



The Secretary of Energy  
Washington, DC 20585

March 16, 2006

The Honorable A.J. Eggenberger  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW, Suite 700  
Washington, D.C. 20004

Dear Mr. Chairman:

I am forwarding the Annual Report for calendar year 2005, 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).

During 2005, the Department received one new recommendation from the Board and provided an implementation plan for the recommendation. In 2005, the Department made progress on resolving existing open Board recommendations and implementing other initiatives to assure public health and safety. These 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, Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450 or Mr. Mark B. Whitaker, Jr., Departmental Representative to the Board, at (202) 586-3887.

Sincerely,

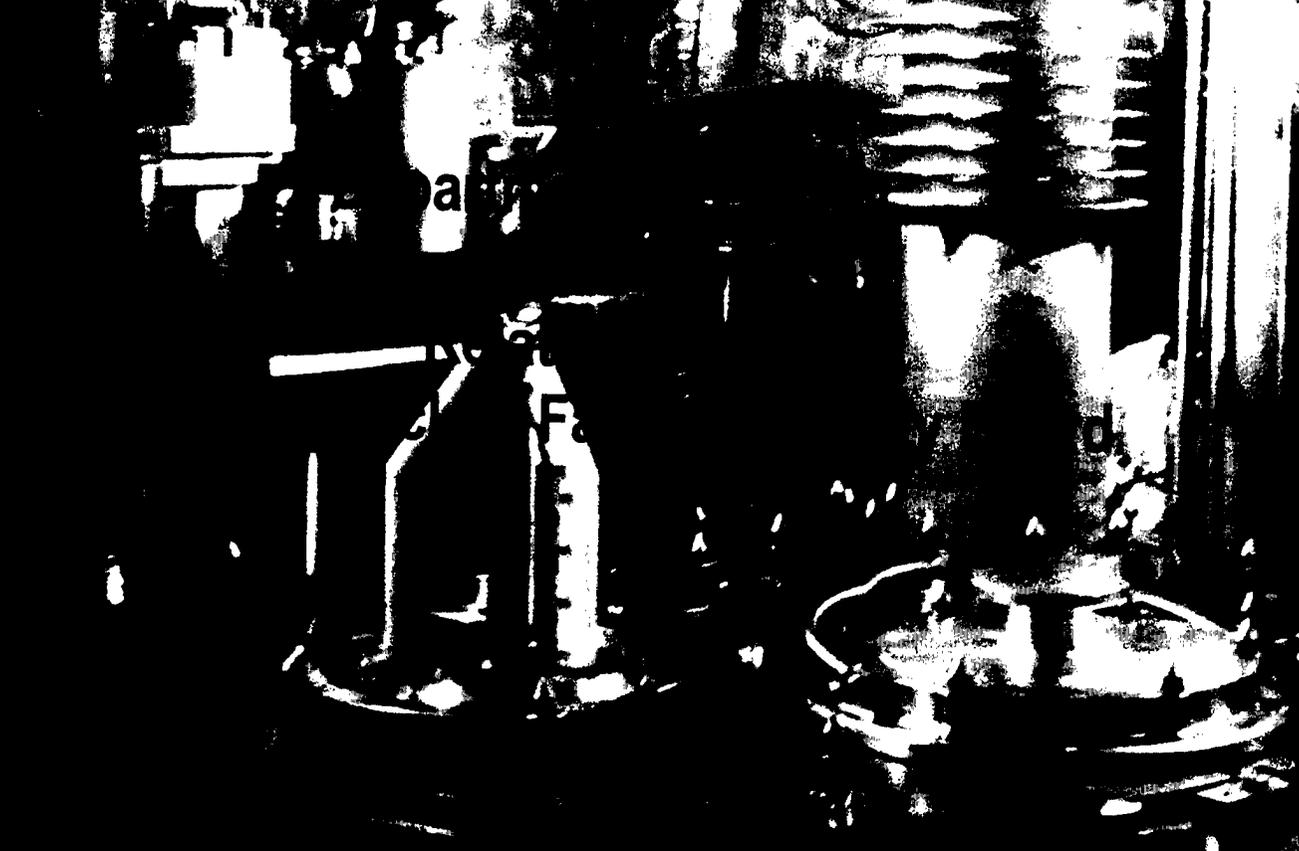
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Samuel W. Bodman

Enclosure



# Annual Report To Congress



# Annual Report To Congress

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

Calendar Year 2005



U.S. Department of Energy  
Washington, DC 20585

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March 2006



The Secretary of Energy  
Washington, DC 20585

March 16, 2006

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

Dear Mr. President:

Enclosed is the Annual Report for calendar year 2005, 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 2005, significant accomplishments were made in the safety and reliability of the defense nuclear complex. Rocky Flats has concluded the physical cleanup of the site and the Department accepted the declaration of physical completion of work at the site in December and is in the process of verifying completion. All buildings at the Miamisburg Closure Project planned for demolition have been taken down.

During 2005, the Department received one new recommendation from the Board. We developed the implementation plan and forwarded it to the Board on August 17, 2005. The Department made excellent progress on resolving Board recommendations and implementing initiatives to ensure public health and safety. 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, Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

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## 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 2005, 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 one new recommendation during 2005. The Department accepted Board recommendation 2005-1, *Nuclear Material Packaging*, and developed an implementation plan to resolve the associated issues.
- The Department's implementation plan includes several interim milestones and formal deliverables, that will result in issuance of a new

interim packaging and storage requirements document for nuclear materials, preparation of a methodology for assessing, and if necessary, prioritizing the repackaging of materials in order to comply with the new requirements document, and development of both site specific and a Department-wide schedule for implementing the new requirements.

#### Recommendations Closed

The Board closed two recommendations during 2005.

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

On August 8, 2005, the Secretary proposed closure of recommendation 99-1. On September 9, 2005, the Board agreed to close this recommendation.

The Board issued recommendation 99-1 on August 11, 1999. On October 12, 1999, the Secretary accepted the recommendation. The primary area of concern was the long term storage of an increasing number of pits, created by the dismantlement of many weapons. The implementation plan was issued by the Secretary on February 1, 2000.

Corrective actions implemented as a result of recommendation 99-1 include:

- Development of the Pantex Pit Management Plan, which provides the high level framework utilized to ensure the safe storage and staging of all pits at the Pantex Site;
- Establishment of consistent program priority and funding by the Department to complete the repackaging effort;

- Development, testing, approval, and procurement of the AL-R8 (2030/2040) Sealed Insert containers needed to provide the appropriate environment for pits;
- Development of the Thermal Monitoring System in the pit storage and staging areas to provide monitoring data used to maintain a safe thermal environment for pits; and
- Implementation of a surveillance program for the AL-R8 (2030/2040) Sealed Insert containers, which will continue for the duration of pit storage at Pantex.

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

On October 18, 2005, the Secretary proposed closure of recommendation 2002-2. On November 22, 2005, the Board agreed to close this recommendation.

The Board issued recommendation 2002-2 on October 3, 2002. On January 8, 2003, the Secretary accepted the recommendation. The primary areas of concerns were:

- Supporting the nuclear weapons program is maintained as top priority at the labs; and
- Establishing and maintaining a set of qualified single points of contacts for each weapons system at the labs.

Corrective actions implemented as a result of recommendation 2002-2 include:

- Issuance of a Secretarial memorandum, and replacing Order

5600.1 with a policy consistent with the Secretary's emphasis on laboratory support of the nuclear weapons program.

- Naming and documenting via three Information Engineering Releases, the single points of contact for each of the three laboratories for each weapons system.
- Defining the roles and responsibilities, and authorities of the single points of contacts.
- Establishment of the processes for the selection, training, mentoring, and succession planning for single points of contacts.

Recommendations Proposed for Closure

- The Secretary has proposed closure of three other Board recommendations issued prior to 2005: (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.

Other Active Recommendations

- A total of fourteen Board recommendations are currently open. The Secretary has proposed closure of three of these recommendations.
- The Department is actively working through its remaining eleven

implementation plans to resolve the safety issues identified in the Board recommendations.

- 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 and Waste

- Rocky Flats has concluded the physical cleanup of the site and the Department is in the process of verifying completion.
- All buildings at the Mound site planned for demolition have been taken down.
- Fernald completed the largest waste shipping campaign in Department history as the 154th train of waste pit material was shipped off-site for disposal. The remediation of the waste pits eliminated a potential long-term source of contamination to the Great Miami Aquifer.
- Richland completed removal of plutonium "hold up" from the Plutonium Finishing Plant more than

a year ahead of schedule, significantly reducing security, worker, and community risk.

- The Savannah River Site completed construction of the M Area Dynamic Underground Stripping system. After 2 months of operation, 14,200 pounds of volatile organic compounds have been removed from the soil and ground waste.

#### 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 2005, 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.
- In 2005, the National Nuclear Security Administration (NNSA) commenced its Future Leaders Program (FLP) to fulfill this commitment. The objective of the FLP is to develop technically competent professionals to eventually manage programs and projects with the NNSA. A total of 30 initial candidates joined the FLP, of which 10 are Facility Representative candidates.



**WORK TO INSTALL A RAIL LINE FOR SHIPPING B371 BUILDING RUBBLE. THE PROJECT NEARS COMPLETION AS PHASE III DEMOLITION BEGINS.**

### Independent Oversight and Performance Assurance

- During 2005, security and safety performance assurance activities were reorganized for better integration and to focus on emerging needs such as the revised Design Basis Threat and designation of the National Training Center (NTC) in Albuquerque, NM as the Center of Excellence for security and safety professional development. Within the new structure, the Office of Independent Oversight (SP-40, formally OA) provides 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 of the Secretary, the Deputy Secretary, or the Administrator of NNSA.

### Quality Assurance Activities

- Requirements and guidance for safety software quality assurance have been identified based on existing industry or Federal agency standards. DOE O 414.1C, *Quality Assurance*, and DOE G 414.1-4, *Safety Software Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements*, and DOE O 414.1C, *Quality Assurance*, were both issued on June 17, 2005.

### Federal Technical Capability Program Activities

- In March 2005 a working group was established to begin reviewing previous assessment data. Based on these reviews, the working group

identified hundreds of potential issues related to the recruiting, developing, training, qualifying, maintaining proficiency, and retaining technically excellent personnel who are fulfilling safety responsibilities for defense nuclear facilities.

- The FTCP Assessment Team developed a Corrective Action Plan that identified the following major actions:
  1. Conduct a functional workforce analysis as a basis for meeting the needs of the organization's missions for the next five years.
  2. Establish and implement a corporate accreditation process and plan based on the Institute for Nuclear Power Operations (INPO) model for the Technical Qualification Program (TQP). The FTCP Panel Chair will oversee this process for the Deputy Secretary.
  3. Reestablish the corporate Technical Leadership Development Program (TLDP – technical intern program) and institutionalize it through commitments to funding and recruitment for classes on an annual basis.
  4. Build on the Facility Representative program as a model for the Senior Technical Safety Manager qualification program and other Functional Area qualification programs.
  5. Revise DOE Manual 426.1-1A, *Federal Technical Capability Manual*, to incorporate and institutionalize changes in Federal Technical Capability expectations developed as part of the Department's 2004-1 implementation plan.

## Other Board Interface Activities

- The Department responded to 26 reporting requirements from the Board during 2005.
- The Department issued 20 new or revised safety directives in 2005, 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 166 pieces of correspondence with the Board during 2005.
- The Department hosted 132 site visits by Board members or Board staff members during 2005.

## Summary of the Department's Major Safety Accomplishments

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

- Fernald completed the largest waste shipping campaign in DOE history as the 154<sup>th</sup> train of waste pit material was shipped off site for disposal.
- The Board closed recommendation 99-1, *Safe Storage of Fissionable Material Called "Pits"* on September 9, 2005.
- The Board closed recommendation 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex* on November 22, 2005.
- Implementation of recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*, efforts culminated in the publication of DOE Policy 226.1, *Department of Energy Oversight Policy* and DOE Order 226.1, *Implementation of Department of Energy Oversight Policy* on June 6, 2005 and September 15, 2005, respectively, and
- Established two Central Technical Authorities (CTA) and Chiefs of Nuclear Safety.



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## I. INTRODUCTION

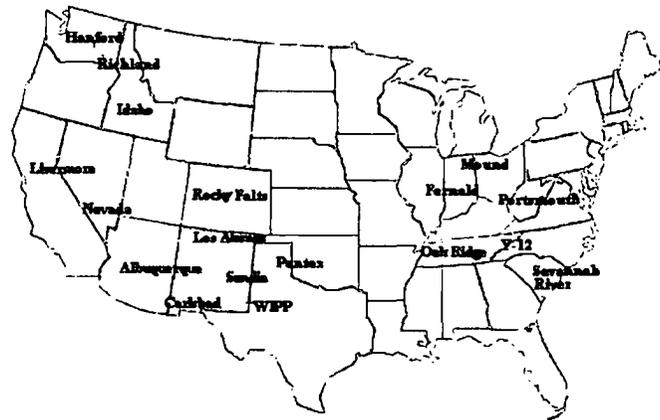
Pursuant to Section 316(b) of the Atomic Energy Act of 1954, the Department submits this Annual Report to Congress, which describes the Department's activities for 2005 pertaining to the Board. This report details the Department's key safety initiatives, implementation of Board recommendations, implementation 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 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 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*
- 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.

**C. Overview of the Department's 2005 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 January 2006, there are 14 open Board recommendations. Seven of the associated implementation plans are

either complete or no longer active. The Department has completed all 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 14 open recommendations (as noted with an "\*" in the list on page I-1).

**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
2005	1	2	-1	14

In 2005, the Board issued a new recommendation to the Secretary.

The data in Table 1.A 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 new Board recommendations for each year.

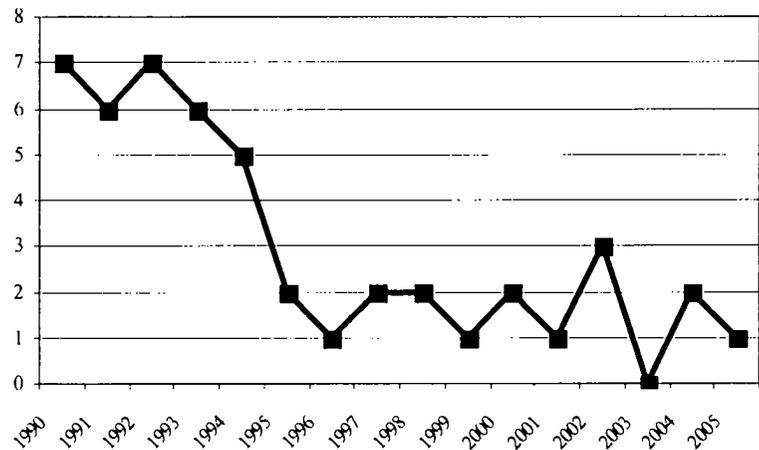
Figure 1.C provides the net open Board recommendations at year end from 1990 - 2005.

Figure 1.D shows the number of recommendations closed by the Board each year from 1990-2005.

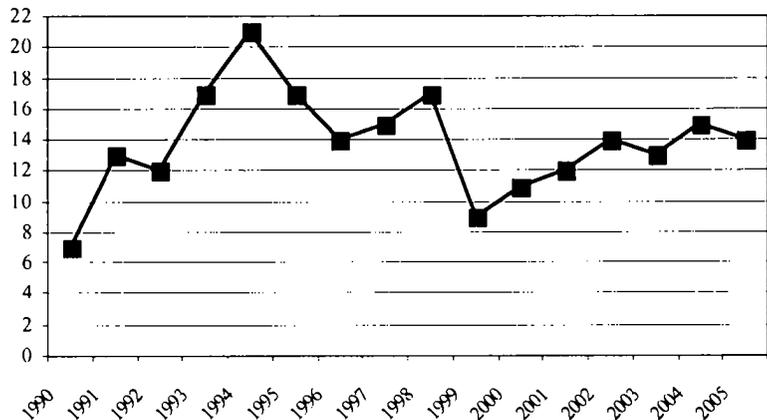
Table 1.B provides key dates for active Board recommendations.

Table 1.C provides a summary status of Board recommendations. The Board closed recommendation 98-2, *Safety Management at Pantex*, on September 9, 2005, and recommendation 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex* on November 22, 2005.

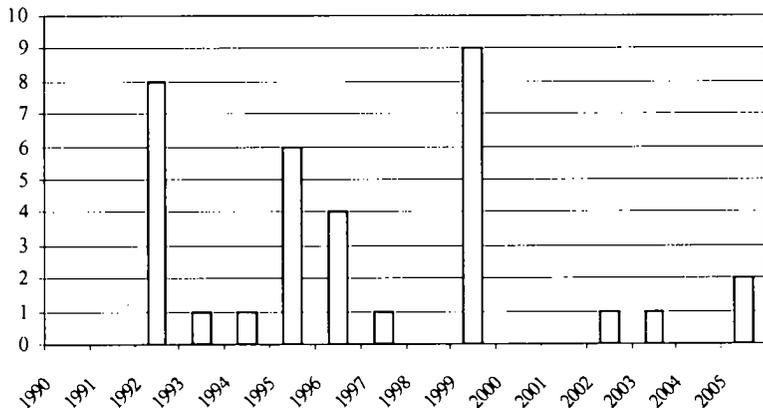
**Figure 1.B New Board Recommendations (1990 - 2005)**



**Figure 1.C Net Open Board Recommendation at Year End (1990 - 2005)**



**Figure 1.D Recommendation Closures Per Year (1990 - 2005)**



**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	1/17/96	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)
2000-1	Stabilization and Storage of Nuclear Material	1/14/00	3/13/00	7/22/02 (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
2002-3	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	6/10/05 (Rev. 1)
2004-2	Active Confinement Systems	12/7/04	3/18/05	8/22/05
2005-1	Nuclear Material Packaging	3/10/05	5/6/05	8/17/05

Section 315(b) of the Atomic Energy Act of 1954 requires the Secretary to accept or reject, in 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.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 <sup>1</sup>	
92-5	Discipline of Operations		10/24/95

<sup>1</sup> 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		12/31/97
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 <sup>2</sup>	
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 <sup>3</sup>	

<sup>2</sup> Secretary proposed closure on June 8, 2000.

<sup>3</sup> Secretary proposed closure on November 13, 2001

**Table 1.C – Summary Status of Board Recommendations, Continued**

<b>Rec</b>	<b>Subject</b>	<b>Open</b>	<b>Closed</b>
98-2	Safety Management at Pantex		9/9/05
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		11/22/05
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	
2005-1	Nuclear Material Packaging	X	

**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 2005 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 is implementing to improve performance in ensuring public health and safety.

### A. Risk Reduction Through Stabilization of Excess Nuclear Materials and Waste

The mission of the Department's Environmental Management Program (EM) is safe risk reduction and cleanup of the environmental legacy of the nation's nuclear weapons program and government-sponsored nuclear energy research. The program is one of the largest and most diverse and technically complex environmental cleanup programs in the world and includes responsibility for the cleanup of 114 sites across the country. Included in that responsibility is the need to:

- Safely provided for the disposition of large volumes of nuclear waste;
- Safeguard materials that could be used in nuclear weapons; and
- Deactivate and decommission several thousand contaminated facilities no longer needed to support the Department's mission and remediate extensive surface and groundwater contamination.

Paramount to EM success is safety—it is EM's top priority. The EM program manages some of the most inherently hazardous materials and is responsible for some of the nation's most crucial environmental actions.

The program has made significant progress in the last four years in shifting focus from risk management to risk reduction and cleanup completion. We are on schedule to complete cleanup at

the Fernald and Mound sites. We have removed and secured nuclear material and spent fuel to reduce risk and prepare them for their ultimate disposition. We have safely disposed of huge amounts of radioactive waste and remediated many of the contaminated areas at our sites. These accomplishments add up to an impressive amount of cleanup and risk reduction. Some highlights include:

- The remediation of the waste pits eliminated a direct source of contamination to the Great Miami Aquifer.
- The Waste Isolation Pilot Plant (WIPP) continues to play a major role in completing cleanup throughout the EM complex – in the spring the site received the final transuranic (TRU) waste shipment from Rocky Flats.
- Rocky Flats completed physical work activities in October 2005. The plutonium and TRU have been removed and the contaminated buildings dispositioned.
- Richland completed removal of plutonium "hold up" from the Plutonium Finishing Plant more than a year ahead of schedule, significantly reducing security, worker, and community risk.
- The Savannah River Site (SRS) completed construction of the M Area Dynamic Underground Stripping System. After 2 months of operation, 14,200 pounds of volatile organic compounds have been removed from the soil and groundwater.



A VIEW OF A RECENTLY DISPOSITIONED HP LINE SOURCE, ULTIMATELY BOUND FOR SAFE DISPOSAL FROM THE SAVANNAH RIVER SITE.



THE B444 WAS THE PRIMARY NON-NUCLEAR MANUFACTURING FACILITY AT ROCKY FLATS. THIS IS THE LAST OF FOUR ORIGINAL PRODUCTION FACILITIES BUILT IN THE EARLY 1950'S TO BE DEMOLISHED.

**Table 1.C – Summary Status of Board Recommendations, Continued**

Rec	Subject	Open	Closed
98-2	Safety Management at Pantex		9/9/05
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		11/22/05
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	
2005-1	Nuclear Material Packaging	X	

**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 2005 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.

- The Idaho National Laboratory (INL) emptied a Category 1 Material Access Area four years ahead of schedule, reducing a security threat and mortgage costs.

The mission is not an easy one—the most visible example being the Waste Treatment Plant at Hanford. The Waste Treatment Plant project is arguably the largest, most complex construction project in the nation. The Waste Treatment Plant is encountering design and construction setbacks. The Department has remained committed to fix the problems correctly. The Department, along with the U.S. Army Corps of Engineers and our contractor, is currently undertaking several major activities to ensure the Department has a full understanding of what is required to complete construction and begin operations. EM's effort to validate the cost and timeline for the project represents responsible management—responsible management that is key to the successful completion of our mission.



CONSTRUCTION WORK  
AT THE IDAHO NATIONAL  
LABORATORY.

To be successful, EM is working to have:

- Credible project baselines;
- Effective identification and management of risk;
- Selection of the most appropriate contract type and fee earning method corresponding to the scope of work and uncertainties;
- Realistic schedules;
- Early and frequent communication with regulators, communities, stakeholders, Congress, and contractors;
- Improvements and training on the source selection process;
- An integrated human capital management program stressing an experienced acquisition and project management staff, and strong technical staff, especially for nuclear related issues; and
- Constant real-time feedback of lessons learned.

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.

## **Table 2.A - Summary of Environmental Management Accomplishments for 2005**

### Richland

- Completed the removal of about 2,100 metric tons of Spent Fuel from the K-Basins into safe, dry, compliant storage. In all, about 105,000 individual fuel assemblies were removed containing over 50 million curies of radioactivity.
- Work has been initiated on the second phase of K-Basin cleanup to remove the remaining radioactive sludge from the K East and West Basins. The approximately 60 cubic meters of sludge is made up of fragments of concrete from the basin walls, sand blown in from the desert and fuel corrosion products.
- Disposed of 825 metric tons of low-enriched uranium fuel from Hanford's River Corridor more than a year ahead of the Tri-Party Agreement milestone and \$1 million under budget.
- Completed the first record of decision in the nation to address a Department of Energy (DOE) plutonium production facility for U Plant.
- Continued TRU waste shipments to the WIPP. Through fiscal year (FY) 2005, 221 shipments were made.
- Safely retrieved the 12 drums containing Pu-238 from retrievable storage in the Low Level Burial Grounds in October 2005. Inspected and relocated the 12 drums from the 218-W-4C burial grounds to interim storage awaiting shipment off site.
- Disposed more than a million tons of contaminated material in the Environmental Restoration Disposal Facility, bringing the total disposed to more than 4.4 million tons since operations in 1996.

### River Protection

- Completed approximately 24 percent of the Waste Treatment and Immobilization Plant (WTP) construction.
- Revised the seismic design basis for the WTP. This revision resulted in a new design spectra for the WTP that were approximately 38 percent greater (horizontally) than the previous design spectra in the 4-6 Hz building frequency range, and 14 percent (horizontally) greater at high frequencies (with comparable increases in the vertical spectrum). The new dynamic analysis generated revised facility loads and new structural responses for equipment and piping systems.
- Review of the Interim Seismic Criteria and its implementation by the DOE Peer Review Team and the Board found it to be satisfactory.
- Completed dynamic analysis incorporating soil-structure interaction for the Pretreatment (PT) Facility and High Level Waste (HLW) Facilities in September.
- Structural Peer Review Team completed design reviews throughout the year to ensure validity of the design of facility structures in compliance with the project design criteria and national Codes and Standards.

## **Table 2.A - Summary of Environmental Management Accomplishments for 2005**

### River Protection, (Continued)

- Formed the Equipment Peer Review Team with the initial review in October 2005 providing recommendations to improve the design criteria and design calculations.
- Completed removing all of the pumpable liquids from all single shell tanks (SSTs). This activity greatly reduces the potential for leakage from the SST system and fulfilled the Consent Decree requirement for pumpable liquid remaining in SSTs.
- Continued waste retrievals on four SSTs (C-200 series tanks). These tanks are an older style SST with a 55,000 gallon capacity and have shown signs of leaking in the past.
- Continued to perform bulk waste retrievals on three larger SSTs (C-103, S-102, and S-112). These tanks are older style SSTs with a 530,000 to 758,000 gallon capacity and have not shown signs of past leaking.
- Maintained the double-shell tank (DST) corrosion control program to protect and evaluate tank condition. The program maintains waste chemistry controls to minimize tank corrosion. The program has been expanded to include improved assessment of DST corrosion potential and any corrosion impacts.
- Performed ultrasonic and visual inspection of the last four DSTs in 2005, completing initial ultrasonic inspections of all 28 DSTs.
- Established an expert panel workshop to review the potential for vapor space corrosion in DSTs.

### Rocky Flats

- Following the prime contractor's declaration of physical completion of work activities in October 2005 in accordance with contractual guidelines, the DOE accepted the declaration of physical completion of work at the site in December 2005.
- The Board formally closed its office at Rocky Flats in July 2005.
- Shipment of Wet Combustibles offsite was completed as part of the TRU Waste Shipping Program in April 2005.

