will be completed early in 2005. Los Alamos briefed the Board in February 2005 and is finalizing their weapons point-of-contact submittal based on their most recent reorganization.

The Department currently projects that all plan deliverables will be completed by March 2005. The Department anticipates that it will propose closure at that time. Closure of this recommendation ultimately took more than one year due to the time required to institutionalize the response measures.

Recommendation 2002-1, *Quality Assurance for Safety-Related Software* (2002-1)

The Board issued recommendation 2002-1 on September 23, 2002. The recommendation addressed the Board's concern regarding the quality of the software used to analyze and guide safety-related decisions, the quality of the software used to design or develop safety-related controls, and the proficiency of personnel using the software. In addition, the Board noted that software performing safety-related functions requires appropriate quality assurance controls to provide adequate protection for the public, the workers, and the environment.

The Secretary accepted the recommendation in November 2002. The Secretary approved the 2002-1 implementation plan in March 2003 and assigned implementation leadership to the Assistant Secretary for Environment, Safety and Health.

The Department has made significant progress towards the completion of the milestones identified in the implementation plan. The key accomplishments in accordance with implementing and institutionalizing the Department's 2002-1 implementation plan during 2004 are:

- The Department completed additional code developer and peer reviews to further improve the accuracy of the gap analysis reports on the toolbox codes. The Department provided final gap analysis reports to the Board on May 12, 2004.

- The Department briefed the Board on the status of 2002-1 activities on June 15, 2004 and October 26, 2004.

- The Department issued updated code-specific guidance reports on use of the six "toolbox" codes identifying applicable regimes in accident analysis, default inputs, and special conditions for use. Updated code-specific guidance reports were prepared and provided to the Board on June 29, 2004.

- The Department revised the Headquarters and field element FRA documents to incorporate Federal responsibilities and authorities for software quality assurance (SQA).

The EM Headquarters FRA was provided to the Board on May 6, 2004, and the Board was notified on July 13, 2004 that the EM Field Element FRA documents were approved.

- The Department completed the assessments of the processes in place to ensure that safety software currently used to support the analysis and design of defense nuclear facilities is adequate. EM completed their assessments on October 1, 2004.

- The Department trained and qualified personnel assigned to SQA positions per the requirements of the Technical Qualification Program. EM notified the Board that Federal personnel were qualified on November 29, 2004, and NNSA notified the Board that an interim SQA expert team had been established on November 23, 2004 until all NNSA Federal personnel are qualified.

- The Department is developing new/revised directives required to invoke industry or Federal agency standards for safety software quality. The Board will be notified of the issuance of revised DOE Order 414.1C, Quality Assurance and the new corresponding DOE Guide 414.1-4, *Quality Assurance Management System Guide for use with 10 CFR 830 Subpart A, Quality Assurance Requirements*, anticipated in April 2005.

Defense waste processing facility's Melter 3 was completed and released for operations in September 2004. The Melter will be stored at 717-F until needed.

As previously reported, the 2002-1 plan requires more than one year to complete due to the technical complexity and widespread actions necessary to fully meet all commitments outlined in the plan. By the end of 2004, the Department had completed twenty-one of twenty-six (81 percent) commitments in the implementation plan. The Department estimates completion of the remaining actions and milestones for this plan in 2005.

Recommendation 2001-1, *HLW Management at the SRS* (2001-1)

The Board issued 2001-1 on March 23, 2001. The recommendation addressed the margin of safety and maintenance of the amount of tank space in the Savannah River Site (SRS) High Level Waste (HLW) system to enable timely stabilization of nuclear materials.

The Secretary accepted the recommendation and provided an initial implementation plan on May 18, 2001. The Board amplified its expectations for this recommendation in a May 24, 2001, letter to the Secretary. The Secretary approved and issued revision 1 to the 2001-1 implementation plan on September 14, 2001.

A commitment in the revised plan called for the Department to develop and submit new commitments related to the implementation of the revised salt processing program. The Secretary approved and issued revision 2 to the 2001-1 implementation plan on May 10, 2002.

During 2004, the Department completed one commitment.

- The conceptual design for the Salt Waste Processing Facility was completed as committed and preliminary design activities are now underway.

A total of twenty-one of the twenty-three milestones in the plan are complete as of December 2004. Two milestones scheduled for 2004 were not met. Due to the litigation that was ongoing, relative to the Department's process for classifying waste for disposal, the State of South Carolina has not issued a disposal permit for the Saltstone facility. As a result, the first

batch of low curie salt has not been processed through the Saltstone Facility for disposal and the Actinide Removal Process did not begin treating salt waste because of the inability to dispose of the decontaminated salt solutions.

The Department is currently in the process of implementing the new legislation (National Defense Authorization Act of Fiscal Year 2005, Section 3116) that clarifies the Department's authority relative to waste classification, and expects to be in a position to define new completion dates for these two commitments early in calendar year 2005.

As previously reported, completion of this plan has taken more than one year due to the associated work scope to fully complete the planned activities. The Department is not able to provide a defensible completion date at this time, as described above.

Recommendation 2000-2, *Configuration Management, Vital Safety Systems* (2000-2)

The Board issued recommendation 2000-2 on March 8, 2000. This recommendation addressed the Board's concern that many of the Department's defense nuclear facilities, constructed years ago, were approaching the end of their design life, and that a combination of age-related degradation and deficient maintenance may affect the reliability and ability of the vital safety systems to perform their safety functions as designed. Also of concern was the Department's capability to apply engineering expertise to maintain the configuration of these systems. Specifically, the recommendation identified possible degradation in confinement ventilation systems and noted the Department's lack of designating system engineers for systems and processes that are vital to safety.

The Secretary accepted the recommendation on April 28, 2000. The Board elaborated the intent of 2000-2 in a letter to the Secretary on September 8, 2000. The Secretary approved the 2000-2 implementation plan on October 31, 2000, and assigned the responsibility for leadership in plan implementation to EH.

Key accomplishments in implementing the plan during 2004 are as follows:

- The Department continued actions to institutionalize the assessment of safety systems to ensure the operability/reliability of vital safety systems as well as the effectiveness of associated programs such as configuration management, system engineers, maintenance, and surveillance and testing.
- The contractor System Engineer Program at the Department's defense nuclear facilities was implemented. Staffing and initial training for this function were completed.
- EM conducted oversight visits to its primary field sites to observe the implementation status of safety system assessments and system engineering programs. NNSA obtained similar information through reports from its site offices.
- The Department's Federal Technical Capability Program (FTCP) Panel identified safety system expertise needed at the Federal level. The panel compiled needs for Federal Safety System Oversight personnel capable of providing oversight of safety systems and programs essential to systems operability. The panel also reviewed field office plans to address critical technical skill gaps. With few exceptions, Federal personnel were selected for these positions.

High-Level Nuclear Waste.

- Program Offices that manage defense nuclear facilities instructed field elements to review facility safety documentation with respect to the revised *Nuclear Air Cleaning Handbook* and develop any necessary corrective actions using the Unreviewed Safety Question process. These direction memoranda were issued in December 2003. This last deliverable in the implementation plan for Recommendation 2000-2 was reported complete to the Board in January 2004.

As previously described, the 2000-2 implementation plan is a Department-wide effort that has required more than one year to execute and institutionalize due to the complex and widespread actions necessary to fully meet all commitments outlined in the plan. In January 2004, the Department had completed all of the forty-three commitments in the implementation plan.

In mid 2004, the Board staff requested additional evidence that the actions in the implementation plan had been successfully institutionalized. The Department collected the following: assignment and qualifications of contractor safety system engineers and Departmental safety system oversight staff; reports of safety system assessments for the past 6 months; safety system assessments scheduled for the next 12 months; and any Unreviewed Safety Questions arising from implementation of the revised Nuclear Air Cleaning Handbook. The Department provided this information to the Board staff for all Department's sites except Los Alamos. Information for Los Alamos is expected in early 2005.

In addition, on November 3, 2004, the Board issued a letter establishing a 60-day reporting requirement regarding configuration management programs for safety systems at Livermore relative to the configuration management of vital safety systems. After this issue is resolved, the Department plans to evaluate potential closure of this recommendation in 2005.

Recommendation 2000-1, *Stabilization and Storage of Nuclear Materials* (2000-1)

The Board issued recommendation 2000-1 on January 14, 2000. The recommendation addressed the urgency for completing nuclear material stabilization activities that the Department previously agreed to pursue in the 94-1 implementation plan. Recommendation 2000-1 calls for accelerated schedule for stabilizing and repackaging high risk, unstable special nuclear materials, spent fuel, unstable solid plutonium residues, and highly radioactive liquids that pose potential safety concerns for the public, workers, and the environment.

Revision 1 of the 2000-1 implementation plan was provided on January 19, 2001, to reflect changes in the schedule for stabilization activities at Los Alamos National Laboratory (LANL) as outlined in the June 2000 plan and consistent with the July 2000 letter. On July 22, 2002, the Secretary approved revision 2 of the 2000-1 implementation plan that incorporates an improved schedule for stabilization activities at LANL and SRS as well as several previously approved milestone changes. It further designated the Chief Operating Officer in EM as the Responsible Manager for EM sites, and the NNSA Deputy Administrator for Defense Programs as the Responsible Manager for LANL and Lawrence Livermore National Laboratory (LLNL).

The key accomplishments related to implementing the Department's 2000-1 plan during 2004 are as follows:

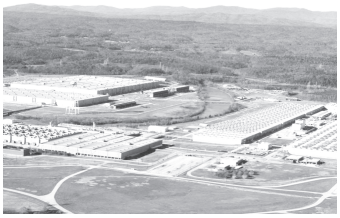
- In May 2004, Hanford personnel completed stabilization and disposition of Plutonium Finishing Plant oxides in furnaces and package oxides.
- In October 2004, Hanford completed removal of spent fuel from the K-East and K-West Basins to the Cold Vacuum Drying Facility. In November 2004, Hanford selected a treatment method for containerized sludge in K-West Basin.
- In May 2004, Savannah River personnel began stabilization of Np-237 solutions from H-Canyon into oxides.
- In February 2004, Savannah River personnel completed dissolution of Mark-16/22 Spent Nuclear Fuel.
- In May 2004, Oak Ridge personnel reported completion of repackaging of all plutonium metals and oxides to meet the metal and oxide storage standard.
- In January 2004, Los Alamos personnel completed roasting and blending of all plutonium oxide items.
- In July 2004, NNSA developed the Comprehensive Nuclear Materials Packaging and Storage Plan. This incorporated and integrated existing stabilization milestones for Los Alamos.
- In April 2004, Lawrence Livermore reported completion of plutonium metal and oxide repackaging, and stabilization and packaging of all other LLNL residues.

As previously reported, the 2000-1 implementation plan requires more than one year to complete due to the technical complexity and diversity of material requiring stabilization at affected defense nuclear sites. Only three sites have additional 2000-1 stabilization activities to complete: Richland, Savannah River, and Los Alamos. The Department estimates completion of all actions and milestones for the 2000-1 implementation plan in December 2009.

Recommendation 99-1, *Safe Storage of Pits at Pantex* (99-1)

The Board issued recommendation 99-1 on August 11, 1999. The recommendation addressed issues associated with ensuring long-term safety of pits, including those held for potential future national security purposes and those identified as surplus to national security needs.

The Secretary accepted 99-1 in October 1999, and approved the implementation plan in February 2000, with NNSA responsible for implementation. In March 2002, the Secretary approved a revision to one plan commitment related to the approach for meeting the target pit repackaging rate. The Department fulfilled all implementation plan deliverables by the end of 2002.



Aerial view of the Oak Ridge National Laboratory.

The Department continues to make progress towards fully accomplishing pit re-packaging objectives. Remaining issues that are receiving Department attention include: (1) reduction in the backlog of container surveillances, (2) finalization of the AL-R8 Sealed Insert 2040 design, and (3) clear disposition path for all pits.

As previously reported, the Department has required more than one year to complete the 99-1 plan due to the magnitude of the effort. Pit repackaging is proceeding as planned. The Department expects to propose closure of this recommendation in 2005.

Recommendation 98-2, *Safety Management at the Pantex Plant* (98-2)

The Board issued recommendation 98-2 on September 30, 1998. The recommendation addressed the need to accelerate safety improvements for nuclear explosive operations at the Pantex Plant. Recommendation 98-2 represents a combination of issues raised in prior Board recommendations and staff observations of Pantex activities.

The Secretary accepted 98-2 on November 28, 1998. The Secretary approved the implementation plan and provided it to the Board on April 22, 1999. Leadership for implementation assigned to the Assistant Deputy Administrator for Military Applications and Stockpile Management.

The implementation plan was revised and provided to the Board on September 25, 2000. Revision 1 introduced a fundamental change in the Department's approach by increasing the focus and priority in making safety improvements applicable to multiple nuclear weapon processes. The Department continues to apply the concepts of Seamless Safety for the 21st Century (SS-21) to individual weapon processes in accordance with the Integrated Weapons Activity Schedule. However, the Department believes major safety improvements can be gained by focusing on improved engineering controls applicable to multiple weapon programs and processes. Thus, the Department can achieve tangible improvements in safety on a near-term basis, allowing weapon project teams to focus on further eliminating or reducing hazards through process redesign, as required.

On October 25, 2002, the Department provided the Board with change 1 to Revision 1 of the implementation plan. This change updated the dates of several remaining commitments and added a new commitment to accelerate SS-21 tooling for the W78 and W88 weapon systems.

The Department continues to take active steps to complete the milestones in the 98-2 implementation plan. Twenty four of the twenty-seven milestones have been met. Key accomplishments during 2004 are as follows:

- Develpoment and Production Manual Chapter 11.7 has been revised and issued on December 15, 2004.
- The Department authorized the SS-21 startup authorization of the W78 weapon system on June 24, 2004.
- All required quarterly reports were delivered to the Board on schedule.

The 98-2 implementation plan required more than a year to complete due to the magnitude and complexity of the changes. The critical path to completion of all commitments of the implementation plan is governed by scheduled completion of the Technical Safety Requirement (TSR) integrated implementation plan. The Department currently estimates completion of all actions and milestones for the 98-2 implementation plan in 2005. Remaining activities are:

- Commitment 4.3.4 to validate the implementation of on-site transportation controls of nuclear explosives. The number of controls implemented to date is 112 out of 150 with an estimated completion date of July 2005.
- Commitment 4.4.6 to authorize startup of B83 SS-21 process. The project is currently in the review process. The Readiness Verification yielded findings that required changes to the Hazard Analysis Report. The Nuclear Explosive

Safety Study is currently scheduled to begin January 2005.

Recommendation 97-1, *Safe Storage of Uranium-233* (97-1)

The Board issued 97-1, on March 3, 1997. The recommendation addressed safety issues for storing the existing inventories of unirradiated uranium-233 bearing materials. The Department accepted the recommendation on April 25, 1997. The Secretary approved the implementation plan and provided it to the Board on September 29, 1997. The Secretary assigned leadership of plan implementation to a Task Team reporting to the Department's Assistant Secretaries for Defense Programs and Environmental Management.

The Department has an inventory of approximately two metric tons of uranium-233 in many different chemical and physical forms, and stored under a variety of conditions throughout the complex. The largest quantities are located at the Oak Ridge National Laboratory (ORNL) and the Idaho National Engineering and Environmental Laboratory (INEEL), with lesser quantities at Los Alamos. Smaller quantities exist at numerous other sites such as the Livermore.

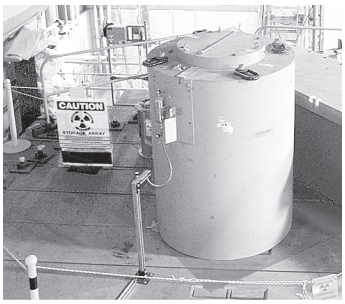
The Department has completed all milestones in its 97-1 implementation plan as of July 1999. The last milestone, which was the development of the Program Execution Plan, was completed in July 1999 and documents the Department's plans to continue the efforts under the uranium-233 safe storage program.

In June 2002, the Department issued Request For Proposal No. DE-RP05-00OR22860, "Uranium-233 Disposition Medical Isotope Production, and Building 3019 Complex Shutdown" to process the uranium-233 in Building 3019 to eliminate criticality and proliferation concerns through down blending, to extract thorium-229, and to remove the uranium-233 so that the 3019 Complex can be deactivated. In October 2003, the contract was awarded to Isotek Systems, LLC, a consortium of Duratek Federal Services, Inc., Burns and Roe Enterprises, Inc, and Nuclear Fuel Services, Inc. The base contract award is for Phase I, Planning and Design with options for Phase II, Project Implementation and Phase III, Building 3019 Complex Shutdown being unilaterally exercised by the Department.

Recent key accomplishments in accordance with institutionalizing the Department's 97-1 implementation plan are as follows:

- As of September 2003, the program of retrieving and inspecting packages containing uranium-233 material from storage tube vaults in Oak Ridge Building 3019 for Recommendation 97-1 was completed. The report, *Summary Report on DNFSB 97-1 Inspections of 233U Storage at Oak Ridge National Laboratory, ORNL/TM-2004/21* was published in April 2004. A total of 66 containers were visually inspected, weighed, and x-rayed. Of these containers, eight were destructively inspected, the material repackaged and returned to storage. In addition, 52 containers were inspected as part of efforts to consolidate uranium-233 at ORNL which included shipments from Livermore as well as those from the ^{229}Th and Molten Salt Reactor Experiment programs on site. The fourth and final batch of uranium-233-bearing materials from LLNL was received early in the month of October 2003. The shipment consisted of seven DOT 6M drums and ten DOT 7A drums.

Actual caption from a fuel enrichment capsule from the Molten Salt Reactor at the Oak Ridge National Laboratory.



Interior view of Molten Salt Reactor Experiment facility located at the Oak Ridge National Laboratory.

- The special inspection equipment, tooling and procedures developed for the inspection program have been effective in confirming the integrity of the containers of uranium-233 stored in the Oak Ridge Building 3019. To date, two packages were found to have significant corrosion of an inner container. One was a tin-plated steel can in direct contact with ammonium diuranate. The other canister was one received from Rocky Flats that exhibited corrosion of the inner container, initially detected by radiography (gamma imaging). Materials from both canisters were stabilized, repackaged in new canisters and stored in Building 3019.

- At Idaho, samples were obtained from the dry vaults used to store unirradiated uranium-233 fuel materials during 2003. Sample data from 2003 was reported in April 2004. The data from 2003 did show an increase in the oxygen level in eight of the vaults. Of these, three have been purged and inspected for leaks. A new corrosion monitoring program is currently in the process of being implemented.

- The vaults used to store the uranium-233 material had the exposed surfaces painted to limit external corrosion and other minor repairs were made. No additional video inspections were made on the unirradiated storage vaults.

Planning for disposition of the unirradiated uranium-233 material in storage at Idaho continues. The current plan is to determine an inexpensive and safe way to arrange for the disposition of these materials. Direct disposal is the least expensive disposal strategy but requires the Department's approval to not provide isotopic dilution of Uranium-233. Experimental work to recover bismuth-213 from the Light Water Breeder Reactor fuel for the medical isotope program is also underway and this may provide another disposition option for the INEEL unirradiated uranium-233.

The 97-1 implementation plan required more than one year to execute due to complexity of the actions. As previously reported, all milestones in the plan were met as of July 1999. The Department continued with efforts to complete and institutionalize actions set in motion by its implementation plan. The Department expects to propose closure in 2005.

Recommendation 95-2, *Integrated Safety Management*

Board recommendation 95-2 called for: (1) an institutionalized process for ensuring that environment, safety, and health requirements are met; (2) graded safety management plans for the conduct of operations; (3) a prioritized list of facilities based on hazards and importance; (4) direction and guidance for the safety management process; and (5) measures to ensure availability of technical expertise to implement the streamlined process effectively.

The Secretary accepted the recommendation in January 1996. The Secretary approved the implementation plan and provided it to the Board in April 1996. The Department completed all implementation plan commitments between 1996 and 1998.

ISM remains the Department's central framework for completing work while protecting the public, the workers, and the environment. Consideration and protection from safety hazards is built right into the work processes. Field offices and contractors strongly support this approach to doing work and want ISM to be an enduring program.

As previously reported, this plan required more than one year to implement due to the magnitude of the fundamental changes involved. The recommendation is implemented and ready for closure. The Department continues to improve implementation within the ISM framework, as described in the 2004-1 implementation plan.

E. Report on Implementation Plans Requiring More Than One Year

The Department has taken more than one year to complete most of the recommendation implementation plans. This has occurred because of a variety of reasons including the size and scope of issues being addressed and challenges in accomplishing complex-wide changes. The Department routinely makes the required Congressional notification in conjunction with the Department's Annual Report to Congress on Board activities (i.e., this report), which is also required by the Board's enabling legislation. In accordance with Chapter 21, Section 315 of the Atomic Energy Act of 1954 [42 U.S.C. § 2286d (f)(1)], the following active implementation plans are expected to require or have already required more than one year to complete:

- 92-4, *Multi-Function Waste Tank Facility at Hanford* [1]
- 94-1, *Improved Schedule for Remediation* [1]
- 95-2, *Safety Management* [1]
- 97-1, Safe *Storage of Uranium-233* [1]
- 98-1, *Resolution of Internal Oversight Findings* [1]
- 98-2, *Safety Management at Pantex* [1]
- 99-1, *Safe Storage of Pits at Pantex* [1]
- 2000-1, *Stabilization and Storage of Nuclear Material* [1]
- 2000-2, *Configuration Management, Vital Safety Systems* [1]
- 2001-1, *High-Level Waste Management at the Savannah River Site* [1]
- 2002-1, *Quality Assurance for Safety-Related Software* [1]
- 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex* [1]
- 2002-3, *Requirements for Administrative Controls* [1]
- 2004-1, *Oversight of Nuclear Operations*

[1] Previously reported to require more than one year to implement.

Tables 3.A, 3.B, and 3.C categorize the open recommendations by their anticipated completion dates.

Table 3.A – Implementation Plans with All Commitments Complete

Open Recommendations
2000-2, Configuration Management, Vital Safety Systems
99-1, Safe Storage of Pits at Pantex
98-1, Resolution of Internal Oversight Findings
97-1, Safe Storage of Uranium-233
95-2, Safety Management
94-1, Improved Schedule for Remediation (remaining commitments transferred to the 2000-1 plan)
92-4, Multi-Function Waste Tank Facility at Hanford

Table 3.B – Implementation Plans with Projected Completion Dates in 2005

Open Recommendations
2002-1, Quality Assurance for Safety-Related Software
2002-2, Weapons Laboratory Support of the Defense Nuclear Complex
2001-1, High-Level Waste Management at the Savannah River Site
98-2, Safety Management at Pantex

Table 3.C – Implementation Plans with Projected Completion Dates After 2005

Open Recommendations
2000-1, Stabilization and Storage of Nuclear Material (2009)
2004-1, Oversight of Nuclear Operations (2007)
2002-3, Requirements For Administrative Controls (2006)

F. Summary of Projected Costs of Remaining Actions

The House Report accompanying the Fiscal Year 2004 Energy and Water Development Appropriations (House Report pg. 108 - 112, summarized below) contains direction for the Department to provide a cost estimate and schedule on remaining actions for open Board recommendations.

"**Safety at DOE Facilities.** The Committee is concerned to learn that the Department is unable to quantify the backlog of safety-related deficiencies in its defense facilities and sites. The Department tracks the number of DNFSB recommendations that still need to be addressed, but does not obtain detailed information on the estimated costs of the corrective actions. Beginning in 2005, the Department is directed to collect the necessary information and report to Congress annually on the backlog of safety-related deficiencies at NNSA and cleanup sites, and present an estimate and schedule for the corrective actions." The conference managers concurred with these instructions (House Report 108-357, pg. 137).

Table 3.D below summarizes the remaining work activities associated with open Board recommendations and the projected costs for these activities. Where activities are not identified in the table below, they are either substantially completed, or their costs are readily accommodated within existing budgets for program management. For example, Board recommendation 2000-2 called for periodic assessments of safety systems; these periodic assessments are now ongoing as normal procedure at all affected Department sites and are not reported in the table below.

The Department's policy and practice is to complete identified safety improvements as expeditiously as possible. The Department reviews and prioritizes improvement tasks to determine acceptable timeframes and then actively manages identified improvements to completion.

Table 3.D Summary of Projected Costs of Remaining Actions

Board Recommendation	Primary Sites Affected	Primary Improvement Activities (and Projected Costs)
2004-1, Oversight of Nuclear Operations	Multiple	**HQ** – Provide technical staff support for the Central Technical Authorities; Provide increased Federal line oversight of field operations; and Develop Operating Experience Program ($4.9 million in FY2005). **NNSA** and **EM** sites – Improve work planning systems; Improve performance of the feedback and improvement element of ISM systems; and Implement improved Operating Experience Program ($6.4 million in FY2005 and FY2006).
2002-3, Administrative Controls	Multiple	**NNSA** sites – Complete training on Administrative Controls; Review safety basis documents to identify Administrative Controls; and Review field implementation of Administrative Controls ($665 thousand in FY2005) **EM** sites - Review field implementation of Administrative Controls ($700 thousand in FY2005)
2002-1, Software Quality Assurance	Multiple	**NNSA** sites – Complete qualification of SQA personnel; Complete SQA assessments; Revise FRA documents; Implement SQA directives ($850 thousand in FY2005) **EM** sites – Implement SQA directives ($70 thousand in FY2005) **EH** – Develop SQA directives and lead implementation effort
2001-1, High-Level Waste at Savannah River	Savannah River	Transfer Low-Curie Salt to Saltstone Facility; Demonstrate Actinide Removal Process ($8.5 million in FY2005, and $2.2 million in FY2006)
2000-1, Prioritization for Stabilizing Nuclear Materials	Savannah River, Richland, Los Alamos	**Richland** – Remove and package sludge from K-East and K-West basins ($33 million in FY2005); **Savannah River** – Complete plutonium stabilization and packaging; complete disposition of enriched uranium solutions; and complete Np-237 solution stabilization ($177 million in FY2005, and $170 million in FY2006). **Los Alamos** – Stabilize all remaining plutonium materials ($13.2 million total from FY2005 to FY2009).
98-2, Safety Management at Pantex	Pantex	Validate implementation of the improved site-wide TSR for transportation; Authorize startup of the B83 SS-21 process; Complete comprehensive review of actions taken in response to this recommendation ($5.7 million in FY2005).

IV. Safety Accomplishments and Activities at Major Defense Nuclear Sites

A. Carlsbad Field Office (CBFO)

The Waste Isolation Pilot Plant (WIPP) is a non-reactor nuclear facility providing safe and permanent disposal of defense transuranic (TRU) waste in subterranean salt beds 2,150 feet beneath the desert of southeastern New Mexico. Since the opening for TRU waste disposal in 1999, the WIPP has played a crucial role in helping the Department of Energy (Department) meet its commitments to environmental cleanup around the nation. The WIPP has been successful in integrating safety into programmatic mission, as demonstrated by safe characterization, transportation, and disposal of TRU waste.

Operational and Safety Accomplishments at WIPP

WIPP continuously strives to enhance operational efficiency and strengthen performance. Significant efforts were made by management and line workers at all levels, which resulted in the following operational and safety accomplishments during 2004:

- The WIPP received, handled, and disposed of more than 8,800 cubic meters of TRU waste. Operational throughput averaged about 20 shipments per week for the year. Total volume of waste disposed of at the WIPP is approximately 21,000 cubic meters.
- Including all participant organizations, the WIPP achieved a low Total Recordable Injury Case rate of 0.68. The Management and Operating Contractor set a record of 208 days without a recordable injury in August and received the National Safety Council Award for two million hours without an injury causing days away from work.
- The WIPP celebrated ten years as a Voluntary Protection Program Star site, the first Department of Energy (DOE) facility to achieve the milestone. The Management and Operating Contractor received the Superior Star designation from DOE for maintaining the recordable injury rate well below the industry average.
- The WIPP received the 18th consecutive Mine Operator of the Year award from the New Mexico Mining Association. The WIPP Mine Rescue Team was recognized as the "National Champion All Around Team" at the National Mine Rescue Contest in July 2004.
- The WIPP has completed mining in Panel 3 and is currently in the process of outfitting the panel and obtaining certification from the State of New Mexico for use as a Hazardous Waste Disposal Unit.
- The WIPP developed and implemented an Issues Management Program. Employing industry best practices, this new program incorporates existing corrective action programs and provides an integrated process for identifying and tracking safety, quality, and operational corrective actions.
- The WIPP completed the first annual update of the Basis for Interim Operation for the Central Characterization Project Mobile Characterization Units, as well as the associated Technical Safety Requirements and the Application Guide. Most changes in this update were made to address the Defense Nuclear Facilities Safety Board's (Board) comments on the documents.

Containers filled with transuranic waste.

- The WIPP Radiochemistry Laboratory was certified to perform sample analysis for the Department of Homeland Security and other Federal agencies in the event emergency laboratory services are needed.

Activities Related to Board Recommendations

The WIPP is committed to implementing the Board's recommendations. As of December 2004, the WIPP has no overdue Board-related commitments or actions. The following is a summary of actions taken in 2004 to implement the Board's recommendations:

TRUPACT-11 shipment approaching the Waste Isolation Pilot Plant.

- The WIPP verified the institutionalization of a system engineer program and the implementation of DOE Safety System Oversight requirements, in support of Board recommendation 2000-2 and the newly revised DOE M 426.1-1A, *Federal Technical Capability Program Manual*. These programs help ensure proper configuration management and operability of safety systems.

- The WIPP completed a comprehensive assessment of the Software Quality Assurance (SQA) Program, in support of the Department's implementation plan for Board recommendation 2002-1. Actions have been taken to strengthen the program, based on opportunities for improvement identified in the assessment.

- The WIPP enhanced the suspect/counterfeit item (S/CI) Program by including preplanned, structured inspections to identify potential S/CI that may be installed. A disposition is assigned to each item along with an engineering determination. Receipt inspection processes are also strengthened to keep additional S/CI from coming into the site.

- The WIPP is revising the Documented Safety Analysis and the Technical Safety Requirements for contact-handled, TRU waste operations to enhance administrative controls in support of the DOE implementation plan for Board recommendation 2002-3.

WIPP Compliance Recertification Application

On March 26, 2004, the Department submitted the first WIPP Compliance Recertification Application to the U.S. Environmental Protection Agency, as required by the WIPP Land Withdrawal Act. The Compliance Recertification Application documents WIPP's continued compliance with the requirements of Title 40 CFR Part 191, *Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes*. The application also presents an updated performance assessment for repository long-term performance based on information collected and analysis performed since 1996. The Environmental Protection Agency is in the process of evaluating the information provided by the Department and is expected to make a recertification decision in 2005.

B. Idaho Operations Office (ID)

Software Quality Assurance

ID has met all commitments to the Board that were required by the Department's 2002-1 implementation plan. The SQA assessments scheduled for 2004 were completed. The Department recently sent a letter to Bechtel Bobcock and Wilcox Inc. (BBWI) Idaho requesting that they place

more rigor on assuring closure of actions from their self-assessment. In addition, a letter has been sent to British Nuclear Fuels Limited identifying significant concerns with their SQA program as it relates to treatment facility readiness. An integrated test of this system will be expected from British Nuclear Fuel Limited prior to certification and full operations. Federal personnel named to provide assistance, guidance, oversight and evaluation of SQA activities completed DOE's technical qualification standard requirements for SQA.

Configuration Management of Vital Safety Systems

Idaho has met all commitments to the Board that are required by the Department's 2000-2 implementation plan. These included identifying all safety systems at Idaho nuclear facilities and conducting Phase I assessments of these systems, i.e., high-level reviews of configuration management, current functional capability, upkeep and maintenance, and adequate representation in the Safety Analysis Report or Operating License. Once the Phase I assessments were completed, the results were analyzed to determine what facilities would receive Phase II assessments.

The Phase II assessment is a detailed assessment of a specific safety system in a defense nuclear facility. It is a top to bottom review that includes several experts in areas such as safety analysis, configuration management, maintenance, and the engineering discipline that best represents the safety system (e.g., a Heating and Ventilation engineer for a ventilation system).

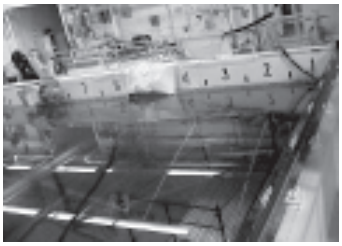
The Phase II assessments found that there were several areas that needed improvement. Improvements are needed in the areas of configuration management and maintenance of the safety system. Phase II assessments are institutionalized by adding scope to the contractor-run (and DOE-evaluated) Facility Evaluation Boards, as well as in the DOE Idaho assessment schedule. In 2004, Phase II Assessments were conducted as part of the Operational Readiness Reviews for denitrator repackaging at the Idaho Nuclear Technology and Engineering Center and for start-up of the Advanced Mixed Waste Treatment Project located at the Radioactive Waste Management Complex. Board staff members observed this assessment.

Commitments 14 through 19 of Department's 2000-2 implementation plan discuss the use of "system engineers" in defense nuclear facilities. The concept of a systems engineer is that an individual is assigned to a safety system and given the responsibility to ensure that all requirements for configuration management, maintenance, safety analysis are met. This individual is qualified by work experience or education to hold the position. BBWI has established and implemented the System Engineer Program, while the DOE Idaho office has established a similar program for federal employees. BBWI maintains a formal list of safety systems.

Environmental Cleanup and Risk Reduction

Idaho continues to make progress toward having current, rule-compliant Documented Safety Analyses (DSA) for all its Environmental Management (EM) nuclear facilities. By October 18, 2004, the Department had completed approval of revisions to three rule-compliant DSAs that had gone years since their last revisions. Current, approved, rule-compliant DSAs for all of Idaho's nuclear facilities are on track for implementation.

Deactivation, Decommissioning and Demolition of cylinders at the Idaho Nuclear Technology and Engineering Center.

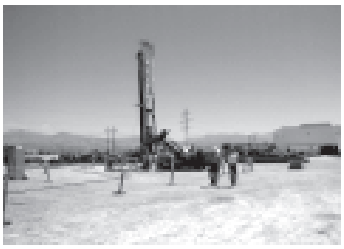


Basin Closure Project - The Test Area North Pool is Cleaned by Specially-Trained Commercial Divers.

In fiscal year 2004, the Idaho Completion Project, managed by BBWI, recorded its safest cleanup year on record as well as its most productive.

Some of the most significant cleanup and risk-reduction activities accomplished for the year include:

- The retrieval of buried waste from Pit 9 was successfully demonstrated by removing 75 cubic meters of TRU waste and other materials that had been buried for more than 30 years.
- Divers cleaned four aging spent nuclear fuel storage basins and emptied the water, removing the potential for water to leak to the Snake River Plain Aquifer.
- A total of 104 unneeded buildings and structures were removed totaling more than 245,000 square feet.
- Spent nuclear fuel from wet storage at the Power Burst Facility was transferred to dry storage.
- The remaining liquid radioactive waste at the Tank Farm was consolidated into four tanks. The remaining six 300,000-gallon tanks and four 30,000-gallon tanks were cleaned and prepared for closure.
- An asphalt pad was installed over contaminated soil in the tank farm to remove the potential of rainwater and snow to push contamination toward the Snake River Plain Aquifer.
- A total of 72,500 tons of contaminated soil was consolidated from around the site to the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility, traveling nearly 105,000 miles safely.
- A total of 2,373 cubic meters of mixed low-level waste was characterized and shipped off site, eliminating the backlog.
- A total of 6,292 cubic meters of low-level waste was disposed of.
- Over 181,000 pounds of volatile organic compounds was removed from the subsurface and treated since 1995.
- Buried beryllium blocks that were posing a potential threat to the aquifer due to carbon-14 being created as the blocks degrade were grouted in place.
- The retrieval enclosure on Pit 4 was constructed, which will allow for additional TRU waste and volatile organic compounds to be removed from above the aquifer.
- A total of 63 drums of remote-handled TRU waste were safely retrieved and placed into storage from underground storage vaults.
- Continued treatment of the groundwater at Test Area North.
- Physical remediation at the Central Facilities Area and the Power Burst Facility was completed.



A Grout Rig will be used to Coat Blocks of Beryllium with a Wax-Based Grout to Reduce the Release of Carbon-14. The Grout will be Injected at approximately 8,200 Pounds per Square Inch at a Temperature of Nearly 400° F.

Maintenance of ISO 14001 Certification

Since implementing the Environmental Management System (EMS), Idaho has continued to demonstrate the benefits of a comprehensive, integrated EMS and of International Organization for Standardization (ISO) 14001 Registration. Recent regulatory inspections showed substantially improved compliance compared to inspections prior to implementing the EMS. Implementation of the EMS has allowed BBWI to concentrate on several significant environmental aspects (conditions or activities that have the

potential to significantly impact the environment) and take appropriate actions to completely eliminate them Additionally, by maintaining ISO 14001 Registration, BBWI has been able to independently demonstrate compliance with DOE Order 450.1, which requires contractors to establish an EMS as part of their Integrated Safety Management (ISM) system.

Maintenance of ISM System

As described in both the Fiscal Year 2003 and Fiscal Year 2004 ISM System Annual Reports, BBWI has made many improvements to ISM System processes to ensure Idaho work continues to be conducted efficiently and in a manner that protects the health and safety of workers, the public, and the environment. Both annual evaluations concluded that all ISM System elements have been maintained, and most have been improved. The evaluations identified some system weaknesses for which improvement actions were identified. Most of the improvement actions developed to address the Fiscal Year 2003 evaluation issues have been completed. Actions that were not completed have been carried forward to the Fiscal Year 2005 improvement actions. These actions are tracked by the Performance Assurance organization and routinely reported to BBWI senior management and DOE Idaho. The BBWI ISM System maintenance processes have been acknowledged by the Department's Idaho Office, Department of Energy Headquarters, the Board, and other sites as benchmarks for maintaining and continuously improving on ISM system.

Voluntary Protection Program (VPP)

BBWI met all the requirements to continue participation as a DOE-VPP Star site. This is validation to the workforce, as demonstrated by their actions and commitment, that BBWI can perform work in a safe, compliant, and environmentally responsible manner. The VPP 3-year STAR re-certification plaque and flag were presented by Ms. Elizabeth Sellers, Manager, Department of Energy Idaho Operations Office to Mr. Paul Divjak, BBWI President, at ceremonies at Central Facilities Area (representing the site facilities) and the Idaho Research Facility (representing town facilities). With 5,000 employees, the Idaho National Engineering and Environmental Laboratory (INEEL) is one of the ten largest VPP STAR sites within both Occupational Safety and Health Administration (OSHA) and the Department.

At the 2004 National Voluntary Protection Program Participants Association in Las Vegas, Nevada, the Department recognized BBWI with their third consecutive "Star of Excellence" award. The key VPP element that positions Idaho to receive the Star of Excellence award is "employee involvement".

Human Performance Initiative (HU)

The Institute of Nuclear Power Operations (INPO) Human Performance initiative became a site-wide initiative early in 2004 when the BBWI Senior Management Steering team approved the HU working group recommended implementation plan. BBWI officially made HU the primary continuous improvement element for the VPP and ISM.

The plan is being effectively implemented and significant improvements have been made in the work place. To date, over 2500 employees have received the HU Fundamentals training, six pilots have been conducted to execute HU tools and the results are being incorporated into company processes. The six pilots were chosen for implementation based on recommendations from INPO and from

results of benchmarking activities at nuclear power plants where HU tools and concepts were effectively implemented.

To effectively and efficiently implement the HU program, the VPP infrastructure was utilized. Under this infrastructure a company level coordination role was established and each unit or organization established a Human Performance Coordinator as part of the unit employee safety team. VPP Senior Champions and VPP Unit Champions work with the site-wide coordinators to support implementation of the HU plan.

C. Livermore Site Office (LSO)

During 2004, Livermore completed actions associated with Board recommendation 2000-1, *Prioritization for Stabilizing Nuclear Materials*, and Board recommendation 97-1, *Safe Storage of U-233*. Lawrence Livermore National Laboratory (LLNL) also completed significant upgrades to both the normal and emergency electrical power systems to increase redundancy and improve electrical power reliability for the Plutonium Facility.

Lawrence Livermore National Laboratory Decontamination and Waste Treatment Facility are loading drums with radioactive waste into a TRUPACT II container for shipment offsite.

Significant progress was demonstrated in the following areas:

- Implementation on actions associated with the Department's 2000-2, implementation plan, *Configuration Management, Vital Safety Systems.*
- Implementation on actions associated with the Department's 2002-1, implementation plan, *Quality Assurance for Safety Related Software.*
- Implementation on actions associated with the Department's 2002-2, implementation plan, *Department of Energy Plan to Address and Resolve Weapons Laboratory Support of the Defense Nuclear Complex.*
- Implementation on actions associated with the Department's 2002-3 implementation plan, *Requirements for Design, Implementation and Maintenance of Administrative Controls.*

In early August of 2004, LSO and LLNL welcomed the first Board on-site representative to be assigned to the Livermore site.

In response to incidents involving work control issues, self assessments, and comments by the Board staff, Livermore initiated changes at the activity level for work control. These changes at the institutional level are expected to better identify and analyze hazards to increase worker safety.

Significant work is going on to resolve 273 LSO comments on the Plutonium Facility B332 DSA and Technical Safety Requirement (TSR) submitted by LLNL in October 2003. Approval of these documents is not expected until mid 2005.

The LSO annual assessment of contractor performance for implementation of 10 CFR Part 830, Subparts A and B rated LLNL performance as unsatisfactory. An approved institutional software quality assurance plan was not completed or formally submitted to LSO during Fiscal Year 2004 as committed. LLNL completed submittals intended to meet 10 CFR Part 830, Subpart B for the Radioactive and Hazardous Waste Management Facility on schedule. Four compliant DSA/TSRs were implemented in Fiscal Year 2004 (B239, B331, B334, and On-site Transportation).

Several issues were identified by LSO from an Unreviewed Safety Question (USQ) program assessment. The contractor developed a corrective action plan which addressed USQ procedure

modifications and improvements to safety basis amendments.

Several safety basis deficiencies were also identified by an audit conducted by the Office of Independent Oversight and Performance Assurance (OA) during October 2004. The OA auditors also identified deficiencies in system design and configuration management.

Decontamination and Waste Treatment Facility

Livermore has implemented an aggressive program for disposing of legacy waste by the end of 2005. At the end of Fiscal Year 2003, LLNL's new decontamination and waste treatment facility was approved for operation. In April of 2004, the TRU waste segments of the facility were approved for operation. The purpose of the TRU waste segments of the facility is to characterize LLNL TRU waste, repackage it as necessary, and load it into TRU Package Transporter Model II casks for off-site shipment to the WIPP. So far, these new facilities have enabled LLNL to effectively address storage issues for over 10,000 drum equivalents of TRU waste, low level waste, and mixed waste. Progress continues towards reducing the radionuclide inventory in B251, the Heavy Element Facility. This facility, which was initially classified as Hazard Category 2, based on radionuclide inventory, now has radionuclide inventories equating to Hazard Category 3. Its inventory is expected to be permanently reduced to radiological status by April 2005.

Materials Stabilization

Livermore completed the following in 2004:

- Complete Stabilize all WG Pu (754Kg)
- Complete stabilize NWG Pu (165Kg)
- Complete stabilize all full vessels and disposition materials.
- Complete disposition of all mixed items
- Complete stabilize all materials (294Kg)
- Complete survey and reprioritize all non-TA-55 excess materials and schedule accordingly.
- Complete stabilize all 2000-1 materials (294Kg)

D. Los Alamos Site Office (LASO)

LASO accomplished the following during 2004:

DOE/National Nuclear Security Administration (NNSA) and Los Alamos National Laboratory (LANL) investigations of security and safety related events identified numerous concerns associated with cultural issues related to implementation of security and safety management. An increase in these issues coupled with a loss of Accountable Classified Removable Electronic Media (ACREM) and a laser accident involving a student worker led the LANL Director to suspend LANL operations on July 16, 2004.

Los Alamos National Laboratory Facility.

Since the standown, LANL and LASO assisted by OA (per direction of the Deputy Secretary) have been working to resume operations across the site. ACREM operations, nuclear and non-nuclear operations and construction projects are near full resumption. All low risk and medium risk activities have been approved for resumption. About 80 percent of high risk activities are approved for resumption. All construction projects have resumed. About 80 percent of the ACREM libraries are approved for resumption.

Glovebox work at Las Alamos National Laboratory.

The operations resumption process has identified numerous significant areas in need of LANL management attention and action. The effort has raised worker awareness of security and safety concerns and has served to communicate management expectations to all levels of staff and management.

LANL set up a team of project management controls experts to establish the tools for managing the resumption effort as a project. Issues regarding the lack of integration of schedules and the lack of incorporation of program priorities into resumption schedules have been highlighed as concerns by both LASO and LANL.

The overarching objective of the suspension is to resume operations at LANL with a much lower level of risk.

LANL has been criticized in the past for ineffective long-term approaches to fixing identified institutional issues. Looking forward, LANL must implement a series of corrective actions that will truly address the issues. Corrective actions, both local and institutional, if well developed, documented and implemented must address the vulnerabilities identified.

E. Nevada Site Office (NSO)

During 2004, NSO continued implementation and compliance with 10 CFR Part 830 and enhancing Nevada's safety initiatives. NSO resolved issues identified by the Board in formal recommendations and correspondence, staff reports, as well as onsite discussions and briefings. NSO responses to Board requests required a significant amount of coordination among NSO employees, contractors, and National Weapons Laboratories.

Las Alamos National Laboratory Plutonium Facility.

In 2004, the following Nevada Test Site (NTS) nuclear facilities/activities documented safety analysis and technical safety requirements were approved by NNSA and/or the department pursuant to 10 CFR Part 830, subpart B: Area 5 Radioactive Waste Management Complex (RWMC) Annual Update, and the Armando Sub Critical Experiment (SCE). The Device Assembly Facility (DAF) annual update has been submitted for review and the G-Tunnel DSA is pending approval.

Readiness Assessments were successfully completed in 2004 for the Armando SCE and the TRU Mobile Characterization Units.

The Armando SCE was conducted in May 2004. It was successfully completed and met the 10 CFR Part 830 requirements. This was the second SCE conducted under 10 CFR Part 830 requirements. Additional SCEs are scheduled to be conducted in the third and fourth quarter of 2005.

The TRU Mobile Characterization Units Readiness Assessment was successfully completed in May 2004. The Mobile Characterization Units have been in operation since 2004. Characterization activities of TRU waste at the NTS have been ongoing to meet requirements for shipment of TRU waste to the WIPP. Characterization activities are expected to continue in 2005.

NSO is responsible in part for three active Department implementation plans including those for Board recommendations 2002-1, 2002-3, and 2004-1. There is one open reporting requirement specifically for NSO related to the DAF Infrastructure. A report is scheduled to be submitted in the first quarter of 2005.

Software Quality Assurance

NSO has identified a Quality Assurance Functional Manager and Subject Matter Expert for Software Quality in 2004. Both staff members are undergoing qualifications training and are scheduled to be fully qualified early in 2005. NSO committed to conduct several

assessments in 2004, all of which were completed as scheduled. Bechtel Nevada completed a Phase I Final Report on the status of SQA implementation in January 2004. NSO, in consultation with headquarters, agreed that a second assessment on the Bechtel Nevada was not necessary to fulfill the SQA Requirements. No specific software controlling Structures, Systems, and Components or design analysis is employed at the site. NSO also began a review of the National Laboratory work at the site for SQA. However, during the assessment it was decided that the scope of the assessment would not be required to meet 2002-1 and the review was suspended. NSO has been active in the SQA Working Groups and in support of headquarters initiatives to improve quality assurance throughout the NNSA complex. NSO sponsored and held a SQA/Quality Assurance Quarterly Meeting in December 2004 at the Nevada Support Facility. NSO has completed all of its milestones in Fiscal Year 2004 in the area of SQA.

Administrative Controls

NSO is proactive in supporting the Department on implementing the Departmental plan for administrative controls, as represented by supporting the development of Nuclear Safety Technical Position 2003-1 and the follow-on technical standard for critical administrative controls pursuant to implementation plan commitment 4.2. The NSO Manager directed formal implementation of Nuclear Safety Technical Position 2003-1 thereby ensuring timely completion of DSA reviews. NSO is establishing validation review schedules through integration with existing annual DSA/TSR update reviews. Furthermore, DOE-STD-1186-04 has been issued and NSO is awaiting the Deputy Administrator for Defense Programs direction for implementation.

EM conducted an assessment of the NSO EM implementation of the Specific Administrative Controls in April 2004. EM is finalizing the report for the complex on EM facilities which will include NSO. There were 5 recommendations (3 for Bechtel Nevada and 2 for NSO) from the assessment. NSO responded to these findings in September 2004.

NSO has developed a Safety System Oversight Program that implements the requirements established in the DOE M 426.1-1A Federal Technical Capabilities Manual, Chapter III Safety System Oversight. The Safety System Oversight Program has been developed to respond to satisfy a commitment made by the DOE to the Board under the implementation plan for the 2000-2 recommendation, *Configuration Management Vital Safety Systems*. The NSO Safety System Oversight Program is implemented to ensure the following objectives are met:

- Clearly defined roles and responsibilities for implementing the NSO Safety Systems Oversight Program are developed.
- A current list of NSO-designated Safety System Oversight Personnel and contractor System Engineers is developed and maintained.
- Clear and consistent guidance is established to ensure the NTS safety systems are assessed periodically by qualified NSO Safety System Oversight Personnel or by the contractor Cognizant System Engineer against predetermined criteria to ensure their operability and safety function are maintained.
- A current integrated list of NTS Safety Systems is developed and maintained.

Glovebox operations at Nevada's Visual Examination and Repackaging Building.

Inspecting the delivery of radioactive material at the Las Alamos National Laboratory Technical Area 18.

This program was audited by the NSO Federal Technical Capabilities Program. Results are pending.

Board Staff Site Visits

Board staff members conducted *fifteen* reviews at the Nevada Test Site in 2004. These included reviews of the following topic areas:

- ISM
- Implementation Operation Readiness Reviews
- Armando Readiness Assessment
- Containment Evaluation Panel
- EM Specific Administrative Control Assessment
- Material and Mission Relocation from LANL Technical Area 18 (TA-18)
- Disposition Steering Group and Disposition Workshop
- Observe Armando As-Built Review, crane function test, and other significant preparation activities for Armando (e.g. insertion activities)
- Observe Armando experiment activities
- DAF Nuclear Explosive Safety Study Master Study and TA-18 material move and mission relocation; TA-18 MRP; Underground Worker Safety Course
- Safety Basis Review (DAF, G-Tunnel, On-Site Transportation, and RWMC)
- LLNL SQA Assessment for LLNL Software used at NTS
- TA-18 Early Move and staging of TA-18 material and criticality experiment facility project
- DAF Training Program Review
- JASPER Control System, software engineering, SQA, and Configuration Management
- TA-18 Early Move and Critical Experiments Facility Project
- Disposition Steering Group
- Critical Experiments Facility Project 30 percent Design Review
- Test Readiness Status and activities
- LANL Resumption Readiness Review

Facility Representatives

During 2004, the Nevada Site Office Facility Representatives were actively engaged in Board activities and support of staff member visits and requests. The Facility Representatives participated in several readiness reviews, focused assessments meeting the Board recommendations, safety system verifications, and documented safety analysis reviews. Throughout the year, the Board was kept abreast of the accomplishments of Facility Representatives through quarterly performance indicators supplied by NNSA headquarters or by direct interaction with Board staff. The Nevada Facility Representative Program has gone through significant changes in 2004 including staffing realignment through detailed staffing analysis and addition of coverage for new, mission critical facilities. NSO Facility Representatives have maintained qualifications and also met the Headquarters goal of field time and oversight time. NSO was instrumental in planning and assisting in the 2004 Annual Facility Representative workshop held in Las Vegas, Nevada which was the largest attended event in the history of the Facility Representative Program.

Specifically, NSO Facility Representatives assisted in the following mission critical events with the Board:

- Armando Sub critical Experiment
- SQA Reviews per the Department's implementation plan 2002-1
- Quality Assurance Site Reviews
- Vital Safety Systems verifications of NSO per the Department's 2000-2 implementation plan
- G-Tunnel DSA Review
- Development of the Safety Systems Oversight Program/Subject Matter Experts
- Board Tours of the JASPER, DAF, and Waste Management Facilities

Integrated Safety Management

The NSO Integrated Safety Management Council is a senior-level working group whose charter is to facilitate feedback and champion improvements in ISM implementation across the NSO complex. For the past three years, the Council has highlighted achievements and opportunities for improvement in an Annual Report to the Manager, NSO. The 2004 Annual Report to the Manager, NSO identified five issues; two of which were resolved and three requiring continued attention. The 2005 report identified four new site-wide issues for resolution by the Council.

F. Oak Ridge Operations Office (OR)

Documented Safety Analyses

All Implementation Validation reviews have been completed at Oak Ridge's EM Hazard Category 2 and 3 nuclear facilities which were in existence at the time of the promulgation of 10 CFR Part 830 Subpart B. The Department Readiness Assessment for K-1065 building at East Tennessee Technology Park which is being upgraded from below Hazard Category 3 to Hazard Category 2 was completed December 8, 2004. When the prestart findings resulting from the Readiness Assessment are properly addressed and closed, all Oak Ridge EM Hazard Category 2 and 3 nuclear facilities will have 10 CFR Part 830 Subpart B compliant Safety Basis documents implemented at the facilities.