## Table 2.A - Summary of Environmental Management Accomplishments for 2005

### Savannah River

- Established the Safety System Oversight function to improve the site's ability to provide a DOE field engineering presence to monitor the condition, maintenance and operational performance of safety systems and evaluate the contractor implementation of cognizant system engineer responsibilities for those systems.
- Completed plutonium de-inventory of the FB-Line in February 2005.
- Shipped the final four containers of depleted uranyl nitrate to the Materials and Energy Corporation facility in Oak Ridge, TN for disposition. This completes the removal of depleted uranyl nitrate from F-Canyon in support of the overall de-inventory and deactivation of F-Canyon.
- Deactivation of the F-Canyon is complete except for the five 800-series underground process tanks.
- H-Canyon had blended and shipped about 137,500 kilograms of low-enriched uranium solution in its Highly Enriched Uranium (HEU) Blend Down operation. After blending with natural uranium to form low enriched uranium (LEU), the LEU is to be converted into materials suitable for use in the Tennessee Valley Authority's commercial power reactors.
- Plutonium storage container (9975 and 3013s) surveillances were initiated in the F Area Material Storage facility using the Limited Extent Surveillance capability. All FY05 surveillances and 12 of 22 FY06 year-to-date surveillances were completed with no significant container issues being identified.
- Twenty one casks from foreign and domestic research reactors, containing 500 spent fuel assemblies were successfully received and processed. In addition to standard fuel receipts, SRS also accommodated receipt of spent fuel from Petten to ship full casks of fuel. The standard reactivity analysis to Petten would have required either additional shipments from Petten or expensive upgrades to SRS equipment. Utilizing burn up credit, however, allowed Petten to make full cask shipments at a savings to DOE of approximately \$650,000.
- Defense Waste Processing Facility (DWPF) produced 257 canisters in FY05 with increased waste loading equivalent to 367 nominal canisters. The facility increased the amount of waste contained in each canister by 7 percent, which will result in about 1,000 fewer canisters over the life of the facility and a savings to taxpayers of about \$1 billion. DWPF has produced 2,015 canisters since operations began in 1996.
- Made 125 shipments (over 720 cubic meters) of TRU waste to WIPP. At this rate, completion of the shipment of legacy drummed waste is expected in 2007.
- The disposal of all legacy low-level waste (LLW) stored at SRS was completed. In addition, SRS disposed of over 21,340 cubic meters of newly generated LLW.
- Completed deactivation of the 247-F Fuel Fabrication Facility and commenced decommissioning. The 247-F Facility will be the first complex, contaminated glove box line facility decommissioned at Savannah River.

## **Table 2.A - Summary of Environmental Management Accomplishments for 2005**

### Ohio

- In Fiscal Year 2005, the Fernald Closure Project placed 821,646 cubic yards in the On-Site Disposal Facility and shipped 920,228 tons of waste pits material to Envirocare for disposal. The site completed the decontamination and decommissioning of six (6) facilities.
- At the Fernald Closure Project, the Silos 1 & 2 Project is approximately 75% complete and the Silo 3 Project is 90% complete.
- The Columbus Closure Project, located at the West Jefferson site near Columbus, Ohio is scheduled to complete by February 15, 2006. The project has removed all nuclear facilities and foundations, remediated over 1.3 million cubic feet of contaminated soil and debris, and has shipped 90% of the soil and debris for off site disposal.
- Miamisburg closure project has completed work on buildings requiring demolition.

### Waste Isolation Pilot Plant

- The WIPP received and disposed of over 7,500 cubic meters (approximately 941 shipments) of contact handled TRU waste in 2005. As of mid-December 2005, the total volume of TRU waste disposed of in WIPP underground rooms was over 33,000 cubic meters.
- Completed TRU legacy waste cleanup at the U.S. Army Material Command, Lovelace Respiratory Research Institute, Brookhaven National Laboratory, Knolls Atomic Power Laboratory-Nuclear Fuel Services, Fernald Closure Project, and completed additional cleanup at the Mound Plant.
- The WIPP Management and Operating Contractor received re-certification as a Voluntary Protection Program (VPP) Star site, continuing its 10 year safety excellence achievement. WIPP was the first DOE facility to originally receive a VPP Star.
- The WIPP received the 19<sup>th</sup> consecutive Mine Operator of the Year award from the New Mexico Mining Association. The WIPP Mine Rescue Teams continue their international award winning characteristics always placing on or near the top in numerous competitions.

**Table 2.A - Summary of Environmental Management Accomplishments for 2005**

Idaho

- Shipped 2,592 cubic meters of stored TRU waste to WIPP for safe disposal.
- Retrieved and placed in safe storage 598 drums of buried TRU waste, reducing the threat to the Snake River Plain Aquifer.
- Completed Critical Decision-1 (approval to begin preliminary design) for the Integrated Waste Treatment Unit, a facility being built to process 900,000 gallons of Sodium Bearing Waste.
- Completed the consolidation of all EM-managed spent nuclear fuel at Idaho to the Idaho Nuclear Technology and Engineering Center.
- Began wet-to-dry transfer of spent nuclear fuel from CPP-666, the last facility using wet storage at Idaho Nuclear Technology and Engineering Center.

Oak Ridge

- Shipped 4,726 uranium-hexafluoride cylinders from East Tennessee Technology Park to the Portsmouth Gaseous Diffusion Plant in Ohio. In addition, three out of the six East Tennessee Technology Park cylinder yards have been emptied, and two have been formally closed.
- Completed disposition of over 48,584 cubic meters, representing 1.2 million cubic feet, of low-level and mixed low-level waste from the Oak Ridge Reservation.
- Excavated High Flux Isotope Reactor and Homogeneous Reactor Experiment Ponds and associated soils and placed contaminated soils in the EM Waste Management Facility.
- Added five additional facility representatives to enhance the Federal oversight of EM facilities.
- East Tennessee Technology Park Three-Building decontamination and decommissioning Project was completed in September 2005. The project completed the removal and permanent disposal of all contaminated equipment and material totaling over 159,000 tons from the three large gaseous diffusion buildings K-29, K-31, and K-33.
- Hazardous Abatement Material removal and disposition from the East Tennessee Technology Park K-25 Gaseous Diffusion Building was completed in September 2005.
- Completed the molten salt reactor experiment facility fuel salt removal from fuel drain tank number 1 and flush salt removal from drain tank number 2.

## **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, non-NNSA Departmental 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 documented the task force'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. The Board also cited the need for a CTA within the Department in its recommendation 2004-1, *Oversight of Complex, High Hazard Operations*. In response, the Department established two CTAs, one in the NNSA and one in Energy, Science and Environment (ESE). The Principal Deputy Administrator is the CTA for NNSA.

In November of 2004, NNSA filled the position of the Chief of Defense Nuclear Safety (CDNS). The CDNS has completed staffing actions to fill seven safety expert positions. In early

2006, the CDNS completed hiring staff in various technical areas. The NNSA CDNS will provide the necessary technical expertise to support the NNSA CTA. In 2005, the CDNS has developed a description of the roles, responsibilities, authorities and associated staffing requirements to support the CTA. The DOE and NNSA Functions, Responsibilities, and Authorities Manual (FRAMs) were updated to incorporate the responsibilities of the CTA and CDNS.

In 2005, the CDNS developed office procedures to govern how the CTA will review and concur in exemptions to nuclear safety requirements. The CDNS also developed a protocol to describe the NNSA Biennial Review Process to conduct a line management self-assessment of the NNSA site offices from the perspective of the NNSA Administrator i.e., the most senior line manager in NNSA. Three such reviews were completed in 2005, at the Savannah River Site Office (SRSO), the Nevada Site Office (NSO), and the Pantex Site Office (PXSO). These reviews have been rigorous and thorough, and have provided the senior leadership of NNSA with increased operational awareness of the status of implementing the nuclear safety rules within NNSA.

### Work Planning and Activity-level Safety Management

On May 21, 2004, the Board sent a letter to NNSA addressing weaknesses in the incorporation of ISM into 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 assessments of work planning activities and present the

findings and proposed corrective actions 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. From this workshop, NNSA developed a path forward intended to resolve the identified weaknesses.

This path forward has since been coordinated with activities identified in the NNSA Quality Assurance (QA) Roadmap and actions for revitalizing ISM contained in the implementation plan for Board recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*. NNSA has since held a second workshop in July 2005 and several meetings to further define and work on the actions specified in the NNSA path forward. These actions will be part of the site office action plans for improving activity level work planning and control processes required by commitment 23 of the 2004-1 implementation plan. Although the action plans are currently under development, NNSA expects that these action plans will include the following items:

- Review and evaluation of existing activity level work planning and control processes against established attributes and best practices for effective incorporation of ISM, and taking actions necessary for improvement;
- Require routine assessments of activity level work planning, control, and execution that focus on ensuring that workers, work planners, and first line work supervisors understand and effectively practice ISM in the field/on the floor;

- Ensure that work planners are properly trained and qualified; and
- Institute routine observation of work and interaction with workers in the field/on the floor that focuses on effective implementation of ISM.

The action plans are scheduled to be submitted to the Board by the end of February 2006, and all actions will be scheduled for completion by the end of April 2007.

#### Future Leaders Program

In August 2004, the NNSA Administrator, recognizing that the average age of the NNSA employee was approximately 50 years old and that there had been no systematic intake of recent college graduates into the workforce. NNSA was started up in March 2000, and announced the establishment of a NNSA intern program. Funding was dedicated to support a FLP Class of 30 for FY05 and the next several years.

The recruitment strategy designed for the FLP was to recruit on-campus for graduates who had received either bachelors or masters degrees in the past two years. A needs assessment of all the different organizational entities in the NNSA was conducted. The FLP office worked with the managers of the various NNSA organizations to identify college campuses at which recruitment would take place. Colleges were selected for their outstanding technical degree programs in geographic proximity to the duty stations of the positions to be filled, as well as the campuses diversity index. A group of 15 campuses was selected.

The U.S. News and World Report recognized seven of the 15 universities visited for their outstanding engineering

schools. Three Historically Black Colleges and Universities and two Hispanic Associated Colleges and Universities were also visited. The other three campuses were visited based upon their reputations for having effective minority engineering programs.

The FLP office, supported by the Service Center Human Resources Department, then assembled several recruitment teams. Each team was comprised of a human resources consultant, one or more selecting officials from the office(s) at which the FLP participants would be placed, and a diversity representative.

An extensive two year training curriculum for the Program was developed. The NNSA FLP Class of 2005 began its employment in July 2005, with a two-week orientation. Participants in technical positions have completed the TQP General Technical Base and other essential technical courses. Along with other FLP participants in Business Management and Information Technology, the Class of 2005 has also completed several core courses in project management, budget, contracting and leadership. Each FLP participant has an Individual Development Plan, on-site Mentor, site-specific training plan, and will complete a 30 and 60-day rotation in other organizations.

Recruitment for the FLP class of 2006 was conducted during the months of October and November 2005. Eleven colleges/universities were visited to recruit another thirty FLP participants in engineering (chemical, nuclear, mechanical, civil, electrical, and general), business management (finance, procurement, realty, and

contractor industrial relations) and information technology. A total of 134 candidates were interviewed.

Early indicators reveal a high level of Program satisfaction from the FLP participants and managers in participating offices.

NNSA's Roadmap for Nuclear Facility Quality Assurance Excellence, NNSA's planning basis for effective quality assurance at NNSA facilities

In April of 2005, the NNSA Management Council approved a Roadmap for Nuclear Facility QA Excellence. It was subsequently provided to the Board and issued to Defense Programs organizational elements, Service Center and Site Offices for implementation. The Roadmap calls for a series of actions, scheduled for completion by June of 2006, and completion of contractor QA effectiveness by June of 2007. It provides a clear path for effective QA at NNSA facilities.

The Roadmap builds from, replaces, and enhances the prior approach for NNSA actions as described in the Department's QA Improvement Plan provided to Board in November of 2002. Furthermore, it fully supports and extends NNSA commitments in the Department's Implementation Plan for Board recommendation 2002-1, *Quality Assurance for Safety-Related Software* regarding safety software QA. There are 16 Mile Markers covering actions in the areas of People, Programs and Processes. The Roadmap effort is being closely coordinated with other Departmental and NNSA initiatives, such as the 2004-1 implementation plan.

Some of the recent accomplishments of the Roadmap include updates to the NNSA and Site Office FRAM and Site Office QA Programs to clarify roles and responsibilities for safety and quality; establishment of NNSA expectations for safety software QA; development of Safety Software QA Handbook, Part I; institutionalization of an integrated site-wide issues management system; and training for safety software QA professionals.

#### 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 team comprised of headquarters and site personnel from seven different program offices. The Senior Technical Advisor to the Principal Deputy Administrator continued to lead the implementation of this plan during 2005.
- The Department-wide 2004 Facility Representative of the Year Award was presented to an NNSA employee of the Y-12 Site Office.
- **Recommendation 99-1, *Safe Storage of Fissionable Material Called "Pits"*** was issued on August 11, 1999. The corrective actions implemented by NNSA to address the issues raised in the recommendation have resulted in a significant improvement in the ability to store strategic stockpile and surplus pits safely at the Pantex Plant. One of the corrective actions implemented was the development of a Pantex Pit Management Plan and a surveillance program for the sealed insert containers for the duration of pit storage at Pantex.

- Recommendation 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex* was issued on October 3, 2002. The actions taken should help ensure that the capabilities and the experience of the weapons laboratories will continue to support the nuclear weapon program. One of the primary goals of Department's Implementation Plan in response to recommendation 2002-2 was to enhance the process for communication and resolution of safety issues between the weapon laboratories and the rest of the nuclear weapon complex.

#### **C. Facility Representative Program Activities**

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 worker 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 jobs. 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 Workshop to promote the sharing of lessons learned from Facility Representative Programs across the complex; and
- Facility Representative web site <<http://www.facrep.org>> 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 of the Year 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 total of 14 Facility Representatives were nominated for the Facility Representative of the Year Award by their field offices. A panel of senior field and headquarters personnel selects the overall Department winner of the award from the field nominees. The 14 nominees from field offices demonstrated continued strong management support for the program and exceptional performance from the Facility Representatives. This year the award was jointly presented to two

individuals: an employee of the Idaho Operations Office (ID) and an employee from the Y-12 Site Office. Their accomplishments are described below.

#### Annual Workshop

The 2005 Annual Facility Representatives Workshop was held in Las Vegas, Nevada, from May 17-19, 2005. A total of 129 people attended, representing every major program and field office. Included in the total were 51 Facility Representatives, representing one-quarter of the Department's Facility Representative community. The Manager of the DOE ID, gave the keynote address. The theme of the address was "Safety Oversight at the Idaho Site." A member of the Defense Nuclear Facilities Safety Board provided remarks on the need for continued improvements in the Facility Representative Program. Billy Robbins gave a detailed presentation entitled "Hooked on Safety" in which he described an accident that resulted in him receiving a severe electric shock causing him to lose both hands. He discussed the importance of providing quality safety oversight every day.

Also at the workshop, the Department-wide 2004 Facility Representative of the Year Award was jointly presented to an employee of the ID and the Y-12 Site Office. Some noteworthy accomplishments of the winner from the ID Office included taking the leading role in DOE's first-time use of divers to apply fixative to spent nuclear fuel pools prior to being drained and closed. He also oversaw the planning, lifting, and transporting of eight spent nuclear fuel casks to a single location at the INL to support national nonproliferation goals.



SECRETARY BODMAN  
CONGRATULATING THE  
WINNERS OF THE  
FACILITY  
REPRESENTATIVE OF  
THE YEAR

Noteworthy accomplishments of the winner from the Y-12 Site Office included leading an effort at the Y-12 Site Office to develop and implement a computerized management information system, which enables Facility Representatives and all members of the site office management team to schedule, execute, track and trend assessments of contractor operations and activities. He also led a team of Federal employees to conduct detailed reviews against an extremely tight deadline of actions taken by the contractor to improve management of classified removable electronic media, as directed by the Deputy Secretary.

#### Continuous Improvement

The Department continued its efforts to improve Facility Representative staffing and training. These efforts began in early 2004 and included the Department's response to the Board letter to the Secretary dated May 14, 2004, 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 the following actions: (1) to develop a more rigorous staffing analysis methodology based on DOE-STD-1063-2000, *Facility Representatives*, and (2) develop corporate guidance for the identification and conduct of activity-specific hazard training.

NNSA completed these two actions in late 2004 with the development of a new staffing analysis methodology and the promulgation of improved guidance for activity-specific hazard training. In early 2005, the NNSA Facility

Representative Steering Committee member and the Headquarters Facility Representative Program Manager visited NNSA sites to review the completed staffing analysis and training procedures. Sites were provided feedback during these visits, and information from the sites was used to improve both the staffing analysis methodology and the activity-specific hazard training guidance.

In its July 13, 2004, letter to the Board, NNSA also committed to developing 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. In 2005, NNSA commenced its Future Leaders Program to fulfill this commitment. The objective of the Future Leaders Program is to develop technically competent professionals to eventually manage programs and projects within the NNSA. A total of 30 initial candidates joined the Future Leaders Program, of which 10 are Facility Representative candidates. The 2005 class is expected to graduate in July 2007.

The Facility Representative Program standard, DOE-STD-1063-2000, *Facility Representatives*, was updated and issued for DOE-wide comment in April 2005. Comments were received from DOE and the Board staff and are in the process of being addressed. The updated standard is expected to be issued in early 2006.

#### Conclusion

Oversight performed by Facility Representatives provides Department line managers with accurate and objective information on the effectiveness of contractor work



IDAHO DIVER  
PREPARING FOR  
ANOTHER DIVE AT  
THE IDAHO  
NATIONAL  
LABORATORY

performance and practices, including implementation of 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. During 2005, security and safety performance assurance activities were reorganized for better integration and to focus on emerging needs such as the revised Design Basis Threat and designation of the NTC in Albuquerque, NM as the Center of Excellence for security and safety professional development. Within the new structure, the Office of Independent Oversight (SP-40, formerly OA) provides independent assessment of the effectiveness of policies and programs in safeguards and security; cyber security; emergency management; ES&H; and other critical functions of immediate interest to the Secretary, the Deputy Secretary, and the Administrator of NNSA. SP-40 reports through the Deputy Director for Operations to the Director of Security and Safety Performance Assurance, who reports directly to the Secretary.

During 2005, the SP-44, the Office of Environment, Safety and Health Evaluations (ES&H Evaluations)

conducted four inspections of defense nuclear sites, and a follow-up inspection to determine the effectiveness of corrective actions identified as a result of findings during the 2003 investigation of worker vapor exposure and the occupational medicine program at the Hanford Site. These findings had been 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, ES&H Evaluations adopted a new approach towards development of complex wide status reports. Annually, based on previous DOE-wide assessment results and operational data, the Office identifies a number of focus areas that warrant increased management attention. During the planning phase of each inspection, the Office selects applicable focus areas for review based on the site mission, activities, and past ES&H performance. In addition to providing feedback to inspected site, ES&H Evaluations uses the results of the review of the focus areas to gain DOE-wide perspectives on the effectiveness of DOE policy and programs. Such information is periodically analyzed and disseminated to the Department's Central Technical Authorities, appropriate DOE program offices, sites, and policy organizations.

In 2005, ES&H inspections identified several focus areas of generally acknowledged weaknesses across the Department, including the Chronic Beryllium Disease Prevention Program, Nuclear Facility Safety System Oversight Programs, and Corrective



EMPLOYEES AT THE 222-S LABORATORY LOCATED AT THE HANFORD SITE GET READY TO RAISE THE VOLUNTARY PROTECTION PROGRAM STAR FLAG. THE STAR STATUS IS THE HIGHEST LEVEL OF SAFETY RECOGNITION FOR ANY ORGANIZATION.

Action and Issues Management Programs. ES&H Evaluations is planning to publish separate reports on the status of issues related to these focus areas during the next year. Reports covering several of the 2004 selected focus areas, including Electrical Safety for Penetration/Excavation, Legacy Hazards Management, and Un-reviewed Safety Questions (USQ) were published during 2005.

#### Emphasis Areas

ES&H inspections continued to emphasize several 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 in particular, corrective action management; the emphasis in this area is consistent with the Department's implementation plan for Board recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*.

#### Recommendation 2004-1, Oversight of Complex, High-Hazard Nuclear Operations (2004-1)

SP-40 devoted considerable effort in internal and external coordination of the

Department's new policy and order for DOE line management oversight. Many organizations across the Department are currently involved in defining and performing activities necessary to implement the requirements of these directives, including SP-40.

#### **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 QA across the Department:

- QA Leadership;
- Flow-down of QA Requirements;
- Integration of QA with ISM;
- Implementation of QA Requirements;
- QA Analysis; and
- QA Oversight and Assessment.

These focus areas were identified through a review of Board documents, Department line management assessments of the 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 will be coordinated with Department line



JOHN SHAW,  
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SAFETY AND HEALTH  
PRESENTS THE COVETED  
VOLUNTARY  
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AND CERTIFICATE TO  
BARBARA HILL AT THE  
222-S LABORATORY  
LOCATED AT THE  
HANFORD SITE.

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

The Department continues its efforts to establish a rigorous and effective software quality assurance (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 safety system software, safety and hazard analysis and design software, and safety management and administrative controls 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 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.
- 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 SQA Functional Area Qualification Standard (FAQS).

- Computer Codes – Safety software has been assessed to determine its current status along with 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 for safety SQA have been identified based on existing industry or Federal agency standards. DOE O 414.1C, *Quality Assurance*, and DOE G 414.1-4, *Safety Software Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements*, and DOE O 414.1C, *Quality Assurance*, were both issued on June 17, 2005. These requirements and guidance are sufficiently rigorous to ensure the reliability of safety software at defense nuclear facilities based on their risk and complexity.
- 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.

#### Nevada Site Office Quality Assurance Activities

SQA was reviewed by the NSO in an assessment conducted in May 2005 in response to Headquarters (HQ) requirements and SQA Implementation Plan requirements. Phase II SQA review was held at NSO and the Board staff was present to watch the SQA Assessment Team conduct oversight.

NSO's SQA Functional Manager successfully completed the TQP in the area of Safety SQA. The NSO SQA Functional Manager and the Senior Quality Assurance Functional Manager are being trained and are scheduled to complete full qualifications early in CY 2006.

NSO committed to conducting several assessments in 2005, all of which were completed as scheduled. A SQA Assessment for Safety/Analysis was performed for Bechtel Nevada, Lawrence Livermore National Laboratory (LLNL), and Los Alamos National Laboratory (LANL). In addition, a LANL Quality Assurance Assessment for TA-18 Early Move to the NSO Device Assembly Facility (DAF)-Phase I was performed.

NSO has also been active in the SQA Working Groups and support of HQ initiatives to improve quality assurance throughout the NNSA complex. NSO sponsored and held a SQA/QA Quarterly Meeting in December 2005 at the Nevada Support Facility. NSO has completed all of its milestones in 2005 in the area of SQA.

#### **F. Federal Technical Capability Program**

The DOE is committed to ensuring that employees are trained and technically capable of performing their duties. In pursuit of this objective, the Federal Technical Capability Program Panel (the Panel) was formed, recognizing that corporate leadership and line management ownership are essential to successfully implementing a program to recruit, develop, deploy, and retain technical capability at defense nuclear facilities. The Panel consists of senior managers designated as Agents to represent DOE HQ and field elements with defense nuclear facility responsibilities, including NNSA. The Panel reports to the Deputy Secretary and is responsible for overseeing the TQP. The TQP includes the Safety System Oversight Program, the Facility Representative Program, and the Senior Technical Safety Manager Program, and other critical technical skills; conducting periodic assessments of the effectiveness of the FTCP using internal and independent experts; and providing recommendations to senior Department officials regarding DOE technical capability.

During 2005, the FTCP was actively involved in developing tools and plans for improving the qualifications of the Department's technical resources. In an effort to ensure an integrated

corporate effort towards achieving its goals, the FTCP worked with other Departmental organizations such as the NTC, EH, and the Office of Human Capital Management. The key activities that the FTCP was involved in during the past year are described below:

Recommendation 2004-1, Oversight of Complex, High-Hazard Nuclear Operations (2004-1)

During 2005, the Department's vision was described in the implementation plan in response to Board recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*, for its technical personnel to be recognized among all federal agencies for the excellence of its federal staff. The 2004-1 implementation plan outlines actions DOE will take to upgrade federal technical capability. Commitment 11 of the implementation plan is intended to improve the quality and rigor of technical qualifications. To achieve this, DOE identified 2-3 people (i.e., DOE Sponsors) who are the most experienced and technically capable in five selected functional areas and charged these individuals with a central role in the qualification of others. The five areas selected were Civil/Structural Engineering, Criticality Safety, Fire Protection Engineering, Nuclear Explosive Safety, and Safety SQA. Once identified, these persons will assist DOE in improving overall technical capability through activities such as providing technical exams to candidates in a particular functional area, reviewing technical qualification standards, evaluating ongoing proficiency standards, and reviewing ongoing training. These personnel could also provide training to others in

particular functional areas. This will use the high-quality technical talent that exists within certain areas of DOE to raise the overall standard of technical qualifications across the DOE complex. After one year of implementing this process, other functional areas will be evaluated to be included in the process.

Commitment 13 of the 2004-1 implementation plan states that the Panel will "...develop corrective actions to improve recruiting, developing, training, qualifying, maintaining proficiency, and retaining technical personnel, as well as FTCP effectiveness. The Corrective Action Plan will include a prioritized list of key positions that should be filled to enhance safety."

The FTCP Chairman convened an Assessment Team of senior personnel with expertise in human resources, training, recruiting, safety management, and operations to perform an assessment of the Department's performance in recruiting, developing, training, qualifying, maintaining proficiency, and retaining technically excellent personnel who are fulfilling safety responsibilities. In March 2005, a working group was established to begin reviewing previous assessment data. Based on these reviews, the working group identified hundreds of potential issues related to the recruiting, developing, training, qualifying, maintaining proficiency, and retaining technically excellent personnel who are fulfilling safety responsibilities for defense nuclear facilities. The issues were binned and further analyzed by the working group. Based on this analysis, the working group identified 18 common issues for the Assessment Team to review and consider.

Corrective actions were then developed for the next four years to maintain and/or improve the technical capability of the Federal workforce with safety responsibilities at defense nuclear facilities.

The Assessment Team met in April and May 2005 to review the results of the working group and started to develop a corrective action plan. The Assessment Team developed a Corrective Action Plan that identified the following major actions.

1. Conduct a functional workforce analysis as a basis for meeting the needs of the organization's missions for the next five years.

During 2005, in response to the Department's 2004-1 implementation plan Commitment 13, the Department committed to provide a listing of key positions that should be filled to enhance safety. The workforce analyses and staffing plans reports were used to prepare this listing.

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. 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. This was resolved with amplifying guidance provided to DOE site and HQ management on preparation of

the Workforce Analysis and Staffing Reports in October 2005.

2. Establish and implement a corporate accreditation process and plan based on the INPO model for the TQP. The FTC Panel Chair will oversee this process for the Deputy Secretary.

Criteria for TQP accreditation were developed using guidance already developed for assessments of the TQP and included in DOE Manual 426.1-1A, *The Federal Technical Capabilities Panel*. The process is based on the INPO model for accreditation of commercial nuclear power training and qualification programs. The document was developed using a working group of FTCP Agents, and reviewed by the CTAs (i.e., Chief of Nuclear Safety and the CDNS). Interim guidance was approved by the FTCP on December 29, 2005. The guidance will be used on an interim basis to pilot the process, and will then be updated as necessary after the pilot and institutionalized through the DOE M 426.1-1A.

3. Reestablish the corporate Technical Leadership Development Program (TLDP – technical intern program) and institutionalize it through commitments to funding and recruitment for classes on an annual basis.

The Department has made several attempts to implement a continuing, successful intern program that effectively meets the needs of the Department. The continuing need has resulted in expending considerable effort in establishing new intern programs or plans for new intern programs at the Program

Office level that have not always been successful. During 2005, the FTCP and the DOE ES&H Office of Facility Safety (EH-2), evaluated why past intern programs lacked continuity and commitment and provided recommendations to prevent recurrence of past program weaknesses. On November 30, 2005, EH-2 provided the results of the review. The report discusses the strengths and weaknesses of earlier intern programs and lessons learned in the areas of senior management direction and support, recruitment, training, rotational assignments, placement, and program administration. Current efforts to address the issues including the ongoing NNSA Future Leaders Program, which was implemented in 2005, and the planned DOE Scholars Program, which was modeled on a program at the Office of River Protection, may address many of the weaknesses of past programs.

4. Build on the Facility Representative program as a model for the Senior Technical Safety Manager qualification program and other functional area qualification programs.

A working group was established to review the Senior Technical Safety Manager FAQs and revise it to ensure that it contains the appropriate level of rigor. At the same time, the group worked with the NTC to establish a Department-wide Senior Technical Safety Manager training course. The Senior Technical Safety Manager FAQs was released through REVCOM on November 17, 2005, for review and comment.

Departmental Champions were identified for 13 core science and engineering functional area qualification programs. The Champions are in the process of developing a schedule to review and upgrade, as appropriate, the qualification programs to ensure that they contain appropriate and adequate qualification and re-qualification requirements.

5. Revise DOE Manual 426.1-1A, *Federal Technical Capability Manual*, to incorporate and institutionalize changes in Federal Technical Capability expectations developed as part of the Department's 2004-1 implementation plan.

For those changes in Federal Technical Capability identified by the FTCP and other Board recommendation 2004-1 activities, the FTCP will revise DOE Manual 426.1-1A, *Federal Technical Capability Manual*, within one year after necessary changes are identified to ensure that the expectations are institutionalized.

#### Implement Safety System Oversight

During 2004, the Panel defined the technical qualification standards for Safety System Oversight personnel. Safety System Oversight personnel are a key technical resource qualified to oversee contractor management of safety systems at DOE defense nuclear facilities. Unlike Facility Representatives, who are responsible for monitoring the safety performance of DOE 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 bases and other applicable requirements. Final assessments to determine whether sites have trained, qualified, and capable Safety System Oversight personnel performing their roles were performed during 2005.

#### Enhance Authorization Basis Capability

One of the key activities that the FTCP has sponsored during the past year has involved reviewing current practices and experience of personnel in performing DOE Authorization Basis (AB) reviews. The FTCP chartered a working group of FTCP Agents and AB experts representing a cross-section of the DOE complex. The working group was divided into three sub-groups: sub-group one reviewed good practices and opportunities for improvement; sub-group two reviewed actions to enhance training and qualification, and improve the hiring pipeline; and sub-group three developed roles and responsibilities for AB personnel. The FTCP reviewed and endorsed the recommendations of the working group. An Action Plan was transmitted to DOE Sites/Offices that includes the activities currently under way to enhance the upgrade and enhance the capability and qualifications of DOE AB personnel, to improve the training and development process, and to enhance the pipeline of Federal AB personnel. The FTCP will track completion of the actions within the Action Plan.

#### Measure Performance in Improving Capability

In FY03, the FTCP established quarterly performance measures to focus line manager's attention on achieving the key Department goals

related to upgrading the DOE 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% to 80% fully qualified rate for all personnel in the TQP.

As of September 30, 2005, the overall DOE qualification rate was 84%. Nine of 18 Offices and Headquarters organizations meet the 80% qualified goal. A second goal is that there will be no personnel participating in the TQP who are overdue in their qualifications. However, on September 30, 2005, 15 personnel were overdue in their qualifications.

Included in the quarterly report is the status of qualifications for Safety System Oversight personnel. Qualification requirements were established in May 2004, with the issuance of DOE Manual 426.1-1A, *Federal Technical Capability Manual*. As of September 30, 2005, sites identified 92 Safety System Oversight personnel, of which 33 are fully qualified, up from 22 the previous quarter.

#### Continued Enhancement of the Facility Representative Program

The Department continued with its efforts to improve Facility Representative staffing and training. These efforts began in early 2004 and included the Department's response to the Board letter to the Secretary dated May 14, 2004, regarding the Facility Representative Program in NNSA. Details of these efforts are in Section II.C Facility Representative Program Activities.



### III. IMPLEMENTATION OF BOARD RECOMMENDATIONS

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

#### A. Recommendation Closures

The Board closed two recommendations in 2005.

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

On August 8, 2005, the Secretary proposed closure of recommendation 99-1. On September 9, 2005, the Board agreed to close this recommendation.

The Board issued recommendation 99-1 on August 11, 1999. On October 12, 1999, the Secretary accepted the recommendation. The primary area of concern was the long term storage of an increasing number of pits, created by the dismantlement of many weapons. The implementation plan was issued by the Secretary on February 1, 2000.

Corrective actions implemented as a result of recommendation 99-1 include:

- Development of the Pantex Pit Management Plan, which provides the high level framework utilized to ensure the safe storage and staging of all pits at the Pantex Site;
- Establishment of consistent program priority and funding by the Department to complete the repackaging effort;
- Development, testing, approval, and procurement of the AL-R8 (2030/2040) Sealed Insert containers needed to provide the appropriate environment for pits;
- Development of the Thermal Monitoring System in the pit storage and staging areas to provide monitoring data used to maintain a safe thermal environment for pits;

- Implementation of a surveillance program for the AL-R8 (2030/2040) Sealed Insert containers, which will continue for the duration of pit storage at Pantex.

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

On October 18, 2005, the Secretary proposed closure of recommendation 2002-2. On November 22, 2005, the Board agreed to close this recommendation.

The Board issued recommendation 2002-2 on October 3, 2002. On January 8, 2003, the Secretary accepted the recommendation. The primary areas of concerns were:

- Supporting the nuclear weapons program is maintained as top priority at the labs; and
- Establishing and maintaining a set of qualified single points of contacts for each weapons system at the labs.

The implementation plan was issued by the Secretary on June 4, 2003.

Corrective actions implemented as a result of recommendation 2002-2 include:

- Issuance of a Secretarial memorandum, and replacing Order 5600.1 with a policy consistent with the Secretary's emphasis on laboratory support of the nuclear weapons program.
- Naming and documenting via three Information Engineering Releases, the single points of contact for each of the three laboratories for each weapons system.

- Defining the roles and responsibilities, and authorities of the single points of contacts.
- Establishment of the processes for the selection, training, mentoring, and succession planning for single points of contacts.

**B. Recommendations Previously Proposed for Closure**

The Department proposed closure of three recommendations prior to 2005:

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

These three recommendations remain open.

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

As stated in last year's report, the Secretary proposed closure of this recommendation in a November 13, 2001, letter to the Board.

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 approach 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 has 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 NNSA, Office of Independent Oversight and Performance Assurance (SP), and ES&H – issued their FRA documents. All of these FRA documents were updated by October 2003. The conditions outlined in the Board's January 2002 letter have been long since met.

The Department's Corrective Action Management Program (CAMP) 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 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 2005 include:

- Addition of Aviation Management safety inspections to the Department's CAMP. In June 2005, independent oversight assessments of DOE aviation management and safety by the Office of Aviation Management, Office of Management, Budget and Evaluation, were added to the CAMP. Identified findings and corrective actions from these independent assessments of DOE aviation sites, activities and equipment are now identified, tracked, and reported to successful completion in the CAMP.
- Revision of CAMP responsibilities and requirements in DOE Order 414.1C, *Quality Assurance*. Changes included the addition of aviation management and safety assessments to the CAMP, additional information addressing corrective actions in corrective action plans, and additional information for line management implementation of corrective action effectiveness reviews.
- Development of DOE Guide 414.1-5, *Corrective Action Program Guide*, which delineates basic principles, concepts, and lessons-learned that DOE managers and contractors may consider in implementing corrective action programs. The guidelines are applicable to work activities, operational events, informal and formal individual and organizational

self-assessments, internal and external oversight, investigations, audits, worker safety concerns, and other types of incidents and assessments.

- Revision to the database and search capabilities of the DOE Corrective Action Tracking System (CATS), and the CATS editor access and registration process to enhance the security and serviceability. Presentation of site and DOE-wide training for 50 CATS editors.
- Revision of the DOE CAMP website ([www.eh.doe.gov/camp/index.html](http://www.eh.doe.gov/camp/index.html)). Website provides access to the background, directives and references, Corrective Action Management Team charter, CATS database, and DOE CAMP quarterly reports disseminated to the Office of the Secretary and senior DOE managers.
- Expanded membership of the DOE Corrective Action Management Team. Continued close coordination with the team, a chartered cross organizational working group of representatives for DOE Headquarters and field elements supporting and coordinating line management implementation of the CAMP.
- Commenced DOE-wide reporting on the status of corrective action effectiveness reviews which became a CAMP requirement in 2004. Effectiveness reviews, which determine whether the completed corrective actions for each finding effectively resolved and will prevent recurrence of the same or similar findings at the performance level, are required to be completed and

formally reported by the field element manager within six months after completion of all corrective actions listed in the corrective action plan.

- Continued coordination, information and assistance to the Department Headquarters and field element managers and assessing organizations on CAMP 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 (94-1)

As stated in last year's report, 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 (92-4)

As stated in last year's report, 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 thirteen years ago, and proposed for closure more than seven years ago.

### **C. New Recommendations**

Recommendation 2005-1, Nuclear Material Packaging (2005-1)

The Board issued recommendation 2005-1 on March 10, 2005. The Board believes the development of technically justified criteria for packaging systems for nuclear materials is necessary on a DOE-wide level. This recommendation addresses issuance of a requirement that nuclear material packaging meet technically justified criteria for safe storage and handling outside of engineered contamination barriers.

The Secretary accepted the recommendation on May 6, 2005, and approved the associated

implementation plan on August 17, 2005. The Department's implementation plan includes several interim milestones and formal deliverables, that will result in issuance of a new interim packaging and storage requirements document for nuclear materials, preparation of a methodology for assessing, and if necessary, prioritizing the repackaging of materials in order to comply with the new requirements document, and development of both site specific and a Department-wide schedule for implementing the new requirements.

Due to the complexity of existing storage configurations, the time required to publish a new requirements document, and the time needed to develop site implementation plans and consolidate them into a Department-wide plan, final completion will require more than one year. The last deliverable is currently expected to be issued at the end of calendar year 2006. All of the milestones and deliverables scheduled in calendar year 2005 were completed on time.

#### **D. Other Open Recommendations**

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

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

The Board issued recommendation 2004-2 on December 7, 2004. The recommendation addressed the need 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 recommended the Department enhance and update associated Department directives and standards, and evaluate all new and existing facilities in light of the new requirements.

On March 18, 2005, the Secretary accepted the recommendation. The Department developed an implementation plan and provided the plan to the Board on August 22, 2005. The implementation plan addresses the Board's recommendation by committing to review all hazard category 2 and 3 defense nuclear facilities to ensure that the selected confinement strategy is properly justified and documented. Priority would be given to design and construction projects, including ongoing major modifications of existing facilities. The first step of the review is for DOE to establish criteria to exclude certain facilities and operations from further review based on sound safety considerations. For facilities not excluded, the focus of review will be to (a) verify that appropriate performance criteria are derived for ventilation systems, (b) verify that these systems can meet the performance criteria, if applicable, and (c) determine if any physical modifications are necessary to enhance safety performance. The implementation plan further commits to revise DOE directives and standards to formalize the evaluation criteria and capture lessons learned. On September 19, 2005, the Board accepted the implementation plan.

Two implementation plan commitments were completed in 2005. Commitment 8.1, to develop a listing of new facilities and facilities undergoing major modification, was provided to the

Board in September 2005. Commitment 8.2, to develop the *Recommendation 2004-2 Exclusion Reporting Process* that will be used for the initial screening of facilities subject to further review and analysis, was provided to the Board in October 2005.

Two deliverables under Commitment 8.5, to develop evaluation guidance for sites to use when reviewing safety-related ventilation systems, were completed. The first deliverable, a letter describing the group of subject matter experts to develop appropriate performance and/or design expectations as input to guidance document, was provided to the Board in September 2005. The second deliverable, a workshop involving personnel from headquarters and the field to develop the ventilation system methodology and guidance, was completed in October 2005. In addition to the safety-related guidance required under commitment 8.5, the final document will include non safety-related evaluation guidance required under commitment 8.7. The expected completion date for the document is January 2006.

Implementation of 2004-2 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 2004-2 implementation plan in 2007.

*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. In December 2004, the Board issued Technical Report 35, *Safety Management of Complex, High-Hazard Organizations*, which was intended to clarify the recommendation and offer potential solutions that could be used to satisfy 2004-1.

The Secretary accepted the recommendation on July 21, 2004, and approved the associated implementation plan on December 23, 2004. In February, the Board sent a letter to the Department which stated that the Board could not accept the implementation plan issued in December. The Secretary approved a revised implementation plan on June 10, 2005.

The revised implementation plan defined the actions that the Department will take in response to this recommendation, and identified three broad areas for improvement:

- Strengthening Federal Safety Assurance
- Learning from Internal and External Operating Experience
- Revitalizing 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:

- Implement and strengthen the Department Oversight Model.

- Issued the Department's Oversight Policy and an Order on Implementation of the policy to strengthen the Department Oversight Model.
- Continued development of Criteria, Review and Approach Documents for several technical areas associated with safety oversight of nuclear facilities for eventual incorporation in a Department Safety Oversight Manual in 2006.
- Established and began implementation of the nuclear safety research function.
- Established new processes and criteria for delegations of safety responsibilities.
- Developed a draft Order on the Department Operating Experience Program, an element of the ISM "feedback and improvement" function, for issuance in early 2006.
- Analyzed the Columbia Accident Investigation Report and the Davis-Besse nuclear plant reactor vessel head corrosion event and issued a Departmental action plan to learn from these events.
- Issued Quality Assurance Program Plans for EM and EH and the nuclear facilities element of NNSA, with follow-on direction to field elements to develop site Quality Assurance Program Plans.
- Developed and presented Nuclear Executive Leadership Training for senior field and headquarters managers with delegated authority for nuclear safety.
- Continued development of a new Technical Professional Career Development Program.
- Developed and began implementation of a corrective action plan for the Federal Technical Capability Program.
- Identified experts in technical disciplines associated with the safety of nuclear facilities.
- Developed a draft Integrated Safety Management System Manual for issuance in early 2006.
- Issued Departmental expectations and assessment criteria for field element assessments and action plans to improve work planning and work control.
- Issued Departmental expectations and assessment criteria for field element assessments and action plans to improve implementation of the ISM "feedback and improvement" function.

For commitments completed and those due in the future, the Department has identified intermediate milestones necessary to achieve the end-state commitments, as well as verification activities to ensure that actions taken are effective to resolve the original issues.

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.

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 (i.e., specific administrative controls). 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 clarifying expectations associated with specific administrative controls was the completion of a new technical standard, DOE-STD-1186-2004, *Specific Administrative Controls*. The final standard was issued in August 2004. The standard provides additional guidance for the identification, implementation and maintenance of specific administrative controls that perform important safety functions. The standard will be referenced in an upcoming revision to DOE-STD-3009-94, *Preparation Guide for U.S. DOE Nonreactor Nuclear Facility Safety Analysis Reports*. This Department standard is referenced as an acceptable method

(safe harbor) to implement the requirements of the Department's nuclear safety basis rule, 10 CFR Part 830, Subpart B.

In 2005, the Department completed several commitments and provided deliverables to the Board. 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 specific administrative controls and to ensure that the training is captured in the appropriate contractor and Department training programs. In 2005, both EM and NNSA reported completion of this initial training and changes to contractor and DOE training programs.

Commitment 4.5 calls for NNSA and EM to confirm the requirements and guidance regarding specific administrative controls are properly treated in the safety basis documents and implementing procedures and controls for nuclear facilities. In 2005, NNSA and EM completed reviews of safety basis documents and developed reports for lessons learned and needed corrective actions. These reports were sent to the Secretary and forwarded to the Board.

In addition to the reviews of safety basis documents, commitment 4.6 calls for NNSA and EM to review field implementation of existing specific administrative controls to ensure that they are developed, implemented and maintained in accordance with the Department's expectations. Deliverable 4.6.2 consists of final reports from NNSA and EM documenting the completion of these field implementation reviews and any corrective actions. EM completed their reviews and issued

a report in July 2005. NNSA completed their reviews and a report is expected to be issued in early 2006.

Commitment 4.7 calls for EH to evaluate the overall success of the effectiveness of implementing the new guidance in DOE-STD-1186-2004 and an earlier EH Nuclear Safety Technical Position on specific administrative controls. A draft report to the Secretary has been developed. EH expects to complete this commitment early in 2006.

Commitment 6.1 calls for the Department to provide periodic briefings to the Board and Board staff on progress with plan implementation. The Deputy Assistant Secretary for Facility Safety in EH provided a formal briefing to the Board in July 2005. Several additional discussions were held with the Board staff throughout 2005 regarding the status of implementing the recommendation.

Implementation 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 2002-1, *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 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 2005 are:

- The Department issued revised directives that invoke industry or Federal agency standards for safety software, including American Society of Mechanical Engineers (ASME) NQA-1-2000, *Quality Assurance Applications for Nuclear Facility Operations*. DOE Order 414.1C, *Quality Assurance*, and the corresponding DOE Guide 414.1-4, *Quality Assurance Management System Guide for use with 10 CFR 830, Subpart A, Quality Assurance Requirements and DOE O 414.1C, Quality Assurance*, was issued June 17, 2005. The Board was notified of their issuance on June 29, 2005.
- The Department briefed the Board on the status of 2002-1 activities on February 7, June 1, and September 26, 2005.

Recommendation 2001-1, High Level Waste Management at the Savannah River Site (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 SRS 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.

Commitment 2.6 of revision 1 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.

Two milestones scheduled for 2004 were not met due to the litigation relative to the Department's process for classifying waste for disposal. In 2005, the Department, in consultation with the Nuclear Regulatory Commission, worked to develop a Waste Determination in accordance with the requirements of Section 3116 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005.

Revision 3 of the Implementation Plan has been prepared to reflect changes in program direction as a result of the program delays and feedback from the State of South Carolina, re-baseline the

two overdue commitments, and establish additional commitments. This revised plan will be submitted to the Board concurrent with DOE approval of the Waste Determination for salt processing.

A total of twenty-one of the twenty-three milestones in the plan are complete as of December 2005. 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.

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.

In January 2004, the Department completed the last implementation plan commitment, which was to review facility safety documentation with respect to the revised *Nuclear Air Cleaning Handbook* and develop any necessary corrective actions using the Un-reviewed Safety Question process. As of that date, all of the forty-three commitments in the implementation plan had been completed.

Key accomplishments in implementing the plan during 2005 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.
- In response to a letter from the Board dated November 3, 2004, the Department completed a 60-day reporting requirement regarding configuration management programs for safety systems at the Lawrence

Livermore National Laboratory. The letter also suggested deferral of proposed closure of the recommendation until configuration management at Livermore had been improved. Configuration management at the laboratory's defense nuclear facilities was assessed and reports were sent to the Board. Livermore developed a schedule for continuing improvements in configuration management, which the Board plans to review in early 2006.

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 meet commitments in the plan.

After the Board is satisfied with configuration management at Livermore, the Department plans to propose closure of this recommendation in a letter to the Board.

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 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 LLNL. On November 28, 2005, the Secretary approved a revision of the 2000-1 implementation plan specific to the Hanford Section reflecting new information of the techniques necessary to safely handle the sludge in the K-Basins at Hanford and appropriate contingency plans for the risks to the project.

The key accomplishments related to implementing the Department's 2000-1 plan during 2005 are as follows:

- In January 2005, Savannah River completed stabilization and packaging of all applicable pre-existing plutonium metals and oxides, eleven months ahead of the December 2005 commitment identified in the implementation plan.
- In June 2005, Savannah River completed disposition of pre-existing enriched uranium solution and enriched uranium solution resulting from Mk-16/22 Spent Nuclear Fuel dissolution.

- In September 2005, Savannah River completed the dissolution of the Savannah River Site pre-existing plutonium residues in H-Canyon.
- In December 2005, Los Alamos personnel completed surveying and reprioritizing all non-Technical Area-55 excess materials.

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 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 recommendation 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 is 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 2005 are as follows:

- The Department validated implementation of the improved site-wide technical safety requirement (TSR) controls for on-site transportation of nuclear explosives

and reported completion on November 30, 2005.

- All required quarterly reports were delivered to the Board on schedule. Quarterly reports no longer need to be prepared. Instead, monthly briefings will provide sufficient status to the Board.

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 authorization to startup the B83 SS-21 process. The Department currently estimates completion of all actions and milestones for the 98-2 implementation plan in 2006. Remaining activities are:

- Commitment 4.2.2 to issue guidance on expectations for the evaluation and documentation of weapon response to potential accident environments and stimuli. This commitment was reopened by a December 14, 2004, letter from the Board rejecting a response by DOE on January 31, 2001. The Department is working with the Board on revisions to the Development & Production Manual to satisfy this commitment in the 3<sup>rd</sup> Quarter FY 2006.
- Commitment 4.4.6 to authorize startup of B83 SS-21 process. The project remained in the review process during 2005 to address nuclear explosive safety study (NESS) and tri-laboratory electrostatic discharge issues related to environmental characterization and preconditioning. Changes to the Hazard Analysis Report and a Readiness Assessment will be

performed to complete the commitment. The estimated completion date is September 2006.

- The final commitment requires a report summarizing the actions taken in response to this recommendation.

#### 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 EM.

The Department has an inventory of approximately two metric tons of uranium mixed or alloyed with 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 INL, with a lesser amount at Los Alamos and even less at numerous other sites.

All implementation plan commitments were completed by July 1999. The Department is in the process of developing plans for the disposition of its uranium-233 inventories.

#### Idaho National Laboratory Activities

The INL has evaluated two major strategies to deal with the uranium-233 inventories: 1) recycling and 2) disposal of U-233 material at that site. On

December 04, 2002, the INL informed the DOE complex of the availability of twenty-eight special nuclear material types, including U-233. Any and all materials on the list were made available to any program office or site. All responses were negative and therefore INL decided to dispose of its U-233 inventory as waste.

INL evaluated disposal of its inventory of U-233 as spent nuclear fuel within the monitored geological repository. It was determined that this material does not meet the definition of spent nuclear fuel, and as such, the statute authorizing the establishment of the monitored geological repository does not permit entry into Yucca Mountain for permanent disposal. Also, it was determined that this material does not meet the definition of TRU waste, nor is it defense-related waste and therefore cannot enter the WIPP for the purpose of permanent disposal. As a result, the INL plans to dispose of this material as low-level radioactive waste. The INL, with appropriate members of the Nevada Test Site (NTS) staff is evaluating the INL U-233 inventory against the waste acceptance criteria for the NTS for possible disposal.

All INL U-233 material is safely and securely managed within dry storage and will remain so until a disposition path is determined and executed.

#### Oak Ridge National Laboratory Activities

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



TRANSURANIC WASTE  
PROCESSING FACILITIES  
FOR LEGACY WASTE AT  
THE OAK RIDGE  
NATIONAL LABORATORY.

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.

During FY 2005, activities in Building 3019 centered on preparations for the transfer of the building to the control of Isotek. This transfer was originally scheduled to take place in July 2005, but was delayed due to uncertainties with Phase II of the planned project. Work proceeded during the year to put into place the required agreements necessary for Isotek to operate the facility in the midst of the ORNL. These agreements included provisions for the supply of utilities, fire protection and security for the facility. In addition, Isotek has planned to use existing employees to insure a smooth transition in facility operation. These employees were trained on the newly developed Isotek procedures for building operation.

In November 2005, Congress directed DOE to terminate promptly the Medical Isotope Production and Building 3019 Complex Shutdown project at the ORNL. Congress also directed that responsibility for disposition of the U-233 be transferred to the Defense EM program per DOE's recommendation, and provided resources for the disposition of the

material stored in Building 3019.

DOE has assigned an interim Federal Project Director and assembled an Integrated Project Team. DOE is in the process of selecting a permanent Federal Project Director and the Integrated Project Team will be finalized after the selection. Efforts are underway to quickly assess the disposition possibilities for the U-233 currently stored at ORNL and provide a report. Regardless of the possible disposition path for the U-233, DOE's focus continues to be getting the U-233 material into a safer and more secure form in the most expeditious and cost effective manner possible.

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 2006.

Recommendation 95-2, *Integrated Safety Management (95-2)*

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 (f)(1) 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*<sup>1</sup>
- 94-1, *Improved Schedule for Remediation*<sup>1</sup>
- 95-2, *Safety Management*<sup>1</sup>
- 97-1, *Safe Storage of Uranium-233*<sup>1</sup>
- 98-1, *Resolution of Internal Oversight Findings*<sup>1</sup>
- 98-2, *Safety Management at Pantex*<sup>1</sup>
- 2000-1, *Stabilization and Storage of Nuclear Material*<sup>1</sup>
- 2000-2, *Configuration Management, Vital Safety Systems*<sup>1</sup>
- 2001-1, *High-Level Waste Management at the Savannah River Site*<sup>1</sup>
- 2002-1, *Quality Assurance for Safety-Related Software*<sup>1</sup>
- 2002-3, *Requirements for Administrative Controls*<sup>1</sup>
- 2004-1, *Oversight of Nuclear Operations*<sup>1</sup>
- 2004-2, *Active Confinement Systems*<sup>1</sup>
- 2005-1, *Nuclear Material Packaging*

<sup>1</sup>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.