Other Activities

- ISM System – Reviews of Department and contractors' programs were conducted in 2004. Oak Ridge started a sitewide initiative to improve the Hoisting and Rigging programs in Oak Ridge due to the identification of negative trends by DOE safety personnel. The EM program is now requiring qualification cards for all competent rigger persons as defined by OSHA.
- Due to several significant events concerning contamination control, EM has continued to focus on improving and modifying the contamination control program. Bechtel Jacobs Company LLC has developed corrective action plans to address the concerns that have been identified by DOE.
- Oak Ridge has sought to improve safety oversight of operations through the scheduling of joint walkthroughs of facilities by Facility Representative and Safety and Health Subject Matter experts.
- Sodium Fluoride Traps Depressurization – All sodium fluoride traps have been depressurized.

Workers conducting remediation activities at the Molten Salt Reactor Experiment facility located at the Oak Ridge National Laboratory.

Side view of the K-25 Building at the East Tennessee Technology Park in Oak Ridge, Tennessee, that is currently undergoing decontamination and decommissioning.

- Systems Engineering—The Bechtel Jacobs Company LLC list of Active Safety Systems which matches System Engineers with the associated safety systems has continued to be updated as Safety Basis documents are implemented at Bechtel Jacobs Company LLC Hazard Category 2 and 3 Nuclear Facilities. DOE performed an assessment of the current list on November 18, 2004 and has determined that it correctly identifies the credited active safety systems.

- Oak Ridge shipped more than 1800 depleted UF6 cylinders from the East Tennessee Technology Park to Portsmouth Gaseous Diffusion Plant in Ohio.

- Oak Ridge processed 429,000 gallons of supernate from the Melton Valley Storage Tanks at the TRU Waste Processing Facility. The processing was completed in October resulting in 97 shipments to the Nevada Test Site of approximately 29,000 curies of mixed fission products.

- Oak Ridge achieved hydrologic isolation of Solid Waste Storage Area 4 at the Oak Ridge National Laboratory. This project significantly reduces the release of radioactive contamination offsite.

- Oak Ridge defueled the Tower Shielding Reactor and the facility was downgraded to less than Hazard Category 3.

G. Office of River Protection (ORP)

Waste Treatment and Immobilization Plant (WTP) Project Status

Engineering design is 74.1 percent complete based on actual hours and is 72.1 percent complete based on dollars. Construction is 28 percent complete based on quantities installed, and is 33.3 percent complete based on dollars. Construction dollars include craft labor, management, supervision, field engineering, quality control, subcontracts, and other support functions.

Through September 2004, the Pretreatment Facility had completed 97 percent of first level walls, 96 percent of second level walls, and 20 percent of third level walls, and had started installation of exterior structural steel. The High Level Waste (HLW) Facility completed all basement walls, and began slab placements for Elevation +0. The Low-Activity Waste (LAW) Facility completed the 25 walls at the +3 elevation, and began installation of structural steel at the +3 elevation. In July 2004, excavation began for the Analytical Laboratory Facility, and concrete placements for two pit base mats were made and installation of under-slab piping continues. The Balance of Facilities group installed over 80 percent of underground piping and conduit as well as completing the construction on Cooling Tower Facility, Switchgear Building, and Simulator Facility.

Through September 2004, WTP site construction forces have installed approximately 119,250 cubic yards of concrete (47 percent complete), 1,716 tons of structural steel (7 percent), 10,560 lineal feet of HVAC duct (4 percent), and 36,600 lineal feet of cable & wire (1 percent). An average of 1,230 craft and 605 non-manual staff were working on-site at the end of September.

Authorization Basis (AB) Maintenance Activities

In November 2004, ORP issued its third annual AB Management Assessment Report (A-04-ESQ-RPPWTP-009). The

assessment report identified several implementation issues that resulted in four Findings and five Observations. While four Findings were identified, they generally represented minor instances of inattention to detail rather than significant safety weaknesses. One Finding in the area of training of those involved in AB maintenance is important and was determined to warrant particular attention. Five Observations were identified, three of which warranted special attention. One involved the failure of the staff to consider consequences of similar related events associated with a change that was made to the Pretreatment Facility evaporator separator; another involved failure to identify and correct deficiencies in the Preliminary Safety Analysis Report during another related review; and the last involved the poor application of Bechtel National, Inc.'s Price Anderson Amendments Act reporting program. Notwithstanding the identified Findings and Observations, procedures were consistent with requirements and being properly implemented. Bechtel National, Inc. staff was found to be knowledgeable and, except for the instance noted above, generally well-trained, and documentation was good. The Findings and Observations represents a small part of the activities in the AB maintenance area.

During 2004, ORP also reviewed and approved 58 AB Amendment Requests, which were significant changes to the WTP's design or safety standards. Many of these requests required significant modification by ORP reviewers prior to them being acceptable.

HLW Load Path Analysis

HLW structural design is strongly influenced by the required layout of the vitrification process. This resulted in a structurally complex building with discontinuous vertical walls, large openings in floor slabs, and floor plans which preclude uniform horizontal layout of structural walls. Over the last several months, ORP and the Bechtel National, Inc. design team were challenged by the Board staff to demonstrate a clear understanding of the seismic load path in the building which is necessary to assure the adequacy of structural design. A series of workshops were held over the past two years to better understand Board staff questions, agree on technical approaches for resolving them, and determine how best to convey our findings formally to the Board.

The pipefitter is working on the nozzle for the High-Level Waste Facility located at the Office of River Protection.

ORP developed an accepted methodology for developing a Summary Structural Report which was released for review in February and April 2004. In general, the report resolved many of the Board staff questions and the level of concern expressed initially by Board was reduced to five key issues. Two of the issues involved providing better explanations for the load path within one particular building location and developing additional data which addressed the designs strength of the building. Both of these questions were resolved to the satisfaction of Board staff. A third question, which also was resolved, involved additional analysis of cracked and uncracked concrete properties and the potential impact on building stability. The fourth question expressed concern over the limitations of the finite element models used by Bechtel National Inc. Preliminary information shows modeling limitations do not significantly impact the structural design of the building.

Effects of Revision of Seismic Design Basis

New modeling of the seismic hazard at the WTP has increased the design basis earthquake hazard. An expert seismic review team, led by Pacific Northwest

National Laboratory and supported by Dr. Carl Costantino and Dr. Robert Youngs, has developed new design spectra for the WTP that better account for the complex effects of the sand, gravel, and interbedded salts that underlie the facility, compared to the current design basis developed in 1996. The new design spectra are approximately 38 percent greater than the previous design in the 4-6 hertz building frequency range, and 12 percent greater at high frequencies. Bechtel National, Inc. has begun to evaluate and revise its design as necessary to incorporate the resulting increased seismic demand loads. It appears that the existing design has sufficient capacity margin, and that only minor design changes to the structures, if any, will be required. Equipment and equipment anchorage, however, may be more significantly affected. Bechtel National, Inc. estimates that the start of cold functional testing may be delayed several months to accommodate the additional engineering analysis, and revised equipment procurements, entailed by the change in seismic design basis.

ORP Structural Peer Review Team (PRT)

In April 2003, ORP assembled an independent PRT to provide ongoing evaluations of structural designs for the main process buildings. The PRT has been very active this year in providing oversight on the WTP design.

On the HLW facility, the PRT was involved on a continuing basis for the production of the first Summary Structural Report as well as taking a leadership role in developing a closure plan to address the issues described above.

Several reviews were done on the LAW and recommendations made, and accepted by Bechtel National, Inc., to bring the facility into compliance with industry codes and standards. The PRT developed a detailed summary document for LAW which was accepted by Board as meeting the requirements for a LAW Summary Structural Report.

The PRT has had several exchanges on Pretreatment Facility structural issues. Issues regarding structural detailing of concrete reinforcement and on embedded plates used to support crane rails have proved difficult to close. Bechtel National, Inc. has made significant improvements to structural steel and roof design which was an earlier PRT concern. Current plans include Bechtel National, Inc. developing a Summary Structural Report for Pretreatment Facility over the next few months.

Hydrogen Release through Pulse Jet Mixing and Air Sparging

Throughout 2004, DOE and its contractors have worked closely with the Board to resolve the Board's concerns with respect to potential flammable accumulations of hydrogen in the ORP WTP. In October 2003 pulse jet mixer (PJM) configurations in vessels containing/processing non-Newtonian fluids were confirmed to be underpowered to provide adequate mixing in WTP Facilities.

Mixing is required to: (1) achieve a homogenous mixture to assure that representative samples can be taken; and (2) avoid substantial accumulations of hydrogen gas.

In November 2003, Phase I of the PJM program developed an alternative "PJM-only" configuration that mixed the vessels containing non-Newtonian slurries in accordance with WTP requirements. In December 2003, Phase I scale gas retention and release testing demonstrated that the WTP could provide safe gas control with these

configurations. While the alternative PJM configuration was acceptable, implementation of PJM-only mixing systems severely impacted the WTP facility designs due to increased numbers of PJMs, additional piping, and significantly increased the air consumption needed to operate these systems.

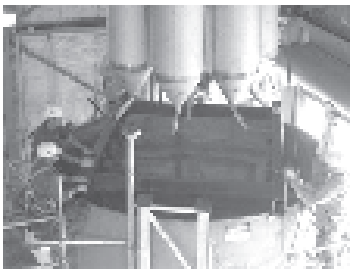
In order to reduce cost and schedule impacts, DOE, Bechtel National, Inc., and Battelle's Pacific Northwest National Laboratory developed innovative hybrid designs that include PJMs to keep sediments from accumulating on the bottom of the process vessels and air spargers to strip hydrogen from the process wastes. This Phase II of the PJM program investigated further alternative configurations to assess the effects of slurry rheology changes, reduced tank volume, PJM jet velocity and nozzle size, sparging, and recirculation pump operation. Phase II PJM hybrid mixing systems completed the necessary additional testing to demonstrate that the modified configurations mix non-Newtonian slurries in accordance with WTP requirements. PJM hybrid mixing systems gas retention and release testing demonstrated that the selected PJM configuration provides safe gas control in accordance with WTP requirements; i.e., effectively keep hydrogen accumulation from reaching the lower flammability limit. In the first quarter of Fiscal Year 2005, the WTP Project installed a scaled PJM hybrid mixing system in a half-scale lag storage vessel and completed the following: (1) confirmed that baseline-operating parameters including gas holdup due to sparging are adequate; (2) demonstrated that normal vessel operations are adequate in terms of gas holdup and release behavior; (3) demonstrated post-design basis event vessel operations are adequate in terms of gas holdup and release; and (4) demonstrate that near term accident response scenarios are sufficient to safely take care of gas holdup and release.

Hydrogen Generation, Retention and Release

For 2004, DOE and its contractors worked closely with the Board and resolved concerns about predicting hydrogen generation in the WTP. The Hu Correlation for predicting hydrogen generation in tank waste was adapted to the WTP by including new terms for the radiolysis of water to better represent hydrogen formation in the diluted slurries with washed solids typical of processed waste. Hu's terms for hydrogen formation by organic reactions were shown to be bounding for WTP conditions. This set of radiolysis and organic reaction terms is called to WTP Hydrogen Generation Rate Correlation. However, work still needs to be completed to further refine the contributions from anti-foaming agents that have the potential to impact vessel vent design and air compressor capacity to power the PJMs. DOE and its contractors will continue to work the resolution of these issues with the Board.

Hydrogen Accumulation in Pipes and Ancillary Vessels

During the last quarter of Fiscal Year 2004, DOE and its contractors worked with the Board to systematically evaluate locations throughout WTP beyond the primary process vessels where hydrogen could accumulate. The contractor has held three sessions with an External Guide and Review Team to develop technical guidance and methodology. A final Hydrogen Accumulation in Pipes and Ancillary Vessels Guide for use by design engineering is scheduled to be issued in February 2005. The contractor is currently conducting Integrated Safety Management reviews on pulse jet

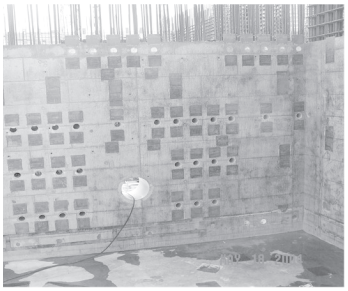


Pulse Jet Mixers at the Waste Treatment Plant located at the Hanford Site.

mixers and applicable reverse flow diverters, Pretreatment Facility waste tank pump suction lines, waste lines, pump seal water, cooling water, cooling water lines and jackets, water flush and reagent lines, steam ejectors, potential void spaces in piping use for internal supports, and dipped input lines. The final Hydrogen Accumulation in Pipes and Ancillary Vessels report is scheduled to be completed on April 26, 2005.

Black Cell Design Review Oversight

ORP led a Black Cell Design oversight review. The review team consisted of experts from the fields of Black Cell Design; Design and Construction Management; Safety Analysis, Welding and Piping Design, Fabrication, and Requirements; Process Engineering; Vitrification Operations; and Radiological Operations. This report contained five recommendations and 26 open items requiring Bechtel National, Inc. closure and several good practice observations. Good practices included well disciplined work processes governing design, procurement and construction; conservative and robust design standards; staffing with experienced personnel; and modular construction for black cell piping. Recommendations focused on improving documentation on materials selection; reassessing erosion allowances; establishing uniform guidance on designing for redundancy and spares; evaluating possible access points into black cells for unforeseen maintenance requirements; and improving identification of black cell components on design and procurement documents. The report also included four recommendations for ORP action including the assessment of black cell vessels for additional design features for operations beyond current contract scope. ORP is independently verifying satisfactory completion of all actions required from the recommendations and open items.



This is a view of the Black Cell Design during construction.

Oversight of the WTP Design and Construction Programs

In 2004, ORP continued with its integrated oversight program of WTP design and construction activities. Oversight of WTP design and construction included eight design inspections, and about 400 surveillances. These oversight activities identified strengths and weaknesses in engineering design and construction processes, in addition to several issues of noncompliance.

Environmental Safety and Quality

- The Draft Safety Evaluation Report (SER) for the Preliminary Safety Analysis Report First annual update was completed as scheduled on December 18, 2003. ORP management completed final review and approval of the Preliminary Safety Analysis Report SER on February 2, 2004.
- The SER for the Laboratory Preliminary Safety Analysis Report was approved and issued on July 29, 2004. The SER authorizes construction of the laboratory facility.

Shallow Borehole for Additional WTP Seismic Data

- Shallow borehole drilling and downhole shear wave measurements were completed to gather additional WTP seismic data. This information is under review.
- ORP issued the SER which provided the basis for approval of the revised Preliminary Fire Hazards Analyses for the WTP facilities. In July 2004, ORP approved the Preliminary Fire Hazards Analyses for the WTP Analytical Laboratory.

Single Shell Tanks Activities

- ORP Complete Interim Stabilization to meet the Consent Decree Milestone of pumpable liquid remaining in the Single Shell Tanks (SSTs).
- ORP retrieved one SSTs (C-106)
- ORP initiated waste retrieval from two SSTs (S-112 and C-203)

Demonstration Bulk Vitrification System

ORP began site preparation activities, including: site grubbing and grading; electrical utility upgrades; and excavation, forming and installation of rebar for equipment pads.

An engineering scale bulk vitrification test using actual Hanford tank waste was performed. The test, ES-13, was performed at a one-sixth linear scale. Preliminary results demonstrate low deposition of leachable technetium in the bulk vitrification package.

Ultrasonic Inspection of Double Shell Tanks

Ultrasonic inspection of four Double Shell Tanks was performed in 2004. Ultrasonic inspections are complete on 24 of 28 Double Shell Tanks. All initial ultrasonic inspections of these tanks will be completed in the 2005 calendar year. Inspections are performed in small spaces with hazardous radiation levels using specialized remotely operated equipment.

Other Tank Farm Activities

- Initiated construction of the Hanford Integrated Disposal Facility
- Upgraded and turned over 4 pits to Waste Feed Operations
- Completed Phase II AW Farm upgrade construction
- Completed fabrication of the 241-AA Valve Pit Bypass piping
- Completed Motor Control Center Installation as part of the AY/AZ Farm upgrade construction.
- The AN-101 Retrieval System completed fabrication of the AN-101 transfer pump and removal and disposal of existing transfer pump and thermocouple tree
- The AY-102 Retrieval System completed the Title II design package

Tank Closure Environmental Impact Statement

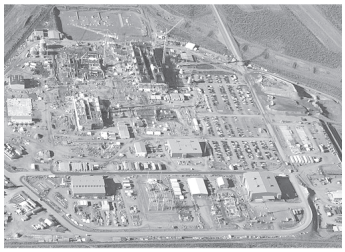
- A draft of the Tank Closure Environmental Impact Statement was completed on August 13, 2004, for DOE Headquarters review. The Tank Closure Environmental Impact Statement will be published for public comment in 2005.

Assessments of Contractor Activities

AB Maintenance Assessment: ORP assessed the WTP contractor's AB Maintenance program in September 2004, and concluded the contractor had improved its AB maintenance program significantly.

Standards Selection Process Assessment: ORP assessed the WTP contractor's Standards Selection Process and concluded the Contractor had implemented its standards selection process compliant with the requirements of the Contract and the Safety Requirements Document Appendix A.

Suspect/Counterfeit Item Program Assessment: ORP assessed the CH2M Hill, Inc. (CH2M HILL) and Bechtel National, Inc. Suspect/Counterfeit Items Programs. ORP identified two actions



An aerial view of the Waste Treatment and Immobilization Plant construction site.

required to bring the contractor programs into compliance with DOE O 414.1B.

Bechtel National, Inc. Configuration Management Assessment: ORP assessed Bechtel National, Inc.'s Configuration Management Program and concluded Bechtel National, Inc. was compliant to the International Organization for Standardization 10007, "Guidelines for Configuration Management." ORP also noted implementation of the Configuration Management Program was improving with regard to the design and construction programs. ORP senior management briefed the assessment results to the Board in August 2004.

Tank Farms Instrument and Control System Computer Software Assessment: ORP assessed Tank Farms Instrument and Control System computer software controls. ORP conducted assessment in response to the Board recommendation 2002-1, Quality Assurance for Safety Software at Department of Energy Defense Nuclear Facilities. ORP evaluated five Hanford Tank Farms Instrument and Control systems and found them acceptable.

Assessment of WTP Design and Analysis Computer Software: ORP assessed the design and analysis computer software being used at the WTP. The assessment was an action included in the DOE response to Board recommendation 2002-1, *Quality Assurance for Safety Software at Department of Energy Defense Nuclear Facilities*. The assessment team concluded that Bechtel National, Inc.'s overall software control program was effective.

Radiological Control Assessments: ORP conducted six performance-based Radiological Control assessments at TF in 2004. These included: (1) the CH2M HILL Radiological Control Organization and Administration program; (2) Radiological Control records assessment; (3) the CH2M HILL Radiological Control Posting and Labeling program; (4) the Radiological Control Instrument and Calibration & Maintenance program; (5) the Radiological Control Release of Material and Equipment program; and (6) the Radiological Control As Low As Reasonably Achievable program.

Corrective Action Plan for Investigation Findings

The Corrective Action Plan for the Office of Independent Oversight and Performance Assurance tank vapor investigation Findings was issued to the Secretarial Officer. Through December 3, 2004, 69 percent of the corrective actions have been completed.

Portions of several corrective action plans from evaluations completed during the year will be consolidated. These corrective action plans were for the 244-CR vault thermocouple removal event, the workplace survey for labor management relations, the common cause analysis for multiple radiological incidents, the OA tank vapor investigation and the first ISM improvement validation report. This consolidation will combine the actions to form a comprehensive ISM Improvement action plan.

Integrated Safety Management Declaration

ORP declared ISM Readiness for 2005 operations in its transmittal to EM. ORP determined its two prime contractors had implemented an effective Integrated Safety Management Systems program noting a number of areas that required improvement (see the Safety Initiatives section below).

ORP Safety Initiatives

Tank Farm vapor exposure control was identified as needing improvement in 2004. A Vapor Solutions Project Team was formed to reduce or eliminate tank vapor exposures. In the third and fourth quarter of 2004, the vapor project has issued a tank vapor technical basis document; identified 52 chemicals of potential concern; an independent panel of nationally recognized toxicological experts validated the approach; increased tank head space, area and worker personal sampling; upgraded industrial hygiene field instruments; and upgraded tank ventilation systems.

A worker received a radiation overexposure to an extremity in July 2004. The root cause analysis identified problems with the work planning and work execution. Corrective actions to improve the hazard identification process and work performance were implemented in the fourth quarter of Fiscal Year 2004 for high and medium risk work. The actions included procedure changes, worker training, worker written and oral exams, and monitoring of field performance. Improvements have been observed with the approach to safely resolving unexpected hazards while performing work.

ORP continued to implement aggressive safety enhancement initiatives at the Tank Farm. This included initiating a DOE oversight Tank Farms ISM Improvement Validation Team. The team is comprised of independent experts who will validate Tank Farm ISM improvement in two separate reviews. The reviews will conclude in 2005 with an evaluation of corrective action effectiveness.

WTP safety statistics reveal a need for continued improvement in the ISM processes. Beginning in the second quarter of Fiscal Year 2004 and continuing through the third quarter, Bechtel National, Inc. experienced an increase in accident and incident injury reportable events. Following aggressive action by ORP and Bechtel National Inc., injury rates declined in the fourth quarter, but remained higher than a year ago. With significant worker involvement, Bechtel National, Inc. assembled a corrective action plan to improve workplace safety conditions and worker safety behaviors to further reduce injury rates while maintaining high quality construction progress.

A view of the Bulk Lime Handling building as it toppled to the ground.

H. Ohio Field Office (OH)

OH has two major sites of interest to the Board: Fernald Closure Project (Fernald) and Miamisburg Closure Project (Miamisburg).

Fernald

Several conference calls were conducted during the year between the Board and Fernald Closure Project staff regarding safety basis development/ approval of the (Accelerated Waste Retrieval Project and Silos 1&2 Project), site-wide project progress and accomplishments, ISM system issues, and reporting issues.

Representatives from the Board visited the Fernald Closure Project June 14-18, 2004 to observe a Fluor Standard Start-up Review and a DOE Fernald Closure Project Readiness Assessment were conducted concurrently during this week to verify Silo 3 Project operational readiness.

Board representatives again visited the Fernald Closure Project on August 9-13, 2004, when a Fluor Fernald Standard Start-up Review and DOE Fernald Closure Project Review were conducted concurrently to verify operational readiness of the Accelerated Waste Retrieval Project.

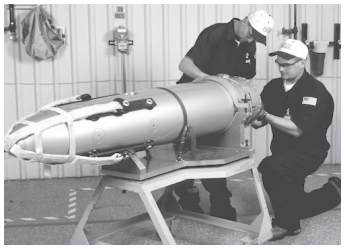
Board Members and support staff visited the site on August 11, 2004, for a general discussion of cleanup status, an overview of contract requirements, DOE and contractor safety oversight, and site coordination with the office of Legacy Management on transition-related activities.

Miamisburg

Biweekly conference calls were conducted throughout the year between the Board and Miamisburg staff regarding occurrence reporting, project progress, and accomplishments (especially Main Hill project), significant issues related to the integrated safety management system, safety impact, PRS66, and Operable Unit-1.

Representatives from the Board visited Miamisburg on February 17-18, 2004, for a general overview of site operations including organizational structure, project work activities, ISM, Occurrence Reporting, and oversight programs. They also met with union representatives and took a site tour.

Board members and additional support staff visited the site on August 10, 2004, for a general discussion on the status of the cleanup, an overview of contract requirements, DOE and contractor safety oversight, and Miamisburg's coordination with the Office of Legacy Management on transition-related activities. A site tour was included in the agenda for this visit. There were no issues identified related to safe work performance.



Two workers at the Pantex Site Office that are working on a B 61 tail section.

An additional staff visit to the site occurred September 14-15, 2004, to discuss the Internal Dosimetry Program. The visit was in follow-up to questions raised about site internal dosimetry software quality assurance in May 2002 by a former subcontractor employee, and that were resolved soon after to DOE Miamisburg's satisfaction. The subject was apparently brought to the attention of the Board in early 2004. Miamisburg is currently working with the Board to provide information requested during that visit and in subsequent conference calls. To date, no issues have been identified.

I. Pantex Site Office (PXSO)

Integrated Safety Management at Pantex

In 2004, PXSO made progress on implementing improved site-wide TSR controls for on-site transportation of nuclear explosives. Validation is to be completed following submittal of DOE Readiness Assessment Report, as scheduled in the Department's 98-2 implementation plan (commitment 4.3.3)

PXSO approved the implementation plan for this new module in June 2003 and the final readiness assessment for transportation controls should be completed by March 2005.

The implementation plan for the Transportation Safety Analysis Report was integrated into the TSR Integrated Implementation Plan, which was approved by PXSO in August 2003. By this time 24 of 40 Transportation Module I SAR controls had been implemented.

In 2004 the 16 remaining Module I controls were subsumed into The Transportation II Module which expanded application of the controls from just Nuclear Explosives to Nuclear Explosive-like Assemblies.

Of the 40 controls in Transportation II Module 19 were made TSR effective in 2004.

Implementation Project Plan revision 1 had a completion date of March 2005. Revision 2 has been submitted to PXSO for approval, and it shows completion of Transportation controls in June 2005.

As reported to the Board in the 98-2 Quarterly Report of November 3, 2004, NNSA projects that authorization of the B83 Seamless Safety for the 21st Century (SS-21) process start-up should be completed by March 2005.

Software Quality Assurance

The Pantex SQA Subject Matter Expert was one of the initial individuals to qualify per the Technical Qualification Program.

In September 2004, Pantex completed the identification, selection, and assessment of safety system software and firmware.

DOE lead assessments on safety software systems found no concerns with the SQA Program.

In response to the issues identified with the Blast Door Interlock assessment:

- A request is being routed for Engineering services to make a change to the facility to resolve the facility design issue identified. Estimated costs and completion of facility changes will be sent to PXSO when routing is completed.
- A Tracking and Trending process is now in place for reporting of Blast Door Interlock issues. Issues identified during assessments are being coordinated with PXSO.
- In July 2004, Pantex completed the assessments of the processes in place to ensure that safety software currently used to support the analysis and design of defense nuclear facilities is adequate.
- DOE lead assessments on safety analysis and design software systems found no concerns with the SQA Program.

In response to the issues identified with the safety analysis and design software assessment:

- DCAT/ERAD: has been retired and is no longer used at the plant.
- MAX2_MHC: All SQA documents except one have been created and Requirements are going through USQ.
- Problem Reporting: A new Work Instruction is being created for the Nuclear Explosive Safety Study (NESS) department to proceduralize the process.

Completion of corrective actions pertaining to issues identified is estimated to be March 2005.