#### **F. Summary of Projected Costs of Remaining Actions**

The House Report accompanying the Fiscal Year 2004 Energy and Water Development Appropriations P.L. 108-137, (House Report 108 - 112, p. 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 Board 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 a 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.A – Implementation Plans with All Commitments Complete**

<b>Open Recommendations</b>
2000-2, Configuration Management, Vital Safety Systems
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**

<b>Open Recommendations</b>
2002-1, Quality Assurance for Safety-Related Software
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**

<b>Open Recommendations</b>
2000-1, Stabilization and Storage of Nuclear Material (2009)
2004-1, Oversight of Nuclear Operations (2007)
2002-3, Requirements For Administrative Controls (2006)
2005-1, Nuclear Material Packaging (2006)

**Table 3.D Summary of Projected Costs of Remaining Actions**

<b>Board Recommendation</b>	<b>Primary Sites Affected</b>	<b>Primary Improvement Activities (and Projected Costs)</b>
2004-1, Oversight of Nuclear Operations	Multiple	<b>HQ</b> – 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). <b>NNSA and EM sites</b> – 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	<b>NNSA sites</b> – Complete training on Administrative Controls; Review safety basis documents to identify Administrative Controls; and Review field implementation of Administrative Controls (\$665 thousand in FY2005) <b>EM sites</b> - Review field implementation of Administrative Controls (\$700 thousand in FY2005)
2002-1, Software Quality Assurance	Multiple	<b>NNSA sites</b> – Complete qualification of SQA personnel; Complete SQA assessments; Revise FRA documents; Implement SQA directives (\$850 thousand in FY2005) <b>EM sites</b> – Implement SQA directives (\$70 thousand in FY2005) <b>EH</b> – 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	<b>Richland</b> – Remove and package sludge from K-East and K-West basins (\$33 million in FY2005); <b>Savannah River</b> – 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). <b>Los Alamos</b> – 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 WIPP is a non-reactor nuclear facility providing safe and permanent disposal of defense transuranic and TRU-mixed 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 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 the Waste Isolation Pilot Plant

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 2005:

- The WIPP received and disposed of over 7,500 cubic meters (approximately 941 shipments) of contact handled TRU waste in 2005. As of mid-December 2005, the total volume of TRU waste disposed of in WIPP underground rooms was over 33,000 cubic meters.
- Including all participant organizations, the WIPP achieved a low Total Recordable Case rate of 0.54. WIPP also achieved a 0.00

for Days Away, Restricted, and Transfer Rates.

- Received regulatory approval for waste shipments from new sites and new waste types, including Advanced Mixed Waste Treatment Plant supercompacted debris and LANL Sealed Sources.
- Certified/recertified TRU waste programs for eight sites in FY05.
- Completed and submitted the remote handled (RH) RH-TRU 72-B Safety Analysis Report to the Nuclear Regulatory Commission.
- Completed TRU legacy waste cleanup at the U.S. Army Material Command, Lovelace Respiratory Research Institute, Brookhaven National Laboratory, Knolls Atomic Power Laboratory-Nuclear Fuel Services, Fernald Closure Project, and completed additional cleanup at the Mound Plant assisted in moving remote handled TRU waste to SRS. Also completed more than 50% cleanup at three other Small Quantity Sites: Argonne National Laboratory, LLNL and the NTS. Note: Removed all available waste from NTS. Deleted Material and Fuels Complex from the >50% completion list.
- Received re-certification approvals from New Mexico Environmental Department and Environmental Protection Agency for Columbus Closure Project characterization operations at SRS, NTS, and LANL, including the Offsite Sources Recovery Program.



SHIPPING CONTAINERS FULLY ENGULFED IN FLAMES COMPLETING THE BURN TEST REQUIREMENTS FOR TRUPACT-II SHIPPING CONTAINERS.



THE WASTE HOIST DRUM WAS SPECIFICALLY BUILT FOR THE WASTE ISOLATION PILOT PLANT. IT IS THE ONLY MINE HOIST IN THE U.S. THAT TRANSPORTS NUCLEAR MATERIALS.



ANOTHER VIEW OF THE WASTE HOIST DRUM AND MOTOR AT THE WASTE ISOLATION PILOT PLANT.

- Initiated work on TRUPACT-III, including purchasing of long-lead items, preparations for packaging and payload testing for Nuclear Regulatory Commission certification, and developing and analyzing safety documentation for the package.
- During 2005, initiated several significant security activities to allow the resumption and continuation of Classified Waste shipping campaigns. These included the recovery, enhancement and activation of the WIPP Intrusion Detection System, the upgrade of the WIPP facility from a Property Protection area to a Class "B" facility. In addition, the initial steps were taken to re-arm the WIPP protective force. Security Officers are now qualified as Security Police Officers II, and final re-arming activities are projected to be complete before the end of Calendar year 2005.
- The WIPP Management and Operating Contractor, Washington TRU Solutions, received recertification as a Voluntary Protection Program Star site, continuing its 10 year safety excellence achievement. WIPP was the first DOE facility to originally receive a Star and has successfully continued its safety excellence and leadership with best practices in significant safety areas such as issues management, lessons learned, as referenced by the DOE EH VPP Review Team in their recertification report. A Superior Star designation was also received for maintaining the recordable injury rate well below the industry average.
- The WIPP received the 19<sup>th</sup> consecutive Mine Operator of the Year award from the New Mexico Mining Association. The WIPP Mine Rescue Teams continue their international award winning characteristics always placing on or near the top in numerous competitions.
- On October 20, 2005, the Environmental Protection Agency published the Compliance Recertification Application (CRA) Completeness determination in the Federal Register. Formal notification was made to the DOE on September 29, 2005. Based on the WIPP Land Withdrawal Act, the Environmental Protection Agency should make a re-certification decision by March 29, 2006.
- The New Mexico Environment Department issued a draft permit to the WIPP Hazardous Waste Facility Permit dealing with implementation of Section 311 of the Energy and Water Development Appropriations for FY 2004, P.L. 108-137, and disposal of remote handled waste at the WIPP. This follows two notices of deficiencies and numerous interactions between DOE and the New Mexico Environment Department and stakeholders. Public hearings will start on March 8, 2006 with the final permit expected to be issued later in 2006.
- The Contact Handled (CH) Documented Safety Analysis (DSA) and CH TSRs were updated to include new hazard and accident analyses, selection of new design basis accidents and derivation of new preventive and mitigative controls.

The TSRs were revised to include new limiting conditions for operations and specific administrative controls. These changes were initiated as a result of reformatting the CH DSA and TSRs documents to be consistent with 10 CFR 830, DOE-STD-3009, and DOE-STD-1186. Implementation of the CH DSA and TSRs is scheduled to be completed in January 2006.

#### Activities Related to Implementation of Board Recommendations

The WIPP is committed to implementing the board's recommendations. As of December 2005, the WIPP has no overdue Board-related commitments or actions. The following is a summary of actions taken in 2005 to support DOE Environmental Management preparations to address Board recommendations:

- New specific administrative controls were incorporated into the recently updated WIPP CH DSA and TSRs documents, and these revised safety authorization documents also included revisions to enhance already existing specific administrative controls. These actions support the Department's implementation plan efforts addressing Board recommendation 2002-3.
- Assessments of (1) Work Planning and Work Control and (2) Feedback and Improvement at WIPP were performed and documented during December 2005 to support meeting Commitments 23 and 25 of the Department's implementation plan efforts addressing Board recommendation 2004-1.

- Appropriate sections of WIPP's two Non-Reactor Nuclear Facilities were listed as facilities: (1) requiring safety related ventilation system evaluations or (2) requiring non-safety related ventilation system evaluations pursuant to Commitments 8.6 and 8.8, respectively, of the Department's implementation plan for Board recommendation 2004-2.

#### **B. Idaho Operations Office (ID)**

##### Recommendation 2005-1, Nuclear Material Packaging (2005-1)

The INL Site has been deeply involved with addressing Board recommendation 2005-1, *Nuclear Material Packaging*. This recommendation has included the inventorying of all materials that should be included under this recommendation, developing a packaging criteria for this material, and developing a risk prioritization method to determine which packages should be repackaged to meet the new criteria. The risk prioritization method also will determine which packages need to be repackaged first. Upon completion of repackaging, a surveillance program will be implemented to monitor the packages condition, to ensure that it properly contains the contents to avoid spreading of contamination to workers and surrounding areas.

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

The INL Site Defense Nuclear Facilities have completed actions in support of Commitment 8.2 of the Secretary's response to the Board for Board recommendation 2004-2. Board recommendation 2004-2 was issued in response to the Board's concerns regarding design of defense nuclear



THE WASTE HOIST CONTROL ROOM AT THE WASTE ISOLATION PILOT PLANT.



AN IDAHO OPERATOR PREPARES THE EXCAVATOR FOR RETRIEVAL OPERATIONS AT PIT 4.



WASTE RETRIEVAL AT  
PIT 4 USING A TELE-  
HANDER.

facilities, which include systems, whose reliable operation is vital to the protection of the public, workers, and the environment. The Board has stated confinement ventilation systems are among the most important of such systems for protecting the public, and are generally relied upon as the final safety-class barrier to the release of hazardous materials with potentially serious public consequences. DOE-ID has participated in the development of the Department's formal response to the Board. Personnel from DOE-ID and the INL Site contractor have attended a DOE sponsored workshop at which confinement system review criteria and facility exclusion criteria were developed. The INL Site has completed confinement system evaluations using the facility exclusion criteria developed by the Department. The evaluation identified the nuclear facilities which will require a system review and the facilities that meet the categorical exclusion or no benefit criteria developed by the Department. DOE-ID will evaluate the confinement ventilation systems that were not excluded using the categorical exclusion and no benefit criteria.

#### Implementation of DOE-STD-1186-2004, Specific Administrative Controls

The INL Site completed initial training on DOE-STD-1186-2004 with nuclear safety professionals involved in the development, implementation, review and approval, and oversight of nuclear facility safety basis documents. Institutionalization of DOE-STD-1186-2004 into the contractor's Nuclear Safety Analyst qualification standard and the DOE's Technical Qualification Program has been completed. The INL Site continues to develop and

implement facility specific administrative controls in DSA reports and TSRs during the annual update process and in newly developed nuclear safety basis documents. Updated training is being developed based on the lessons learned from the annual update and review process. Complete implementation is expected for Defense Nuclear Facilities by June 2006. DOE Facility Representatives will perform verification surveillances.

#### Configuration Management of Vital Safety Systems

The INL Site has met all commitments to the Board that are required by the Board recommendation 2000-2 implementation plan. These included identifying all vital safety systems (VSS) at INL Site 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 VSS in a Defense Nuclear Facility. It is a top to bottom assessment that includes reviews by experts in areas such as Safety Analysis, Configuration Management, and Maintenance. Commitments 14 through 19 of the Board recommendation 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 VSS and given the responsibility to



WASTE RETRIEVED FROM  
PIT 4 THAT IS PACKAGED  
INTO 55-GALLON DRUMS.

ensure that all requirements for configuration management, maintenance, and safety analysis are met. This individual is qualified by work experience or education to hold the position. The INL Site contractors have established and implemented the System Engineer Program for the INL Site, while DOE-ID established a similar program for federal employees. The INL Site maintains a formal list of VSSs.

In August 2004, DOE-ID performed a review to evaluate progress by the Department of Energy, Richland Operations Office (RL) in developing and implementing a Safety System Oversight program. The results were documented in a final report identifying Noteworthy Practices and Opportunities for Improvement. A reciprocal review by DOE-RL was completed in September 2005. DOE-ID has established a significantly improved program including clearly defined roles, responsibilities, authorities and accountabilities, oversight expectations and a qualification process. DOE-ID Safety System Oversight line management demonstrates responsibility and ownership of the Safety System Oversight Program and its implementation to ensure safety in their nuclear facilities. Although the program is well documented, limited evidence was provided to demonstrate full implementation. The two most significant areas needing further implementation are the performance of assessments to evaluate the contractors System Engineer programs and the operability of VSS. DOE-ID updated and revised the Safety System Oversight qualification cards in 2005 and updated their program to be compliant with DOE M 426.1-1A,

### *Federal Technical Capability Manual.*

#### Recommendation 2004-1, Oversight of Complex, High-Hazard Nuclear Operations (2004-1)

The Board issued its recommendation 2004-1, *Oversight of Complex, and High-Hazard Nuclear Operations*, on May 21, 2004. In its recommendation, the Board noted concerns regarding a number of safety issues, including delegations of authority for fulfilling safety responsibilities, federal technical capability, CTAs, nuclear safety research, lessons learned from significant external events, and integrated safety management. The implementation plan defines the actions that the Department will take in response to this recommendation.

These actions fit into three broad areas:

#### Strengthening Federal Safety Assurance

DOE-ID supported the CTA as part of the 2004-1 recommendation by providing the CTA an information synopsis of oversight of nuclear safety for INL operations. In addition, the DOE-ID Oversight Program fulfills the requirements of DOE O 226.1, *Implementation of Department of Energy Oversight Policy*.

#### Learning from Internal and External Operating Experience

The Idaho National Laboratory Contractors are conducting assessments led by DOE-ID in the areas of Work Control under commitment 23 and Feedback and Improvement under commitment 25 in the DOE implementation plan. Site Actions Plans resulting from these assessments are due to DOE Headquarters in early 2006.



WORKERS  
PREPARING FOR  
WASTE RETRIEVAL  
OPERATIONS AT THE  
ACCELERATED  
RETRIEVAL PROJECT.



WORKERS PREPARE FOR  
WASTE RETRIEVAL  
OPERATIONS AT THE  
ACCELERATED  
RETRIEVAL PROJECT.

### Revitalizing Integrated Safety Management Implementation

Battelle Energy Alliance, LLC. and CH2M ♦ WG Idaho, LLC revised or developed their Integrated Safety Management System description documents in 2005 after becoming site contractors. Battelle Energy Alliance, LLC. is tasked with operating the Idaho National Laboratory. This revision to the Battelle Energy Alliance, LLC. ISM System included adding facilities formerly assigned to the DOE Chicago Operations Office and located at (formerly) Argonne National Laboratory West. CH2M WG Idaho is tasked with operating the Idaho Cleanup Project as part of the EM Program. Phase 1 and Phase 2 externally led implementation assessments will review both contractors for Integrated Safety Management System (ISMS) implementation in 2006.

### Human Performance

For FY05, the INL established and funded the Center for Human Performance. This Center has been providing support to numerous organizations including DOE EH, Energy Facility Contractors Group (EFCOG), Price-Anderson Amendments Act (PAAA), Office of Science, and Numerous Contractors. The Center also provided the Chairperson for the first annual DOE Complex Wide Human Performance Workshop held at Oak Ridge National Laboratory. Additionally, the Center provided the Chairperson for the EFCOG Human Performance Task Team. DOE HQ EH has been providing Train-the-Trainer session for all of DOE. The primary support and

instructor has been provided by the INL Center. Numerous contractors have and continue to contact the INL for Human Performance support.

The INL Center has appointed (while a national search for a full-time Director is underway) an Acting Director who is in charge of the INL Human Performance Institutionalization Plan. The plan includes a work break down structure, process description documents and human performance tools that the INL will use over the next several years. Among the tools listed are: a unified Behavior-Based Safety and Human Performance Program, Draft Human Performance Event Analysis Guide, Site Observation Reporting Tool, On-Line Human Performance Survey Tool, Cross-Cutting Training Forum, INL INPO Web Site, Observation and Coaching, Project Preview, Interactive Pre-job, Peer and Self Check Video, HU Fundamentals Course for Research and Development (R&D), Strong Nuclear Safety Culture Training, and Performance Based Leadership Program.

Current status of these tools and initiatives at INL include the following:

### Unified Behavior-Based Safety and Human Performance Program

During the last quarter of FY05 representatives from the Safety organization and the Center for Human Performance designed a set of three integrated courses to teach the fundamentals of behavior-based safety. The curriculum development and role out (pilot) is expected to be completed in the first quarter of FY06. The first course, behavior-based safety and Human Performance Integration will be a four-hour presentation that explains the relationship between behavior-



ENGINEERING TEST  
REACTOR STACK  
DEMOLITION AT THE  
REACTOR  
TECHNOLOGY  
COMPLEX.

based safety and human performance. The 2<sup>nd</sup> course is a behavior based safety concepts course, and the 3<sup>rd</sup> course is a behavior-based safety observation and feedback course that utilizes various aspects of the coaching and observation course previously developed.

#### Draft Human Performance Event Analysis Guide

This guide was developed with partial funding support from Pacific Northwest National Laboratory and was used to analyze events that had occurred at that site and then as it was being reviewed and piloted, used at the INL while conducting three event analyses. Each use has led to important improvements. Further pilot testing will be done in FY06.

#### The Site Observation and Reporting Tool

This is a web-based program that helps manage and store the data from field observations. Due to the reorganization and focus on consolidation, site observation and reporting tools use was limited in FY05 to collecting specialized information for the maintenance department relating to productivity and barriers preventing productive "wrench time." The INL has explored the possibility of adopting other similar tools produced by Energy Policy Research Institute and Savannah River Site to capture, trend, and analyze data.

#### On-Line Human Performance Survey Tool

This web survey tool was developed in FY04 and used extensively to survey most of the site workers during the spring or summer of 2004. The survey

assesses the maturity level of adoption of various key human performance principles and was modeled after INPO's Leadership Gap Survey. The results of the surveys conducted in FY04 were used in making recommendations and plans for FY05. However, with the change of contractor, most of the personnel and organizations previously surveyed were no longer part of the INL. During FY05 plans were made to re-baseline the remaining maintenance organization Operations & Maintenance Services (O&MS) as well as the Safeguards and Security and Engineering Divisions. The O&MS survey is scheduled for the first quarter of FY06 with others to follow as plans are finalized.

#### Cross-Cutting Training Forum

This is a web tool developed for the DOE training community, funded by the Office of Training and Human Resource Development (MA-1). The INL contracted with DOE-HQ to create this tool and finished a major revision in FY05, which greatly expanded its capability. The tool has been recommended for adoption by the Human Performance DOE Contractors and Federal workers for sharing instructional and other knowledge resources (networking). EFCOG and DOE HQ (EH-1) are currently considering this as a viable and cost-effective way of linking this community. Meanwhile, the INL has continued using this tool as part of its toolbox to minimize training costs and maximize training effectiveness.



DEMOLITION EXPERTS  
DETONATED CHARGES TO  
COLLAPSE A 250 FT.  
EXHAUST STACK AT THE  
TEST REACTOR AREA.

### Idaho National Laboratory Institute of Nuclear Power Operations Web Site

For several years as new information is posted on the INPO home site, we have been authorized to copy that information to our local Intranet and post it for internal use. This site has been very well maintained and used.

### Observation and Coaching Course

This four-hour classroom course is designed to help supervisors and managers get started on the right foot as observers and coaches. The course includes brief role-plays that help the future coaches learn to ask good questions rather than resort to telling those whom they are helping what to do. Ideal follow-up after the course is one-on-one on the job training. During FY05 approximately 150 individuals attended the observation and coaching training. As noted above, some of this course was extracted and used as part of the behavior-based safety observation course.

### Interactive Pre-job Brief Course

This two-hour classroom course introduces strategies and human performance tools that can be used to make pre-job briefs more interactive and effective. The course uses a 20-minute INPO video segment. During FY05 86 individuals received this training. The approach is becoming more widely understood and used. It is expected that during FY06 a significant portion of the INL workforce who could use this course and have not received it will be trained.

### Peer and Self-Check Video/Web-based Course

This was produced at the INL at the end of FY04. The initial intent was to distribute it for presentation at a regular staff safety meeting. However, with the contract changeover it was made available primarily through the web. 468 INL employees have taken the web-based course. This course reviews the purpose, importance, and basic process/principles of applying peer and self-checks. It is designed to enforce the value (safety and productivity) of applying peer and self-checks in any work environment. The setting is a group safety meeting discussing several incidents that had recently occurred.

### Human Performance Fundamentals Course for Research & Development

This was video-taped during FY04 and viewed by 78 individuals during FY05. This course focuses on those principles and concepts most relevant to employees engaged in scientific, technical and engineering work. The key principles of human performance are presented along with more detailed concepts related to human-system interface design, and memory and human information processing. These detailed concepts are especially applicable to office and laboratory work. In the class, a strong emphasis is placed on establishing a Just Culture.

### Human Performance Fundamentals Course for Security Police Officers

This course was presented during the third quarter of FY05. The course was specifically designed around the specific duties of a Security Police Officer.

More than 230 have attended the training. The evaluations from the Officers were overwhelmingly positive. With the training close to completion, Security is now developing an aggressive implementation plan.

#### Strong Nuclear Safety Culture Workshop

This full-day workshop was created and implemented during the last quarter of FY04 and then continued during the first two quarters of FY05. It reviews and reinforces the principles presented in INPO's Draft Nuclear Safety Culture Workbook. The workshop ends with candid discussion and a comprehensive set of organizational strengths and weaknesses that are presented to the appropriate facility manager. Approximately 400 employees working at the Reactor Technology Complex participated in this workshop while it was being offered. The data collected through the discussions incorporated into the workshop were used extensively by management and an external Readiness Review reported excellent progress in several aspects covered by the workshop.

#### Performance-Based Leadership Program

This program was completed by 26 INL leaders. The thrust of this overarching program is improving business results through changes in leadership behavior. Leadership, at a basic level, involves creating business success by guiding and motivating others to want to do and to do the right things. The INL's Performance-Based Leadership (PBL) Program introduces tools and concepts that are actively put

into practice in a combined knowledge-based exercise, and role playing environment that teaches these concepts and how to use them in the work environment. As implemented before the contractor turn-over, the PBL Program is supported by and integral to the Human Performance Fundamentals and Coaching and Observation courses.

#### **C. Livermore Site Office (LSO)**

During 2005, there was significant progress implementing the actions for completion of the following Board recommendations.

Implementation on actions associated with Board recommendation 2000-2, *Configuration Management, Vital Safety Systems* were:

- Response to Board letter dated November 3, 2004, concerning implementation of Configuration Management at LLNL;
- December 2004, "DOE; NNSA; Livermore Site Office (LSO) Evaluation of LLNL; and Configuration Management in Building 332;
- March 2005, "DOE/NNSA LSO evaluation of LLNL configuration management in Buildings 331, 334, 239, 251, and Radioactive and Hazardous Waste Management (RHWM)";
- May 2005, "Corrective Action Plan for Configuration Management in Building 332";
- September 2005, Corrective Action Plan for Configuration Management in Buildings 239, 331, 334 and RHWM";



**MORE THAN 600 DRUMS OF WASTE WERE PACKED UP AT THE LAB AND SHIPPED TO THE WASTE ISOLATION PILOT PLANT.**

- September 2005, "Nuclear Materials Technology Program Configuration Management Resource-loaded Schedule"; and
- October 2005, "Joint Review of Vital Safety Systems in Building 332".

Implementation on actions associated with Board recommendation 2002-1, *Quality Assurance for Safety Related Software*:

- LLNL's SQA implementation plan is being developed and is due to LSO in January 2006.

Implementation on actions associated with Board recommendation 2002-3, *Design, Implementation and Maintenance of Administrative Controls*:

- Due to the delays in approval of the B-332 DSA, specific administrative controls implementation reviews were conducted for the existing safety basis.

Implementation on actions associated with Board recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations* :

- An LSO 2004-1 implementation plan has been developed. Both work planning/control and the feedback and improvement action plans are in development and on time.

Implementation on actions associated with Board recommendation 2004-2, *Active Confinement System*:

- LSO has completed its initial evaluation of each of its nuclear facilities to determine at which facilities confinement ventilation systems may be appropriate.

Implementation on actions associated with Board recommendation 2005-1, *Nuclear Material Packaging*:

- Met all milestones/deliverables to date listed in the Department's Implementation Plan; and
- On schedule to complete first draft of Packaging Manual (due January 2006).

As a result of issues identified by LSO and OA-40, Building 332 (B-332, the Plutonium Facility) stood down during January 2005. Issues were identified and resulted in several TSRs violations and Potential Inadequacies to the Safety Analysis. LLNL developed a resource loaded project plan with priorities and milestones to better define the workload and commitments for B-332. In addition, a Management Self Assessment was performed as well as a Readiness Assessment prior to standing up operations. The Board was briefed during August 2005 on the stand-up of B-332. On October 10, 2005, LSO approved the resumption of reduced activities for B332 effective October 11, 2005. Details were discussed during meetings with the Board at LLNL on October 19, 2005.

On September 1, 2005, LLNL submitted a resource loaded schedule to the LSO that addresses configuration management upgrades in Nuclear Material Technology Program facilities. Development of the schedule was a commitment LLNL made in response to the Board's letter on the matter dated November 3, 2004. The Board identified an apparent lack of an adequate CM program for the highest-hazard nuclear facilities at LLNL. The LLNL Nuclear Materials Technology Program (NMTP) developed the schedule for all NMTP nuclear facilities

using the information obtained from detailed reviews conducted earlier this year. In its submittal, LLNL indicated that once the NMTP CM program is fully implemented, processes and procedures will be in place to effectively manage CM of procedures, drawings, and equipment. NMTP has put into place alternative methods (e.g. management systems) in place to maintain the CM program until full implementation is achieved.

LLNL is resubmitting for LSO verification the B332 DSA and TSRs on December 19, 2005, which will include resolution to LSO comments on the draft. LSO will issue a Safety Evaluation Report detailing the results of the review.

The LSO annual assessment of contractor performance for improvements associated with implementation of 10 CFR 830, Subparts A and B, rated LLNL performance as satisfactory. However, the Nuclear Safety portion of this measure was rated unsatisfactory. LLNL revised their USQ procedure and changed leadership of their Nuclear Safety Program which has resulted in some improvements. However, several issues were identified by OA-40 and LSO associated with implementation of the Lab's USQ program. USQ program progress overall has been slow by LLNL. Resolution of DOE comments for Buildings 332, 331, and 334 safety basis submittals has been slow. Planning for safety basis amendments needs to be improved. Building 251 was successfully downgraded from Hazard Category 2 to Radiological status in April 2005.

LLNL shipped off-site almost 700 drums of TRU waste during Calendar Years 2004 and 2005, in conjunction with the TRU waste certification program. Currently there are two active nuclear segments within the RHWM facilities.

#### **D. Los Alamos Site Office (LASO)**

The Los Alamos Site Office (LASO) manages LANL a multi-discipline facility with 27 nuclear facilities (11 of which are newly-categorized Nuclear Environmental Sites).

Following the suspension of operations in 2004, LASO and LANL have made progress in safety management and compliance with DOE directives which has resulted in the following operational and safety accomplishments during 2005:

##### Contractual Performance Measures

LANL's mission performance was evaluated as "Outstanding" by DOE for FY05. LANL's operations performance was upgraded to "Satisfactory" by DOE in FY05 as a result of substantial improvements in a number of functional areas.

##### Resumption

Laboratory operations were suspended on July 16, 2004 and were resumed by February 1, 2005. The resumption process identified approximately 350 pre-start findings and over 3,000 post-start findings. A Corrective Action Review Board was established and chartered to validate the integrity of local corrective action plans from all Divisions at the Laboratory with LASO concurrence. 1,227 of 1,669 local corrective actions identified by



AREAL VIEW OF LOS ALAMOS NATIONAL LABORATORY CENTRAL COMPLEX.