Administrative Controls

NNSA will ensure the completion of initial training for relevant DOE, NNSA, and contractor organizations on the materials developed under the Department's 2002-3 implementation plan (commitment 4.3) and will ensure that training focus is captured in the appropriate contractor and DOE training programs.

Pantex expects to complete this action by May 2005.

Pantex will conduct safety basis document reviews to determine whether critical administrative controls are being properly implemented.

Pantex has completed response to actions to update the Data Sheet Control Log and Data Sheets that document the status of Administrative Controls approval, implementation, and field verification in November 2004.

- An update to the Data Sheet Control Log – two controls were deleted, one W62 control had a change in title, one B83 control was revised, and 17 controls were added. The new

B 61 at the Pantex Site Office.

controls include nine W56 controls, four controls added to the Sitewide SAR as a result of the approved changes, three controls added to the facility SARs as a result of incorporating the new B83 processes and weapon response, and one new control for the W78 program.

- A list of lessons learned were identified during the approval, implementation, and verification of the controls.

J. Richland Operations Office (RL)

RL has accelerated site cleanup and continues to improve the effectiveness of their ISM Systems to reduce risk and perform work safely.

Team members of the K Basins Decontamination and Decommissioning project begin pouring grout to permanently fill and secure the discharge chute.

Type A Investigation of Hanford Fall Fatality Accident

On July 15, 2004, an employee of a vendor hired by a private purchaser of a surplus Hanford office trailer was found motionless at the base of a ladder at a trailer in Hanford's 200 East Area. Despite emergency treatment and transport to a local medical facility, the employee died. The RL Manager appointed a Type A accident investigation board.

On August 24, 2004, the board provided a report with Judgments of Need related to RL, contractor, and DOE Headquarters (HQ) responsibilities. These included concerns about excess equipment policy and oversight of personnel without a clear contractual relationship for access to DOE sites. RL reviewed the Judgments of Need, drafted corrective actions deemed necessary to prevent a recurrence of the event, and issued an interim Corrective Action Plan, subject to Headquarters review, on October 21, 2004. Corrective actions are underway.

Integrated Safety Management System Continuous Improvement

ISM continues to function effectively at RL as described within DOE P 450.4, *Safety Management System Policy*, and as required of the RL contractors through the implementation of the *Integration of Environment, Safety, and Health into Work Planning and Execution*. The RL contractors are maintaining their ISM System descriptions, executing the guiding principals and core functions, meeting minimum performance expectations and committing to improvement through Performance Objectives, Measures, and Commitments. In general, the RL contractors are implementing an adequate ISM system within all project and functional areas. However, some weaknesses in the implementation of the contractor's safety management system have been identified. RL identified a significant number of violations of DOE nuclear safety requirements occurred regarding one contractor and there have been numerous heavy equipment events that have raised significant concern within RL by another contractor. Corrective action plans have been implemented for these weaknesses.

Risk Reduction

RL met or exceeded Fiscal Year 2004 goals for reducing risk in all areas. Specific examples include:

- The Plutonium Finishing Plant finished stabilization and packaging of oxides in February 2004, completing all stabilization and packaging of Board 2000-1 materials at Hanford. Rewelding outer containers for metals was completed in May 2004.

- The Plutonium Finishing Plant has transitioned from operation activities to deactivation and decommissioning activities.

- During 2004, RL completed removal of 647 metric tons of Spent Fuel from the K-Basins into safe, dry, compliant storage. This completed a life cycle total of about 2300 metric tons of spent fuel removed away from the Columbia River shoreline.
- RL has initiated work on the second phase of K Basins cleanup – removing about 65 cubic yards of radioactive sludge. Sludge pumping has been initiated into large diameter canisters from K Basin's North Load Out Pit. Containerization of K Basin sludge has also been initiated.
- During 2004, 3800 cubic meters of Low Level Waste and Mixed Low Level Waste were disposed in the Low Level Burial Grounds exceeding the 3300 cubic meters planned (58 percent of total complete).
- RL completed demolition of the first of three plutonium concentration facilities at Hanford, the 233-S Plutonium Concentration Facility using a first-of-its kind process. The "free air" demolition applied a fixative to the walls to glue contamination in place and a large fogger machine to maintain a mist of water over the site to control dust and prevent the spread of contamination.
- During 2004, 62 waste sites were remediated (20 percent of total life cycle complete), 8 nuclear facilities were demolished, 7 radioactive facilities were demolished and 38 industrial facilities were demolished.
- During 2004, 426 cubic meters of TRU waste was shipped to the WIPP exceeding the 200 cubic meters planned (3 percent of total life cycle complete). During 2004, retrieved 1346 cubic meters of suspect TRU waste from the 218-W-4C burial grounds.
- During 2004 the Environmental Restoration Project completed 33,846 shipments representing 624,582 tons of Low-Level Waste to the Environmental Restoration Disposal Facility Project. The Central Waste Complex transferred 5,210 drums of waste to the Environmental Restoration Disposal Facility. There have been no lost time injuries at the landfill since operations began in 1996. The Environmental Restoration Project completed Safe Store of one Reactor in 2004 bringing the total to four reactors placed into interim safe storage. (50 percent complete of life cycle total.)
- The legacy waste removal project has removed 90 Ci of Pu 239 Equivalent in the Radiochemical Processing Laboratory.
- The orphaned waste removal project has removed 11 Ci of Pu 239 Equivalent in the Radiochemical Processing Laboratory.
- Projects that have concluded their life cycle and are closed have disposed of 170 Ci of Pu 239 Equivalent.

Clean-up at the Hanford site.

Board Recommendations and Safety Issues

- RL completed commitment 111 of the Department's 2000-1 implementation plan for stabilization and packaging of oxides on February 20, 2004.
- RL completed commitment 4.1.6 of the Department's 2002-1 implementation plan to revise the RL Functions, Responsibilities, and Authorities Manual to be consistent with the EM HQ Functions, Responsibilities and Authorities. RL issued their Functions, Responsibilities, and Authorities Manual in April 2004.

Glovebox worker at the Hanford site.

- RL completed letter commitment L03-016 to report on path forward for K-Basin Sludge Removal by sending the Board an implementation plan change on May 3, 2004.
- RL completed commitment 4.2.3.3 of the Department's 2002-1 implementation plan to identify, select, and assess software and firmware. RL completed an assessment of Instrument and Control software on May 20, 2004.
- RL completed commitment 4.1.4 the Department's 2002-1 implementation plan to qualify personnel for software quality assurance position on August 8, 2004. RL has two qualified SQA personnel.
- RL completed commitment 4.2.4.3 of the Department's 2002-1 implementation plan to complete the assessment of the processes in place to ensure that safety software currently in use to support analysis and design of defense nuclear facilities is adequate. The last of the analysis and design software assessment was completed on August 23, 2004.
- RL completed commitment 118E of the Department's 2000-1 implementation plan calling for removal of spent nuclear fuel from the K-Basins on October 29, 2004.
- RL completed commitment 121 of the Department's 2000-1 implementation plan to select a treatment process for the containerized K West Basin sludge on November 15, 2004.
- 2000-1 implementation plan commitment 119E calling for the completion of sludge containerization in K-East Basin by December 31, 2004 is behind schedule with completion projected for February 2005. Water clarity problems and difficulties with sludge flocculation system are impacting the sludge containerization activities.
- RL is continuing to provide status to the Board on disposal plans for 12 drums containing Pu-238. (Letter commitment L04-519) RL will continue to provide their actions planned to safely retrieve and handle specific drums of concern, verify drum integrity, ensure safe storage, and disposition of the drums.
- The Department's 2000-2 implementation plan is institutionalized for RL and their contractors. RL is providing, and will continue to provide formal oversight of the contractors System Engineer program and Vital Safety Systems to ensure that the requirements of 2000-2 continue to be adequately implemented.

Contractor Oversight

RL oversight is based on an assessment of hazards, the importance of activities to the site mission, performance indicators, past performance, and input from our Facility Representatives. During 2004, RL completed 306 oversight assessments including operational awareness walkdowns. During 2005, RL plans to conduct 255 oversight assessments per the Integrated Evaluation Plan, which is updated quarterly.

EM-3.2 (Integrated Safety Management/ Operating Oversight), supported by EH, reviewed the RL Quality Assurance Program Description. In the area of Management Assessment, the review recommended that RL modify the QA Program Description to clearly state the expectation to document improvement actions and, as applicable, process lessons learned and track corrective actions within the formal RL tracking system. This modification was made

and it was reissued. RL tracks management assessments as part of its Integrated Evaluation Plan.

K. Rocky Flats Field Office (RF)

The principal accomplishments of RF during 2004 pertained to Board recommendations 2000-1 and 2002-1. With respect to recommendation 2000-1, 98 percent of the residues had been shipped to the WIPP as of December 2004. Per current shipping schedules the remainder of the residues will be removed from the site coincident with the end of the TRU waste program in June 2005. RF has also met all commitments associated with recommendation 2002-1 regarding SQA including a comprehensive programmatic assessment. There are no outstanding actions associated with this commitment.

L. Sandia Site Office (SSO)

SSO and Sandia National Laboratories (SNL) received visits by Board staffers, ranging from facility representative training and staffing, to hoisting and rigging, to weapons issues, to safety basis.

Concerns with safety basis analysis and docuation at SNL arose during the Operational Readiness Review for Auxiliary Hot Cell Facility in May 2004. In August, four Board staffers visited SNL to focus on the Auxiliary Hot Cell Facility safety basis and safety basis in general. In September the Board sent a letter to the NNSA Administrator questioning the adequacy of safety basis documents at SNL. The Board attached the August trip report which identified several specific examples of deficiencies in the Auxiliary Hot Cell Facility Analysis.

The SSO site office manager requested a NNSA Headquarters led independent team to review the status of safety basis documents at SNL. This team completed their review in December and their draft report identified several deficiencies in the nuclear facility DSA's.

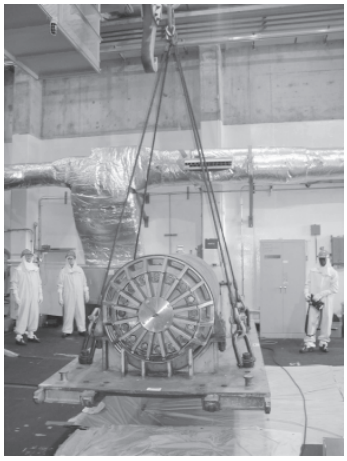
SSO and SNL have begun efforts to perform root cause analysis of the deficiencies so that corrective action plans can be developed and interim actions put into place. A delay of thirty days for the report and briefing to the Board was requested. The thirty-day extension was agreed to in a letter from the Board dated December 13, 2004.

In October the Board sent a letter to the NNSA Administration requesting a copy of a corrective action plan and a briefing associated with a skin contamination incident. The Board indicated that the weaknesses revealed by this incident may be due to Integrated Safety Management not being fully implemented. SNL committed to have the plan developed by January 2005.

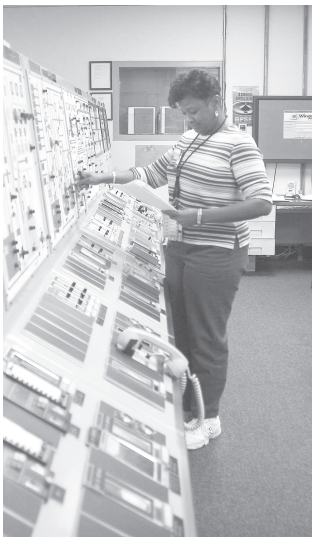
The SQA assessment was completed in accordance with the Department's 2002-1 implementation plan.

Progress continues to be made on Sandia's portions of the Department's 2002-3 implementation plan. Reviews of specific admin controls were completed at the Auxiliary Hot Cell Facility, Annular Core Research Reactor, Sandia Pulsed Reactor Critical Assembly, and Manzano Nuclear Facility.

SSO and SNL responded to unclassified and classified document requests and provided other support material.



Filling and transporting a Cask from L-Area to the E-Area burial ground, for final disposal at Paducah.



H Area Canyon Control Room at the Savannah River Site.

M. Savannah River Operations Office (SR) and Savannah River Site Office (SRSO)

Key accomplishments for SR and SRSO during 2004 are as follows:

SRS supported the Board and their staff in 2004 by providing them more than 600 documents in support of their oversight activities. Additionally, the Board conducted 17 on site reviews in 2004, including one visit by the Board members.

During 2004, SRS initiated a number of safety initiatives aimed at improving the safety posture at the site. One such initiative is the safety timeout. This is a positive addition to the SRS safety program, as it provides a less formal avenue than stop work authority for employees to call a halt to work if they recognize a safety concern. Also, SRS has established a cross-functional team to improve the existing hazard analysis process on site. This team will be instrumental in addressing identified issues with Automated Hazards Analysis implementation and work control issues.

Bechtel Savannah River Incorporated Construction achieved their first ever safety milestone of 12 million safe hours without a lost-time injury resulting in days away from work.

F Area Closure Projects

Through December 27, 2004, SRS packaged a total of 475 new DOE-STD-3013 containers during 2004 bringing the total to date to 815 containers. Also through December 27, 2004, 1,233 items of an estimated 1,602 items have been de-inventoried from FB-Line. Final packaging of all SRS plutonium metal and oxide to the requirements of DOE-STD-3013 and final de-inventory of FB-line are scheduled to be complete in March 2005, ahead of the December 2005 Board recommendation 2000-1 Implementation Plan (Rev. 2) milestone date.

F Area Complex at the Savannah River Site.

Deactivation of the F-Canyon Complex continues ahead of schedule. Through December 13, 2004, 36 of 74 F-Canyon deactivation milestones and 17 of 55 FB-Line deactivation milestones were complete. The endpoint of the F-Canyon Complex Deactivation Project Plan is expected to be achieved by mid-2006.

H Area Completion Projects

SRS began dissolution of unirradiated Mk-22 fuel in January 2004. Through December 13, 2004, over 2,300 kgs of Highly Enriched Uranium (HEU) were dissolved and separated in H-Canyon from unirradiated Mk-22 fuel. Also through December 13, 2004, SRS loaded and shipped over 60,000 kgs of Low Enriched Uranium (LEU) to the Nuclear Fuel Services Inc. site in Erwin, Tennessee, bringing the total LEU shipped to date to over 92,000 kgs.

On August 11, 2004, SRS successfully started up the Neptunium Oxide Line in HB-Line Phase II by transferring neptunium solution from H-Canyon Tank 8.5 to HB-Line Receipt Tank JT-71. The successful transfer capped an intense two-year effort to prepare personnel, plant and equipment to stabilize neptunium solution to oxide. Beginning the neptunium solution conversion to oxide also marked the early completion of a Board recommendation 94-1/2000-1 milestone. Through December 13, 2004, 6,244 of 17,750 liters have been transferred from H-Canyon to HB-Line. Neptunium oxide processing is well ahead of schedule and should be complete before the December 2006 Board recommendation 2000-1 Implementation Plan (Rev. 2) milestone date.

HB-Line completed dissolution of the remaining Denitrator Oxide material from the Idaho National Engineering and Environmental Laboratory (INEEL). The facility dissolved a total of 160 items in the dissolution campaign and completed it seven months ahead of schedule.

H-Canyon began dissolution of plutonium contaminated scrap in November. Through December 13, 2004, six of 283 items have been completed. HB-Line is repackaging the material in support of dissolution in H-Canyon.

The 221-H Ventilation System Restoration project will restore the Old HB-Line ventilation system. DOE approved the Critical Decision 3 (CD-3), Start of Construction for the project in October. The project is on schedule for completion in late 2006.

Nuclear Materials Management

Designed, constructed and brought on line a 3013 surveillance capability in 235-F. New capability includes plan for interim stabilization of any possible anomalous 3013 packages, until the new SRS 3013 Container Surveillance and Stabilization Capability is operational.

Conducted assay of 235-F Pu238 source term and an assessment of alternatives for disposition of this source term.

Developed CD-2 project baseline for new 235-F 3013 project.

Successfully executed INEEL material receipt/transfer to HB-Line campaign.

Spent Nuclear Fuel

The Receiving Basin for Offsite Fuels was deactivated and placed in a long-term surveillance and maintenance mode. In all, 32 systems were shut down and the facility hazard category was reduced from a hazard category 3 to a radiological facility, with resultant reduction in surveillance requirements and cost.

Eight hundred sixty four slugs of cobalt, thulium, and flux monitor pins were successfully disposed in the SRS burial ground using a Paducah cask that was also destined for disposal. The Paducah cask not only provided the necessary shielding for disposal of the slugs but also allowed the use of a minimum amount of burial ground space for disposition of these multiple items.

Forty five casks from foreign and domestic research reactors were successfully received and processed. In addition to standard fuel receipts, SRS also accommodated two unique fuel receipts from the Tower Shield Reactor, Oak Ridge National Laboratory, and the RSG-GAS30 Research Reactor in Indonesia. In support of a defueling campaign at Tower Shield Reactor, SRS overcame significant fuel design challenges to successfully receive, process and store the unique cylindrical and annular shaped fuel pieces. In support of Global Threat Reduction Initiatives, SRS accommodated an accelerated receipt schedule (6 months vs. 18 months) to successfully receive, process and store fuel from the RSG-GAS30 Research Reactor.

A contract was awarded to National Security Space Institute to demonstrate detritiation of heavy water. If the process demonstration is successful, prospects for sales of heavy water should significantly increase. Demonstration results are expected by the end of 2005.

Workers inspecting a Cask at Puducah.

Deactivation and Decommissioning

Completed decommissioning of 69 facilities, representing a footprint reduction of over 640,000 ft^2. This brings the total number of facilities decommissioned since the start of Fiscal

Year 2003 to 117 of the 253 facilities included in the current contract, which ends in November 2006.

Completed decommissioning the final seven of the 28 facilities in T Area and turned the area over to Soils and Groundwater Closure Projects. Following closure, several units in T Area will be removed from the Superfund National Priority Listing.

Completed the deactivation of 62 of 100 process zones in Building 247-F. 247-F will be the first major contaminated glove-box facility at the SRS to be decommissioned. The facility is now about six months ahead of schedule.

High Level Waste

At the Defense Waste Processing Facility, 260 canisters were produced with increased waste loading equivalent to 327 nominal canisters. To date, over 33 percent of sludge waste by volume has been processed.

Building 512-S modifications were completed that would allow processing of actinides from salt waste solutions. However, actual processing was not initiated due to permit delays as the result of the Waste Incidental to Reprocessing lawsuit.

SR established dispositions for over 1500 cubic meters of legacy TRU waste through shipments to the Waste Isolation Pilot Project or repackaging/ reclassification.

SRS continued the in-Service Inspection program for HLW tanks. To date, a total of eight tanks have been ultrasonically inspected with no degradation detected.

Tritium

The Tritium Facility Modernization and Consolidation project was successfully completed and is now in operation. The startup and operation of the systems installed via this project were required to allow for the shutdown and decommissioning of an existing tritium facility, which has been in operation for nearly 50 years.

In July 2004, the Board staff reviewed the ongoing installation of worker protection systems in the new Tritium Extraction Facility. In addition, the team reviewed several electronic operating procedures and observed how they interfaced directly with the Tritium Extraction Facility process control system. No issues were identified by the Board staff during the review. A follow-on review has been tentatively scheduled for March 2005 to evaluate worker protection system startup testing.

In February 2004, two SQA assessments were completed to address Board recommendation 2002-1, *Quality Assurance for Safety Related Software*: 1) Assessment of SRS's SQA Processes for Safety System Software and Firmware (Tritium Extraction Facility Worker Protection System, and Tritium Facility Modernization & Consolidation project Software), fulfilling Commitment 4.2.3; and 2) Assessment of Savannah River Site's SQA Processes for Design and Analysis Software for Safety System (GTSTRUDL, and Tank Top Loading Software), fulfilling Commitment 4.2.4.

N. Y-12 Site Office (YSO)

YSO accomplished the following in 2004:

- A successful Corporate Independent Assessment of ISM was held August 9–20, 2004. The criteria for the nine Criteria and Review Approach Documents (CRADs) were met, which included a review of Integrated Safeguards and Security Management.

- Significant progress on the Technical Basis Reconstitution initiatives in the Configuration Management Upgrades Project was achieved. The Technical Baseline Index Summaries for all vital safety systems were issued one full year in advance of the original commitment. Additionally, the institutionalization of recommendation 2000-2 was continued through the completion of Phase II type assessments against VSSs and support programs.
- The 10 CFR Part 830 Rule compliant DSA and TSR for the 9212 complex was completed and submitted three weeks early.
- A major revision to the USQ Determination procedure was completed resulting in both quality and compliance improvements in USQ Determination prepared for Y-12 nuclear facilities.
- Continued with the implementation of Board recommendation 2002-3 by identifying Specific Administrative Controls in Y-12 nuclear facilities.
- A significant first for Y-12: Since December 2003, on two separate occasions, more than 3,000,000 hours were worked without a Lost Workday Away case.
- The Nuclear Criticality Safety program continued to be implemented in accordance with applicable requirements. No significant criticality issues occurred that affected the performance of Y-12 operations, safety, or accomplishment of mission.
- Received only one administrative noncompliance as result of seven different environmental regulatory compliance inspections performed by external environmental regulatory agencies. Resolved noncompliance.
- Awarded 3-year re-accreditation for Occupational Health Services from the Accreditation Association for Ambulatory Health Care in January 2004.
- In the area of Emergency Management, a Full Participation Exercise was successfully conducted on August 25, 2004, using first-of-a-kind scenario for weapons of mass destruction event.
- Y-12 Continued to lead the Complex in the SQA program including implementation of Board recommendation 2002-1. During 2004, Y-12 achieved full compliance with NNSA directives and company procedures. Additionally, a Y-12 Site Office employee became the first NNSA Site Office employee to complete the Training Qualification Program for the functional area of Safety SQA.
- Y-12 successfully launched the Conduct of Operations Representatives program. Representatives completed interim qualifications and established oversight presence in manufacturing facilities. The representatives continue to pursue full qualifications and are on track to complete in early 2005.
- Completed all modifications to the equipment in Enriched Uranium Operations Special Processing for return to operation. Completed Enriched Uranium Wet Chemistry first-use activities. All Wet Chemistry processes have been exercised with special nuclear materials and product produced.
- Completed design analyses to rectify a long standing issue with B-1 Wing of Building 9212. A project has been initiated to provide fire protection to the area.

- Completed all major construction within 13 months on the Purification Facility Project, the first new production facility at Y-12 in 35 years.
- Met all critical path milestones on or ahead of schedule for the Highly Enriched Uranium Materials Facility Project. Received Critical Decision-3 approval and awarded the main facility construction subcontract.
- Received Critical Decision-0 approval for the Enriched Uranium Manufacturing Facility Project.
- Thirty-two buildings were demolished (approximately 107,000 square feet) within the 2004 work scope, including buildings 9704-2 and 9404-11.
- Completed Disassembly Glovebox project and turned over to Operations within revised funding level of $15M.
- Completed 51 projects with a total value of $46.5M and an average cost performance index of 0.975 in the General Plant Project/General Plant Equipment Program.
- BWXT developed and submitted *Fiscal Year 2004 Y-12 Ten Year Comprehensive Site Plan*, which incorporated BWXT Y-12's new modernization approach and the BWXT Y-12 Master Site Plan.
- Negotiated, transferred, and executed Quality Evaluation screening work scope from Pantex to Y-12 to reduce complex backlog issues and supported the surveillance needs of the enduring stockpile.
- Y-12 developed and implemented special security plan for the protection of the stored Libyan centrifuge materials. Completed a risk assessment and implemented actions to address assessment results and audited security plan implementation.
- Oxide Conversion Facility cold operations were initiated in March 2004 and preparations for early 2005 start-up continue.
- Y-12 complied with the Deputy Secretary of Energy's letter standing down operations involving Accountable Classified Removable Electronic Media in late July. BWXT Y-12 restarted those operations on August 13, 2004, after accounting for 16,632 pieces of Classified Removable Electronic Media and 130 classified Classified Removable Electronic Media repositories.

Hydrologic isolation activities for Solid Waste Storage. This includes employing a state-of-the-art trenching technology that ensures that the project meets the regulatory requirements for reducing groundwater infiltration into the Waste Burial Grounds at Y-12.

V. Other Board Interface Activities

The Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board (Departmental Representative) manages the Department's overall interface with the Board and provides advice and direction for resolving safety issues identified by the Board. DOE M 140.1-1B, *Interface with the Defense Nuclear Facilities Safety Board* details the Department's process used to interface with the Board and the Board's staff. In addition to the activities relating to the Board outlined in the prior sections of this report (Sections I-IV), the Department interacts with the Board and its staff on several other activities to further ensure adequate protection of public and worker health and safety and the environment at the Department's defense nuclear facilities. These activities include:

- coordination of the Board's review of the Department's safety directives;
- briefings, site visits, and other Board interactions;
- responses to Board reporting requirements;
- attendance and presentations at the Board's public meetings;
- Secretary briefing with the Board members;
- Safety Issues Management System (SIMS);
- maintenance of the information archive of Board-related documents; and
- interface workshop and interface manual.

A. Coordination of Board Review of Department Safety Directives

One of the Board's significant responsibilities is to review and evaluate the Department's safety directives and standards that apply to the design, construction, operation, and decommissioning of Department's defense nuclear facilities. The Board reviews the body of the Department's directives (including rules, policies, notices, orders, manuals, handbooks, guides, and standards) that it has identified as "of interest" to the Board due to their applicability to pubic health and safety at the Department's defense nuclear facilities. Whenever the Department develops changes to the identified directives or identifies new directives potentially "of interest" to the Board, the Board is provided an opportunity to review and comment on the changes prior to approval of the changes by Department management. The Departmental Representative's Office coordinates this review process with the Board to ensure that the Board and its staff are notified of each change and given an opportunity for review and comment prior to issuance or re-issuance of the directives. Appendix A provides a listing of the orders identified by the Board as "of interest" and a listing of Departmental safety directives "of interest" to the Board that were changed in 2004.

B. Briefings, Site Visits, and Other Board Interactions

The Department, the Board, and the Board's staff are in constant contact to identify and resolve safety issues at the Department's defense nuclear facilities. The Department provides briefings to the Board on a regular basis in order to:

- update the Board on the Department's progress toward resolving issues identified in Board recommendations;
- update the Board on the Department's safety initiatives; and
- update the Board on specific safety issues as requested by the Board.

The Board and the Board's staff regularly visit the Department's defense nuclear facilities to perform reviews of the Department's safety initiatives, safety facilities and operations, and attend briefings at the sites. Appendix B provides a summary of site visits supported by the Department during 2004. In addition, Department personnel conducted numerous teleconferences and video conferences to exchange information and resolve safety issues.

C. Responses to Board Reporting Requirements

The Board communicates with the Department through a variety of channels including formal recommendations and reporting requirements, letters requesting action and information, and letters providing suggestions and information, such as staff issue reports and trip reports. Communication channels also include Board and Board's staff requests for information, public meetings, briefings and discussions, and site visits. The Board's choice of communication vehicle suggests the level of the Board's concern, with the more formal channels used for clearly-defined safety issues that require prompt attention by Departmental managers. During 2004, the Board issued 30 sets of formal reporting requirements, pursuant to Chapter 21, Section 313(d) of the Atomic Energy Act of 1954 [42 U.S.C. 2286b(d)], as shown in Table 5.A. Table 5.B lists active reporting requirements from prior years.

D. Board Public Meetings

The Board holds public meetings periodically to review significant safety issues in a public forum. The Board provides advance public notice for these meetings pursuant to the provision of the "Government in the Sunshine Act" (5 U.S.C. 552b). During 2004, the Department supported two public meetings conducted by the Board on February 3, 2004 and February 9, 2004 on the topic of safety oversight.

E. Secretary Periodic Briefings with the Board Members

The Secretary typically provides periodic briefings to the Board members. The Secretary initiated these briefings in 1994 to facilitate senior level information exchange on key safety issues. The Secretary, Deputy Secretary, Under Secretaries, and the Departmental Representative typically represent the Department in these periodic reviews.

F. Safety Issues Management System (SIMS)

The Department established a Department-wide commitment management tool, SIMS, in August 1995. Using this tool, the Department has reduced the number of outstanding commitments related to Board recommendations from 694 in August 1995 to 77 in December 2004. The total number of overdue commitments related to Board recommendations has also declined significantly, from 245 in August 1995 to 16 in December 2004. In addition to commitments and actions related to Board recommendations, SIMS is also used to manage commitments and actions related to other interactions between the Department and the Board, such as Board requests for action or information and Department commitments in letters to the Board. As of December 2004, the Department is tracking fifty-three open letter commitments to the Board.

The Departmental Representative conducts qualitative and technical reviews of the Department's implementation plans and other outgoing correspondence to the Board to identify and capture Department commitments. Commitment information identified from these documents is entered into the SIMS database. Monthly summary reports on the status of commitment implementation and completion are distributed to responsible Department managers, points of contact, and Secretarial Officers. Quarterly SIMS reports are also prepared to focus attention where needed. Department personnel can access detailed SIMS information and use various view, sort, and report formats via an on-line, Internet-based user interface.

G. Information Archive of Board-Related Documents

A key part of identifying, understanding, and resolving safety issues is maintaining effective communication between the Department and the Board. One of the key mechanisms to facilitate communication is regular correspondence between the Department and the Board. A large portion of the written communication involves the Board's recommendations and the associated deliverables, schedules, and reporting requirements contained in the Department's recommendation implementation plans. In addition, the Department receives and responds to trip reports detailing visits by the Board and the Board's staff to Department facilities. The Department also receives specific requests from the Board and the Board's staff for particular information or action by the Department. Appendix C provides a summary of key correspondence between the Department and the Board for 2004; this summary does not include transmittal of requested information and routine distribution of assessments and evaluations.

The Departmental Representative maintains an information archive of all correspondence, reports, plans, assessments, and transmittals between the Department and the Board on-line at <https//www.hss.doe.gov/deprep/>. The website provides an efficient way for the Department to share information, except information classified as official use only or higher, pertaining to defense nuclear facilities activities.

The following types of documents are included in the information archive:

- Board recommendations;
- Department responses and implementation plans;
- Department letters to the Board;
- Board letters to the Department;
- selected key letters concerning the status of recommendations;
- policy statements from the Secretary and the Board;
- Annual Reports to Congress from the Secretary and the Board concerning Board-related matters;
- Resumes of the Board members;
- Department Manual for Interface with the Board; and
- Board staff issue reports provided to the Department by the Board.

H. Interface Manual

The Department, through the Departmental Representative, must ensure that the Department's personnel are provided with appropriate Board interface training and assistance.

Training and assistance helps to ensure the integrity of the Department's efforts in resolving safety issues identified by the Board. Additionally, training works to ensure that all affected Departmental elements are actively involved in properly resolving safety issues and meeting recommendation implementation plan commitments, Board reporting requirements, and letter commitments.

The Department's key tools for interface training are DOE M 140.1-1B and the Department's periodic interface workshop. DOE M 140.1-1B outlines the Department's process used to interface with the Board and the Board's staff. It is available to Departmental personnel through the Departmental Representative's website or office. The manual was revised by the Department and re-issued in March 2001.

Table 5.A – Formal Reporting Requirements Established by the Board in 2004

Date	Reporting Requirements	Days to Report
1/20/04	A report regarding Weapon Dismantlement at the Pantex Plant.	30
1/22/04	A report documenting the Department's plan to address Nuclear Explosive Safety Study Process and Schedule at Pantex.	60
1/27/04	A report regarding the implementation of facility design requirements and good engineering practices at Los Alamos National Laboratory.	90
1/29/04	A briefing regarding plans to address Board comments on proposed rule 10 CFR 851, *Worker Safety and Health.*	30
2/12/04	A revised implementation plan for Recommendation 2000-1 regarding accelerated stabilization, repackaging, or disposition of nuclear materials at Los Alamos National Laboratory.	120
3/03/04	A report on the plan for sludge removal from the K-Basins relative to the Department's 2000-1implementation plan, *Prioritization for Stabilizing Nuclear Materials.*	58
3/23/04	A report regarding fire protection and structural engineering issues at the Office of River Protection's Waste Treatment Plant in Hanford.	60
3/24/04	A report regarding hydrogen hazards related to non-Newtonian high-level waste and black cell design for the Office of River Protection's Waste Treatment Plant in Hanford.	60
3/24/04	A briefing regarding issues on high-level waste at Savannah River Site relative to the low-curie salt program and funding for salt processing activities.	30

Table 5.A – Formal Reporting Requirements Established by the Board in 2004 (Continued)

Date	Reporting Requirements	Days to Report
4/01/04	A briefing regarding issues on the term "site/facility management contractor" and its proposed use in DOE Order 251.1A, *Directives System*.	15
4/05/04	A briefing regarding assessing, prioritizing, and managing risks at defense nuclear facilities.	60
4/12/04	A report regarding safety basis issues for Building 332 at Lawrence Livermore National Laboratory.	30
5/03/04	A report regarding safety basis documentation for mobile waste characterization and loading units at the Waste Isolation Pilot Plant	45
5/14/04	A report regarding Facility Representative Program at NNSA sites.	60
5/21/04	A briefing regarding TA-18 Accident Analysis at Los Alamos National Laboratory.	45
6/18/04	A report regarding Quality Assurance Review of the Tooling program at Pantex.	30
7/21/04	A briefing regarding Fire Protection of Structural Steel at the Office of River Protection's Waste Treatment Plant at Hanford.	30
7/29/04	A report regarding Ground Motion Issues related to the design of the Office of River Protection's Waste Treatment Plant at Hanford.	30
8/06/04	A report regarding site-wide evaluations of training and qualification programs at Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and the Nevada Test Site.	45
8/06/04	A report regarding on corrective action plans to address findings of site-wide training and qualification program evaluations.	30*
8/06/04	A briefing and a report regarding Cell Leak Path areas and high explosive accident analysis at the Pantex Plant.	45
8/27/04	A report regarding the design of the Salt Waste Processing Facility at the Savannah River Site and regarding DOE directives on natural phenomena hazards.	45
9/08/04	A report regarding implementation plan Integrated Safety Management at the Office of River Protection's Tank Farms.	60

* after evaluations are complete

Table 5.A – Formal Reporting Requirements Established by the Board in 2004 (Continued)

Date	Reporting Requirements	Days to Report
9/27/04	A briefing and a report regarding issues on the adequacy of safety analyses for defense nuclear facilities at Sandia National Laboratory.	90
10/27/04	A report regarding the Department's commitment to develop a program for archiving safety-related activities at the Pantex Plant, the Y-12 National Nuclear Complex, and the Nevada Test Site relative to Department's 93-6 implementation plan, *Maintaining Access to Nuclear Weapons Expertise*.	90
11/03/04	A report regarding deficiencies in the Device Assembly Facility at Nevada Test Site.	90
11/03/04	A report regarding configuration management program for safety systems at Lawrence Livermore National Laboratory and Livermore Site Office relative to the Department's 2000-2 implementation plan, *Configuration Management, Vital Safety Systems.*	60
12/14/04	A management briefing on implementation of the Department's 98-2 implementation plan, *Safety Management at the Pantex Plant.*	Monthly
12/14/04	A briefing regarding unvented transuranic waste drums at the Savannah River Site.	30
12/15/04	A report regarding the tooling program at the Pantex Plant.	30
12/16/04	A report regarding the draft Request for Proposal for the Los Alamos National Laboratory management and operating contract.	20

Table 5.B – Active Reporting Requirements Established by the Board in Prior Years

Date	Reporting Requirements	Days to Report
8/7/03	An annual report on the Department's Nuclear Criticality Safety Program.	Annually

APPENDIX A

DEPARTMENT SAFETY ORDERS AND DIRECTIVES "OF INTEREST" TO THE BOARD

Table A.1 - Group 1 - Currently Active Orders of Interest to the Board

Order Number	Title
DOE O 151.1B	Comprehensive Emergency Management System
DOE O 225.1A	Accident Investigations
DOE O 231.1A Chg 1	Environment, Safety, and Health Reporting
DOE O 251.1A	Directives System
DOE O 252.1	Technical Standards Program
DOE O 341.1	Federal Employee Health Services
DOE O 360.1B	Federal Employee Training
DOE O 413.3	Program and Project Management for the Acquisition of Capital Assets
DOE O 414.1B	Quality Assurance
DOE O 420.1A	Facility Safety
DOE O 425.1C	Startup and Restart of Nuclear Facilities
DOE O 430.1B	Real Property Asset Management
DOE O 433.1	Maintenance Management Program for DOE Nuclear Facilities
DOE O 435.1 Chg 1	Radioactive Waste Management
DOE O 440.1A	Worker Protection Management for DOE Federal and Contractor Employees
DOE O 442.1A	Department of Energy Employee Concerns Program
DOE O 450.1	Environmental Protection Program
DOE O 451.1B Chg 1	National Environmental Policy Act Compliance Program
DOE O 452.1B	Nuclear Explosive and Weapon Surety Program
DOE O 452.2B	Safety of Nuclear Explosive Operations
DOE O 460.1B	Packaging and Transportation Safety
DOE O 460.2A	Departmental Materials Transportation and Packaging Management
DOE O 461.1A	Packaging and Transfer or Transportation of Materials of National Security Interest

Table A.1 - Group 1 - Currently Active Orders, (Continued)

Order Number	Title
DOE O 470.2B	Independent Oversight and Performance Assurance Program
DOE O 473.1	Physical Protection Program
DOE O 474.1A	Control and Accountability of Nuclear Materials
DOE O 541.1B	Appointment of Contracting Officers and Contracting Officer Representatives
DOE O 5400.5 Chg 2	Radiation Protection of the Public and the Environment
DOE O 5480.4 Chg 4	Environment Protection, Safety, and Health Protection Standards
DOE O 5480.19 Chg 2	Conduct of Operations Requirements for DOE Facilities
DOE O 5480.20A Chg 1	Personnel Selection, Qualification, Training and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities
DOE O 5480.30 Chg 1	Nuclear Reactor Safety Design Criteria
DOE O 5530.1A	Accident Response Group
DOE O 5530.2	Nuclear Emergency Search Team
DOE O 5530.3 Chg 1	Radiological Assistance Program
DOE O 5530.4	Aerial Measuring System
DOE O 5600.1	Management of the Department of Energy Weapon Program and Weapon Complex
DOE O 5660.1B	Management of Nuclear Materials

Table A.1 – Group 2 – National Nuclear Security Administration Policy Letters

Order Number	Title
None Issued to Date	Documents will be added to this table if NNSA issues Policy Letters related to safety.

Table A.1 – Group 3 – Archived or Deleted Orders of Interest to the Board Cited in Current Contracts

Order Number	Title
DOE O 210.1	Performance Indicators and Analysis of Operations Information
DOE O 232.1A	Occurrence Reporting and Processing of Operational Information
DOE O 1300.2A	Department of Energy Technical Standards Program
DOE O 1360.2B	Unclassified Computer Security Program
DOE O 1540.2 Chg 1	Hazardous Material Packaging for Transport – Administrative Procedures
DOE O 1540.3A	Base Technology for Radioactive Material Transportation Packaging Systems
DOE O 3790.1B	Federal Employee Occupational Safety and Health Program
DOE O 4330.4B	Maintenance Management Program
DOE O 4700.1	Project Management System
DOE O 4700.4	Project Manager Certification
DOE O 5000.3B Chg 1	Occurrence Reporting and Processing of Operations Information
DOE O 5400.1	General Environmental Protection Program
DOE O 5400.2A Chg 1	Environmental Compliance Issue Coordination
DOE O 5400.3	Hazardous and Radioactive Mixed Waste Program
DOE O 5400.4	Comprehensive Environmental Response, Compensation, and Liability Act Requirements
DOE O 5480.21	Unreviewed Safety Questions
DOE O 5480.22 Chg 2	Technical Safety Requirements
DOE O 5480.23 Chg 1	Nuclear Safety Analysis reports
DOE O 5440.1E	National Environmental Policy Act Compliance Program
DOE O 5480.1B Chg 5	Environmental, Safety and Health Program for DOE Facilities
DOE O 5480.3	Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes
DOE O 5480.5 Chg 2	Safety of Nuclear Facilities
DOE O 5480.6	Safety of Department of Energy-Owned Nuclear Reactors

Table A.1 – Group 3 – Archived or Deleted Orders of Interest to the Board Cited in Current Contracts, (Continued)

Order Number	Title
DOE O 5480.7A	Fire Protection
DOE O 5480.8A Chg 2	Contractor Occupational Medical Program
DOE O 5480.9A	Construction Safety and Health Program
DOE O 5480.10	Contractor Industrial Hygiene Program
DOE O 5480.11	Radiation Protection for Occupational Workers
DOE O 5480.15	Department of Energy Laboratory Accreditation Program for Personnel Dosimetry
DOE O 5480.17	Site Safety Representatives
DOE O 5480.18B	Nuclear Facilities Training Accreditation Program
DOE O 5480.24	Nuclear Criticality Safety
DOE O 5480.25	Safety of Accelerator Facilities
DOE O 54800.26	Trending and Analysis of Operations Information Using Performance Indicators
DOE O 5480.28	Natural Phenomena Hazards Mitigation
DOE O 5480.29	Employee Concerns Management System
DOE O 5480.31	Startup and Restart of Nuclear Facilities
DOE O 5481.1B Chg 1	Safety Analysis and Review System
DOE O 5482.1B Chg 1	Environment, Safety, and Health Appraisal Program
DOE O 5483.1A	Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned Contractor-Operated Facilities
DOE O 5484.1B	Environmental Protection, Safety and Health Protection Information Reporting Requirements
DOE O 5500.1B	Emergency Management System
DOE O 5500.2B Chg 1	Emergency Categories, Classes, and Notification and Reporting Requirements
DOE O 5500.3A Chg 1	Planning and Preparedness for Operational Emergencies
DOE O 5500.4A	Public Affairs Policy and Planning Requirements for Emergencies
DOE O 5500.7B	Emergency Operating Records Protection Program
DOE O 5500.10	Emergency Readiness Assurance Program

Table A.1 – Group 3 – Archived or Deleted Orders of Interest to the Board Cited in Current Contracts, (Continued)

Order Number	Title
DOE O 5610.10	Nuclear Explosive and Weapon Safety Program
DOE O 5610.11	Nuclear Explosive Safety
DOE O 5610.12	Packaging and Offsite Transportation of Nuclear Components, and Special Assemblies Associated with the Nuclear Explosive and Weapon Safety Program
DOE O 5632.1C	Protection and Control of Safeguards and Security Interests
DOE O 5632.11	Physical Protection of Unclassified Irradiated Reactor Fuel in Transit
DOE O 5700.6C Chg 1	Quality Assurance
DOE O 5820.2A	Radioactive Waste Management
DOE O 6430.1A	General Design Criteria

Table A.1 – Group 4 - Related Documents Setting Forth Safety-related Requirements or Guidance

Document No.	Title
DOE SEN-35-91	Nuclear Safety Policy
DOE M 140.1-1B	Interface with the Defense Nuclear Facilities Safety Board
DOE P 141.2	Public Participation and Community Relations
DOE G 151.1-1 series	Emergency Management Guide Volumes 1 through 10
DOE G 200.1-1 series	Software Engineering Methodology Guide Chapters 1- through 10
DOE G 225.1A-1	Implementation Guide for Use with DOE Order 225.1 Accident Investigations
DOE M 231.1-1A Chg 1	Environment, Safety and Health Reporting Manual
DOE G 231.1-1	Occurrence Reporting and Performance Analysis Guide
DOE M 231.1-2	Occurrence Reporting and Processing of Operations Information
DOE G 231.1-2	Occurrence Reporting Causal Analysis Guide
DOE P 251.1	Directives System Policy
DOE M 251.1-1A	Directives System Manual

Table A.1 – Group 4 - Related Documents Setting Forth Safety-related Requirements or Guidance, (Continued)

Document No.	Title
DOE G 252.1-1	Technical Standards Program Guide
DOE G 341.1-1	Guide on Federal Employee Occupational Medical Programs
DOE G 341.1-2	Guide of Federal Employee Assistance Programs
DOE M 360.1-1B	Federal Employee Training Manual
DOE P 410.1A	Promulgating Nuclear Safety Requirements
DOE N 411.1	Safety Software Quality Assurance Functions, Responsibilities, and Authorities of Nuclear Facilities and Activities
DOE P 411.1	Safety Management Functions, Responsibilities, and Authorities Policy
DOE M 411.1-1C	Safety Management Functions, Responsibilities, and Authorities Manual
DOE P 413.1	Program and Project Management Policy for the Planning, Programming, Budgeting, and Acquisition of Capital Assets
DOE M 413.3-1	Project Management for the Acquisition of Capital Assets
DOE G 414.1-1A	Management Assessment and Independent Assessment Guide
DOE G 414.1-2	Quality Assurance Management System Guide for Use with 10 CFR 830.120 and DOE O 414.1
DOE G 420.1-1	Nonreactor Nuclear safety Design Criteria and Explosive Safety Criteria Guide for Use with DOE Order 420.1 Facility Safety
DOE G 420.1-2	Guide for the Mitigation of Natural Phenomena Hazards for DOE Nuclear Facility and Non-Nuclear Facilities
DOE G 421.1-1 series	Criticality Safety Good Practices Program Guide for DOE Nonreactor Nuclear Facilities
DOE G 421.1-2	Implementation Guide for Use in Developing Documented Safety Analyses to Meet Subpart B of 10 CFR 830
DOE G 423.1-1	Implementation Guide for use in Developing Technical Safety Requirements
DOE G 424.1-1	Implementation Guide for use in Addressing Unreviewed Safety Question Requirements
DOE P 426.1	Federal Technical Capability Policy for Defense Nuclear Facilities

Table A.1 Group 4 - Related Documents Setting Forth Safety-Related Requirements or Guidance, (Continued)

Document No.	Title
DOE M 426.1-1	Federal Technical Capability Manual
DOE G 426.1-1	Recruiting, Hiring, and Retaining High-Quality Technical Staff
DOE P 430.1	Land and Facility Use Planning
DOE G 430.1-2	Implementation Guide for Surveillance and Maintenance During Facility Transition Disposition
DOE G 430.1-3	Deactivation Implementation Guide
DOE G 430.1-4	Decommissioning Implementation Guide
DOE G 430.1-5	Transition Implementation Guide
DOE G 433.1-1	Nuclear Facility Maintenance Management Program Guide for Use with DOE Order 433.1
DOE M 435.1-1 Chg 1	Radioactive Waste Management Manual
DOE G 435.1-1 series	Implementation Guide for Use with DOE Manual 435.1-1 Chapters 1 through 4
DOE M 440.1-1	DOE Explosives Safety Manual
DOE G 440.1-1 series	Guides for Use with DOE Order 440.1 Volumes 1 through 7
DOE G 441.1	DOE Radiological Health and Safety Policy
DOE G 441.1-1 series	Guides for Use with 10 CFR 835 Volumes 1 through 13
DOE G 442.1-1	DOE Employee Concerns Program Guide
DOE P 450.1	Environment, Safety, and Health Policy for the Department of Energy Complex
DOE G 450.1-1 series	Implementation Guide for Use with DOE Order 450.1 Volumes 1,4
DOE P 450.2A	Identifying, Implementing, and Complying with ES&H Requirements
DOE P 450.3	Authorizing Use of the Necessary and Sufficient Process for Standards-Base Environment, Safety and Health Management
DOE M 450.3-1	DOE Closure Process for Necessary and Sufficient Sets of Standards
DOE G 450.3-1 series	Documentation for Work Smart Standards Applications Volumes 1 through 3
DOE P 450.4	Safety Management System Policy

Table A.1 Group 4 - Related Documents Setting Forth Safety-Related Requirements or Guidance, (Continued)

Document No.	Title
DOE G 450.4-1B series	Integrated Safety Management System Guide Volumes 1 through 2
DOE P 450.5	Line Environment, Safety and Health Oversight
DOE P 450.6	Secretarial Policy Statement on Environment, Safety and Health
DOE P 454.1	Use of Institutional Controls
DOE P 455.1	Use of Risk-Based End States
DOE G 460.1-1 series	Implementation Guide for Use with DOE Order 460.1A, Packaging and Transportation Safety
DOE G 460.2-1	Implementation Guide for Use with DOE Order 460.2 Departmental Materials Transportation and Packaging Management
DOE M 460.2-1	Radioactive Material Transportation Practices Manual
DOE M 461.1-1	Packaging and Transfer of Materials of National Security Interest Manual
DOE M 474.1-1B	Manual for Control and Accountability of Nuclear Materials
DOE M 474.1-2A	Nuclear Materials Management and Safeguards System Reporting and Data Submission Manual
DOE M 10 CFR 820	Procedural Rules for DOE Nuclear Activities
10 CFR 830, Subpart A	Quality Assurance Requirements
10 CFR 830, Subpart B	Nuclear Safety Management
10 CFR 835	Occupational Radiation Protection
48 CFR 970.5204-2	Laws, Regulations, and DOE Directives
48 CFR 970.5215-3	Conditional Payment of Fee, Profit, and other Incentives – Facility Management Contracts
48 CFR 970.5223-1	Integration of Environment, Safety, and Health Into Work Planning and Execution
Various	DOE Handbooks and Technical Standards cited in Orders and related documents of interest to the Board as listed in the tables above

Table A.2 Department Safety Related Directives Coordinated with the Board Staff and Issued in 2004

Order Number	Title	Date Issued
DOE P 413.2	Value Engineering	1/7/2004
DOE STD-1176-2004	Chemical Processing Functional Area Qualification Standard	1/20/2004
DOE STD-1177-2004	Emergency Management Functional Area Qualification Standard	1/21/2004
DOE STD-1178-2004	Technical Program Manager Functional Area Qualification Standard	2/17/2004
DOE G 450.1-1	Implementation Guide for use with DOE O 450.1, Environmental Protection Program	2/18/2004
DOE STD-1179-2004	Technical Training Functional Area Qualification Standard	2/26/2004
DOE STD-1180-2004	Construction Management Functional Area Qualification Standard	3/4/2004
DOE M 231.1-1A	Environment, Safety and Health Reporting Manual	3/19/2004
DOE STD-1181-2004	Facility Maintenance Management Functional Area Qualification Standard	3/29/2004
DOE STD-1182-2004	Civil/Structural Engineering Functional Area Qualification Standard	3/29/2004
DOE STD-1183-2004	Nuclear Safety Specialist Functional Area Qualification Standard	4/1/2004
DOE STD-3013-2004	Stabilization, Packaging, and Storage of Plutonium-Bearing Materials	4/1/2004
DOE O 461.1A	Packaging and Transfer or Transportation of Materials of National Security Interest	4/26/2004
DOE O 414.1B	Quality Assurance	4/29/2004
DOE M 426.1-1A	Federal Technical Capability Manual	5/18/2004
DOE O 231.1A Chg1	Environment, Safety and Health Reporting	6/3/2004
DOE STD-1090-2004	Hoisting and Rigging Standard	6/7/2004

Table A.2 Department Safety Related Directives Coordinated with the Board Staff and Issued in 2004, (Continued)

Order Number	Title	Date Issued
DOE P 450.7	Environment, Safety and Health (ES&H) Goals	8/2/2004
DOE HDBK-1100-2004	Chemical Process Hazards Analysis	8/3/2004
DOE HDBK-1101-2004	Process Safety Management for Highly Hazardous Chemicals	8/3/2004
DOE G 450.1-2	Implementation Guide for Integrating Environmental Management Systems into Integrated Safety Management Systems	8/20/2004
DOE STD-1185-2004	Nuclear Explosive Safety Study Functional Area Qualification Standard	8/20/2004
DOE STD-1186-2004	Specific Administrative Controls	8/31/2004
DOE M 231.1-1A Chg 1	Environment, Safety and Health Reporting Manual	9/9/2004
DOE HDBK-1184-2004	Radiological Control Programs for Special Tritium Compounds	9/10/2004
DOE G 414.1-3	Suspect/Counterfeit Items Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements, and DOE O 414.1B, Quality Assurance	11/3/2004
DOE STD-3015-2004	Nuclear Explosive Safety Evaluation Process	11/5/2004
DOE HDBK-1092-2004	Electrical Safety	12/17/2004
DOE HDBK-1122-99	Radiological Control Technician Training	12/17/2004
DOE HDBK-1092-2004	Electrical Safety	12/17/2004
DOE O 460.2A	Departmental Materials Transportation and Packaging Management	12/22/2004

Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as "of Interest"

Series 100—Leadership/Management/Planning

DOE O 151.1B, *Comprehensive Emergency Management System*
Establishes policy and assigns and describes roles and responsibilities for the DOE Emergency Management System. The Emergency Management System provides the framework for development, coordination, control, and direction of all emergency planning, preparedness, readiness assurance, response, and recovery actions.

Series 200—Information and Leadership

DOE O 225.1A, *Accident Investigations*
Prescribes requirements and responsibilities related to the Department's accident investigation program. It provides an organized and proven methodology for effectively and efficiently conducting Type A and Type B accident investigations.

DOE O 231.1, A, Chg 1, *Environment, Safety, and Health Reporting*
Ensures collection and reporting of information on environment, safety and health that is required by law or regulation to be collected, or that is essential for evaluating DOE operations and identifying opportunities for improvement needed for planning purposes within the DOE.

DOE O 251.1A, *Directives System*
Establishes requirements for the development, coordination, and review of certain internal Directives System documents (Policies, Orders, Notices, Manuals, and Guides). This ensures issuance of clear, succinct, cost-effective, and outcome-oriented Directives System documents; early involvement of affected organizations and timely development, coordination, and issuance of Directives System documents.