WASTE DRUMS ARE CHECKED IN PREPARATION FOR OFF-SITE STORAGE.

Divisions have been closed as of the end of calendar year 2005.

#### Operational Efficiency Project

The Operational Efficiency Project will address many of the institutional post-start findings identified during the resumption reviews. The Operational Efficiency Project is managed via an Operational Efficiency project execution plan utilizing a formal work breakdown structure. The project includes 8 main elements: safety, quality assurance, software quality assurance, conduct of engineering, safety basis, operations, environmental risk management, and training. The project is a multi-year program which could systematically reduce a broad spectrum of LANL safety risks and address several issues raised by the Board. As of the end of 2005, 92 of 125 milestones have been completed.

#### Enterprise Project

The Enterprise Project is an integrated administrative procurement and human resources management system to be implemented in four phases and completed by the end of FY06. NNSA has approved the scope and baseline. Two phases of the project were completed and four successful releases were executed in FY05.

#### Security Posture

The security posture at LANL has improved over this year. Examples include the completion of the Los Alamos National Laboratory's Technical Area (TA-18) early move project, thereby reducing the vulnerability of nuclear materials, and the completion of an upgrade of the

security posture of the Plutonium Facility.

#### Contractor Assurance System

LANL submitted its Contractor Assurance Description Document to LASO, which after review, was forwarded to the Administrator of NNSA.

#### Quality Assurance Program

The Quality Assurance Program was formally established this year and the LANL Quality Assurance Program and implementation plan was approved by NNSA.

#### New Mexico Environment Department

The Consent Order was finalized this year which encompassed agreement to accelerate cleanup by approximately 15 years. Additionally, all FY05 stipulations were met.

#### Transuranic Waste

Shipments resumed in April after an 18 month suspension. Success was attributed to partnering with the DOE Carlsbad Field Office WIPP. 850 drums were sent to WIPP this year.

#### Price Anderson Amendments Act

LANL has improved at self-identification and reporting of issues. The PAAA system has become one of the most effective systems at LANL for identifying and tracking closure of nuclear safety issues.



LOS ALAMOS NATIONAL LABORATORY PLUTONIUM FACILITY

## Integrated Safety Management

The Plutonium Facility initiated Human Performance Improvement training in a first step at laying a strong foundation around the principles and key concepts concerning human performance. This class is a derivative of the INPO Human Performance Improvement program.

## Activities Related to Board Correspondence and Recommendations

LASO is committed to implementing the Board's recommendations. The following is a summary of actions taken in 2005 to implement the Board's recommendations:

LANL has implemented a viable system engineer program in support of Board recommendation 2000-2. Significant progress has been made in the institutionalization of engineering practices consistent with Board correspondence. These programs help ensure proper configuration management and operability of safety systems.

LANL completed a comprehensive assessment of the 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.

LANL has implemented a comprehensive program for the stabilization of nuclear materials in response to Board recommendation 94-1 and 2000-1.

LANL completed an emergency exercise demonstrating marked improvement in response activities and EOC coordination with NNSA, LANL, and Los Alamos County compared to previous years. Emergency management has been an area of identified concern by the Board.

LANL developed and began implementation of a comprehensive Fire Protection Program Plan intended to continue to reduce the fire risk in response to a Board letter.

## Los Alamos Site Office oversight of Los Alamos National Laboratory

LASO participated in all aspects of the restart of Laboratory operations including the Readiness Review Board and the Corrective Action Review Board.

LASO completed a comprehensive assessment of the Laboratory's nuclear facility training program. In response, LANL developed a comprehensive, integrated corrective action plan that addresses findings from five other training assessments conducted between 2003 and 2005. The institutional training corrective action plan is being managed through the operations efficiency project.

LASO hired a Fire Protection Engineer this year to address fire protection and response weaknesses at LANL.

Secretary of Energy Bodman announced on December 21 that Los Alamos National Security, LLC has been selected to be the management and operations contractor for the Los Alamos National Laboratory in New Mexico. Los Alamos National Security, LLC is a limited liability corporation made up of Bechtel



LOS ALAMOS NATIONAL  
LABORATORY NATIONAL  
SECURITY SCIENCES  
BUILDING.



ENVIRONMENTAL  
MONITORING AT LOS  
ALAMOS NATIONAL  
LABORATORY

National, Inc., the University of California, BWX Technologies, Inc., and the Washington Group International, Inc.

### **E. Nevada Site Office (NSO)**

During 2005, 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.

#### Safety Bases

In 2005, the following NTS nuclear facilities DSAs and TSRs were approved by NNSA and/or the Department pursuant to 10 CFR Part 830, subpart B:

- G-Tunnel<sup>1</sup>
- Krakatau Sub Critical Experiment (SCE)
- Down Draft Table Addendum and DAF DSA Annual Update
- RadNuc CTEC Preliminary Documented Safety Analysis (PDSA)
- Area 3 Radioactive Waste Management DSA Annual Update

Startup authorization for the DAF as a Category 2 nuclear facility was received in August 2005. In September 2005, the scheduled TA-18 Early Move shipments were completed from Los Alamos to the NTS.

The Kerenei Confirmatory experiment for the Krakatau SCE was conducted in September at the U1a Complex. The Krakatau CRA was completed in October 2005. The corrective action plan has been developed and items are being closed out in preparation of the NSO CRA scheduled to begin in January 2006.

The Centaur Confirmatory experiment for Unicorn is scheduled for December 2005.

A Contractor ORR for the down draft table was completed in November and the NSO ORR began in December 2005. Hot operations are scheduled for the first quarter CY 2006.

#### Board Letters Specific to the Nevada Site Office

NSO received letters from the Board on Electrical Safety and Lightning Protection including G-Tunnel safety basis implementation (March 28, 2005) and letters related to the DAF infrastructure (November 7, 2004; March 18, 2005 and November 28, 2005). A response to the Electrical Safety and Lightning Protection letter was submitted on July 13, 2005. NSO developed a Site Wide Lightning Detection and Protection Order that is in the final stages of approval. The response included an ARL/SORD study comparing the lightning detection system used at the NTS with several other sites including Pantex and Cape Canaveral, a G-Tunnel prioritized list of control implementation and a draft NTS Site-Wide Lightning Detection and Protection Order.

Several responses to the Board issues related to the DAF for seismic and concrete analysis were provided (May 16, 2005; June 16, 2005; and



STEMMING OPERATION AT THE NEVADA TEST SITE.

December 2005—pending). There has also been continued dialogue via conference calls, visits, document submittals and emails to ensure NSO adequately addresses the DAF concerns presented by the Board.

In the November 3, 2004 letter from the Board and a subsequent follow on letter on November 28, 2005, the Board expressed concern over the status of Safety Management Program Assessments for the DAF. In December 2005, five Safety Management Program assessments were initiated. The scopes of the assessments were Authorization Basis Flow Down, Maintenance, USQ, Systems Engineer Program, and High Explosive Safety.

#### Environmental Management

The NTS TRU waste program made significant accomplishments in CY 2005. Mobile characterization units for TRU waste were demobilized in August 2005 and characterization of legacy TRU waste drums stored at the NTS was completed in September 2005. All legacy TRU waste drums meeting the WIPP waste acceptance criteria were shipped offsite by November 2005 to the WIPP.

A DSA/TSRs for the Clean Slate II and III environmental restoration sites was submitted to the SBRT for final review in July 2005. The SER is expected to be approved in the first quarter CY 2006.

Two annual updates for the NSO Environmental Management were completed in CY 2005. The annual update of the DSA/TSRs for the Area 3 Radioactive Waste Management Site was completed in February 2005 and the SER was approved in March

2005. The annual update for the Area 5 Waste Management Complex was submitted to NSO in October 2005 and the SER is expected to be approved in the first quarter CY 2006.

#### Training and Qualification of Contractor Personnel

NSO provided oversight of the contractor Technical & Qualification Programs through closure of corrective actions for the DAF and LANL Subcritical Experiment Program that were identified during 2004 assessments. A DOE-STD-1070-94 assessment of the LANL program was conducted in December 2005 with Board staff observing. The DAF program will undergo the same level assessment in February 2006. Corrective actions were tracked to completion, and full programmatic assessments of these and other NTS Technical & Qualification Programs will be conducted on an accelerated schedule - more frequently than the three year requirement as recommended during the NSO Biennial Review of Nuclear Safety Performance, conducted by the Chief, Defense Nuclear Safety, during October 2005.

#### SQA, Recommendation 2002-1, Weapons Laboratory Support of the Defense Nuclear Complex (2002-1)

SQA was reviewed by the NSO in a major assessment conducted in May 2005 in response to HQ requirements and SQA Implementation Plan requirements. Phase II SQA review was held at NSO and the Board was present to watch the SQA Assessment Team conduct oversight.



IRONWORKERS AND  
LAB TECHNICIANS  
LOWERING THE  
EXPERIMENT RACK  
INTO THE CANISTER.

NSO's SQA Functional Manager successfully completed the Technical Qualification Program in the area of Safety SQA. The NSO SQA Functional Manager and the Senior Quality Assurance Functional Manager are being trained and are scheduled to complete full qualifications early in CY 2006.

NSO committed to conducting several assessments in 2005, all of which were completed as scheduled. A SQA Assessment for Safety/Analysis was performed for Bechtel Nevada, Lawrence Livermore National Laboratory, and Los Alamos National Laboratory. In addition, a Quality Assurance Assessment for TA-18 Early Move to the DAF-Phase I was performed.

Specific Administrative Controls, Recommendation 2002-3, Design, Implementation, and Maintenance of Administrative Controls (2002-3)

Board recommendation 2002-3 implementation plan commitments for NSO were completed in 2005. Activities included development of a Specific Administrative Control training course specific to NTS. Two classes were held and participation of NSO staff and managers was high. The first training course was observed by a Board staff member.

Nuclear Materials Storage and Handling, Recommendation 2005-1, Nuclear Material Packaging

Board staff reviewed storage and handling activities of nuclear materials at the NTS in August 2005. A follow up video teleconference was conducted in November 2005 to provide additional information

regarding inventory and nuclear hazard categorization of the Area 12 Core Library. Additional inventory information requests for the Advanced Spectroscopy Portal were provided in December 2005. No concerns have been identified.

Board Staff Site Visits

Board and staff members conducted numerous reviews at the Nevada Test Site in 2005. These included reviews and observations of the following topics:

Board Reviews:

- ISM (March)
- DAF Structure/TA-18 EM/Safety Basis/Start up/Safety Management Program/Criticality Experiment Facility and G-Tunnel Safety Basis and Disposition (May)

Board Staff Reviews:

- Electrical Safety and Lightning Protection (January)
- DAF Structural Review of Cracks and Leaks (February)
- Results of mapping leaks and cracks at DAF and the update of the probabilistic seismic hazards assessment (April)
- G-tunnel to discuss and review electrical safety systems and lightning protection systems at G-tunnel (May)
- DAF Structure - Concrete Expert (July)
- Nuclear Material Storage and Handling 2005-1 (August)
- Safety Management Program Assessments (September)

- G-tunnel for a structural and seismic assessment (September)
- Fire protection review of defense nuclear facilities (November)
- Observe the NNSA ORR for Sub-Critical Assembly, Radiography & Downdraft Table (SCAR'D) (December)

Observations:

- Observe the 60% Final Design Review for the Criticality Experiments Facility Project (December)
- Observe the NNSA Training and Qualification review for LANL subcritical experiments (December)
- Disposition (March)
- PDSA review for the Criticality Experiment Facility Project (March)
- Training session on Specific Administrative Controls (March)
- Comments of NNSA SBRT review of the PDSA for the Criticality Experiment Facility at DAF (April)
- ORR for the TA-18 Early Move Material at DAF (May)
- Disposition (May)
- Safety Evaluation Panel for Krakatau DSA (June)
- Criticality Experiment Facility PDSA (June)
- Disposition (August)
- DAF Emergency Exercise (September)
- Disposition (September)
- CRA for Krakatau (September)
- 30% Criticality Experiment Facility Project final design review (September)
- Containment Review Panel meeting for the Unicorn experiment (September)
- Recommendation 2004-2 workshop at NSO (October)
- Unicorn Containment Review Panel (CRP) tour and meeting (October)

A staff review of the fire protection and Criticality Experiments Facility controls at the DAF is scheduled for January 2006 as a continuation from the November review.

Facility Representatives

The NSO Facility Representatives provided support and interacted with the Board representatives and Board members in CY2005. The Facility Representatives supported the following areas related to Board visits:

- LANL Resumption Review (January)
- TA-18 Early Move Phase I ORR (January)
- Electrical Safety and Lightning Protection Review (January)
- SQA Phase II Assessment (May)
- Facility Representative Annual Conference (May)
- QA Roadmap Meetings (May, June)
- Kerenci Confirmatory SCE (September)
- NTS Fire Suppression and Protection Review (November)

Specific interactions by the Facility Representatives with the Board included:



BUILDING 3019  
COMPLEX AT OAK  
RIDGE NATIONAL  
LABORATORY

- Participation in tours of the U1a Complex to understand the subcritical experiment program and to review Kerenei operations and placement
- Technical support for the Fire Suppression and Protection Review at the G-Tunnel
- Technical support for the Fire Suppression and Protection Review at the U6c Complex which also included a basic review of the subcritical program including the Centaur in the 4<sup>th</sup> Quarter of CY 2005 and Unicorn SCE scheduled for the first quarter CY 2006.
- Technical support and a tour of the Area 5 Radiological Waste Management Complex.
- Technical support and a tour of the JASPER gas gun operations and primary target chamber building during the Fire Protection Review.

#### 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 FY05 Annual Report to the Manager, NSO identified four issues addressing: ISMS and Environmental Management multi-organization implementation matrices; an NSO directive on balanced priorities; a minority opinion process; and a Criteria Review and Approach Document library to improve assessment depth and breadth. All four

corrective actions resolving the issues were completed. The report also identified four new site-wide issues: ISMS and EM implementation evaluation; an expanded balanced priority directive; an enhanced annual ISMS self-evaluation using the continuing core requirements recommended in DOE G 450.4-1, *ISM Guide*.

#### **F. Oak Ridge Operations Office (OR)**

##### Integrated Safety Management System

- Completed successful reviews to demonstrate continued improvement in the implementation of effective ISMS. This included a review of the Federal ISMS program by a team external to Oak Ridge Operations composed of DOE and contractor subject matter experts.
- Added five additional facility representatives to enhance the Federal oversight of EM facilities.
- Achieved significant improvements in EM performance metrics as compared to 2004: TRC (24%), DART (42%), radioactive material contaminations (54%), and transportation events (down to 1 from 12 in 2004).
- Significant improvements to the EM Waste Management and Transportation Program including:
- Clarification and communication of Waste Management and Transportation roles and responsibilities.
- Enhanced Waste Management and Transportation planning through use of Waste Management critical items

checklist and weekly project manager meetings.

- Established consistent subject matter expert review of subcontractor plans.
- Established subcontractor Transportation personnel as “key” positions to ensure appropriate level of competence in subcontractor organizations.
- Established Waste Packaging Specialist position and deployed Waste Management and Transportation personnel to the projects.
- Increased Waste Management and Transportation staffing level by over 500%.
- Established a single transportation subcontract for short-haul and long-haul waste transportation.
- Broadened the Waste Certification Program to all waste streams across the Bechtel-Jacobs Corp.
- Revised Waste Management and Transportation program documents to ensure uniformity and increased rigor of all elements of Waste Management and Transportation irrespective of disposal outlet.
- Increased rigor of oversight and frequency of assessments, including documented oversight through the use of checklists to ensure adequate flowdown and implementation of requirements.
- Established nine Waste Management and Transportation training modules with over 350 attendees during FY05.

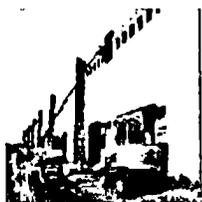
- Bechtel-Jacobs Corp. implemented a People Based Safety program on three of the Oak Ridge projects: K25/K27 Decontamination and Decommissioning, East Tennessee Technology Park (ETTP) decontamination and decommissioning, and Melton Valley, during FY05.
- Bechtel-Jacobs Corp. has continued the Safety Leadership Workshops and has trained 447 Safety Leaders since this effort was initiated in July 2004.
- During FY05, Bechtel-Jacobs Corp. completed a USQ Determination screen or evaluation of all company-level procedures that were not exempted by DOE.
- Bechtel-Jacobs Corp. has identified the environmental objectives and targets for the Environmental Management System (EMS) to align with the Accelerated Clean-up Project activities planned at the Oak Ridge Reservation through 2008. Bechtel-Jacobs Corp. has integrated the EMS into the approved ISMS and has sent an EMS declaration letter to DOE-ORO.
- The revision of the Bechtel-Jacobs Corp. work control procedure was completed. The new procedure became a requirement for all projects and was flowed down to all Bechtel-Jacobs Corp. subcontractors. Some of the procedure enhancements include:
  - More consistent and prescriptive work planning process.
  - Standardized work planning documents.



CLEANUP WASTE ARRIVING FOR ON-SITE DISPOSAL AT THE OAK RIDGE ENVIRONMENTAL MANAGEMENT WASTE MANAGEMENT FACILITY.



REMIEDIATION AT SOLID WASTE STORAGE AREAS ON THE OAK RIDGE RESERVATION.



REMOVAL OF TRANSITE SIDING AT THE K-25 BUILDING.

- Better upfront integration of engineering and radcon into the characterization and hazard analysis work process.
- Worker involvement and feedback requirements clearly stated.
- Implementation of the Safety Task Analysis Risk Reduction Talk card on all projects. This serves as a final reminder of all potential hazards that may be encountered on the task.
- The radiological work control process was integrated into the company work control process to ensure early radcon input to work planning involving radiological hazards.

#### Other Activities

- The ETPP Three-Building Decontamination and Decommissioning Project was completed in September 30, 2005. The project completed the removal and permanent disposal of all contaminated equipment and material totaling over 159,000 tons from the three large gaseous diffusion buildings K-29, K-31, and K-33.
- Hazardous Material Abatement removal and disposition from the ETPP K-25 Gaseous Diffusion Building was completed on September 30, 2005.
- Excess Material Removal and disposition from the ETPP K-25 and K-27 Gaseous Diffusion Buildings was completed.
- Initiated de-fueling activities for the Molten Salt Reactor Experiment Facility. Required removal of uranium from one of three tanks has been completed. After completion



CONSTRUCTION IN THE INTERIOR OF THE SPALLATION NEUTRON SOURCE AT THE OAK RIDGE NATIONAL LABORATORY.

- of uranium stripping activities, residual salts will be transferred to appropriate canisters for disposal. These activities are scheduled for completion by September 2006.
- Shipped over 2,850 uranium hexafluoride cylinders from ETPP to the Portsmouth Gaseous Diffusion Plant in Ohio. In addition, three out of the six ETPP cylinder yards have been emptied, and two have been formally closed.

### **G. Office of River Protection (ORP)**

#### Status of Construction of Waste Treatment and Immobilization Plant

Bechtel National, Inc. has been in the process of developing an interim WTP project baseline and a revised estimate at completion which has required a significant portion of their project management resources. As a result, August 2005 is the latest project performance data with regular monthly performance reporting, but reporting will begin again the first quarter of Calendar Year (CY) 2006. WTP site construction forces have installed approximately 177,780 cubic yards of concrete (59 percent complete), 9,795 tons of structural steel (26 percent), 452,220 pounds of heating, ventilation, and air conditioning duct (10 percent), and 200,660 lineal feet of cable and wire (3 percent). Engineering design is 64 percent complete based on earned hours against the most recent estimate at completion. Construction is 30 percent complete based on quantities installed. Due to uncertainties in the final cost of the project, in August, Bechtel National Inc. was directed to develop a revised estimate at completion for the project. This effort

will result in a new projected cost for the project and is expected to be completed in mid 2006. Also, due to reduced FY06 funding, estimate at completion activities, and the need to resolve technical issues such as the application of the revised seismic criteria, PT Facility and HLW Facility construction activities will be severely reduced until the summer of 2006.

Through October 2005, the PT Facility had completed 100 percent of first level walls, 98 percent of second level walls, 95 percent of third level walls, 24 percent of the floor slabs and over 75 percent of the structural steel up to the 56 foot elevation. Twenty-four vessels were also installed in inaccessible "black" cells in the PT Facility during the year. Through the end of CY 2005, the HLW Facility completed all basement walls, and placed eighteen 0 foot slabs and fifteen +14 foot walls. Also, three cell wall modules were delivered. The Low Activity Waste (LAW) Facility completed the +28 foot elevation concrete slabs and 85 percent of the +48 foot elevation slabs, and 95 percent of the structural steel was completed for the main building. Also, all fourteen process cell vessels have been placed in the facility along with the turntables and elevators in the melter pour caves. Concrete slab placements for the Analytical Laboratory Facility are on-going, the maintenance room and waste storage concrete walls were placed, and rebar and embeds for the fourteen hot cells are being installed. The Balance of Facilities group placed the foundation and slab for the chiller compressor plant and is currently installing the equipment and piping. In addition, the concrete slabs were placed for the important-to-safety switchgear

buildings. The water treatment building is constructed and is ready for equipment installation. Finally, significant construction progress was made on the cooling towers, main switchgear building, steam plant, process/potable water tanks, fuel oil facility, and the non-radioactive liquid disposal system tanks.

#### Authorization Basis Maintenance Activities

Forty AB amendment requests were approved in 2005. One was disapproved (proposed tailoring of training Order DOE O 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*). The requests that were approved largely completed the reclassification of structures, systems, and components at the WTP into the categories defined in 10 CFR 830. The reclassifications also reduced and removed engineered safety features that were not required to ensure protection of the public per 10 CFR 830.

#### Implementation of Revised Ground Motion

The seismic design basis for the WTP was revised as a result of the investigations reported in Pacific Northwest National Laboratory-15089, *Site-Specific Seismic Site Response Model for the Waste Treatment Plant, Hanford, Washington* in February 2005. This revision resulted in new design spectra for the WTP that were approximately 38 percent greater (horizontally) than the previous design spectra in the 4-6 Hz building frequency range, and 14 percent (horizontally) greater at high frequencies (with comparable increases in the vertical spectrum). The WTP



AERIAL VIEW AT THE  
WASTE TREATMENT  
AND IMMOBILIZATION  
PLANT.

project was directed to incorporate the revised spectra as the seismic design basis and to implement it in the WTP design while minimizing the impact to the project. Installation of irreversible structures, such as concrete walls and slabs were halted, except on a case-by-case basis with Office of River Protection (ORP) approval. Bechtel National Inc. was also directed to develop a bounding Interim Seismic Criteria to be used to continue with the release of structures and components for installation until the dynamic analysis of the facilities was completed. The new dynamic analysis generated revised facility loads and new structural responses for equipment and piping systems. The Interim Seismic Criteria and its implementation were reviewed by the DOE Peer Review Team (PRT) and the Board and found to be satisfactory. Further, the dynamic analysis incorporating soil-structure interaction for the PT and HLW Facilities was completed in September. Redesign activities for equipment and piping and other distribution systems have been initiated using the revised structural responses. Finally, Bechtel National Inc. was directed to develop rationales for eliminating "conservative" design parameters in order to reduce the impact from the seismic load increase on the existing design. The items considered for the reduction of conservatisms were: a) use of more accurate analysis for the accidental torsion loadings; b) use of inelastic absorption factors,  $F_{\mu}$ , for the structures and components; and c) modified approach for the American Concrete Institute thermal load in combination with seismic loads for the design of concrete structures.

In response to Board concerns that the mesh size in the finite element models for the static analysis of the facility structures was not fine enough to accurately analyze the facilities, the WTP Project acquired new software, SAP 2000, with better capabilities to replace the existing GTStrudl software. The new software incorporates finer mesh size modeling of the facilities. Facility static models have been updated in the new software with finer (a minimum of 3x3) mesh refinements, current facility and load configurations, and the results of the revised dynamic analysis. Efforts are currently under way to complete the static analysis using the updated models. The PRT, an independent review team from U.S. Army Corps of Engineers, and the Board reviewed the resolution of all pending issues and applicable incorporation in the Structural Design Criteria. Two remaining open issues involve the applicability of the modified approach for the thermal and seismic load combination if there is fatigue due to high thermal load cycles and the immaturity of the approach to steel design that is still being developed. It is anticipated that the project will issue the first concrete design calculation with the revised ground motion in early CY2006.

#### Office of River Protection Structural Peer Review Team

The PRT completed design reviews throughout the year to ensure validity of the Bechtel National Inc. design of facility structures in compliance with the project design criteria and national Codes and Standards. Since the establishment of the Revised Ground Motion in early 2005 and to ensure the soundness of the calculations, ORP had

designated the PRT as an independent external reviewer of the concrete placement calculations performed to the Interim Seismic Criteria that incorporates the Revised Ground Motion. In addition, the PRT participated in the review of the Bechtel National Inc. resolution of technical issues raised by the PRT and the Board staff.

#### Office of River Protection Equipment Peer Review Team

Due to potential impacts on the design of facility equipment, ORP assembled an external independent Equipment PRT. The Equipment PRT will ensure the validity of the Bechtel National Inc. design of equipment, piping, and other distribution systems incorporating the Revised Ground Motion. The initial review was performed in October 2005 and recommendations were made to improve the design criteria and the design calculations.

#### Hydrogen Release through Pulse Jet Mixing and Air Sparging

In early FY05, the WTP Project installed a scaled pulse jet mixing (PJM) hybrid mixing system in a half-scale lag storage vessel in order to confirm that baseline operating parameters and normal vessel operations are adequate, and to demonstrate post-design basis event vessel operations and near term accident response scenarios were sufficient to safely mitigate gas holdup and release. The final two reports, documenting the half-scale Lag Storage test results, and an overview of the entire PJM program are scheduled for release early in 2006.

Three other PJM-related testing programs are in progress: (1) internal PJM mixing testing is complete and analysis of the results is in progress with initial results expected in early 2006; (2) testing to determine instrument sensitivity, particularly the pressure sensors, is expected to be completed in mid 2006, and will confirm the ability to detect the pressure change characteristics needed for PJM operation control; and (3) a series of small tests is being performed at Savannah River Nuclear Laboratory to verify that the anti-foam added due to sparging the non-Newtonian tanks will not increase the gas hold-up in the vessels. Test results are expected in the summer of 2006.