DOE O 252.1, *Technical Standards Program*
Promotes the use of voluntary consensus standards by the DOE, provides DOE with the means to develop needed technical standards, and manages overall technical standards information, activities, issues, and interactions. DOE Technical Standards cover performance-based or design-specific technical specifications and related management systems practices, and span classification of components; delineation of procedures; specification of materials, products, performance, design, or operations; and definitions of terms or measurements of quality and quantity in describing materials, products, systems, services, or practices.

Series 300—Human Resources

DOE O 341.1, *Federal Employee Health Services*
Establishes requirements and responsibilities for occupational medical, employee assistance, and workers' compensation programs for Federal employees.

Table A.3 – Department Orders and Directives Descriptions (Continued)

DOE O 360.1B, *Federal Employee Training*
Establishes requirements and assigns responsibilities for DOE Federal employee training, education, and development under the Government Employees Training Act of 1958. The objective is to improve workforce performance related to the mission and strategic objectives of DOE through a cyclical program of training planning, needs analysis and assessment, design, development, implementation, and evaluation.

Series 400—Work Process

DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*
Provides DOE, including NNSA, project management direction for the acquisition of capital assets that are delivered on schedule, within budget, and fully capable of meeting mission performance and environmental, safety, and health standards.

DOE O 414.1B, *Quality Assurance*
Establishes an effective management system (i.e. QA programs) using the performance requirements of this Order, coupled with technical standards where appropriate. Ensures that senior management provides planning, organization, direction, control, and support to achieve quality assurance objectives.

DOE O 420.1A, *Facility Safety*
Establishes facility safety requirements for DOE and NNSA.

DOE O 425.1C, *Startup and Restart of Nuclear Facilities*
Establishes the requirements for the DOE, including the NNSA, for startup of new nuclear facilities and for the restart of existing nuclear facilities that have been shut down. The requirements specify a readiness review process that must, in all cases, demonstrate that it is safe to start (or restart) the applicable facility.

DOE O 430.1B, *Real Property Asset Management*
Provides requirements for planning, acquiring, operating, maintaining, and disposing of physical assets as valuable national resources.

DOE O 433.1, *Maintenance Management Program for DOE Nuclear Facilities*
Defines the program for the management of cost-effective maintenance of DOE nuclear facilities.

DOE O 435.1, Chg 1, *Radioactive Waste Management*
Ensures that all DOE radioactive waste is managed in a manner that is protective of worker and public health and safety, and the environment.

Table A.3 – Department Orders and Directives Descriptions (Continued)

DOE O 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*
Establishes the framework for an effective worker protection program that will reduce or prevent injuries, illnesses, and accidental losses by providing DOE Federal and contractor workers with a safe and healthful workplace. The order requires DOE to implement a written worker protection program and establish written policy, goals, and objectives for the worker protection program.

DOE O 442.1A, *Department of Energy Employee Concerns Program*
Ensures employee concerns related to such issues as the environment, safety, health, and management of DOE and NNSA programs and facilities are addressed through prompt identification, reporting, and resolution of employee concerns regarding DOE facilities or operations in a manner that provides the highest degree of safe operations; free and open expression of employee concerns that results in an independent, objective evaluation; and supplementation of existing processes with an independent avenue for reporting concerns.

DOE O 450.1, *Environmental Protection Program*
Implement sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources impacted by Department of Energy (DOE) operations and by which DOE cost effectively meets or exceeds compliance with applicable environmental; public health; and resource protection laws, regulations, and DOE requirements.

DOE O 451.1B, Chg 1, *National Environmental Policy Act Compliance Program*
Establishes DOE internal requirements and responsibilities for implementing the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality Regulations Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and the DOE NEPA Implementing Procedures (10 CFR Part 1021). The goal is to ensure efficient and effective implementation of DOE's NEPA responsibilities through teamwork while controlling the costs and time for the NEPA process.

DOE O 452.1B, *Nuclear Explosive and Weapon Surety Program (NEWS)*
Establishes requirements and responsibilities for the DOE NEWS Program. This is done to ensure adequate safety, security, and control of nuclear explosives and nuclear weapons; maintain a formal, comprehensive, and systematic NEWS Program to protect the public and worker health and safety and the environment while supporting national defense requirements; establish nuclear explosive surety standards, nuclear weapon design surety requirements, and appraisal requirements for the NEWS Program; and address requirements and responsibilities for planned nuclear explosive operations.

DOE O 452.2B, *Safety of Nuclear Explosive Operations*
Establishes requirements and responsibilities for ensuring the safety of both routine and planned DOE nuclear explosive operations and associated activities and facilities, address the safety of nuclear explosive operations in nuclear explosive safety and ES&H; and address requirements and responsibilities for planned nuclear explosive operations.

Table A.3 – Department Orders and Directives Descriptions (Continued)

DOE O 460.1B*, Packaging and Transportation Safety*
Prescribes a comprehensive safety program for the DOE and DOE-contractor packaging and transportation operations.

DOE O 460.2A*, Departmental Materials Transportation and Packaging Management*
Establishes DOE policies and requirements to supplement applicable laws, rules, regulations, and other DOE Orders for materials transportation and packaging operations.

DOE O 461.1A*, Packaging and Transfer or Transportation of Materials of National Security Interest*
Establishes requirements and responsibilities for the Transportation Safeguards System packaging and transportation and online transfer of nuclear explosives, nuclear components, Naval nuclear fuel elements, Category 1 and Category II special nuclear materials, special assemblies, and other materials of national security interest.

DOE O 470.2B*, Independent Oversight and Performance Assurance Program*
Enhances the Department's safeguards and security, cyber security, and emergency management programs and provides the Department and contractor managers, Congress, and other stakeholders with an independent evaluation of the effectiveness of DOE policy and line management performance in safeguards and security, cyber security, emergency management, and other critical functions, as directed by the Secretary.

DOE O 473.1, Physical Protection Program
Establish DOE management objectives, requirements and responsibilities for the physical protection of Safeguards and Security interests.

DOE O 474.1A*, Control and Accountability of Nuclear Materials*
Prescribes DOE requirements, including those for the NNSA, for nuclear material control and accountability for DOE-owned and -leased facilities and DOE-owned nuclear materials at other facilities that are exempt from licensing by the Nuclear Regulatory Commission.

Series 3700—Personnel Relations and Services

Series 4700—Project Management

DOE O 4700.4*, Project Manager Certification*
Establishes certification requirements for DOE project managers at identifiable skill levels and to encourage development of project managers.

Table A.3 – Department Orders and Directives Descriptions (Continued)

Series 5400—Environmental Quality and Impact

DOE O 541.1B, Appointment of Contract Offices and Contracting Offices Representative
Establish procedures governing the selection, appointment, and termination of Department of Energy (DOE)/National Nuclear Security Administration (NNSA) contracting officers and contracting officer representatives. Also, ensure that, within the scope of this Order, only trained, qualified procurement and financial assistance professionals serve as contracting officers.

DOE O 5400.5, Chg 2, *Radiation Protection of the Public and the Environment*
Establishes the standards and requirements for operations of the DOE and DOE contractors with respect to operating its facilities and conducting its activities so that (a) radiation exposures to members of the public are maintained within the established limits and to control radioactive contamination through the management of real and personal property and (b) the environment is protected from radioactive contamination to the extent practical.

DOE O 5480.4, Chg 4, *Environment Protection, Safety, and Health Protection Standards*
Specifies requirements for the application of the mandatory ES&H standards applicable to all DOE and DOE contractor operations and provides a listing of reference ES&H standards; and identifies the sources of the mandatory and reference ES&H standards.

DOE O 5480.19, Chg 2, *Conduct of Operations Requirements for DOE Facilities*
Provides requirements and guidelines for Departmental Elements, including the NNSA, to use in developing directives, plans, and/or procedures relating to the conduct of operations at DOE facilities. The implementation of these requirements and guidelines should result in improved quality and uniformity of operations.

DOE O 5480.20A, Chg 1, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*
Establishes requirements for the development and implementation of contractor-administered training programs that provide consistent and effective training for personnel at DOE nuclear facilities and contains the minimum requirements that must be included in training and qualification programs.

DOE O 5480.30, Chg 1, *Nuclear Reactor Safety Design Criteria*
Establishes requirements for the design of all safety class structures, systems and components of DOE nuclear reactor facilities. Each covered DOE contractor use these criteria in the review and development of existing and proposed directives, plans, or procedures relating to the design of new and existing DOE nuclear reactor facilities.

Table A.3 – Department Orders and Directives Descriptions (Continued)

Series 5500—Emergency Preparedness

DOE O 5530.1A, *Accident Response Group*
Establishes DOE policy for maintaining a continuing capability to provide immediate response to peacetime accidents and significant incidents involving nuclear weapons or radiological nuclear weapon components.

DOE O 5530.2, *Nuclear Emergency Search Team*
Establishes DOE policy to establish and maintain capabilities for technical response to potential and actual threats and incidents as may be requested by the Lead Federal Agency.

DOE O 5530.3, Chg 1, *Radiological Assistance Program*
Establishes DOE policy, procedures, authorities, and responsibilities for its Radiological Assistance Program. Calls for establishing and maintaining response plans and resources to provide radiological assistance to other Federal agencies, State, local, and tribal governments, and private groups requesting such assistance.

DOE O 5530.4, *Aerial Measuring System*
Establishes requirements to maintain a capability to provide regularly scheduled aerial remote sensing surveys to provide baseline radiological, multi-spectral, and other remotely sensed data; early warning of environmental impacts of operations; and total site surveillance. In addition, capability will be maintained to provide urgent and emergency aerial assessment of radiological conditions in the vicinity of peacetime radiological incidents or accidents.

Series 5600—Defense Programs

DOE O 5600.1, *Management of the Department of Energy Weapon Program and Weapon Complex*
Provides the steps to assure the effective management of the weapon complex and the weapon program, assure the continuing capability of the weapon complex to carry out its primary mission, to conduct the weapon program, and to encourage the effective use of the capabilities and resources of the weapon complex in support of DOE's non-weapon responsibilities or other programs of national interest, subject to the need to assure that such programs do not adversely impact the weapon program.

DOE O 5660.1B, *Management of Nuclear Materials*
Establishes requirements and procedures for the management of nuclear materials within the DOE in order to implement a comprehensive nuclear materials management program to conserve valuable nuclear material resources; distribute nuclear materials needed for DOE and other programs for research, development, and other purposes; optimize nuclear materials production, processing, and inventory management operations; and conduct studies and prepare plans for the future use and disposition of nuclear materials including operation of DOE nuclear materials production, processing, and storage facilities.

Table A.3 – Department Orders and Directives Descriptions (Continued)

Related Documents Setting Forth Safety-Related Requirements

DOE N *411.1, Safety Software Quality Assurance Functions, Responsibilities, and Authorities for Nuclear Facilities and Activities*
Assign roles and responsibilities for improving the quality of safety software.

DOE P 141.2, *Public Participation and Community Relations*
Ensure that public participation and community outreach are integral and effective parts of DOE activities and that decisions are made with the benefit of significant public perspectives.

DOE P 251.1, *Directives System Policy*
Directives provide formal and organized communication of the Department's expectations for performance of work within the DOE complex and include Policy Statements, Regulations, Orders, Notices, Manuals, Guides, and Technical Standards.

DOE P 410.1A, *Promulgating Nuclear Safety Requirements*
Establishes policy for use of notice and comment rulemaking to promulgate requirements on nuclear safety issues currently covered by DOE Orders, and issuance of notices of proposed rulemaking with respect to important nuclear safety requirements in existing DOE Orders as expeditiously as practicable. The use of notice and comment rulemaking gives members of the public the opportunity for meaningful participation in the development of nuclear safety requirements.

DOE P 411.1, *Safety Management Functions, Responsibilities and Authorities*
Defines the DOE safety management functions, responsibilities and authorities to ensure that work is performed safely and efficiently. Develops and implements requirements and standards that are necessary to provide reasonable assurance that workers, the public, and the environment are adequately protected; and defines essential safety management functions and establish unambiguous DOE roles, responsibilities, and authorities for executing them to accomplish the authorized work.

DOE P 413.1, *Program and Project Management Policy for the Planning, Programming, Budgeting, and Acquisition of Capital Assets*
Establish Department of Energy (DOE) program and project management policy for the planning, programming, budgeting, and acquisition of capital assets consistent with the following Office of Management and Budget (OMB).

DOE P 426.1, *Federal Technical Capability for Defense Nuclear Facilities*
The FTCP provides for the recruitment, deployment, development, and retention of Federal personnel with the demonstrated technical capability to safely accomplish the Department's missions and responsibilities. It is institutionalized through DOE directives to establish the program's objective, guiding principles, and functions. The program is specifically applicable to those offices and organizations performing functions related to the safe operation of defense nuclear facilities.

Table A.3 – Department Orders and Directives Descriptions (Continued)

DOE P 430.1, *Land and Facility Use Planning*
Strengthens the stewardship of our vast lands and facilities and encourages the return of some of these national resources to their rightful owners, the American public. The policy will stimulate local economies, cut costs and ensure public participation in our planning processes.

DOE P 450.1, *Environment, Safety, and Health Policy for the Department of Energy Complex*
Delineates guiding principles to promote daily excellence in the protection of the worker, the public, and the environment. Guiding principles include personal commitment, mutual trust, open communications, continuous improvement and full involvement of all interested parties.

DOE P 450.2A, *Identifying, Implementing, and Complying with Environment, Safety, and Health Requirements*
Establishes a policy for an integrated review of safety requirements for ensuring adequate protection for workers, the public and the environment. Establishes requirements for developing appropriate set of ES&H requirements to ensure adequate protection.

DOE P 450.3, *Authorizing Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health*
Establishes the Closure Process for Necessary and Sufficient Sets of Standards as one means of addressing the selection of ES&H standards. This will provide adequate protection of the workers, the public and the environment and will increase stakeholder trust and confidence. This does not apply to defense nuclear facilities. The Department will consult with the Board on the Closure Process for Necessary and Sufficient Sets of Standards.

DOE P 450.4, *Safety Management System Policy*
Provides a formal, organized process whereby people plan, perform, assess, and improve the safe conduct of work. The Safety Management System is institutionalized through DOE directives and contracts to establish the Department-wide safety management objective, guiding principles, and functions. The system encompasses all levels of activities and documentation related to safety management throughout the DOE complex.

DOE P 450.5, *Line Environment, Safety and Health Oversight*
Sets forth the Department's expectations for DOE line management ES&H oversight and for the use of contractor self-assessment programs as the cornerstone for this oversight. An effective and efficient oversight program can be realized when a vigorous contractor self-assessment program is in place, similar to those used in successful companies. DOE line oversight and contractor self-assessments together ensure that field elements and contractors are adequately implementing the DOE Safety Management System.

Table A.3 – Department Orders and Directives Descriptions (Continued)

DOE P 450.6, *Secretarial Policy Statement on Environment, Safety, and Health*
Rearticulates general policy for protection of public and worker health and safety, and the environment. Emphases implementation of ISM to prevent accidents, openness to feedback on safety concerns, and a goal of "zero tolerance" for serious accidents.

DOE P 454.1, *Use of Institutional Controls*
Delineates how the Department of Energy (DOE), including the National Nuclear Security Administration, will use institutional controls in the management of resources, facilities and properties under its control and to implement its programmatic responsibilities. The Policy will guide site-specific and programmatic decisions on DOE's own planning, maintenance and implementation of institutional controls, and address responsibilities related to DOE's role as a steward of Federal lands and properties, and identify activities that DOE needs to accomplish.

DOE P 455.1, *Use of Risk-Based End States*
Focus the Department line management officials on conducting cleanup that is aimed at, and achieves, clearly defined, risk-based end states. Risk-based end states are representations of site conditions and associated information that reflect the planned future use of the property and are appropriately protective of human health and the environment consistent with that use.

10 CFR Part 820, *Procedural Rules for DOE Nuclear Activities*
Sets forth the procedures to govern the conduct of persons involved in DOE nuclear activities and, in particularly, to achieve compliance with the DOE Nuclear Safety Requirements by all persons subject to those requirements.

10 CFR Part 830, Subpart A, *Quality Assurance Requirements*
Sets forth rules for contractors responsible for a DOE nuclear facility to conduct work in accordance with the QA criteria; develop and submit for approval by DOE a QA program for the work; and implement the QA program, as approved and modified by DOE.

10 CFR Part 830, Subpart B, *Safety Basis Requirements*
Sets forth rules describing how responsible contractors must prepare a documented safety analysis that in part, describes the facility, activities, and operations; provides systematic identification of hazards; evaluates normal, abnormal, and accident conditions; and derives hazard controls to provide an adequate level of safety to the public, workers and the environment.

10 CFR Part 835, *Occupational Radiation Protection*
The rules in this part establish radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities.

APPENDIX B

SITE VISITS SUPPORTED BY THE DEPARTMENT IN 2004

Workers at the Sludge Retrieval and Disposition Project connect hoses to ports in the top of large diameter containers that will hold sludge from the North Loadout Pit in the K East Basin at the Hanford Site.

Atlanta

- On March 16-18, 2004, the Board's staff visited **Atlanta, Georgia** to observe the Occurrence Reporting and Processing System Workshop.

Fernald

- On March 15-19, 2004, the Board's staff visited **Fernald** to review worker health and safety program.
- On May 17-21, 2004, the Board's staff visited **Fernald** to review Silo 3 startup readiness review.

Hanford

- On January 13-16, 2004, the Board's staff visited **Hanford** to review the emergency preparedness hazard assessment and emergency preparedness program implementation at the Tank Farms.
- On January 20-23, 2004, one Board Member and the Board staff visited **Hanford** to review site issues and activities.
- On March 16-19, 2004, the Board's staff visited **Hanford** to review Building 325 and the unreviewed safety question processes implemented by CH2M Hill Hanford Group, Inc. and Fluor Hanford, Inc.
- On June 28-July 2, 2004, the Board's staff visited **Hanford** to review the sludge removal and disposition project.
- On August 9-13, 2004, the Board's staff visited **Hanford** to review the sludge retrieval and disposition project.
- On September 20-24, 2004, the Board and its staff visited **Hanford** to review site issues and activities.
- On October 4-8, 2004, the Board's staff visited **Hanford** to review the Decontamination and Disassembly programs at the Plutonium Finishing Plant.
- On December 6-10, 2004, the Board's staff visited **Hanford** to review the Sludge Retrieval and Disposition Project.

Idaho National Engineering and Environmental Laboratory

- On March 8-12, 2004, the Board's staff visited the **Idaho National Engineering and Environmental Laboratory** (INEEL) to observe a subcommittee meeting of INEEL's Board on Radioactive Waste Management, and to visit the Idaho Nuclear Technologies and Engineering Center, Radioactive Waste Management Complex, and the Advanced Mixed Waste Treatment Project.
- On April 20-23, 2004, the Board and its staff visited **Idaho National Engineering and Environmental Laboratory** to review site issues and activities.
- On July 5-9, 2004, the Board's staff visited **Idaho** to review the preliminary operational readiness review for the Advanced Mixed Waste Treatment Project.

The Department supported 138 site visits in 2004

- On August 2-6, 2004, the Board's staff visited **Idaho** to observe the Department's operational readiness review on the Advanced Mixed Waste Treatment Project privatization project and to review the progress of the accelerated retrieval project at the Radioactive Waste Management Complex.

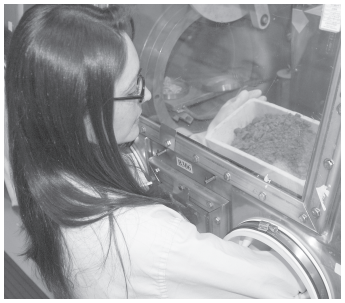
- On October 18-22, 2004, the Board's staff visited the **Idaho National Engineering and Environmental Laboratory** to review the Neptunium storage at Argonne National Laboratory - West, and review activities at the Advanced Mixed Waste Treatment Project, the Idaho Nuclear Technologies and Engineering Center, and the Accelerated Retrieval Project.

- On December 6-10, 2004, the Board's staff visited **Idaho National Engineering and Environmental Laboratory** to review the Advance Mix Waste Project, the Accelerated Retrieval Project, and Decontamination and Decommissioning activities at the Idaho Nuclear Technologies and Engineering Center.

Lawrence Livermore National Laboratory

- On March 1-5, 2004, the Board's staff visited **Lawrence Livermore National Laboratory** to review documented safety analysis at Building 332.

- On March 29-April 1, 2004, the Board and its staff visited **Lawrence Livermore National Laboratory** to review site issues and activities.



Glovebox worker at Los Alamos National Laboratory

- On April 26-29, 2004, the Board's staff visited **Lawrence Livermore National Laboratory** to review operations at Decontamination and Waste Treatment Facility and Building 251.

- On June 14-18, 2004, the Board's staff visited **Lawrence Livermore National Laboratory** to follow-up on work planning.

- On September 19-24, 2004, the Board and its staff visited **Lawrence Livermore National Laboratory** to review site issues and activities.

- On November 1-5, 2004, the Board's staff visited the **Lawrence Livermore National Laboratory** to observe the B83 Lawrence Livermore National Laboratory Presentations and the Pantex Focus group meeting at Sandia National Laboratory, Albuquerque.

- On December 14-17, 2004, the Board's staff visited the **Lawrence Livermore National Laboratory** to support one Board member's visit and to review weapons activities.

Los Alamos National Laboratory

- On February 9-13, 2004, the Board's staff visited **Los Alamos National Laboratory** to review Temperature Monitoring System at Technical Area-18, Instrumentation & Control design standards, and Software Quality Assurance.

- On March 15-18, 2004, the Board and its staff visited **Los Alamos National Laboratory** to review site issues, activities, and Plutonium-238 operations.

- On March 22-26, 2004, the Board's staff visited **Los Alamos National Laboratory** to review National Nuclear Security Administration's enhanced surveillance campaign and Facility Representative training and staffing.
- On March 30-April 2, 2004, the Board's staff visited **Los Alamos National Laboratory** to review ventilation systems at the Plutonium Facility and Chemistry and Metallurgy Research Replacement Facility.
- On June 7-9, 2004, the Board's staff visited **Los Alamos National Laboratory** to review issues related to Los Alamos National Laboratory supporting Pantex operations.
- On June 14-18, 2004, the Board's staff visited **Los Alamos National Laboratory** to review the seismic design requirements of the Chemistry and Metallurgy Research Replacement Building.
- On June 21-23, 2004, the Board's staff visited **Los Alamos National Laboratory** for a site visit, to review Technical Area-55, and to review the interface with the Los Alamos Site Office.
- On July 12-15, 2004, one Board member and the Board staff visited **Los Alamos National Laboratory** to review site issues and activities.
- On July 26-30, 2004, the Board's staff visited **Los Alamos National Laboratory** to review the Internal Dosimetry.
- On August 2-6, 2004, the Board's staff visited **Los Alamos National Laboratory** to review software quality assurance for Advanced Simulation and Computing safety-related codes, and Board recommendation 93-6 implementation (on maintaining nuclear weapons expertise).
- On August 17-20, 2004, the Board and its staff visited **Los Alamos National Laboratory** to review site issues and activities.
- On September 13-17, 2004, the Board's staff visited **Los Alamos National Laboratory** to review start-up activities.
- On September 20-24, 2004, the Board's staff visited **Los Alamos National Laboratory** to review the start-up activities.
- On September 27-October 1, 2004, the Board's staff visited **Los Alamos National Laboratory** to review the resumption process.
- On October 18-22, 2004, the Board's staff visited the **Los Alamos National Laboratory** to observe the restart.
- On November 1-5, 2004, the Board's staff visited the **Los Alamos National Laboratory** to observe the resumption activities and review Transuranic Waste program.
- On November 15-19, 2004, the Board's staff visited the **Los Alamos National Laboratory** to review the restart activities.
- On November 30-December 2, 2004, the Board's staff visited the **Los Alamos National Laboratory** to observe the probabilistic seismic hazard analysis update planning meeting.

- On December 7-10, 2004, the Board's staff visited the **Los Alamos National Laboratory** to review the Pit Disassembly and Conversion Facility and Plutonium-238 activities.

Miamisburg

Demolition of the R/SW building at the Miamisburg Closure Project.

- On February 16-19, 2004, the Board's staff visited **Miamisburg** to review worker health and safety at the Mound.
- On August 9-11, 2004, two Board members and the Board staff visited **Mound** and **Fernald** to review site issues and activities.
- On September 13-16, 2004, the Board's staff visited the **Mound** to review internal dosimetry topics.

Nevada

- On January 5-8, 2004, the Board and its staff visited **Nevada Test Site** to review site issues and activities.
- On March 1-5, 2004, the Board's staff visited the **Nevada Test Site** to review integrated safety management and quality assurance.
- On March 8-12, 2004, the Board's staff visited the **Nevada Test Site** to review work planning and worker protection program.
- On April 19-23, 2004, the Board's staff visited the **Nevada Test Site** to review weapons program status, to observe the critical experiments projects meeting, to review construction of the U1h hoist at the U1a Facility, to review administrative controls and to observe and review Los Alamos National Laboratory and Nevada Site Office readiness assessments for the Armando subcritical experiment.
- On May 3-7, 2004, the Board's staff visited the **Nevada Test Site** to review damaged nuclear weapon disposition activities.
- On May 17-21, 2004, the Board's staff visited **Las Vegas** to observe the 2004 Facility Representatives Workshop.
- On May 17-21, 2004, the Board's staff visited the **Nevada Test Site** to review readiness for the Amando subcritical experiment.
- On May 24-27, 2004, the Board's staff visited the **Nevada Test Site** to review readiness for the Amando subcritical experiment.
- On June 14-18, 2004, the Board's staff visited **Nevada Test Site** to observe and review the Nuclear Explosive Safety Process master study for the Device Assembly Facility.
- On July 19-23, 2004, the Board's staff visited the **Nevada Test Site** to review the safety basis of the Device Assembly Facility, G-tunnel, on-site transportation, and the Radioactive Waste Management Complex.
- On July 26-30, 2004, the Board's staff visited the **Nevada Test Site** to observe the assessment of the software quality assurance for Lawrence Livermore National Laboratory software.
- On September 13-17, 2004, the Board's staff visited **Nevada Test Site** to review the Training Program of the Nevada Test Site and Lawrence Livermore National Laboratory.
- On September 20-24, 2004, the Board's staff visited the **Nevada Test Site** to review the JASPER Software Quality Assurance.

- On October 19-22, 2004, the Board's staff visited the **Nevada Test Site** to observe the Container Evaluation Panel and the Disposition Steering Group meetings, to view the U1h Hoist at the U1a Facility, and to review capability to dispose of damaged nuclear weapons, and planning for implementing G-Tunnel Documented Safety Analysis.

- On October 26-29, 2004, the Board's staff visited the **Nevada Test Site** to review 30% of the design of the Criticality Experiment Facility Project.

- On December 6-10, 2004, the Board's staff visited the **Nevada Test Site** to review the Los Alamos National Laboratory and Nevada Site Office readiness assessments for Los Alamos National Laboratory resumption activities at Nevada Test Site and contractor operational readiness review for early move of TA-18 material to the Device Assembly Facility.

Oak Ridge

- On January 5-9, 2004, the Board's staff visited **Oak Ridge** to observe the Department's Operational Readiness Review of the Melton Valley Transuranic Waste Treatment Plant facility startup.

- On January 26-28, 2004, the Board's staff visited **Oak Ridge** to observe the initial radioactive operations at the Melton Valley Transuranic Waste Processing Facility.

- On July 26-29, 2004, the Board's staff visited **Oak Ridge** to review startup preparations for the Oxide Conversion Facility.

- On August 30-September 1, 2004, the Board's staff visited **Oak Ridge National Laboratory** to review the Uranium-233 project design at Building 3019.

- On December 14, 2004, the Board's staff visited **Oak Ridge** to review the Waste Management Facility and activities at the Waste Processing Facility.

Office of River Protection

- On January 5-9, 2004, the Board's staff visited **Office of River Protection** for the structural review of the pretreatment facility of the Waste Treatment Plant and continuation of the review for the High-Level Waste Safety Analysis Report.

- On March 8-12, 2004, the Board's staff visited **Office of River Protection** to review the fire protection for the Waste Treatment Plant.

- On April 12-16, 2004, the Board's staff visited **Office of River Protection** to observe a meeting of the expert corrosion panel, to review the Waste Treatment Plant High Level Waste Facility Design, discuss and provide comments on the draft of High Level Waste Summary Structural Report.

- On April 26-30, 2004, the Board's staff visited **Office of River Protection** to review mechanical systems, especially heating, ventilation, and air conditioning systems, at the Waste Treatment Plant.

- On June 21-25, 2004, the Board's staff visited the **Office of River Protection** to review the instrumentation and control design for the Waste Treatment Plant.

Solid Waste Storage Areas undergoing remediation on the Oak Ridge Reservation in Oak Ridge, Tennessee.

- On August 2-6, 2004, the Board's staff visited **Office of River Protection** to review the Waste Treatment Plant.
- On August 17-20, 2004, the Board's staff visited the **Office of River Protection** to review the Summary Structural Report of the Waste Treatment and Immobilization Plant for High-Level Waste.
- On August 23-26, 2004, the Board's staff visited **Office of River Protection** to review configuration management at the Waste Treatment Plant and emergency preparedness for waste storage and retrieval.
- On October 20-22, 2004, the Board's staff visited **Bechtel San Francisco** to review ground motion attenuation and site response issues at Hanford.
- On October 25-29, 2004, the Board's staff visited **Office of River Protection** to review the Waste Treatment Plant.
- On November 16-19, 2004, the Board's staff visited **Office of River Protection** to review the configuration management and the structural review of the Summary Structural Report for the High-Level Waste of the Waste Treatment Plant.
- On November 29-December 3, 2004, the Board's staff visited **Office of River Protection** to review the Waste Treatment Plant.
- On December 13-17, 2004, the Board's staff visited **Office of River Protection** to review the Waste Treatment Plant.

Pantex

- On January 5-9, 2004, the Board's staff visited **Pantex** to review the W78 Readiness Assessment observations.
- On January 12-16, 2004, the Board's staff visited **Pantex** to review the W78 Readiness Assessment observations.
- On January 26-30, 2004, the Board's staff visited **Pantex** to observe the W78 Readiness Assessment.
- On February 18-20, 2004, the Board's staff visited **Pantex** to review the electrostatic discharge and cell gap calculations.
- On March 8-12, 2004, the Board's staff visited **Pantex** to review Paint Bay contractor operational readiness review and readiness assessment for W78 cell operations.
- On March 22-26, 2004, the Board's staff visited **Pantex** to assess Move right operations and review National Nuclear Security Administration Facility Representatives training and staffing.
- On March 29-April 2, 2004, the Board's staff visited **Pantex** to review the special tooling program and implementation of National Nuclear Security Administration Quality Assurance Improvement Plan activities, and to observe the Software Quality Assurance Improvement Plan workshop and the Software Quality Assurance Subcommittee Move Right Improvement Semi annual Meeting.
- On April 5-9, 2004, the Board's staff visited **Pantex** to review and observe the nuclear explosive safety process change control review for the W56 dismantlement program.

- On April 26-30, 2004, the Board's staff visited **Pantex** to review transportation program.
- On June 21-24, 2004, one Board member and the Board staff visited **Pantex** to review site issues and activities, Cell Gap, Pit Storage, and Radioisotopic Thermoelectric Generator.
- On August 23-27, 2004, the Board's staff visited **Pantex** to review the electrical and lightning protection systems.
- On September 13-17, 2004, the Board's staff visited **Pantex** to review implementation of current Authorization Basis and Technical Safety Requirement.
- On October 25-29, 2004, the Board's staff visited **Pantex** to observe the W80 and B83 Program Discussions and Observations meeting.
- On November 15-19, 2004, the Board's staff visited **Pantex** to observe the National Nuclear Security Administration tooling review.
- On December 6-10, 2004, the Board's staff visited **Pantex** to update Personnel Assurance Program training and medical testing.

Rocky Flats

- On January 20-23, 2004, the Board's staff visited the **Rocky Flats Environmental Technology Site** to review corrective actions in response to the glovebox fire and the December 2, 2003 Board letter.
- On March 8-11, 2004, the Board's staff visited **Rocky Flats** to review work control and work package improvements and status in the implementation of corrective actions.
- On April 12-13, 2004, one Board member and the Board staff visited **Rocky Flats** to review site issues and activities.
- On May 3-7, 2004, the Board's staff visited **Rocky Flats** to review implementation of final corrective actions relative to the glovebox fire at Rocky Flats.
- On June 28-July 1, 2004, the Board's staff visited **Rocky Flats** to review implementation of Rocky Flats Project Office and Kaiser-Hill corrective actions and closure in the Department's May 4, 2004 letter and status of supervisor training and pre-evolution briefings.
- On October 18-22, 2004, the Board's staff visited **Denver** to review seismic design of the Pit Disassembly and Conversion Facility.

First rail shipment at Rocky Flats.

Sandia National Laboratory

- On February 3, 2004, one Board member visited **Albuquerque, NM** to participate in the NNSA Safety Summit Meeting.
- On March 23, 2004, the Board's staff visited **Sandia Site Office** to review NNSA Facility Representative training and staffing.
- On March 29-April 2, 2004, the Board's staff visited **Sandia National Laboratory** to observe in the National Nuclear Security Administration nuclear materials management meeting.
- On May 3-7, 2004, the Board's staff visited **Sandia** to review operational readiness of the Aux Hot Cell.

- On June 14-18, 2004, the Board's staff visited **Sandia Site Office** to observe the DOE Hoisting and Rigging Committee meeting, and to review the hoisting and rigging program at Sandia.
- On August 2-5, 2004, the Board's staff visited **Sandia National Laboratory** to review safety basis for the Auxiliary Hot Cell Facility and observe in the National Nuclear Security Administration Inactive Actinides Working Group meeting.
- On August 9-12, 2004, the Board's staff visited **Sandia National Laboratory** to review electrostatic discharge, software quality assurance for Weapons Research Development database and Advanced Simulation and Computing codes, and Board recommendation 93-6 implementation (on maintaining nuclear weapons expertise).
- On October 18-22, 2004, the Board's staff visited **Albuquerque** to review Research and Development activities for the 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials* and the Department training for the 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls.*
- On November 8-10, 2004, the Board's staff visited **Albuquerque** to review the Department's B53 Weapons Dismantling Proposal.
- On December 6-10, 2004, the Board's staff visited **Albuquerque** to observe the independent review of Sandia.

Savannah River Site

- On February 17-20, 2004, the Board's staff visited **Savannah River Site** to review Neptunium processing, high level waste salt processing, and software quality assurance.
- On March 1-5, 2004, the Board's staff visited the **Savannah River Site** to review the L-Basin, packaging standard for plutonium-238, and design and calculation details for the second glass waste storage building.
- On March 24-25, 2004, the Board's staff visited **Savannah River Site** to review DOE's response to the Board's plutonium storage report.
- On May 17-19, 2004, the Board's staff visited the **Savannah River Site** to review Tank Farm operations.
- On June 14-18, 2004, the Board's staff visited **Savannah River Site** to review activities at the Salt Waste Processing Facility, the HB-Line, and Semi-Integrated Pilot Plant.
- On July 12-16, 2004, the Board's staff visited the **Savannah River Site** to review the Tritium Extraction Facility, software quality assurance, startup and testing plans, tank farms ventilation, maintenance program of tank farms, and management of aging electrical equipment.
- On August 17-19, 2004, the Board's staff visited the **Savannah River Site** to review ventilation system and salt waste processing.
- On September 22-24, 2004, the Board's staff visited the **Savannah River Site** to review Research and Development Laboratory Safety Practices and Procedures.

- On September 27-October 1, 2004, the Board's staff visited the **Savannah River Site** to review tank farm hydrogen detectors.
- On October 25-29, 2004, the Board's staff visited the **Savannah River Site** to review Building 235 F and observe the Tritium Discussion Group meeting.
- On November 3-5, 2004, the Board's staff visited the **Savannah River Site** to review the Salt Waste Processing Facility.
- On November 8-10, 2004, the Board's staff visited the **Savannah River Site** to review the retrieval of the transuranic waste.
- On November 16-19, 2004, the Board and its staff visited the **Savannah River Site** to review site issues and activities.

Waste Isolation Pilot Plant

- On May 17-19, 2004, the Board's staff visited the **Waste Isolation Pilot Plant** to review ongoing operations.
- On October 27-29, 2004, the Board's staff visited the **Waste Isolation Pilot Plant** to review ongoing Waste Isolation Pilot Plant and National Transuranic Program operations and activities.

Y-12

- On January 20-23, 2004, the Board's staff visited **Y-12** to review the Department's Software Quality Assurance assessment and perform follow-up review on the Oxide Conversion Facility.
- On February 16-19, 2004, the Board's staff visited **Y-12** to review and observe the W56 operations.
- On March 22-24, 2004, the Board and its staff visited **Y-12** to review the construction readiness of the Highly Enriched Uranium Materials Facility and to support the Board's visit.
- On April 12-16, 2004, the Board's staff visited **Y-12** to review instrumentation and control design of the Highly Enriched Uranium Materials Facility, cleanup of contamination leak at Melton Valley Waste Processing Facility, neptunium storage and processing, Radiochemical Engineering Development Center operations and Environmental Management facilities operations.
- On April 19-23, 2004, the Board's staff visited **Y-12** to review Enriched Uranium Operations, the Oxide Conversion Facility, and wet chemistry, and to observe the activities of the Central Safeguards and Security Group.
- On April 26-30, 2004, the Board's staff visited **Y-12** to review software quality assurance activities.
- On May 4-7, 2004, the Board's staff visited **Y-12** to review Research and Development safety, corrective actions from the Saltless Direct Oxide Reduction process explosion, purification facility chemical processing, and plutonium-238 repackaging.
- On June 21-25, 2004, the Board's staff visited **Y-12** to review the Beta 2E glovebox.
- On June 28-July 2, 2004, the Board's staff visited **Y-12** to review the Beta 2E glovebox and contractor operational readiness review of the Oxide Conversion Facility.

- On July 14-16, 2004, the Board's staff visited **Y-12** to review its activities in support of Y-12 human reliability program requirements.
- On August 30-September 2, 2004, the Board's staff visited **Y-12** to review new glovebox project in Beta 2E.
- On September 14-16, 2004, the Board's staff visited **Y-12** to review its Human Reliability Program.
- On October 12-15, 2004, the Board's staff visited **Y-12** to observe the Software Quality Assurance meeting and to review safety issues at the Highly Enriched Uranium Materials Facility and Building 9212, and the Oxide Conversion Facility contractor operational readiness review.
- On October 20, 2004, the Board's staff visited **Y-12** to review the Highly Enriched Uranium Materials Facility.
- On October 25-27, 2004, the Board's staff visited **Y-12** to review the Nuclear Criticality Safety program.
- On December 16, 2004, the Board's staff visited **Y-12** to review construction of the Highly Enriched Uranium Materials Facility.

APPENDIX C

KEY CORRESPONDENCE BETWEEN THE DEPARTMENT AND THE BOARD IN 2004

From the Board to the Department

January

- On **January 8, 2004**, the Board sent an announcement of a Public Meeting regarding the Department's oversight scheduled for February 3, 2004 at 9 A.M. at the Board.
- On **January 20, 2004**, the Board sent a letter to the Department with a 30-day reporting requirement regarding weapon dismantlement at the Pantex Plant.
- On **January 21, 2004**, the Board sent a letter to the Department regarding hoisting and rigging at the Nevada Test Site.
- On **January 22, 2004**, the Board sent a letter to the Department with a 60-day reporting requirement regarding the Nuclear Explosive Safety Study process at Pantex.
- On **January 27, 2004**, the Board sent a letter to the Department with a 90-day reporting requirement regarding implementation of facility design requirements and good engineering practices at Los Alamos National Laboratory.
- On **January 29, 2004**, the Board sent a letter to the Department with a 30-day reporting requirement for a DOE briefing on DOE plans for addressing the Board's comments on proposed rule 10 CFR Part 851, *Worker Safety and Health.*
- On **January 30, 2004**, the Board sent a letter to the Department regarding deactivation and decommissioning activities at defense nuclear facilities.

February

- On **February 2, 2004**, the Board sent an announcement regarding changes to the Public Meeting scheduled for February 3, 2004 on safety oversight.
- On **February 12, 2004**, the Board sent a letter to the Department with a 120-day reporting requirement for the Department to provide a revised implementation plan for Board recommendation 2000-1 regarding accelerated stabilization, repackaging, or disposition of nuclear materials at Los Alamos National Laboratory.
- On **February 13, 2004**, the Board sent a letter to the Department regarding electrical and lightning protection systems for the K-Area Material Storage Facility, FB-Line, and Building 235-F at the Savannah River Site.
- On **February 18, 2004**, the Board sent an announcement of a Public Meeting on February 27, 2004 at 9:30 A.M. at the Board headquarters regarding the Department's plans to address the Board's comments on the proposed 10 CFR Part 851 rule.

The Department received 68 letters from the Board in 2004.

- On **February 24, 2004**, the Board sent a letter to the Department regarding suspension of the proposed rulemaking on 10 CFR Part 851 and cancellation of the previously announced public hearing scheduled for February 27, 2004.
- On **February 24, 2004**, the Board sent a letter to the Department forwarding its Fourteenth Annual Report to Congress describing its health and safety activities relating to the Department of Energy's defense nuclear facilities.

March

- On **March 1, 2004**, the Board sent a letter to the Department regarding electrical systems for the Highly Enriched Uranium Materials Facility at Y-12.
- On **March 3, 2004**, the Board sent the Department a 58-day reporting requirement requesting information and a revised implementation plan regarding sludge removal from the K-Basins relative to the Department's 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*.
- On **March 23, 2004**, the Board sent a letter to the Department with a 60-day reporting requirement regarding fire protection and structural engineering issues at the ORP's Waste Treatment Plant at Hanford.
- On **March 24, 2004**, the Board sent a letter to the Department with a 60-day reporting requirement regarding hydrogen hazards related to non-Newtonian high-level waste and black cell design concept for the ORP's Waste Treatment Plant at Hanford.
- On **March 24, 2004**, the Board sent a letter to the Department with a 30-day reporting requirement regarding issues on high-level waste at Savannah River Site relative to the low-curie salt (LCS) program and funding for salt processing activities.
- On **March 24, 2004**, the Board sent a letter to the Department regarding waivers to DOE Order 440.1A granted by the Department.
- On **March 29, 2004**, the Board staff sent a letter to the Department forwarding an updated list of Department of Energy Orders of Interest to the Board.

April

- On **April 1, 2004**, the Board sent a letter to the Department establishing a 15-day reporting requirement regarding issues on the term "site/facility management contractor" and DOE Order 251.1A.
- On **April 5, 2004**, the Board sent a letter to the Department establishing a 60-day reporting requirement regarding assessing, prioritizing, and managing risks at defense nuclear facilities.
- On **April 5, 2004**, the Board sent a letter to the Department regarding the existing annual reporting requirement on nuclear criticality safety.
- On **April 12, 2004**, the Board sent a letter to the Department with a 30-day reporting requirement regarding safety basis for Building 332 at Lawrence Livermore National Laboratory.

May

- On **May 3, 2004**, the Board sent a letter to the Department regarding proposed "safety basis academy" at Los Alamos National Laboratory and the development of Draft TRNG-0046, Nuclear Safety Specialist Functional Area Qualification Standard.
- On **May 3, 2004** the Board sent a letter to the Department establishing a 45-day reporting requirement regarding authorization basis for the Waste Isolation Pilot Plant mobile characterization units.
- On **May 14, 2004**, the Board sent a letter to the Department with a 60-day reporting requirement regarding Facility Representative training and staffing deficiencies.
- On **May 14, 2004**, the Board sent a letter to the Department granting a 90-day extension to complete a report regarding Conduct of Engineering and implementation of DOE Order 420.1A, Facility Safety, at Los Alamos National Laboratory.
- On **May 14, 2004**, the Board sent a letter to the Department regarding nuclear safety consequences of proposed Section 3116 of the National Defense Authorization Act for Fiscal Year 2005 (S. 2400) regarding radioactive material storage at Savannah River Site.
- On **May 21, 2004**, the Board sent a letter to the Department with a 45-day reporting requirement regarding operations at Technical Area 18 at Los Alamos National Laboratory.
- On **May 21, 2004**, the Board sent a letter to the Department requesting NNSA to brief the Board on actions taken to address issues regarding documentation and practices associated with activity-level work planning at NNSA sites.
- On **May 21, 2004**, the Board sent a letter to the Secretary forwarding its recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*.
- On **May 27, 2004**, the Board sent a letter to the Department regarding safety bases at Los Alamos National Laboratory.
- On **May 28, 2004,** the Board sent a letter to the United States Congress forwarding the First Annual Report to Congress regarding *Plutonium Storage at the Department of Energy's Savannah River Site*.

June

- On **June 7, 2004**, the Board recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*, was published in the Federal Register.
- On **June 18, 2004**, the Board sent a letter to the Department regarding potential impacts of suspending radioactive waste disposition activities at Savannah River Site.
- On **June 18, 2004**, the Board sent a letter to the Department regarding revision to the 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*, regarding sludge removal at Hanford's K-Basins.

- On **June 18, 2004**, the Board sent a letter to the Department with a 30-day reporting requirement regarding a comprehensive quality assurance review of the tooling program at Pantex.
- On **June 22, 2004**, the Board sent a letter to the Department congratulating Ms. Joanne Lorence of Los Alamos Site Office as the 2003 Facility Representative of the Year.

July

- On **July 21, 2004**, the Board sent a letter to the Department establishing a 30-day reporting requirement regarding fire protection of structural steel at the Waste Treatment Plant.
- On **July 21, 2004**, the Board sent a letter to the Department regarding design of various ventilation systems for the Waste Treatment Plant at Hanford.
- On **July 29, 2004**, the Board sent a 30-day reporting requirement regarding ground motion issues at Hanford.

August

- On **August 6, 2004**, the Board sent a 45-day reporting requirement regarding site-wide evaluations of training and qualification programs at Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and Nevada Test Site and after completion, a 30-day reporting requirement on corrective action plans to address evaluation findings.
- On **August 6, 2004**, the Board sent a 45-day reporting requirement regarding cell leak path areas and high explosive accident analysis at the Pantex Plant.
- On **August 23, 2004**, the Board sent a letter to the Department regarding electrical and ventilation systems for high-level waste concentration, storage, and transfer facilities at the Savannah River Site.
- On **August 24, 2004**, the Board sent a letter to the Department regarding Waste Treatment Plant High-Level Waste Facility.
- On **August 26, 2004**, the Board sent a letter to the Department regarding electrical and instrumentation and control systems of the Waste Treatment Plant at the Hanford Site.
- On **August 27, 2004**, the Board sent a letter to the Department regarding the design of the Salt Waste Processing Facility (SWPF) at the Savannah River Site and a 45-day reporting requirement regarding revising DOE directives on natural phenomena hazards.

September

- On **September 8, 2004**, the Board sent a letter to the Department with a 60-day reporting requirement regarding Integrated Safety Management System for the Hanford tank farms.
- On **September 10, 2004**, the Board sent a letter to the Department regarding conduct of engineering at the Los Alamos National Laboratory.
- On **September 13, 2004**, the Board sent a letter to the Department regarding suspension of nuclear operations and restart efforts at Los Alamos National Laboratory.

- On **September 27, 2004**, the Board sent a letter with a 90-day reporting requirement regarding issues on the approved Documented Safety Analysis for the Auxiliary Hot Cell Facility at Sandia National Laboratory.
- On **September 29, 2004**, the Board sent a letter regarding process chemistry and facility design for the Hanford Waste Treatment Plant.

October

- On **October 8, 2004**, the Board sent a letter to the Department to the regarding Integrated Safety Management at Sandia National Laboratories, New Mexico.
- On **October 26, 2004**, the Board sent a letter to the Department acknowledging receipt of the Department's letter dated October 25, 2004.
- On **October 27, 2004**, the Board sent a letter to the Department with a 90-day reporting requirement regarding the Department's commitment to develop a program for archiving safety-related activities at the Pantex Plant, the Y-12 National Nuclear Complex, and the Nevada Test Site relative to implementation plan 93-6, *Maintaining Access to Nuclear Weapons Expertise*.

November

- On **November 3, 2004**, the Board sent a letter to the Department with a 90-day reporting requirement regarding deficiencies in the Device Assembly Facility.
- On **November 3, 2004**, the Board sent a letter to the Department with a 60-day reporting requirement regarding configuration management program for safety systems at Lawrence Livermore National Laboratory and Livermore Site Office relative to the 2000-2 implementation plan, *Configuration Management, Vital Safety Systems.*
- On **November 3, 2004**, the Board sent a letter to the Department regarding electrical and lightning protection systems at the Pantex Plant.

December

- On **December 7, 2004,** the Board sent a letter to the Department forwarding its recommendation 2004-2**,** *Active Confinement Systems* with Technical Report DNFSB/TECH-34, *Confinement of Radioactive Materials at Defense Nuclear Facilities***.**
- On **December 13, 2004**, the Board sent a letter to the Department granting a 30-day extension to respond to Board reporting requirement regarding safety bases at Sandia National Laboratory.
- On **December 13, 2004**, the Board sent a letter to the Department regarding activity-level work planning and control of deactivation and decommissioning activities at the Savannah River Site.
- On **December 14, 2004**, the Board sent a letter to the Department with a reporting requirement for monthly briefings from senior NNSA managers regarding commitments in the 98-2 implementation plan, *Safety Management at the Pantex Plant.*

- On **December 14, 2004**, the Board sent a letter to the Department providing Board Technical Report DNFSB/TECH-35, *Safety Management of Complex, High-Hazard Organizations*.
- On **December 14, 2004**, the Board sent a letter to the Department with a 30-day reporting requirement for a briefing on safety issues regarding unvented transuranic waste drums at the Savannah River Site.
- On **December 15, 2004**, the Board sent a letter to the Department with a 30-day reporting requirement regarding the tooling program at the Pantex Plant.
- On **December 16, 2004**, the Board sent a letter to the Department with a 20-day reporting requirement regarding the draft Request for Proposal for the Los Alamos National Laboratory management and operating contract.
- On **December 22, 2004**, the Board sent a letter to the Department regarding DOE Policy 226.1, *Department of Energy Oversight Policy*.

From the Department to the Board

January

- On **January 5, 2004**, the Chief Operating Officer of EM sent a letter to the Board regarding electrical and lightning protection systems for the K-Area Material Storage Facility, Building 235-F, and FB-Line at Savannah River Site.
- On **January 7, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Quality Assurance Implementation Plan Action 3.2.2 which requires each Site Office Manager to certify effective implementation of the quality assurance assessment process.
- On **January 13, 2004**, the Manager of Savannah River Operations Office sent a letter to the Board providing additional information on Oversight as requested at the Board Public Meeting held on December 4, 2003.
- On **January 14, 2004**, the Director of the EH Office of Regulatory Liaison sent a letter to the Board reporting completion of Commitment 25 in the Department's implementation plan 2000-2, *Configuration Management, Vital Safety Systems*, which requires the issuance of direction to site offices for implementing the revised *Nuclear Air Cleaning Handbook*.
- On **January 14, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board providing status on Action 3.3 in the Department's Quality Assurance Improvement Plan, which requires the NNSA to validate and verify effective implementation of quality assurance programs.
- On **January 21, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Commitment 506 in implementation plan 2000-1, *Prioritization for Stabilizing Nuclear Materials*, which requires roasting and blending of dioxide items at Los Alamos National Laboratory.

The Department sent 119 letters to the Board in 2004.

- On **January 23, 2004**, the Administrator of the NNSA sent a letter to the Board inviting Board Chairman John T. Conway to be a guest speaker at the NNSA Safety Summit scheduled for February 4, 2004 in Albuquerque, NM.

- On **January 29, 2004**, the Deputy Chief Operating Officer for EM sent a letter to the Board providing status of Commitments 4.1.3, 4.2.1.5, 4.2.3.2, and 4.2.4.2 in the Department's 2002-1 implementation plan, *Quality Assurance for Safety-Related Software*.

- On **January 29, 2004**, the Assistant Secretary for EH sent a letter to the Board reporting interim status on Commitment 4.2.1.3 in the Department's 2002-1 implementation plan, *Quality Assurance in Safety-Related Software*, which requires a gap analysis on toolbox codes.

February

- On **February 2, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board providing an interim deliverable on Commitment 4.6 in the Department's 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which requires the Office of EM to establish schedules to review and verify field implementation of critical administrative controls.

- On **February 3, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board providing the status of commitments on sludge removal at Hanford in the Department's 2000-1 implementation plan, *Stabilization and Storage of Nuclear Materials*, low curie salt-waste process in the Department's 2001-1 implementation plan, *High-Level Waste Management at the Savannah River Site*, and two actions in the Quality Assurance Improvement Plan.

- On **February 3, 2004**, the Assistant Secretary for EM sent a letter to the Board providing an interim status on the actions taken in response to Board letter dated December 2, 2003 regarding the glovebox fire at Building 371 at the Rocky Flats Site.

- On **February 3, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board providing an interim response to Board letter dated November 7, 2003 regarding retrieval, storage, and disposal of waste drums at Hanford.

- On **February 3, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board providing status on Commitment 4.6 in Department's 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which requires NNSA to review of field implementation of existing critical administrative controls.

- On **February 3, 2004**, the Assistant Deputy Administrator for Military Applications and Stockpile Operations of the Defense Programs sent a letter to the Board forwarding the quarterly report for the Department's 98-2 implementation plan, *Safety Management at the Pantex Plant*, for the period October 1 – December 31, 2003.