#### Hydrogen Generation, Retention, and Release

In early FY05, ORP directed Bechtel National Inc. to assume solids from DST 241-AY-102 as characterized in the process flow model (TFCOUP, Rev. 5a) as the most limiting fccd to the WTP and to modify the Design Basis accordingly. This direction was provided to reduce hydrogen generation rates in the waste delivered to the WTP and to expedite the refinement of the hydrogen generation calculation to support continued plant design and construction. In response, Bechtel National Inc. revised the hydrogen generation rate calculation and the times, to the lower flammability limit for the WTP hydrogen producing vessels. In order to verify the acceptability of the results, ORP formed a Design Oversight Team to perform a review of the revised calculation. A draft oversight report that identified thirteen proposed open items has been developed. Prior to finalizing the



ANALYTICAL  
LABORATORY AT THE  
OFFICE OF RIVER  
PROTECTION.



PRETREATMENT  
FACILITY HOT CELL  
AT THE OFFICE OF  
RIVER PROTECTION

calculation and using it in the design process, Bechtel National Inc. will have to address and adequately close these open items. Assuming the revised calculation is eventually accepted, and because of higher potential hydrogen generation rates than those assumed in this ORP direction, the solids of DST 241-AZ-101 will have to be blended with other tank farm solids prior to delivery to the WTP to ensure the feed is within the revised feed specification.

#### Hydrogen Accumulation in Pipes and Ancillary Vessels

Bechtel National Inc. has completed a systematic review of the WTP design in order to identify locations in which hydrogen could accumulate. The locations are in addition to the primary process vessels, in which the hydrogen build-up is mitigated through the use of spargers, PJMs, and air sweeps of vessel headspaces. A systematic review of the potential locations for hydrogen accumulation in pipes and ancillary vessels was performed. Similar locations were grouped and analyzed; e.g., the PJM tubes, waste and transfer piping such as recirculation loops, and heat exchangers, including vessel cooling jackets. Generic solutions are under development for each group including controlling solids content, periodically sweeping the vessel, or possibly allowing detonation if adequate safety margins can be demonstrated. The final generic solutions will be formally submitted to ORP for review and approval in 2006. In parallel, Bechtel National Inc. has begun identifying the necessary facility design changes, which include the addition of up to 80,000 linear feet of piping in the PT Facility.

#### Black Cell Design Review Oversight

In the summer of 2005, ORP completed the verification of closure of all thirty-six open items and recommendations from the Black Cell Design Oversight Review performed in 2004. In addition to verifying, Bechtel National Inc. had satisfactorily addressed the open items and recommendations, ORP conducted an independent analysis of the vessel design to ensure the vessels containing PJMs are sufficiently robust to allow for operations beyond the specifications in the contract; e.g., operating at higher solids concentrations or operating PJMs for 100 percent of the time was considered. This analysis assured ORP that PJMs could be operated 100 percent of the time if needed. ORP committed to protect the assumptions for the erosivity of the waste stream feed by sampling for and controlling the mean particle size, hardness, and size distribution of the incoming waste feed for the WTP. The results of the review were presented to the Board in the summer of 2005.

One additional event occurred that required review of the black cell design. In April of 2005, a significant pipe break and leak was detected in a dark cell (similar to a black cell) of the Thermal Oxide Reprocessing Plant at the Sellafield Facility in the United Kingdom. Because of the similar approach of not planning any access to a dark or black cell, ORP and Bechtel National Inc. jointly reviewed the investigation results from the incident and developed a plan to ensure the lessons learned are incorporated into the design and operations of the WTP.

### Fire Coatings on Waste Treatment and Immobilization Plant Structural Steel

Intumescent fire coatings (fireproofing) are being applied to the primary (load bearing) structural steel columns and beams in the LAW, HLW, and PT Facilities. The objectives for the use of the intumescent fire coatings are: (1) to meet applicable building code requirements; (2) to protect the confinement structure; and (3) to protect non-redundant components whose failure could lead to an event that could cause a failure of the confinement structure. The coating subcontractor is using a fire coating product for which the required minimum thicknesses for some of the structural steel sizes (W/D ratios) are determined using empirical equations based on limited fire test data.

### Ultrafiltration System Design

In July 2005, Bechtel National Inc. issued three studies evaluating approaches to improve ultrafiltration process system performance to effectively leach aluminum from tank waste solids and to increase system throughput to support mission completion.

The studies concluded that increasing the quantity of caustic added in the leaching process and feeding leachate forward through ion exchange instead of recycling in the process optimized caustic leaching performance. The studies also identified options to increase throughput including increasing ultrafilter surface area and relocating the leaching operation upstream of the ultrafilter loop (such as to the feed evaporation process system). Other changes such as filter temperature,

sodium molarity, and feed sequencing can also improve performance. In November 2005, ORP issued a letter directing Bechtel National Inc. to confirm the recommendation to enhance ultrafiltration system performance. Bechtel National Inc. was also directed to assess the assumptions and risks associated with proposed ultrafiltration system changes and confirm facility performance with the WTP Tank Utilization Model.

### Alternative Ion Exchange Resin Development

There is only one producer of the baseline SuperLig® 644 cesium ion exchange resin. The SuperLig® 644 resin is expensive and must be replaced after approximately 10 regeneration cycles. To reduce the single-supplier risk, Bechtel National Inc. is developing spherical resorcinol formaldehyde resin as an alternative to the reference SuperLig® 644 resin for removal of cesium from tank waste. Work to develop spherical resorcinol formaldehyde ion exchange resin is continuing to make good progress. Results meet or exceed project requirements in all areas including hydraulic performance, cesium removal, and spent resin de-contamination for disposal. During the last six months, multi-cycle testing with a 24-inch column (~1/2 scale) was completed and manufacture scale-up to 100-gallon lots was successful at both vendor and subcontractor facilities. Spherical resorcinol formaldehyde resin costs are substantially less than SuperLig® 644 and data indicates the spherical resorcinol formaldehyde resin can be used for significantly more regeneration cycles than the baseline SuperLig® 644.



LOW ACTIVITY  
WASTE FACILITY AT  
THE OFFICE OF  
RIVER PROTECTION

Bechtel National Inc. Research and Technology considers qualification for commissioning has a high probability. A WTP recommendation regarding spherical resorcinol formaldehyde use is planned for November 2006.

#### Oversight of the Waste Treatment and Immobilization Plant Design and Construction Programs

In 2005, ORP continued with its integrated oversight program of WTP design and construction activities. Oversight of WTP design and construction included twelve engineering design-related inspections, about 430 documented onsite construction inspections, and 10 offsite supplier inspections. These oversight activities identified strengths and weaknesses in engineering design, construction processes, and personnel safety in addition to several code and/or contract noncompliance issues. Although the vast majority of inspections identified acceptable performance, ORP oversight personnel raised a number of significant issues in the areas of quality program implementation by non-important-to-safety suppliers; implementation of the construction site lockout/tagout program; implementation of the site pipe fabrication and welding program; and implementation of facility fire alarm and emergency lighting testing. Bechtel National Inc. has taken actions to address these and other identified issues, and ORP continues to independently verify the adequacy of these corrective actions.

Additionally, ORP along with the RL issued an investigation report on gravity-related events at the Hanford Site. The investigation was conducted

in response to multiple events involving the dropping of objects from elevated heights or personnel injuries due to falls. The final report contains eight conclusions and improvement opportunities that should assist in preventing future gravity-related events. The corrective actions identified by Bechtel National Inc. are complete and ORP's corrective actions are on track.

#### DOE Headquarters Office of Environmental Management Oversight Assessment

EM staff completed an assessment of the ORP Oversight Program. The team identified no Findings and had the following observations:

- ORP has a strong oversight program;
- ORP has an effective system in place for tracking issues and corrective actions;
- ISM is practiced throughout all levels of the organization;
- The Facility Representative program is strong and effective;
- ORP should consider adding an Industrial Safety Oversight Specialist/Inspector to the organization;
- ORP captures and distributes lessons learned on a regular basis, but should consider designating a central coordinator;
- Line and independent oversight is scheduled and accomplished in an organized manner; however, all assessments should be included in the ORP Integrated Assessment Schedule; and;
- ORP should consider conducting additional self-assessments for continuous improvement benefits.

### Environment, Safety, and Quality

ORP has contracted with Pacific Northwest National Laboratory to plan to acquire additional shear wave velocity data in the interbedded basalts under the WTP, to improve the accuracy of the seismic prediction of ground motion. Updates will be prepared this coming year in the probabilistic seismic hazards analysis to incorporate new attenuation models, and incorporate California rock correlation predictions, rather than the California soil correlations as currently used. DOE has requested an external independent review of the seismic design basis by the U.S. Army Corps of Engineers; that review is expected to be completed in the spring of 2006.

### Assessments of Contractor Activities

Bechtel National Inc. Procurement Program: The assessment involved a vertical slice review of two important-to-safety procurements. The important-to-safety procurement items were shield doors for the HLW and PT facilities, and the Ultimate Overflow and HLW Effluent Transfer Vessels in PT. These items were assessed for general procurement processes, documentation contents, receipt inspection and control of non-conformances. Additionally, the assessors also reviewed Bechtel National Inc. monthly surveillance reports for controlled material storage facilities and material staging areas. No Findings were identified.

Assessment of Bechtel National Inc. PAAA Program: ESQ evaluated the Bechtel National Inc. PAAA program for effectiveness, including adequate implementation of procedures that incorporate PAAA requirements. One

Finding and seven Observations were identified. The assessment determined Bechtel National Inc. has sufficient tools and processes in place, but had not consistently executed its program, effectively resulting in some untimely and ineffective efforts to identify, report, and correct PAAA issues.

WTP Corrective Action Management Program Assessment: This assessment evaluated corrective action effectiveness regarding health and safety issues, supplier quality problems, concrete deficiencies, and control of onsite work performed by Bechtel National Inc. vendors. One Finding was issued for non-compliance with procedural requirements regarding management suspension of work. Four Observations were made concerning accident investigation processes, corrective actions, and root cause team recommendations.

Estimate-at-Completion: ORP performed a detailed review of the project Estimate-at-Completion in the Spring of 2005. Based on concerns identified during this review and the lack of justification for cost and schedule increases, ORP directed that Bechtel National Inc. produce a new, more detailed estimate at completion that will be reviewed by both ORP and the U.S. Army Corps of Engineers. The new estimate at completion is expected to be completed in mid 2006.

Important-to-safety Electrical Design: ORP reviewed the application of IEEE Class 1E standards with application to the important-to-safety switchgear buildings and the emergency diesel generators. No Findings or Recommendations were identified and the systems were found to be in compliance with the standards.

## Project Safety Culture

WTP safety statistics reveal a need for continued improvement in the ISM processes. Overall for FY05, the WTP project recordable case rate ended slightly higher than the rate at the beginning of the year. A significant jump in the project recordable case rate occurred during the second quarter but returned to average levels in the third quarter and remained relatively constant through the end of the year. During the year, Bechtel National Inc. initiated a number of activities to improve the safety culture of the project. For example, with significant union management and worker involvement, Bechtel National Inc. conducted safety leadership training and site-wide safety briefings to refocus workers on safety and to improve behaviors to further reduce injury rates.

ORP oversight staff has completed a number of initiatives to increase its safety culture. For example, Occupational Safety and Health Administration (OSHA) Training was provided for most of the staff and included facility walkthroughs to identify safety issues. Also, a seminar was provided to all ORP staff on implementing a Safety Conscious Work Environment. Further, ORP held monthly all employee meetings at which safety was discussed and included lessons learned from other industries. Finally, all WTP staff routinely walkdown the facility. All of these activities serve to emphasize safety in all work activities.

## Tank Farms Project

### Single Shell Tanks Activities

ORP completed removing all of the pumpable liquids from all SSTs. This activity greatly reduces the potential for leakage from the SST system and fulfilled the Consent Decree requirement for pumpable liquid remaining in SSTs.

ORP continues to perform waste retrievals on four SSTs (C-200 series tanks). These tanks are an older style SST with a 55,000 gallon capacity and have shown signs of leaking in the past. A new Vacuum Retrieval technology is being used for the first time on these tanks. This retrieval method limits the use of water during retrieval work. Waste retrieval was completed from two tanks (C-203 and C-202) during the year. About 6,000 gallons of tank waste was transferred to the newer, more robust DSTs. Work on Tank C-201 is 28% complete at the end of CY 2005 and Tank C-204 will start in early 2006. This technology will be improved while working on these smaller tanks and then deployed on the larger SSTs that may have leaked in the past.

ORP continues to perform bulk waste retrievals on three larger SSTs (C-103, S-102 and S-112). These tanks are older style SSTs with a 530,000 to 758,000 gallon capacity and have not shown signs of past leaking. A waste sluicing technology is being used to remove the solid and liquid waste from the tanks. About 1.09 million gallons of tank waste has been transferred to the newer robust DSTs. At the end of CY 2005, Tank S-112 is 96 percent complete, S-102 is 54 percent complete, and C-103 10 percent

complete. Tanks S-102 and C-103 completed retrieval system construction and startup during 2005. Removal to less than one inch of waste in the tank bottom has been technically challenging. As a result, a remote water lance was developed and deployed in tank S-112 to examine the potential for physically breaking up the dense salt cake in the bottom of the tank. This new technology is being developed for in-tank use. The remote water lance test has proven to be very successful.

#### Evaluation and Maintenance of Double Shell Tanks Integrity

The DST corrosion control program is being maintained to protect and evaluate tank condition. The program maintains waste chemistry controls to minimize tank corrosion. The program has been expanded to include improved assessment of DST corrosion potential and any corrosion impacts. This information will be used to establish more reliable estimates of useful tank life.

Ultrasonic and visual inspection of the last four DSTs was performed in 2005. This completes initial ultrasonic inspections of all 28 DSTs. Inspections are performed in small subterranean spaces with hazardous radiation levels using specialized remotely operated equipment to examine wall thickness and detect small pits or cracks potentially caused by corrosion. These tanks have volumes of over 1 million gallons and contain highly radioactive chemical waste.

An expert panel evaluation of corrosion detection and monitoring in DSTs was performed. Expert panel recommendations have been incorporated into the corrosion control

program. DSTs Ultrasonic Testing frequency has been increased and the area examined during these inspections has been doubled. A new in-tank corrosion monitoring probe has been designed to provide real time evaluation of corrosion potential and phenomena. The prototype for this probe is in the procurement process.

An expert panel and laboratory analysis of DST corrosion from exposure to AN-107 waste was performed. AN-107 contains a unique waste type that appears to be less prone to corrosion. Results have provided a better understanding of corrosion in tank waste, improvements in monitoring tank corrosion, and provided the basis for changing the chemistry control specification, which will reduce the amount of caustic (sodium hydroxide) to be added in the future and will reduce future waste treatment costs.

ORP and the Tank Farm Contractor established an expert panel workshop to review the potential for vapor space corrosion in DSTs. This workshop should provide a path forward for closing the Board concern in this area. The workshop will take place in March 2006 and focus on ORP and Savannah River Site DSTs.

Significant progress was made in closing TSRs Recovery Plans for DST Corrosion Chemistry Control. Four DSTs had sludge layers with chemistry outside of the required specifications. Chemical additions were made to bring this waste back into specification. The sludge chemistry in two of these tanks has returned to specification and the recovery plans are being evaluated for closure. The two remaining recovery plans will not be complete until 2007 due to the nature of the sludge.

Supernate chemistry went out of specification in one DST during retrieval operations and was returned to specification within 30 days.

Progress was made on the analysis of record for DST System structural integrity. The system includes pumps, pipes, detection equipment, and tanks. New seismic criteria from the WTP evaluation, as well as Tank Farms Ultrasonic and Visual Testing of DSTs has been incorporated into this evaluation. A report will be issued in March 2006 by the Independent Qualified Registered Professional Engineer to support RCRA permitting.

#### Demonstration Bulk Vitrification System

The Demonstration Bulk Vitrification System is a research and development project with the goal of proving the suitability of Bulk Vitrification for disposing LAW from tank farms. From January to June 2005, design and testing was worked in parallel with early procurement and construction activities. Starting in June 2005, the project field construction and major procurements were placed on hold due to technical issues requiring detailed resolution and increasing cost and schedule durations. Site preparation activities, including site grubbing and grading; electrical utility upgrades; excavation; and installation of equipment pads, have been completed.

The key technical issues are related to confinement strategy and hazards analysis methodology. To ensure that all necessary technical and project corrective actions were identified and implemented, project reviews were performed by ORP and the Contractor CH2M HILL Hanford Group, Inc.

These included an independent review of the Demonstration Bulk Vitrification System. Procurement and construction activities will not resume until completion of the design and research activities, and completion of Critical Decisions CD-2 to approve performance baseline and CD-3 to approve start of construction.

Three full scale tests were performed using actual in-container vitrification (ICV™) boxes to gather data (heat loads to various system components, nitrogen oxide generation, off-gas particulate composition, etc.) for Demonstration Bulk Vitrification System design using a six-tank composite LAW stimulant.

#### Vapor Issue Resolution

The Tank Farms Industrial Hygiene and Vapor Characterization saw substantial progress during the last quarter of 2005. In October 2005, ORP conducted an effectiveness review of the corrective actions implemented by the Tank Farms Contractor, CH2M HILL. CH2M HILL implemented these CAs in response to a series of findings that the DOE Office of Assessment and Oversight (OA) issued in April 2005. In addition, the Tank Farms Contractor has identified about 90 chemicals of potential concern that are being reviewed by the Toxicology Panel. The ORP team and CH2M HILL worked together to develop the key elements of a strategic plan and effectiveness criteria that, when completely implemented, will adequately address all OA and ORP findings and provide for an effective industrial hygiene program for all Tank Farm work. Based on the current progress made in the characterization of chemicals of potential concern, it

appears that A "prefix" Farms will be able to apply the required personal protective equipment based on hazards and reduce the use of self-contained breathing apparatus by April 2006.

#### Integrated Safety Management

ORP conducted the annual line management review of the ISM system. The ISM review evaluated improvements made since the Validation Reviews (conducted in October 2004 and March 2005), determined the effectiveness of corrective actions, reviewed the work planning/control process, evaluated the ISM self-assessment program, evaluated feedback and improvement processes, and evaluated the Contractor's progress towards resolving the Tank Farm vapor issues.

The review concluded that the ISM system is implemented and, with some exception, is effective. Significant progress has been made since the October 2004 ISM Improvement Validation Review. Additional improvements are warranted to address deficiencies identified in this review and to fully address previously identified findings. Of particular note, the ISM review identified hazard analysis and work control process deficiencies associated with the C-200 retrieval project. In this case, a detailed project hazard analysis was needed to address all phases of the project in an integrated manner, including the hazards involved in system reconfiguration when moving the retrieval system from tank to tank.

#### Authorization Basis Maintenance Activities

Eighteen AB amendment requests were approved in 2005. These requests

were largely in support of retrieval activities and preparation for waste feed to the WTP mission. Significant changes approved or reviewed included: (1) the testing of a new retrieval technology; (2) implementation of Board 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which required implementation of Specific Administrative Controls within DSA and TSRs documents; (3) a PDSA amendment to support deployment of a new vitrification technology (Demonstration Bulk Vitrification System); (4) the testing and calibration of a new leak detection device (high resolution resistivity leak detection and monitoring system); (5) review of a PDSA to stabilize TRU waste for storage (Contact Handled TRU Mixed Waste Facility); (6) and a PDSA for the Interim Disposal Facility.

#### Integrated Disposal Facility Construction

This facility is designed to dispose of Low-Level Waste and Mixed Low-Level Waste. The Integrated Disposal Facility project, landfill cells 1 and 2, consists of a single landfill divided lengthwise into two separate, expandable cells. One cell is permitted as a RCRA Subtitle C landfill system and will be designed in accordance with the State of Washington Dangerous Waste Regulations. The other cell will not receive dangerous and/or hazardous waste and therefore will not require a permit for this function. The Integrated Disposal Facility project initial construction is designed to dispose of 163,000 cubic meters and full build out capacity is 900,000 cubic meters.

The Integrated Disposal Facility project is scheduled to be completed by March 2006 which is 14 months ahead of the regulatory commitment. The Integrated Disposal Facility is 91 percent complete and the two landfill cells are 95 percent complete. The original cost of the Integrated Disposal Facility project was \$ 24.8 million to complete, current expenditure is \$ 17.6 million, and the finished facility is estimated to be below the baseline cost.

#### Tank Farm RCRA Corrective Action Project

ORP has been characterizing the large past releases from tank farms to estimate future environmental and human impacts and mitigate past releases as per the M-45,-50, 60 *Hanford Federal Facility Agreement and Consent Order* milestone series. This project has nearly finished the first phase of the characterization, with analyses issued for 9 of the 13 most impacted farms with the recent issuance of the Field Investigative Report for Waste Management Areas T, TX, and TY in July 2005. Interim corrective measures (water run-on controls and water line leaks) have also been completed on all the SSTs. Planning for phase two with RL is under way to link upcoming groundwater cleanup decisions and future tank closure efforts, and will be embodied in upcoming joint RL-ORP milestone negotiations.

#### Environmental Impact Statement

A draft of the Tank Closure Environmental Impact Statement (EIS) was completed on August 13, 2004, for DOE HQ review. Subsequent to the HQ review, an extensive analysis

was undertaken to assess various approaches to completing the groundwater analysis and enhancing the scope of the document to include a more quantitative cumulative impact analysis. Senior management has decided to conduct the groundwater analysis using a commercially available model different than that used in the initial draft. Activity is currently under way to develop this new model with Hanford field data for application in the EIS. The schedule for completion of the next draft is currently under development. This EIS is required to support future treatment, storage, and disposal of tank waste.

#### **H. Ohio Field Office (OH)**

##### Ashtabula Closure Project

The Ashtabula Closure Project (ACP) remediation contract was awarded on September 30, 2005, to a small business contractor who submitted a baseline target date for completion of October 16, 2006. The contractor has mobilized and initiated transportation and disposal of existing soil piles left by the previous remediation contractors. Although the contractor is in the very early stages of remediation, their proposal indicated a well thought out plan with explicit detail on their approach for the remediation of the Waste Management Unit on site that contains both radiological and hazardous material. As in all of the Ohio Closure Projects, DOE has emphasized the need to develop a safety culture with the new workers that includes all the elements of an Integrated Safety Management System. To ensure proper implementation, DOE has assigned a group of Facility Representatives who will maintain a

continuous presence at the site until physical completion.

### Columbus Closure Project

The Columbus Closure Project, located at the West Jefferson site near Columbus, Ohio is owned by the Battelle Memorial Institute and is scheduled to complete by February 15, 2006. The project has removed all nuclear facilities and foundations, remediated over 1.3 million cubic feet of contaminated soil and debris, and have shipped 90% of the soil and debris for off site disposal. The remaining issue is to maintain a strong focus on safety. The project has experienced an incredible safety record by attaining "zero" incidents through September 30, 2005, but continued employment of heavy earth moving equipment on a small geographic site requires careful planning and intense focus of all the workers interacting on the site. It is important to maintain strict oversight, utilizing DOE Facility Representatives on a rotational basis until the contractor declares physical completion. Remaining work includes backfilling operations and waste load-out of contaminated soil. A recent major accomplishment was the removal of all TRU Waste from the site that will allow Battelle to terminate their Nuclear Regulatory Commission license during the first half of calendar year 2006.

### Miamisburg Closure Project

It is currently estimated that an additional 0.8 million cubic feet will be required for closure. The last building to be renovated, T-Building, is approximately 87% complete, with the remainder undergoing remediation and sampling.

Although radiation safety continues to be important during the remaining excavation and remediation activities, occupational safety is currently the biggest risk to the working craft. During FY06, all safety goals were exceeded except for the Total Recordable Rate. The actual Total Recordable Rate was 1.69, compared to the goal of 1.60. The total number of occurrence and reporting processing system reports and first aid injuries were reduced.

Both the DOE and the contractor will continue to place emphasis on occupational safety thru FY06 closure during work planning sessions and oversight activities.

### Fernald Closure Project

The project work during this calendar year was dynamic with heavy construction equipment operating around the clock to remediate contaminated soils from beneath the demolished main plant facilities. Additionally, both Silo remediation facilities were commissioned and waste processing, packaging and disposal well underway. While there was a reduction in occurrence and reporting processing system reports, and the total recordable rates for FY04 (.82) and FY05 (.86) are roughly equivalent, there was considerable activity in the ISMS program in response to the changing work environment. These low total recordable rates demonstrate that the ISMS program at the Fernald Closure Project (Fernald) is effective. At the beginning of FY05, Fernald was in the construction stages of the Silos project; through the middle of the FY it was in the start-up phase, and toward the end of the FY, it has been primarily early



THE DECONTAMINATION AND DEMOLITION PROJECT WORKS SCOPE INCLUDES THE DISMANTLEMENT OF 259 FORMER PRODUCTION PLANTS, SUPPORT STRUCTURES AND ASSOCIATED COMPONENTS.



TWO OF FERNALD'S MOST RECOGNIZABLE LANDMARKS FELL TO THE GROUND ON APRIL 16-17, 2005.



WORKERS USING PNEUMATIC AND MECHANICAL RETRIEVAL SYSTEMS TO REMOVE WASTE FROM THE SILO AND PACKAGE IT IN SOFT-SIDED CONTAINERS FOR OFF-SITE SHIPMENT.

silos operations and soil excavation. For each of these phases of the silos projects, the safety risks changed considerably which required additional training and procedure adaptations to the changing conditions.

A key issue which will continue through FY06 is the ability of DOE OH to perform adequate oversight during the final phases of both the Fernald Closure Project and Miamisburg Closure Project. As DOE OH ramps down to final closure, the loss of personnel and experience to provide adequate oversight may exceed the pace of completion. As was done in FY05, the utilization of outside resources from both the DOE and private sector will be enhanced as necessary.



SHIPPING PREPARATIONS AT FERNALD SILO 3 PROJECT.

The Board continues to closely monitor the efforts of the Department's Fernald Closure Project and its contractor, Flour Fernald, Inc., to retrieve, treat, and package for disposal the radioactive wastes in the silos at Fernald. The Board notes that Flour Fernald personnel completed readiness reviews for the first two of three phases of the silos remediation effort, including the Silo 3 Retrieval and Disposition Project and the Silos 1 and 2 Accelerated Waste Retrieval Project. During April 2005, a member of the Board's staff observed efforts to complete a contractor Standard Startup Review and a DOE Readiness Assessment for the third and final phase of the silos remediation effort, the Silos 1 and 2 Remediation Facility. This was the second attempt to verify that the facility was ready for operations. The first attempt to verify readiness ended with Flour Fernald rescinding their declaration of readiness on the third day of the review. During

this review, which began on April 22, 2005, Flour Fernald provided evidence through operations that significant improvements had been made since January 2005. Unfortunately, it was also apparent that the Silos 1 & 2 Remediation Facility's implementation of radiological controls to prevent spread of contamination was unacceptable and would have warranted a pre-start finding, had the RA been completed per the schedule. The RA was not terminated, due to the facility not being ready, because virtually every other area that the RA had reviewed was acceptable. Therefore the RA was temporarily suspended on April 25. The suspension allowed Flour Fernald to address their significant shortcomings in their implementation of radiological controls and work practices. The RA resumed on May 3 and was completed on May 6. After the RA resumed, Flour Fernald demonstrated significant improvements in implementation of radiological controls and work practices. The RA resulted in no Pre-start Findings, three Post Start Findings, nine Observations and four Notable Practices.

Members of the Board staff provided oversight and observation of the review. The review team provided a recommendation to the authorization authority to allow facility startup on May 8, 2005.

The silos 1 & 2 Project is approximately 75% complete. This project should be complete in late summer of 2006.

The Silo 3 Project removed 5,100 cubic yards of thorium bearing low-level waste from one concrete silo and shipped the waste off site for disposal to Envirocare of Utah. The waste was



PREPARING THE SOFT-SIDED CONTAINERS FOR OFF-SITE SHIPMENT.

removed from the silo using a pneumatic and mechanical retrieval system. The material was conditioned to reduce potential dispersability before packaging and shipping it off site for disposal. There have been more than 1,550 soft sided packages filled to date; a total of approximately 1,800 soft sided packages are anticipated. The shipping campaign is expected to last through January 2006 and the facility demolition is scheduled to be completed in March 2006. Heel material removal presents the biggest challenge. This project is approximately 90 percent complete.

The Board plans to make a site visit to Fernald in early 2006.

### **I. Pantex Site Office (PXSO)**

#### Activities Related to Board Recommendations

Pantex completed the pit repackaging consistent with the Board 99-1 recommendation by packaging a total of 1,446 pits in FY05 into sealed insert containers. The Board evaluated BWXT Pantex's accomplishments and issued a letter agreeing to close the recommendation. This significant milestone represents the culmination of over six years of effort to repackage pits into a much improved storage environment.

BWXT Pantex, with support from the Nuclear Weapons Complex, improved production output by completing more Disassembly & Inspection deliverables than any of the previous 13 years.

The W76 Lifetime Extension Program Disassembly successfully met the milestone to disassemble the first week in November.

SS-21 projects have completed several major milestones in FY05. W87 and B61 Hazards Analysis Reports (HARs) were submitted. The B83 HAR was submitted and the Nuclear Explosive Safety Study conducted. The W76 completed the Milestone One presentation using value streaming in its project planning to compress the schedule to meet program requirements. The W88 completed the forward cap potting process, and developed an High Explosive gauging process that improves safety by minimizing personnel handling.

IIP project - The following items were completed in FY05:

- Electrical Rated Forklifts were procured and placed into service to move nuclear explosives and nuclear material;
- The Blast Door Interfaces systems for nuclear explosive bays were fully implemented;
- All computer terminals in the bays and cells were restrained to the wall with cables for seismic considerations;
- The safety basis for the Enhanced Transportation Carts were shifted from the Analytical Basis to the Site and Transportation Safety Analysis Reports; and
- The format of the TSRs Applicability Matrix was substantially improved in both clarity and accuracy.

The Nuclear Explosive Safety (NES) Master Study of Interactive Electronic Procedures (IEPs) was completed in January 2005.

The NES Master Study of the Paint Bay Facility was completed in March 2005.

Following an external assessment of tooling in November, BWXT Pantex used a systems level approach for tooling improvement. These improvements were validated by the NNSA in a Special Tooling Program Assessment performed in September. An overall satisfactory score was given to the program. The following actions were undertaken in FY05:

- Defined overall tooling program responsibilities and interfaces in a new Plant Standard;
- Rewrote and obtained approval for subordinate procedures and processes;
- Completed a Special Tooling Program Readiness Review chaired by the Deputy General Managers and Division Managers;
- Realigned tooling facilities;
- Completed process mapping; and
- Completed training ahead of schedule

BWXT Pantex continued to support PXSO and the National Nuclear Security Administration through participation in workshops, workgroups, reviews, and meetings to meet the implementation plan for Board recommendation 2002-1. In addition, BWXT Pantex completed the following tasks:

- Defining clear requirements, standards, and guidance for safety SQA;
- Institutionalizing procedures; and

- Providing information on safety software in use by the plant.

Beneficial Occupancy of the Special Nuclear Materials Component Requalification Facility occurred on December 16, 2004 as scheduled. This allowed the installation of the various workstations supporting the overall mission requirements to proceed.

The High Pressure Fire Loop Conceptual Design Report was completed and submitted to the PXSB in June 2005 as scheduled.

A new ISM Program Office was created and managed by a Division Manager reporting directly to the BWXT Pantex General Manager. The task of the organization is drive higher levels of operational ISM implementation and day-to-day practice among all plant management and staff. The ISM Program office completed a gap analysis against the recommendations in 2004-1 and existing ISM requirements. Policies and ISM documentation were revised to incorporate 2004- 1, Human Performance Improvement, and the best attributes from other ISM programs.

#### **J. Richland Operations Office (RL)**

The Department of Energy—RL has made significant cleanup progress in 2005 demonstrating commitment and dedication to safely cleaning up the legacy of the Hanford site. The cleanup is being completed safely as shown by the fact that workers have reduced the number of recordable injuries on RL projects by 50% since 2000, while at the same time increasing the amount of hazardous work completed.



NUCLEAR CHEMICAL OPERATORS "WALK DOWN" TWO CONTAMINATED HOODS IN THE ANALYTICAL LABORATORY IN THE PLUTONIUM FINISHING PLANT DEACTIVATION AND DECOMMISSIONING WORK.

## Risk Reduction

### Plutonium Finishing Plant

- The Plutonium Finishing Plant (PFP) has transitioned from operation activities to deactivation and decommissioning activities including removing plutonium material “held up” in equipment and piping. PFP completed the Tri-Party Agreement regulatory milestone more than a year ahead of schedule. More than 500 drums of radioactive waste were removed and prepared for shipment to the Waste Isolation Pilot Plant in New Mexico for disposal.
- As a result of changes in site priorities, funding, and deferred de-inventory of Plutonium bearing materials, PFP scheduled removal to slab-on-grade by FY09 will be delayed. RL is taking actions to account for an extended life for PFP.
- A Security Enhancement Program has been implemented to support interim storage of Plutonium at Hanford. Plans are being developed for the construction of an Interim Secure Storage Facility to store Hanford’s special nuclear fuel.

### K Basin Closure Sludge Retrieval and Disposition

- During FY05, the removal of about 2,100 metric tons of Spent Fuel from the K-Basins into safe, dry, compliant storage was completed. In all, about 105,000 individual fuel assemblies were removed containing over 50 million curies of radioactivity.

- Work has been initiated on the second phase of K Basins cleanup to remove the remaining radioactive sludge from the K East and West Basins. The approximately 60 cubic meters of sludge is made up of fragments of concrete from the basin walls, sand blown in from the desert and fuel corrosion products.
- During October 2005, the first radioactive sludge retrieved from a spent nuclear fuel pool at Hanford was treated and containerized. Approximately four cubic meters of sludge was retrieved from the North load Out Pit (NLOP) and pumped into large diameter containers and transported to T-Plant where specialized equipment is being used to process the material. As of the end of November 2005, 33 drums of NLOP treated sludge have been generated.
- As part of the K Basin Closure Project radioactive sludge will be containerized and then transferred from K-East Basin to the K-West Basin using a Hose-In-Hose Transfer system which is currently being installed. During 2005, major component installation for the Hose-In-Hose Transfer system was 100% complete.

- Total sludge containerized from the K East Basin (including NLOP) is approx. 34.9 m<sup>3</sup> of 42.6 m<sup>3</sup> (~82%).

### Waste Treatment & Disposal including Groundwater Remediation

- Disposed of 825 metric tons of low-enriched uranium fuel from Hanford’s River Corridor more than a year ahead of the Tri-Party Agreement milestone and \$1 million under budget.



THE HOSE-IN-HOSE SYSTEM AT K-EAST BASIN.



A NEW SLUDGE TRANSFER LINE AT K-EAST BASIN



VIEW OF THE  
HOSE-IN-HOSE  
SYSTEM AT K-EAST  
BASIN

- Placed one of six groundwater pump-and-treat systems on standby status after removing the heart of the contaminant plume. More than 210 million gallons of groundwater have been pumped from wells near U Plant and more than 440 pounds of uranium and technetium-99 have been removed since treatment operations began in 1994. Monitoring of the site continues.
- Installed a cumulative total of 45 groundwater monitoring wells ahead of the Tri-Party Agreement regulatory schedule; to date 267 excess wells have been decommissioned.

#### Waste Site Remediation

- Demolished 53 excess facilities near B Plant, U Plant, and in the 300 area.
- The FY05 accomplishments include two (2) Radioactive Facility Completions, 21 Industrial Facility Completions, 27 waste site remediations, and 1,310 containers of Enriched Uranium packaged and disposed. With these accomplishments, at the end of September the River Corridor Project cumulative FY03 through FY05 accomplishments to date will include 124 Remediation Completions, 8 Radioactive Facility Completions, 32 Industrial Facility Completions, and 1310 Uranium containers dispositioned.
- Completed the first record of decision in the nation to address a DOE plutonium production facility for U Plant.



ANCILLARY FACILITIES  
NEAR U PLANT

#### Transuranic Waste Disposal

- Retrieved the first 13,500 of 75,000 drum equivalents of suspect-transuranic waste five months ahead of the Tri-Party Agreement regulatory milestone
- The site has made more than 221 shipments of TRU waste containing more than 6,400 drums, to the Waste Isolation Pilot Plant in New Mexico for disposal

Completed the Tri-Party Agreement milestone to retrieve 2700 cubic meters of retrievably stored waste 5 months early

- During FY05, retrieved 1680 cubic meters of suspect TRU waste from the 218-W-4C burial grounds
- Safely retrieved the 12 drums containing Pu-238 from retrievable storage in the Low Level Burial Grounds in October 2005. Inspected and relocated the 12 drums from 218-W-4C burial grounds to interim storage awaiting shipment off site.

#### Environmental Restoration Disposal Project

- Disposed more than a million tons of contaminated material in the Environmental Restoration Disposal Facility, bringing the total disposed to more than 4.4 million tons since operations began in 1996.
- The River Corridor Closure Project completed interim safe storage of H reactor bringing the total to five of nine plutonium production reactors placed into interim safe storage.

- Completed disposal of 12,241 drums of contaminated waste from the 183-H Solar Basin, including 5,757 drums of unstable waste that had to be specifically treated before disposal at ERDF.

#### Radiochemical Processing Laboratory

- The legacy waste removal project has removed 171.31 Ci of Pu 239 equivalent in the Radiochemical Processing Laboratory (RPL).
- The orphaned waste removal project has removed 13.69 Ci of Pu 239 equivalent in the RPL.

#### Board Recommendations and Safety Issues for 2005

- RL completed letter commitment L05-513 to make a revision to the Hanford section of the 2000-1 Implementation Plan. The revision was signed by the Secretary on November 28, 2005. This revision extended the due dates for several RL commitments related to the removal sludge from the K-Basins. Containerized sludge in the K-West Basin will be removed and treated to meet the applicable waste acceptance criteria by November 30, 2009.
- On May 31, 2005, RL completed letter commitment L04-519 to provide follow-up related to the retrieval and disposition of twelve buried Pu-238 Drums. RL will continue to status the Board on shipping plans for the twelve drums.
- RL completed letter commitment SL05-009 to provide the Board with a briefing on PFP fire response procedures.

- RL completed letter commitment SL05-010 to report on the Sludge Removal Project Delays.
- RL completed letter commitment SL04-011 to brief the Board on Hanford PFP criticality safety issues.

#### 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 DOE oversight including our safety system oversight and facility representatives. RL has conducted over 240 scheduled assessments of contractor activities in FY05.

In addition to the scheduled assessments, RL utilizes an Operational Awareness (OA) database in which RL staff record daily contractor oversight observations. This system allows for the collection of a wide range of information at an informal level, thereby giving RL an additional tool to evaluate the contractor's ISM performance. Each quarter, the information is analyzed for potential trends and new areas in need of management attention and contractor corrective actions are identified. For FY05, RL generated 3,088 OA entries against the contractor's performance of work. From these entries, 997 issues (6 Concerns, 322 Findings, 669 Observations) and 88 Good Practices were identified and provided to the contractor.

Along with the quarterly trend analysis, issues are brought routinely to the RL Manager's attention through weekly operation oversight reports and are communicated to the contractor for resolution. RL continues to optimize



DEBRIS REMOVAL FROM THE K-EAST BASIN REQUIRES FULL RADIATION PROTECTION CLOTHING AND AIR PURIFYING RESPIRATORS.



NUCLEAR CHEMICAL OPERATORS VIEW GRATE PUMPING EQUIPMENT AT THE K-EAST BASIN.

this process and anticipates this will become an increasingly important tool in assessing the implementation and effectiveness of the contractor's ISM system.

In general, RL has concluded that the RL contractors have a robust ISM System Description. Incidents during FY05 primarily resulted from inadequate implementation of the contractor's ISM System rather than a lack of appropriate processes and procedures contained in the contractor's ISM System Description. During FY06 RL contractors will be using the INPO Human Performance Improvements approach to improve performance. RL is actively involved in completing the commitments made in the implementation plan for Board recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*. The plan should result in significant improvement in DOE's oversight of its high hazard nuclear operations and reduce the likelihood of a nuclear accident.

#### **K. Rocky Flats Project Office (RFPO)**

The Rocky Flats Project Office (RFPO) had no formal outstanding commitments to the Board in 2005, but had an agreement to complete shipment of Wet Combustibles offsite. This effort was completed as part of the TRU Waste Shipping Program in April, 2005. The Board's staff made several visits to the site in 2005 and formally closed its office at Rocky Flats (RF) in July 2005. Remaining files and equipment were shipped back to Board Headquarters. On October 3, 2005, the Board sent Secretary Bodman a letter stating that the

Board's responsibilities under the "Memorandum of Understanding Governing Regulation and Oversight of Department of Energy Activities in the Rocky Flats Environmental Technology Site Industrial Area" have been carried out. The prime contractor at Rocky Flats, Kaiser-Hill, LLC, declared physical completion of work activities at the site in October, 2005 in accordance with contractual guidelines. The Department accepted the declaration of physical completion of work at the site in December 2005.

#### **L. Sandia Site Office (SSO)**

##### Safety Basis Improvements

The Sandia Site Office (SSO) continued to focus on making improvements in safety basis analysis and documentation that the Board identified in their letter of September 27, 2004. SSO conducted a root cause analysis and developed the "SSO Safety Bases for Sandia National Laboratories Nuclear Facilities Corrective Action Plan" to address the issues raised by the SSO self-assessment and the NNSA Independent Evaluation Team as well as the Board concerns. The plan includes actions to enhance SSO safety basis staff qualifications, and improve SSO's processes for review, comment, and approval of Sandia National Laboratories (SNL) safety bases. It also addresses actions to provide consistency in safety basis reviews, formality in communications between SSO and SNL, and clarity in expectations for safety basis documents.



ROCKY FLATS  
ENVIRONMENTAL  
TECHNOLOGY  
SITE CLEAN-UP  
B707 RUBBLE  
FROM THE SITE.



A SANDIA NATIONAL  
LABORATORY  
RESEARCHER INSERTS  
AN IMMUNOASSAY CHIP  
INTO THE MICROFLUIDIC  
MODULE IN A HAND  
HELD DIAGNOSTIC  
DEVICE.

Similarly, SNL developed a corporate improvement plan for its safety basis program, the "Safety Basis Improvement Project." The plan is comprehensive, covering actions to strengthen the role of senior management, improve the processes for developing safety bases, improve the qualifications of employees who prepare safety basis documents, and establish independent reviews. To establish consistent approaches in document preparation, SSO is working with SNL to develop an implementation guide, similar to Safety Analysis and Risk Assessment Handbooks used at other DOE sites.

In conjunction with this, the selection of two key Site Office positions, the new Senior Technical Safety Advisor and the Assistant Manager for Nuclear Facilities and Safety Basis, in collaboration with the Chief of Defense Nuclear Safety, will be instrumental in providing the necessary leadership and high standards for effective implementation of both the SSO and SNL plans.

Board Meeting on June 7, 2005

The Board held a meeting at SNL on June 7, 2005 to address the following topics:

- Integrated Safety Management
- SNL Support to Pantex
- Status of Special Nuclear Material at SNL
- Status of Technical Area V Facilities and specifically, the Annular Core Research Reactor
- Status of Safety Basis for Technical Area V Facilities

The discussion on the topic of Integrated Safety Management included specific actions that have been taken in response to the Skin Contamination event of April 19, 2004, and the subsequent Board letter of October 8, 2004. Per the two requests in the October 8, 2004 letter: a written corrective action plan was provided to NNSA HQ on April 13, 2005; and a briefing was conducted during this meeting. SSO actions in response to the letter of October 8, 2004 are considered complete.

Regarding the other topics addressed, no issues or concerns were identified by the Board that required a specific Corrective Action Plan. Based on the meeting, it was SSO's understanding that the Board and its staff would continue to monitor the progress in completing the safety basis related corrective actions.

This meeting concluded with a tour of the Technical Area V (TA-V) facilities.

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

Activities Related to Board Recommendations at the Savannah River Site

SRS initiated a number of safety initiatives aimed at improving the Site's safety posture and the flow down of safety requirements to subcontractors. A Point of Entry (POE) process was developed and implemented which ensures that safety requirements are communicated to all visitors, vendors, and suppliers who are not permanent employees, before they arrive on site. Assigned responsible individuals and focused observations are also part of



SECRETARY OF ENERGY ENTERING THE SAVANNAH RIVER SITE'S DEFENSE WASTE PROCESSING FACILITY



SECRETARY OF ENERGY VISITING THE CONTROL ROOM AT THE SAVANNAH RIVER SITE'S DEFENSE WASTE PROCESSING FACILITY.



TRITIUM EXTRACTION  
FACILITY WATER  
CRACKER GLOVEBOX  
AT THE SAVANNAH  
RIVER SITE.

the POE process. The level of briefing received is determined based on the hazard level of work they will be conducted.

The remote worker process was enhanced and now includes a software program that digitally indicates the location of all remote workers on the site. The program notifies the dispatcher if the area is restricted due to onsite hunts, controlled burns or other reasons. It will also notify the dispatcher when the worker is overdue.

The Assisted Hazards Analysis (AHA) process was streamlined to enhance output documents that provide increased value to the end-user. The output contains only the pertinent information the worker needs for hazards and controls. This information is included on the back of a safe work permit which authorizes the work crews to perform work. The output went from a 30 page document to one page (front and back). Furthermore, the AHA process focuses on analysis of hazards vs. applying controls to existing hazards. The consolidated hazard analysis process and the AHA computer programs were changed to include more probing questions to determine if a job could be performed in a different, less-hazardous way.

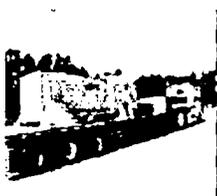
DOE-SRS established the Safety System Oversight function to improve the site's ability to provide a DOE field engineering presence to monitor the condition, maintenance and operational performance of safety systems and evaluate the contractor implementation of cognizant system engineer responsibilities for those systems. Establishment of the Safety System Oversight function has improved the federal engineering oversight of field

work and is expected to enhance DOE's ability to monitor in-process engineering support for both safety and nonsafety related systems.

As of mid-December, Washington Savannah River Company Operations and Construction employees achieved several significant safe work milestones. Operations exceeded 5.6 million hours and more than 118 days since their last injury requiring days away from work, and exceeded 3.0 million hours and more than 65 days since their last injury requiring restricted work activity. Construction exceeded 17 million hours and 2,725 days since their last injury requiring days away from work, and 317 days and over 1.8 million hours since their last injury requiring restricted work activity.

#### Tritium

- The initial biennial assessment of the NNSA - Savannah River Site Office was performed in July 2005 by the Office of the Chief Defense Nuclear Safety. The focus of this assessment involved nuclear safety operating and oversight principles for the Tritium Facilities. Although there were several findings and opportunities for improvement noted, the overall evaluation indicated that the operations and oversight met expectations.
- SRS Defense Programs met or exceeded all mission requirements in FY05, including Limited Life Component shipments, Stockpile Surveillance data, and 43 NNSA Milestones. Operations were performed safely, as evidenced by a Total Recordable Case rate of zero for the entire year.



TRITIUM EXTRACTION  
FACILITY SHIELDED WASTE  
CONTAINERS AT THE  
SAVANNAH RIVER SITE.

- The Tritium Extraction Facility (TEF) project continued well ahead of schedule and under budget. Construction of the Remote Handling Building and Tritium Process Building was completed in March 2005, and start-up testing activities began in preparation for the Operational Readiness Review in FY06. The Board reviewed TEF project execution and provided positive feedback. The TEF project earned two prestigious awards: 1) Bechtel's "Construction Team of the Year" award and 2) NNSA Procurement Executive's Award for Innovation in Supply Chain Management. The first cask of Tritium-Producing Burnable Absorber Rods was delivered to the site in August 2005, and awaits processing in TEF.
- In March 2005, a team from the Board, visited the TEF for three days to review startup testing, operator training and qualification, plans for temporary storage of Tritium-Producing Burnable Absorber Rods in K-Area and status of any project technical issues. Within those areas, the focus of the review centered on Safety Significant systems and components. There were no findings resulting from the review. Several suggestions, such as installation of oxygen monitors in the Remote Handling Building, were adopted by the TEF project team.
- In March 2005, the Board reviewed SRS-DP's Integrated Safety Management Program and provided positive feedback. SRS-DP has actively shared this program with NNSA Complex partners and the American Nuclear Society.
- Cask handling testing in TEF commenced in April 2005; these tests were reviewed and evaluated by the Board site representatives.
- Throughout 2005, the TEF project team provided briefings to Board staff in Washington, DC, every other month regarding the status of the project, SQA, issues being managed, and plans for startup and operation.
- In August 2005, Washington Savannah River Company Defense Programs provided a briefing on reservoir design and operation to four members of the Board as well as several staff personnel.
- A cost-effective alternative strategy for Acorn reservoir production was developed and accepted by NNSA (NA-10), enabling Washington Savannah River Company to return over \$38 million of remaining funding from the Capability for Advanced Loading Missions (CALM) line item project for high-priority NNSA work scope. Plant modifications will provide the production capacity required to meet requirements and adequate capabilities to support the stockpile.
- SRS-DP was recognized for achieving full compliance with NNSA Quality Manual QC-1, Rev. 10 during a Quality Assurance Survey (QAS 1.0) conducted in April 2005. This was largely attributable to the Operations Risk and Opportunity Management Program, which was fully implemented in FY05. Software Quality received the first "Full Performance" rating ever given during a QAS.



**SAVANNAH RIVER SITE**  
EMPLOYEES WORK AT THE  
NEWLY CONSOLIDATED  
AND MODERNIZED  
TRITIUM EXTRACTION  
FACILITY.



**KAMS - EXTERIOR**  
AT THE SAVANNAH  
RIVER SITE.



ARRIVAL OF TRITIUM  
PRODUCING BURNABLE  
ABSORBER ROD'S  
(TPBAR) AT THE  
SAVANNAH RIVER SITE.

### F-Area Closure Projects

- F-Area Closure Projects (FACP) made history on February 25th when FB-Line completed plutonium deinventory. Over the previous two years, FB-Line produced and shipped to K-Area Material Storage a total of 919 DOE-STD 3013 containers. All remaining residue material stored in FB-Line was also transferred to the 235-F facility and/or HB-Line awaiting disposition. On February 28th, DOE-SR issued the required documentation to downgrade FB-Line from a Material Control and Accountability (MC&A) Category I to Category IV. A significant reduction in physical security included elimination of WSI force deployment.
- The final four containers of depleted uranyl nitrate (DUN) were shipped to the Materials and Energy Corporation facility in Oak Ridge, TN for disposition. This completes the removal of DUN from F-Canyon in support of the overall deinventory and deactivation of F-Canyon.
- Through November, FACP shipped 6,595 of the 33,000 drums scheduled (12 of the 20-railcar campaign) to be dispositioned during the contract period. Each railcar contains 92 55-gal drums inserted in 85-gal overpacks. Disposal of the drums supports F-Area deinventory and site deactivation and decommissioning requirements.



THE 105-L BUILDING AT  
SAVANNAH RIVER WHERE  
SPENT NUCLEAR FUEL FOR  
THE SITE IS STORED.

- Deactivation of the F-Canyon is complete except for the five 800-series underground process tanks based upon new direction from DOE. The final endstate of F-Canyon is still under review with DOE Headquarters. FB-Line deactivation continues ahead of schedule. Thirty-two of 58 FB-Line deactivation milestones have been completed. The F-Canyon Complex Project completes in mid-2006.

### H-Area Completion Projects

- At the end of FY05, H Canyon had blended and shipped about 137,500 kilograms of low-enriched uranium solution in its HEU Blend Down operation. HEU Blend Down is processing SRS unirradiated fuels – those that had not yet been placed in SRS reactors when the Cold War ended in 1991. HEU is recovered in H Canyon, and then blended with natural uranium to form LEU. The LEU is sent to Tennessee to be converted into materials suitable for use in the Tennessee Valley Authority's commercial power reactors. HEU dissolution is expected to be completed in late 2006. LEU shipments to Tennessee Valley Authority are expected to be complete in mid-2007, well ahead of schedule.
- H Canyon and HB Line supported F Area deinventory by receiving and stabilizing plutonium-containing materials. In September, the last F Area 94-1 materials were completed, meeting a Board commitment.

- Neptunium processing continues ahead of schedule in HB Line. The neptunium solutions, which have been stored in H Canyon since the 1980s, represent the last of the United States' neptunium inventory. The solution is being converted to an oxide form in HB Line's Phase II facility, and then shipped to Idaho for eventual use in the space program.

### Nuclear Materials Management

- 9975 and 3013 storage container surveillances were initiated in the F-Area Material Storage (FAMS) facility using the Limited Extent Surveillance (LES) capability. All FY05 surveillances and 12 of 22 FY06 YTD surveillances were completed with no significant container issues being identified.
- The Container Storage and Stabilization Capability (CSSC) project was relocated to the K-Area Complex (KAC) and the K-Area Interim Surveillance (KIS) 910B Fan Room Conversion (FRC) projects was initiated in the KAC to address DOE direction to accelerate shutdown of the FAMS facility in FY06.
- 135 drums of plutonium materials in the FAMS facility were dispositioned and deinventoried to accelerate shutdown of the FAMS facility in FY06. All remaining materials will be deinventoried in FY06.
- Enhanced fire controls in the FAMS facility were implemented prior to resumption of SNM measurements on the Passive-Active Neutron (PAN) shuffler. In addition, defense-in-depth fire protection

upgrades were initiated to support plutonium storage in the KAC.