- On **February 4, 2004**, the Deputy Assistant Secretary of the Office of Corporate Performance Assessment sent a letter to the Board forwarding the semi-annual report on Filter Test Facility data for fiscal year 2003.

- On **February 5, 2004**, the Assistant Secretary for EH sent a letter to the Board reporting completion of Commitment 4.3 in the Department's 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which requires the development of appropriate training materials for contractor personnel responsible for critical administrative controls.

- On **February 6, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board reporting completion of Commitment 2.8 in the Department's 2001-1 implementation plan, *High-Level Waste Management at the Savannah River Site*, which requires completion of the conceptual design of the Salt Waste Processing Facility at the Savannah River Site.

- On **February 10, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board reporting completion of Commitment 227 in Revision 2 of the Department's 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*, which requires completion of the dissolution of Mark-16/22 spent nuclear fuel at the Savannah River Site.

- On **February 13, 2004**, the Assistant Deputy Administrator for Research, Development, and Simulation of the Defense Programs sent a letter to the Board forwarding the annual report on Criticality Safety for Calendar Year 2003.

- On **February 23, 2004**, the Secretary sent a letter to the Board regarding suspension of rulemaking on 10 CFR Part 851 rule.

- On **February 23, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding the seismic monitoring system in the Tritium Extraction Facility.

- On **February 23, 2004**, the Secretary sent a letter to the Board forwarding the Department's Annual Report to Congress for Calendar Year 2003, on Board-related activities.

- On **February 23, 2004**, the Administrator of the NNSA sent a letter to the Board providing status of LANL projects.

- On **February 25, 2004**, the Secretary sent a letter to the Board regarding W56 Dismantlement Program.

- On **February 25, 2004**, the Administrator of NNSA sent a letter to the Board forwarding the *NNSA Lessons Learned and Recommendations from Review of NASA's Columbia Accident Investigation Board Report.*

March

- On **March 1, 2004**, the Assistant Secretary for EH sent a letter to the Board forwarding part of the Department's proposed revision to the DOE Handbook on *Electrical Safety*.

- On **March 1, 2004**, the Assistant Secretary for EH sent a letter to the Board providing interim status on Commitments 2.1 and 2.2 on the Action Plan on Fire Safety and Preparedness.

- On **March 2, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board forwarding the *Programmatic Risk Assessment for the Savannah River Site Salt Processing Program* relative to the Department's 2001-1 implementation plan, *High-Level Waste Management at Savannah River Site*.

- On **March 8, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board forwarding the Quality Assurance Program assessment reports for Pantex, Los Alamos, Nevada, and Livermore Site Offices completing Action 1.3.1 of the Quality Assurance Improvement Plan.

- On **March 9, 2004**, the Principal Assistant Deputy Administrator for Defense Programs sent a letter to the Board providing additional information as a follow-up to the February 3, 2004 Board public meeting.

- On **March 9, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board providing status of LANL's portion of commitment 4.6.1 in the Department's 2002-3 implementation plan, *Requirements of the Design, Implementation, and Maintenance of Administrative Controls*, which requires NNSA to review field implementation of existing critical administrative controls.

- On **March 16, 2004**, the Departmental Representative to the Board sent a letter to the Board inviting Chairman John T. Conway or a member of the Board to be a guest speaker at the 2004 Facility Representatives Workshop scheduled for May 18-20, 2004 in Las Vegas, Nevada.

- On **March 18, 2004**, the Assistant Secretary for EH sent a letter to the Board forwarding a report on the Analysis of the Temperform USA Investigation.

- On **March 18, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding lightning protection system at LANL's Weapons Engineering Tritium Facility and safety classification of the electrical distribution system at LANL's Chemistry and Metallurgy Research facility.

- On **March 18, 2004**, the Manager of Sandia Site Office sent a letter to the Board providing additional information as a follow-up to their briefing with the Board on its new management team and other areas of interest to the Board.

- On **March 19, 2004**, the Administrator of NNSA sent a letter to the Board regarding weapon dismantlement at the Pantex Plant.

- On **March 22, 2004**, the Deputy Assistant Secretary for EH's Office of Corporate Performance Assessment sent a letter to the Board providing the address to access the Department's newly-developed Software Quality Assurance Knowledge Portal.

- On **March 24, 2004**, the Assistant Secretary for EH sent a letter to the Board providing information on technical qualifications and experience of personnel involved in the development of DOE technical standard on administrative controls relative to Department's 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*.

- On **March 25, 2004**, the Deputy Assistant Secretary for EH's Office of Corporate Performance Assessment sent a letter to the Board forwarding a report on *Safety-Related Design Code Survey* relative to Commitment 4.2.1.5 in Department's 2002-1 implementation plan, *Quality Assurance for Safety-Related Software*.

- On **March 25, 2004**, the Assistant Secretary for EH sent a letter to the Board providing additional information in response to questions from the February 9, 2004 Board public meeting.

- On **March 25, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board providing status on updating the NNSA Site Office Functions, Responsibilities and Authorities Manuals.

- On **March 25, 2004**, the Assistant Deputy Administrator for Military Application and Stockpile Operations Defense Programs sent a letter to the Board regarding Nuclear Explosive Safety Study process.

April

- On **April 5, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding update on Software Quality Assurance deficiencies at Pantex.

- On **April 5, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board forwarding LANL's schedule to review field implementation of existing critical administrative controls relative to Commitment 4.6 in the Department's 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*.

- On **April 9, 2004**, the Assistant Secretary for EH sent a letter to the Board forwarding the semi-annual report, *Analysis and Trending of Suspect/Counterfeit Items at Department of Energy Facilities*.

- On **April 12, 2004**, the Assistant Secretary for EH sent a letter to the Board reporting completion of Commitment 2.2 in the Department's Action Plan on Fire Safety and Preparedness with the issuance of DOE Manual 231.1, *Environment, Safety, and Health Reporting Manual*.

- On **April 13, 2004**, the Director for the Office of Nuclear Weapons Stockpile, Defense Programs, sent a letter to the Board regarding revision of DOE Order 5600.1 on the management of the Department's Weapon Program and Weapon Complex relative to the Department's 2002-2 implementation plan, *Weapons Laboratory Support of the Defense Nuclear Complex*.

- On **April 26, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of stabilization and packaging of certain nuclear materials at LLNL relative to the Department's 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*.

- On **April 27, 2004**, the Secretary sent a letter to the Board providing status on the revision of the fire protection requirements in DOE Order 420.1A, *Facility Safety*.

- On **April 27, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding the schedule for the training assessment of the Device Assembly Facility.

- On **April 28, 2004**, the Assistant Deputy Administrator for Military Application and Stockpile Operations, Defense Programs, sent a letter to the Board forwarding the Quarterly Report for the Department's 98-2 implementation plan, *Accelerating Safety Management Improvements at the Pantex Plant*.

- On **April 29, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding the status of various issues related to weld quality assurance and safety basis at the Oxide Conversion Facility at Y-12.

- On **April 30, 2004**, the Deputy Assistant Secretary of EH's Office for Facility Safety, Environment, Safety, and Health, sent a letter to the Board forwarding draft of the fully revised DOE Handbook on Electrical Safety.

- On **April 30, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board requesting a 90-day extension to submit report regarding Conduct of Engineering and Implementation of DOE Order 420.1A, *Facility Safety*, at LANL.

May

- On **May 3, 2004**, the Secretary sent a letter to the Board forwarding the Department's revised implementation plan 2000-1, *Prioritization for Stabilizing Nuclear Materials*.

- On **May 3, 2004**, the Secretary sent a letter to the Board providing a revision to Commitment 4.2.1.3 in the Department's 2002-1 implementation plan, *Quality Assurance for Safety-Related Software*, which requires the Department to perform a gap analysis on the six toolbox codes.

- On **May 4, 2004**, the Secretary sent a letter to the Board regarding glovebox fire in Building 371 at the Rocky Flats Environmental Technology Site.

- On **May 4, 2004**, the Manager of Oak Ridge Operations Office sent a letter to the Board reporting completion of Commitment 401 in the Department's 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*, which requires repackaging and disposition of all plutonium materials.

- On **May 5, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board providing status on commitments from EM to the Board that are past due.

- On **May 6, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board providing status of commitments on Software Quality Assurance and forwarding the revised EM Headquarters Functions, Responsibilities, and Authorities (FRA) document.

- On **May 12, 2004**, the Deputy Assistant Secretary for EH's Corporate Performance Assessment sent a letter to the Board providing status on the revision of directives to reflect the process, and roles and responsibilities of EH and other organizations in relation to suspect/counterfeit items (S/CI).

- On **May 12, 2004**, the Deputy Assistant Secretary for EH's Corporate Performance Assessment sent a letter to the Board forwarding the final gap analyses report for the MACCS2, ALOHA, EPICODE, MELCOR, GENII, and CFAST toolbox codes relative to Commitment 4.2.1.3 in the Department's 2002-1 implementation plan, *Quality Assurance for Safety-Related Software*.

- On **May 13, 2004**, the Assistant Secretary for EM sent a letter to the Board regarding proposed Section 3116 of the National Defense Authorization Act for Fiscal Year 2005 (S. 2400) regarding radioactive material storage at Savannah River Site.

- On **May 14, 2004**, the Administrator of NNSA sent a letter to the Board regarding the safety basis for Building 332 at LLNL.

- On **May 14, 2004**, the Administrator of NNSA sent a letter to the Board regarding electrical and lightning protection and detection systems at the Nevada Test Site.

- On **May 21, 2004**, the Assistant Secretary for EM sent a letter to the Board regarding fire protection and structural engineering issues at the ORP's Waste Treatment Plant at Hanford.

- On **May 21, 2004**, the Assistant Secretary for EM sent a letter to the Board regarding hydrogen hazards related to non-Newtonian high-level waste and black cell design concept for the ORP's Waste Treatment Plant at Hanford.

- On **May 25, 2004**, the Deputy Chief Operating Officer for EM sent a letter to the Board reporting completion of Commitment 111 in the Department's 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*, which requires the complete stabilization and packaging of oxides at Hanford.

- On **May 25, 2004**, the Deputy Chief Operating Officer for EM sent a letter to the Board regarding retrieval, storage, and disposal of waste drums containing Plutonium-238 (Pu-238) at Hanford.

- On **May 28, 2004**, the Secretary sent a letter to the Board regarding plutonium storage at the Savannah River Site.

June

- On **June 4, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding the contractor training assessment by the Livermore Site Office.

- On **June 4, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board forwarding the NNSA Site Office Functions, Responsibilities and Authorities Manuals, and plans for updating safety-related Orders, Standards, and supplemental Directives.

- On **June 16, 2004**, the Secretary sent a letter to the United States Congress forwarding the First Annual Report to Congress on *Plutonium Storage at the Savannah River Site*.

- On **June 17, 2004**, the Assistant Secretary for EM sent a letter to the Board requesting a 60-day extension to respond to a Board letter regarding authorization basis for the Waste Isolation Pilot Plant mobile characterization units.

- On **June 18, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board reporting completion of repackaging and welding of 358 DOE STD-3013 outer containers at Richland.

- On **June 24, 2004**, the Assistant Deputy Administrator for Military Application and Stockpile Operations of the Defense Programs sent a letter to the Board notifying the Board of the authorized startup of the Seamless Safety (SS-21) Process for the W78 weapon system.

- On **June 29, 2004**, the Deputy Assistant Secretary for EH's Corporate Performance Assessment sent a letter to the Board forwarding the updated code-specific guidance reports for the safety analysis toolbox codes relative to Commitment 4.2.1.4 in the Department's 2002-1 implementation plan, *Quality Assurance for Safety-Related Software*.

July

- On **July 6, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding fire protection in Building 9212 B-1 Wing at Y-12.
- On **July 13, 2004**, the Deputy Chief Operating Office of EM sent a letter to the Board reporting completion of three Environmental Management commitments in the Quality Assurance Improvement Plan and the Department's 2002-1 implementation plan, *Quality Assurance for Safety-Related Software*.
- On **July 13, 2004**, the Administrator of the NNSA sent a letter to the Board regarding the Facility Representatives Program at the NNSA sites.
- On **July 15, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding a training assessment for the Device Assembly Facility at Nevada Site Office.
- On **July 16, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding a schedule for the review of quality assurance at the Pantex Plant.
- On **July 21, 2004**, the Secretary sent a letter to the Board accepting Board recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*.
- On **July 23, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding effectively incorporating ISM into work planning and control at the NNSA sites.
- On **July 23, 2004**, the Secretary sent a letter to the Board forwarding the Department's revised 2000-1 implementation plan for stabilization, repackaging, or disposition of nuclear materials at the LANL.
- On **July 23, 2004**, the Secretary sent a letter to the Board regarding delay in the completion of Commitment 118E in the Department's 2000-1 implementation plan which requires completion of fuel removal from the K West and K East Basins to the Cold Vacuum Drying Facility at Hanford.

August

- On **August 3, 2004**, the Manager of ORP sent a letter to the Board forwarding Low Activity Waste structural report for the Waste Treatment and Immobilization Plant (WTP).
- On **August 6, 2004**, the Acting Assistant Secretary for EM sent a letter to the Board regarding Waste Isolation Pilot Plant Mobile Characterization Unit Generic Documented Safety Analysis.

- On **August 6, 2004**, the Acting Assistant Deputy Administrator for Military Application and Stockpile Operations of the Defense Programs sent a letter to the Board forwarding the quarterly report for the Department's 98-2 implementation plan, *Accelerating Safety Management Improvements at the Pantex Plant,* for the period April 1 through June 30, 2004.

- On **August 9, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board requesting an additional 90-day extension to submit report regarding Conduct of Engineering and Implementation of DOE Order 420.1A, *Facility Safety*, at LANL.

September

- On **September 2, 2004**, the Acting Director of the Office of Nuclear Weapons Stockpile Defense Programs sent a letter to the Board reporting completion of Commitment 4.4.1 in the 2002-2 implementation plan, Weapons Laboratory Support of Defense Nuclear Complex, by the issuance of a memorandum of Appointment of Contracting Officer Representative for LANL.

- On **September 3, 2004**, the Acting Assistant Secretary for EM sent a letter to the Board regarding seismic ground motion at Hanford.

- On **September 17, 2004**, the Administrator for NNSA sent a letter to the Board regarding site-wide evaluations of training and qualification programs at LANL, Lawrence Livermore National Laboratory, and the Nevada Test Site.

October

- On **October 1, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board providing status on personnel quality and software assessments relative to the Department's 2002-1 implementation plan, *Quality Assurance for Safety Software at Department of Energy Defense Nuclear Facilities.*

- On **October 1, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board providing status of the wet combustible transuranic waste shipments from the Rocky Flats Environmental Technology Site.

- On **October 7, 2004**, the Administrator of the NNSA sent a letter to the Board regarding status of the Waste Management Risk Mitigation and Partial Site-Wide Fire Alarm Replacement Projects at the Los Alamos National Laboratory

- On **October 7, 2004**, the Administrator of the NNSA sent a letter to the Board regarding leak path factor for Building 332 at the Plutonium Facility at Lawrence Livermore National Laboratory.

- On **October 12, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board informing completion of Commitment 219 of the Department's 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*, which requires the initiation of the neptunium stabilization activities in the HB-Line Facility at the Savannah River Site.

- On **October 13, 2004**, the Under Secretary for Energy, Science, and the Environment sent a letter to the Board regarding seismic design of the Salt Waste Processing Facility at the Savannah River Site and DOE directives on natural phenomena hazards.

- On **October 18, 2004**, the Acting Assistant Secretary for EH sent a letter to the Board forwarding the Department's assessment on fire safety performance metrics.

- On **October 21, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board providing revised schedule for updating NNSA headquarters and Site Office Functions, Responsibilities and Authorities Manuals.

- On **October 22, 2004**, the Acting Assistant Secretary for EM sent a letter to the Board regarding ISM implementation for the Hanford Tank Farms.

- On **October 25, 2004**, the Secretary sent a letter to the Board informing the Board that the Department requires up to an additional 45 days to finalize the Department's implementation plan for Board recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*.

- On **October 27, 2004**, the Acting Assistant Secretary for EM sent a letter to the Board reporting completion of Commitment 118E in the Department's 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*, which requires the removal of spent nuclear fuel from the K-Basins, providing status of Commitment 119E, and the North Load-Out Pit sludge.

November

- On **November 3, 2004**, the Acting Assistant Deputy Administrator for Military Application and Stockpile Operations of the Defense Programs sent a letter to the Board forwarding the Quarterly Report for the 98-2 implementation plan, *Accelerating Safety Management Improvements at the Pantex Plant*, for the period July 1 through September 30, 2004, and the NNSA exemption extension approvals for the W87 and W88 weapons program.

- On **November 4, 2004**, the Secretary sent a letter to the Board providing status of Commitment 4.4 in the Department's 2002-3 implementation plan, *Requirements for Design, Implementation and Maintenance of Administrative Controls*.

- On **November 10, 2004**, the Senior Technical Advisor for Safety and Operations for NNSA sent a letter to the Board regarding implementation of the guidance on Facility Representative training and staffing analysis.

- On **November 10, 2004**, the Acting Assistant Secretary for EH sent a letter to the Board providing the schedule for revising four DOE technical standards relative to High Efficiency Particulate Air filters.

- On **November 22, 2004**, the Administrator for NNSA sent a letter to the Board requesting a 30-day extension to submit a report and brief the Board regarding adequacy of safety basis for nuclear facilities at Sandia National Laboratory.

- On **November 23, 2004**, the Deputy Administrator for Defense Programs sent a letter to the Board providing status of NNSA's portion in Commitment 4.1.4 in the 2002-1 implementation plan, *Quality Assurance for Safety-Related Software*, which requires NNSA personnel assigned to Software Quality Assurance positions to have qualifications in accordance to the Technical Qualification program.

- On **November 24, 2004**, the Deputy Assistant Secretary for EH's Office of Corporate Performance Assessment sent a letter to the Board reporting completion of suspect/ counterfeit items commitment relative to the revision of directives to reflect the process and roles and responsibilities of EH and other organizations.

- On **November 24, 2004**, the Acting Assistant Secretary for EM sent a letter to the Board reporting completion of Commitment 121 in the Department's 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*, which requires the selection of a treatment process for the containerized K-West Basin sludge.

- On **November 29, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board reporting completion of the EM portion of Commitment 4.1.4 in the Department's 2002-1 implementation plan, *Quality Assurance for Safety-Related Software*, which requires at least one qualified Software Quality Assurance person in EM non-closure sites.

- On **November 29, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board regarding a delay in the Program Plan commitments related to ground motion issues vis-à-vis to the design of ORP's Waste Treatment Plant at the Hanford Site.

December

- On **December 14, 2004**, the Acting Assistant Secretary for EM sent a letter to the Board regarding DOE natural phenomena hazards design standards and the Salt Waste Processing Facility at the Savannah River Site.

- On **December 22, 2004**, the Senior Advisor for Environment, Safety and Health for NNSA sent a letter to the Board regarding Facility Representatives staffing and training recruitment for the NNSA sites.

- On **December 23, 2004**, the Secretary sent a letter to the Board forwarding the Department's implementation plan in response to Board Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*.

- On **December 29, 2004**, the Deputy Chief Operating Officer of EM sent a letter to the Board reporting completion of the EM portion of Commitment 4.2.3.3 in the Department's 2002-1 implementation plan, *Quality Assurance for Safety-Related Software at Department of Energy Defense Nuclear Facilities*, which requires the assessment of EM's safety software.

APPENDIX D

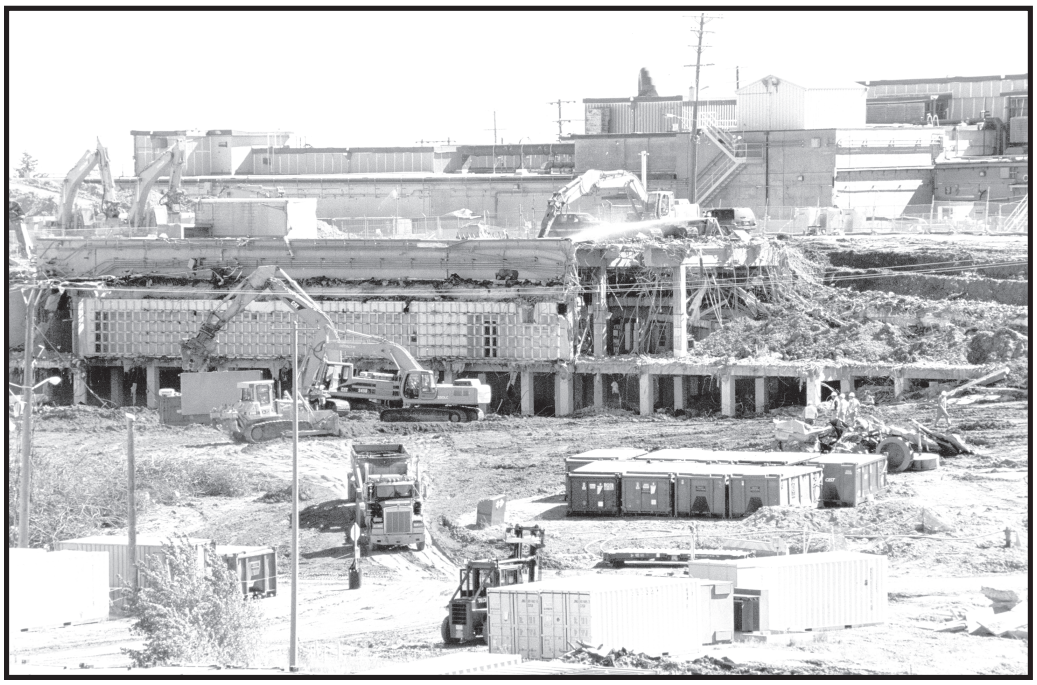
ABBREVIATIONS AND ACRONYMS

2000-1	Board recommendation 2000-1, *Stabilization and Storage of Nuclear Material*
2000-2	Board recommendation 2000-2, *Configuration Management, Vital Safety Systems*
2001-1	Board recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*
2002-1	Board recommendation 2002-1, *Quality Assurance for Safety-Related Software*
2002-2	Board recommendation 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*
2002-3	Board recommendation 2002-3, *Design, Implementation, and Maintenance of Administrative Controls*
2004-1	*Board recommendation 2004-1, Oversight of Complex, High-Hazard Nuclear Operations*
2004-2	*Board recommendation 2004-2, Active Confinement System*
92-4	Board recommendation 92-4, *Multi-Function Waste Tank Facility at Hanford* Tank Farms
94-1	Board recommendation 94-1, *Improved Schedule for Remediation*
95-2	Board recommendation 95-2, *Safety Management*
97-1	Board recommendation 97-1, *Safe Storage of Uranium-233*
98-1	Board recommendation 98-1, *Resolution of Safety Issues Identified by Internal Independent Oversight*
98-2	Board recommendation 98-2, *Safety Management at Pantex*
99-1	Board recommendation 99-1, *Safe Storage of Pits at Pantex*
AB	Authorization Basis
ACREM	Accountable Classified Removable Electronic Media
BBWI	Bechtel Bobcock and Wilcox, Inc.
Board	Defense Nuclear Facilities Safety Board
CAIB	Columbia Accident Investigation Board
CAMP	Corrective Action Management Program
CATS	Corrective Action Tracking System
CBFO	Carlsbad Field Office
CTAs	Central Technical Authorities
CRADs	Criteria and Review Approach Documents
DAF	Device Assembly Facility
Department	Department of Energy

Departmental Representative	Departmental Representative to the Defense Nuclear Facilities Safety Board
DOE	The Department of Energy
DWPF	Defense Waste Processing Facility
DSA	Documented Safety Analysis
EH	Office of Environment, Safety and Health
EM	Office of Environmental Management
EMS	Environmental Management System
ES&H	Environment, Safety and Health
FAQSs	Functional Area Qualification Standards
Fernald	Fernald Closure Project
FRA	Functions, Responsibilities, and Authorities
FTCP	Federal Technical Capability Program
FY	Fiscal Year
HEW	Highly Enriched Uranium
HLW	High Level Waste
HU	Human Performance Initiative
HQ	Headquarters
ID	Idaho Operations Office
INEEL	Idaho National Engineering and Environmental Laboratory
INPO	Institute of Nuclear Power Operations
ISM	Integrated Safety Management
ISO	International Organization for Standardization
ISSM	Integrated Safeguards and Security Management
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
LAW	Low Activity Waste
LEU	Low Enriched Uranium
LLNL	Lawrence Livermore National Laboratory
LSO	Livermore Site Office
Miamisburg	Miamisburg Closure Project

NESS	Nuclear Explosive Safety Study
NNSA	National Nuclear Security Administration
NSO	Nevada Site Office
NTC	National Training Center
NTS	Nevada Test Site
OA	Office of Independent Oversight and Performance Assurance
OH	Ohio Field Office
OR	Oak Ridge Operations Office
ORNL	Oak Ridge National Laboratory
ORP	Office of River Protection
OSHA	Occupational Safety and Health Administration
PXSO	Pantex Site Office
PRT	Peer Review Team
PFP	Plutonium Finishing Plant
PJM	pulse jet mixer
QA	Quality Assurance
RF	Rocky Flats Field Office
RL	Richland Operations Office
RWMC	Radioactive Waste Management Complex
S/CI	suspect/counterfeit items
SCE	Sub Critical Experiment
Secretary	Secretary of Energy
SER	Safety Evaluation Report
SNL	Sandia National Laboratory
SO	Office of Security
SQA	Software Quality Assurance
SR	Savannah River Operations Office
SRS	Savannah River Site
SRSO	Savannah River Site Office
SS-21	Seamless Safety for the 21st Century
SIMS	Safety Issues Management System
SSA	Office of Security and Safety Performance Assurance
SSO	Sandia Site Office

SSOP	Safety System Oversight Personnel
SSTs	Single Shell Tanks
TA-18	Las Alamos National Laboratory's Technical Area 18
TBISs	Technical Baseline Index Summaries
TQP	Technical Qualification Program
TRU	transuranic
TSR	Technical Safety Requirement
USQ	Unreviewed Safety Question
VPP	Voluntary Protection Program
VSS	Vital Safety System
WIPP	Waste Isolation Pilot Plant
WTP	Waste Treatment and Immobilization Plant
YSO	Y-12 Site Office



Cover Photograph:

The 52-year old, reinforced concrete B771 structure at Rocky Flats Environmental Technology Site took less than a month to demolish after a nine-year effort to safely drain and stabilize 15,000 liters of plutonium solutions and remove 240 contaminated gloveboxes, 291 tanks, more than 11 miles of piping and 40,000 liters of contaminated sludge. Clean-up of the Rocky Flats Environmental Technology Site is scheduled to be completed in December 2005.

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