### Spent Nuclear Fuel

- Twenty one casks from foreign and domestic research reactors, containing 500 spent fuel assemblies were successfully received and processed. In addition to standard fuel receipts, SRS also accommodated receipt of spent fuel from the Petten reactor in the Netherlands by utilizing burn up credit to allow Petten to ship full casks of fuel. The standard reactivity analysis for Petten would have required either additional shipments from Petten or expensive upgrades to SRS equipment. Utilizing burn up credit, however, allowed Petten to make full cask shipments at a savings to DOE of approximately \$650,000. SRS also accommodated an accelerated shipment from R2 in Sweden to coordinate with the Petten shipment to reduce transportation costs by about \$250,000.
- NSSI continued to startup their demonstration of 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 FY06.
- Forty excess casks were shipped from the RBOF cask pad to Envirocare for final disposition. This was the first disposition of excess casks from this pad. About 100 casks remain to be dispositioned as priorities allow.



SAVANNAH RIVER SITE  
WORKERS CAREFULLY  
MANEUVER A SPENT  
FUEL CASK.



DEFENSE WASTE  
PROCESSING FACILITY  
CANISTERS AT THE  
SAVANNAH RIVER SITE.

## Savannah River National Laboratory



SALTSTONE AT THE SAVANNAH RIVER SITE.

- In 2005, Savannah River National Laboratory (SRNL) enhanced its ability to support the SRS tritium operations with the installation and startup of electrical discharge machining, which sections tritium-exposed components for materials testing. With this machining, SRNL has a unique-in-the-DOE-complex method of evaluating the long-term effects of tritium on the structural properties of components.
- SRNL completed small-scale vitrification of the last of three tank samples from the Hanford site – the final research and testing step in the major portion of SRNL radioactive work for the Hanford River Protection Program (RPP). Since 1996, SRNL has been helping to design, develop and test processes for treating Hanford's tank wastes and closing their tanks, using the same skills and expertise that made the design, startup and operation of the SRS DWPF possible.
- SRNL continues its long tradition of support for the DWPF by providing a strategy that allowed the DWPF to increase waste loading – the amount of waste that can be placed into each canister of glass – from 37 to 40 % of each canister. The Laboratory also supported the design of a new glass pump, which resulted in a 7% improvement in the facility's melt rate.
- SRNL is leading a three-year, DOE complex-wide initiative to study the ways in which the earth repairs environmental damage (Monitored Natural Attenuation). Results are



DEACTIVATION AND DECOMMISSIONING OF BUILDING 720-A AT THE SAVANNAH RIVER SITE.

expected to accelerate cleanup by a minimum of 10 years for DOE sites that have groundwater plumes contaminated with chlorinated solvents.

## High Level Waste

- The DWPF produced 257 canisters with increased waste loading equivalent to 367 nominal canisters in FY05. The facility increased the amount of waste contained in each canister by 7 percent, which will result in about 1,000 fewer canisters over the life of the facility and a savings to taxpayers of about \$1 billion. As of December 16, 2005, DWPF has produced 2,015 canisters since operations began in 1996.
- The total space recovered by the 2F, 2H, and 3H Evaporator Systems equaled 3,544,000 gallons.
- F and H-Tank Farms performed bulk waste removal activities at Tanks 11 and 5. A total of 16,000 gallons of sludge has been removed from Tank 5, with additional activities in progress. A total of 120,000 gallons of sludge was removed from Tank 11.
- Saltstone Facility modifications to support interim salt processing were completed and integrated system testing was in progress in December 2005.
- Significant progress was made in design and construction of the Actinide Removal Process (ARP) and construction was initiated on a modular caustic side solvent extraction unit that will provide low capacity cesium removal for salt

waste starting in 2007. The mission of ARP and the mobile calibration unit is to reduce the level of Sr-90, Cs-137 and actinides in the decontaminated salt solution stream that is to be dispositioned as Saltstone grout.

- Dissolved the first batch of salt waste and staged it pending the completion of the final Section 3116 Waste Determination and State issued permits.
- Continued with the In-Service Inspection program for HLW tanks completing 8 additional tanks in FY05. To date, a total of eighteen tanks have been ultrasonically inspected with no degradation detected. Eight hundred eleven scheduled inspections (includes video and 7553 photographs) and 1166 special inspections have been performed for liquid waste disposition facilities as part of the ongoing inspection program. Two new inactive leak sites on the primary tank wall of Tank 12 were found as a result of the inspection program.

#### Solid Waste

- In 2005, SRS maintained its accelerated TRU waste shipment program, dispositioning over 720 cubic meters of legacy TRU waste and successfully completing 125 shipments to the Waste Isolation Pilot Plant. At this rate, SRS expects to complete shipment of its legacy drummed waste in 2007. This target date, compared to the original date, will save taxpayers about \$100 million.

- SRS received its final shipment of TRU waste from the Miamisburg (Ohio) Closure Project, in 2005, completing the transfer of waste from the Miamisburg Closure Project (Mound). Over three years, SRS has received about 302 cubic meters of TRU waste from Mound, helping DOE achieve the early closure of this surplus facility.
- The disposal of all legacy LLW stored at SRS was completed during FY05, thereby achieving a major milestone. At the start of FY01, the SRS LLW inventory stood at 12,641 cubic meters, and in just four years, this inventory was reduced to zero, one year ahead of schedule. In addition, SRS disposed of over 21,340 cubic meters of newly generated LLW.
- The Effluent Treatment Project treated over 16.6 million gallons of wastewater, exceeding the target by 66 percent.
- SRS shipped a cumulative total of over 2,050 cubic meters of LLW off site to the NTS and over 1,330 cubic meters of DUO waste to a commercial vendor in support of decommissioning and demolition activities during FY05.
- In 2005, SRS completed characterization, manifesting and shipment of 262.37 cubic meters of mixed waste for treatment and disposal. The 21 truck-loads of waste were shipped to certified off-site vendors for disposal.



DEACTIVATION AND  
DECOMMISSIONING OF  
BUILDING 720-A AT  
THE SAVANNAH RIVER  
SITE.



THE COMPLETED  
PURIFICATION  
FACILITY AT Y-12.

### Deactivation and Decommissioning

- Completed decommissioning of 46 gold metric facilities during FY05, representing reduction of 677,000 sq. ft. This brings the total number of gold metric facilities decommissioned to 140.
- Decommissioning all but one facility in the Heavy Water portion of D Area was completed and only three facilities remain to be decommissioned in M Area.
- Completed deactivation of the 247-F Fuel Fabrication Facility and commenced Decommissioning. The 247-F Facility will be the first complex, contaminated glove box line facility decommissioned at Savannah River. Decommissioning is targeted to complete in mid FY06, six months ahead of schedule.
- Commenced planning actions for deactivation and decommissioning of the F Area Material Storage Facility. The Pu-238 hold up in this facility makes it one of the highest risk facilities at the site.

### **N. Y-12 Site Office (YSO)**

Modernization continues at Y-12 through increased design and construction of new facilities, and demolition of older unusable facilities. An Integrated Modernization Plan and Schedule was developed and presented to NNSA-HQ which balances the need for aggressive efforts on material consolidation, dismantlement, and Quality Evaluation relocation against the need to not impact production milestones. The Highly Enriched Uranium Materials Facility is under construction with concrete pours being completed this

year and structure development occurring. The Uranium Processing Facility (UPF) received Critical Decision 0 approval late last calendar year, and design activities are well underway. Interaction with NNSA and both LLNL and LANL Design Agency/ Production Agency representatives has occurred to ensure proper coordination regarding the insertion of new/improved technologies into the UPF.

Ground was broken this year on two new facilities to house employees. These two facilities, the New Hope Building (serving as a public interface facility) and the Production Interface Facility, are privately financed, total approximately 500,000 square feet, and will house approximately 1500 employees which are currently located in more than 20 separate buildings. Construction of these new facilities will allow the complex to vacate and tear down obsolete, inefficient facilities built in the 1940s helping to reduce the footprint. Footprint reduction activities continued with 34 older facilities (totaling over 214,000 square feet) demolished this year.

Four major restart/startup activities occurred at the Y-12 National Security Complex in 2005:

- The Enriched Uranium Complex Oxide Conversion Facility was restarted. This system was redesigned and rebuilt resulting in more safety controls while allowing the facility to support production goals.
- The Enriched Uranium Complex Alternative Casting process was started which will allow new technologies to be utilized for casting of material to support production goals.

- Following construction and preparation activities, the Special Materials Capability Program Purification Facility received authorization to start up. This new facility built from the ground up using current codes and standards, as well as knowledge from past operations will allow purification activities for special materials to commence after having been halted since the early 1990's.
- The Disassembly Glovebox received authorization to commence operations following successful reviews. Operations in the Glovebox will allow recovery of materials for future use.

With the process startups mentioned above, an aggressive Emergency Management Drill and Exercise Program was maintained, including drills at the Oxide Conversion Facility and exercises at the Purification Facility.

Compliance with 10 CFR 830 continued with implementation of approved safety bases for nuclear facilities. Implementation Validation Reviews were conducted to ensure facilities can adequately implement and comply with their documents. Specific Administrative Controls were added to these documents and field implementation reviews were conducted as required by the implementation plan for Board recommendation 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*. Additionally, the Safety Analysis Report for the ES-3100 Shipping Container was completed and delivered to NNSA and the Nuclear Regulatory Commission.

Y-12 concerns for worker safety are indicated by the following highlights:

- The plant worked a total of 5.3 million hours without a Lost Workday Away case.
- A 93% reduction in the number of breathing zone samples for beryllium was accomplished. No samples exceeded the Permissible Exposure Limit.
- Commercial vehicle drivers completed their 13<sup>th</sup> accident free year.
- The National Safety Council awarded two Green Cross for Safety Excellence Achievement Awards to Y-12 for 1) achieving a reduction greater than 20% in injuries and illnesses involving the days away from work, and 2) maintaining a Lost Workday Case Incident Rate at less than 50% of the Bureau of Labor Statistics rate for our industry classification. Additionally, three merit awards for "recognition of outstanding safety practices or noteworthy accomplishments" were received.
- A Behavior-Based Safety process was initiated as was an aggressive ergonomics awareness campaign to prevent future occupational injuries and illnesses.

The first major external independent assessment of the Y-12 Environmental Management System (EMS) determined that, with only minor exceptions, Y-12 has successfully implemented an EMS that meets DOE requirements and measures up to the International Organization for Standardization 14001 international standard which includes the integration of EMS into the ISMS. Additionally,



Y-12 EMPLOYEE  
OPERATES A MOORE  
JIG BORER.



DEMOLITION OF THE  
1940'S/1950'S ERA  
BUILDING AT Y-12.

Y-12 has conducted several pollution prevention and recycling presentations to teachers and students in surrounding schools in order to educate and inform on the merits of a sound environmental program.

In the area of Criticality Safety, Y-12 collaborated with other sites to develop a unique Personnel Annunciation Device (PAD) to augment the Criticality Accident Alarm System (CAAS) in areas where the CAAS system may be inaudible. In collaboration with the Kansas City Plant, a Y-12 team performed a system design and fabricated a prototype for demonstration.

Accomplishments across the site include:

- Over 150 MT of unneeded depleted uranium and depleted uranium alloys were packaged and shipped to off-site disposal facilities.
- Over 65,000 items were brought into compliant storage. Approximately 10,000 items were repackaged and dispositioned to the Nevada Test Site.
- Initiated the Quality Evaluation (QE) Relocation Project in support of Design Basis Threat compliance requirements.
- Transferred approximately 699 MT of elemental mercury to a National Defense Stockpile (NDS) depot creating approximately 6,800 square feet of limited use storage space.
- Completed equipment hold-up material measurements on more than 230 systems.

- Met shipment schedules for enriched uranium to the United States Enrichment Corporation and the Tennessee Valley Authority.
- Actively supported work for shipments of enriched uranium material for research reactor fuel. Shipments were made for reactors in Romania, South Korea, Australia, Canada, and Japan and to fuel fabricators in Argentina, Canada, Japan, and France.
- Produced more material for the High Flux Isotope Reactor in the first 6 months of FY05 than any other year in more than 10 years.

The Y-12 BWXT/Bechtel initiative to improve complex wide Readiness Performance continued in 2005 as for the fifth year, Y-12 hosted the Readiness Workshop. Working with NNSA, Y-12 was responsible for the planning and coordination of the workshop, and the development of several key readiness presentations. Working together, NNSA headquarters, EH, EM, the new Chief of Defense Nuclear Safety staff, and several key sites ensured that there was excellent complex wide participation and that the agenda addressed both concerns noted with Readiness performance, and various Readiness Process improvement initiatives underway at a number of sites. The workshop is considered a major part of the path forward to address and implement Readiness Preparation improvements.

A review of Safeguards and Security by the Office of Independent Assessment and Performance Assurance recognized significant progress in all areas of performance, including praise as the "flagship" for cyber security and leading in Integrated Management within the

NNSA Complex. Additionally, after appropriate reviews, NNSA approval to operate the first Remote Operated Weapons System in the NNSA Complex was obtained.

Y-12 actively supported the Department's efforts to develop implementation plans for Board recommendations 2005-1, *Nuclear Material Packaging*, and 2004-2, *Active Confinement Systems*. The site supported actions associated with the Implementation Plans for Board recommendations 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*, and 2002-1, *Quality Assurance for Safety-Related Software*. Additionally, actions continued in institutionalizing Board recommendation 93-6, *Maintaining Access to Nuclear Weapon Expertise*. Current efforts have focused on evaluating new and existing knowledge preservation data to establish a plan for its use in indoctrination of new engineers and new line managers who were designated as the initial key focus groups. With the current increased

influx of new engineering and manufacturing process/system engineers and line supervisors, shift technical advisors, and managers, Y-12 has initiated actions to establish an indoctrination course for these new personnel after they obtain their security clearances. The course will be centered around video tapes recorded by Dr. John Googin which capture the basics of nuclear weapon design and the role of Y-12 in the nuclear weapons complex. Dr. Googin worked many years at Y-12 and was responsible for the development of many of the Enriched Uranium processes.

Lastly, in the area of community outreach, Y-12 hosted over 600 people who participated in the first-ever public tour of Building 9204-3 to view the electromagnetic separation devices used in the Manhattan Project. This included welcoming back to the site a war era Operator and her Supervisor who had not been in the building for approximately 60 years.



**WORKERS FINISH  
CONCRETE POURS AT  
THE Y-12 HIGHLY  
ENRICHED URANIUM  
MATERIALS FACILITY  
PRESENTLY UNDER  
CONSTRUCTION.**



## 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 briefings with the Board members;
- Safety Issues Management System (SIMS);
- maintenance of the information archive of Board-related documents; and

- interface workshops 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 public 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 2005.

## **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 2005. 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 2005, 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 2005, the Department supported one public meeting conducted by the Board on December 7, 2005, on the topic of Safety in Design.

## **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 106 in December 2005. The total number of overdue commitments related to Board recommendations has also declined significantly, from 245 in August 1995 to 13 in December 2005. 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 2005, the Department is tracking fifty 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 2005; 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 <http://www.deprep.org>. 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 2005**

Date	Reporting Requirements	Days to Report
1/18/05	A report regarding long-term management of waste retrieval and tank space and a briefing on implementation of the Expert Panel's recommendations on Hanford Site's double-shell tank waste chemistry control.	45
1/31/05	A report regarding writing, tracking, and closing conditions of approval for 10 CFR 830 documented safety analyses.	90
2/2/05	A report on actions taken to ensure that the Silos 1 and 2 Remediation Facility is fully ready to operate safely.	Provided prior to start-up authorization from DOE
2/4/05	A report regarding Sludge Retrieval and Disposition Project (SRDP).	60
2/11/05	A report regarding Nuclear Criticality Safety issues at the Plutonium Finishing Plant.	60
2/14/05	A briefing on fire response procedures at the Plutonium Finishing Plant (PFP) at the Hanford Site.	60
2/24/05	A briefing on the use of a design-build approach for the Chemistry and Metallurgy Research Facility Replacement (CMR-R) Project at the Los Alamos National.	30
3/8/05	A report on the path forward for resumption of programmatic operations in the Plutonium Facility.	Before resumption of operations
3/18/05	A report provide the results of a condition assessment and mapping of building leaks and structural cracks at Device Assembly Facility.	45
3/28/05	A report identify the desired conditions of readiness for G-Tunnel at Nevada Test Site, including facility and equipment improvements, and provide its plan and schedule to establish those conditions.	120
4/20/05	A briefing on structural deficiencies of Building 9212 at Y-12.	30
5/2/05	A briefing on improve Conduct of Operations at Pantex in light of several explosives handling events.	30

**Table 5.A - Formal Reporting Requirements Established by the Board in 2005, Continued**

Date	Reporting Requirements	Days to Report
5/31/05	A report that outlines NNSA's plan and schedule for implementation of an effective safety-class system that would protect the public from the unmitigated consequences of a potential event at LANL's plutonium facility	60
5/31/05	A report describing the strategy that will lead to timely resolution of all LANL fire protection deficiencies and achieve site-wide improvements in the laboratory's fire protection program for defense nuclear facilities	90
6/1/05	A report on the incorporation of vapor space data into the ongoing test programs for double-shell tanks, and the risk versus benefits of revising waste chemistry limits at the Hanford Site	90
7/29/05	A briefing on the path forward for designing and implementing a satisfactory system architecture for the NNSA Policy Letter system, and the schedule for that path forward.	60
9/7/05	A briefing on the Office of River Protection's technical and programmatic oversight of the Demonstration Bulk Vitrification Project	Before January 2006
9/7/05	A briefing on the Resolution of Demonstration Bulk Vitrification Project Concerns	Annually
9/9/05	Annual briefing on the Pit Management Plan (PMP) and the pit packaging program at Pantex	90
9/14/05	A briefing regarding Operational Readiness Review Process	45
10/11/05	A briefing on the Department's Action Plan on <i>Lessons Learned from the Columbia Space Shuttle Accident and Davis-Besse Reactor Pressure Vessel Head Corrosion Event</i>	60
11/23/05	A report providing the details of a more aggressive plan for developing and implementing an appropriate DOE-level policy, along with the necessary implementing guidance, to ensure the appropriate use of risk assessment methodologies at defense nuclear facilities	60
11/28/05	A report and briefing on safety management programs and vital safety systems at the Device Assembly Facility (DAF) at the Nevada Test Site	60

**Table 5.A - Formal Reporting Requirements Established by the Board in 2005, Continued**

<b>Date</b>	<b>Reporting Requirements</b>	<b>Days to Report</b>
11/28/05	A report that identifies the 9212 complex modifications that would be implemented if each Critical Decision milestone for the Uranium Processing Facility project be delayed at the National Security Complex (Y-12).	60
11/29/05	A briefing regarding federal safety oversight responsibilities of the Los Alamos Site Office.	7
12/14/05	A report on provides a clear path forward for developing the required guidance in the draft technical business practice.	30

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

<b>Date</b>	<b>Reporting Requirements</b>	<b>Days to Report</b>
8/7/03	An annual report on the Department's Nuclear Criticality Safety Program.	Annually
12/14/04	A management briefing on implementation of the Department's implementation plan 98-2, <i>Safety Management at Pantex</i> .	Monthly



## 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 151.1C	Comprehensive Emergency Management System
DOE O 225.1A	Accident Investigations
DOE O 226.1	Implementation of Department of Energy Oversight Policy
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 Chg 1	Program and Project Management for the Acquisition of Capital Assets
DOE O 414.1C	Quality Assurance
DOE O 420.1B	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 Chg 2	Environmental Protection Program
DOE O 451.1B Chg 1	National Environmental Policy Act Compliance Program
DOE O 452.1C	Nuclear Explosive and Weapon Surety Program
DOE O 452.2B	Safety of Nuclear Explosive Operations
DOE O 452.3	Management of the Department of Energy Nuclear Weapons Complex
DOE O 460.1B	Packaging and Transportation Safety

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

<b>Order Number</b>	<b>Title</b>
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
DOE O 470.2B	Independent Oversight and Performance Assurance Program
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	Environmental Protection, Safety, and Health Protection Standards
DOE O 5480.20A Chg 1	Personnel Selection, Qualification, and Training Requirements for DOE 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 5660.1B	Management of Nuclear Materials

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

<b>Order Number</b>	<b>Title</b>
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**

<b>Order Number</b>	<b>Title</b>
DOE O 210.1	Performance Indicators and Analysis of Operations Information
DOE O 232.1A	Occurrence Reporting and Processing of Operational Information
DOE O 473.1	Physical Protection Program
DOE O 474.1A	Control and Accountability of Nuclear Materials
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 Operations
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

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

<b>Order Number</b>	<b>Title</b>
DOE O 5480.6	Safety of Department of Energy-Owned Nuclear Reactors
DOE O 5480.7A	Fire Protection
DOE O 5480.8A Chg 2	Contractor Occupational Medical Program
DOE O 5480.9A	Construction Safety and Health Management
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 5480.19 Chg 2	Conduct of Operations Requirements for DOE Facilities
DOE O 5480.24	Nuclear Criticality Safety
DOE O 5480.25	Safety of Accelerator Facilities
DOE O 5480.26	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 5484.1 Chg 7	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

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

<b>Order Number</b>	<b>Title</b>
DOE O 5500.7B	Emergency Operating Records Protection Program
DOE O 5500.10 Chg 1	Emergency Readiness Assurance Program
DOE O 5600.1	Management of the Department of Energy Weapon Program and Weapon Complex
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**

<b>Document No.</b>	<b>Title</b>
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 P 226.1	Department of Energy Oversight Policy
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

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

<b>Document No.</b>	<b>Title</b>
DOE G 231.1-2	Occurrence Reporting Causal Analysis Guide
DOE M 251.1-1A	Directives System Manual
DOE P 251.1	Directives System Policy
DOE P 410.1A	Promulgating Nuclear Safety Requirements
DOE P 411.1	Safety Management Functions, Responsibilities, and Authorities Policy
DOE P 413.1	Program and Project Management Policy for the Planning, Programming, Budgeting, and Acquisition of Capital Assets
DOE P 413.2	Value Engineering
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 414.1-2A	Quality Assurance Management System Guide for Use with 10 CFR 830, Subpart A, Quality Assurance Requirements, and DOE O 414.1C, Quality Assurance
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
DOE G 414.1-4	Safety Software Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements, and DOE O 414.1C, Quality Assurance
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**

<b>Document No.</b>	<b>Title</b>
DOE M 426.1-1A	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 440.1-1A	DOE Explosives Safety Manual
DOE G 440.1 series	Guides for Use with DOE Order 440.1 Volumes 1 through 7
DOE P 441.1	DOE Radiological Health and Safety Policy
DOE G 441.1 series	Guides for Use with 10 CFR 835 Volumes 1 through 13
DOE G 441.1-3A	Internal Dosimetry Program Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection
DOE G 441.1-4A	External Dosimetry Program Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection
DOE G 442.1-1	DOE Employee Concerns Program Guide
DOE G 450.1 series	Implementation Guide for Use with DOE Order 450.1 Volumes 1,4
DOE G 450.1-2	Implementation Guide for Integrating Environmental Management Systems into Integrated Safety Management Systems
DOE G 450.1-5	Implementation Guide for Integrating Pollution Prevention into Environmental Management Systems
DOE P 450.2A	Identifying, Implementing, and Complying with ES&H Requirements

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

Document No.	Title
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 series	Documentation for Work Smart Standards Applications Volumes 1 through 3
DOE P 450.4	Safety Management System Policy
DOE G 450.4-1B series	Integrated Safety Management System Guide Volumes 1 through 2
DOE P 450.7	Environment, Safety and Health (ES&H) Goals
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 Chg 1	Packaging and Transfer of Materials of National Security Interest Manual
10 CFR 820	Procedural Rules for DOE Nuclear Activities
10 CFR 830, Subpart A	Nuclear Safety Management, Quality Assurance Requirements
10 CFR 830, Subpart B	Nuclear Safety Management, Safety Basis Requirements
10 CFR 835	Occupational Radiation Protection
48 CFR 970.5204-2	DOE Acquisition Regulation, Laws, Regulations, and DOE Directives Clause
48 CFR 970.5215-3	DOE Acquisition Regulation, Conditional Payment of Fee, Profit, and other Incentives – Facility Management Contracts Clause
48 CFR 970.5223-1	DOE Acquisition Regulation, Integration of Environment, Safety, and Health Into Work Planning and Execution Clause
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 2005**

Order Number	Title	Date Issued
DOE-STD-1136-2004	Guide of Good Practices for Occupational Radiological Protection in Uranium Facilities	12/31/2004
DOE O 450.1 Chg1	Environmental Protection Program	1/24/2005
DOE-HDBK-1139/3-2005	Chemical Management Handbook (Volume 3 of 3) Consolidated Chemical User Safety and Health Requirements	4/30/2005
DOE-STD-1120-2005, Volume 1	Integration of Environment, Safety, and Health into Facility Disposition Activities	4/30/2005
DOE G 450.1-5	Implementation Guide for Integrating Pollution Prevention into Environmental Management Systems	5/27/2005
DOE O 452.3	Management of the Department of Energy Nuclear Weapons Complex	6/8/2005
DOE P 226.1	Department of Energy Oversight Policy	6/10/2005
DOE G 441.1-3A	Internal Dosimetry Program Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection	6/11/2005
DOE G 441.1-4A	External Dosimetry Program Guide for Use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection	6/11/2005
DOE G 414.1-2A	Quality Assurance Management System Guide for Use with 10 CFR 830, Subpart A, Quality Assurance Requirements, and DOE O 414.1C, Quality Assurance	6/17/2005
DOE O 414.1C	Quality Assurance	6/17/2005
DOE G 414.1-4	Safety Software Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements, and DOE O 414.1C, Quality Assurance	6/17/2005
DOE-STD-1120-2005, Volume 2	Integration of Environment, Safety, and Health into Facility Disposition Activities	6/30/2005
DOE M 461.1-1	Packaging and Transfer of Materials of National Security Interest Manual	7/26/2005
DOE O 226.1	Implementation of Department of Energy Oversight Policy	9/15/2005
DOE O 452.1C	Nuclear Explosive and Weapon Surety Program	9/20/2005

**Table A.2 Department Safety Related Directives Coordinated with the Board Staff and Issued in 2005, Continued**

<b>Order Number</b>	<b>Title</b>	<b>Date Issued</b>
DOE G 454.1-1	Institutional Controls Implementation Guide for Use with DOE P 454.1, Use of Institutional Controls	10/14/2005
DOE G 450.1-1A	Implementation Guide for Use with DOE O 450.1, Environmental Protection Program	10/24/2005
DOE O 151.1C	Comprehensive Emergency Management System	11/02/2005
DOE-STD-1104-96	Review and Approval of Nuclear Facility Safety Basis Documents (Documented Safety Analysis and Technical Safety Requirements)	11/30/2005
DOE O 450.1 Chg2	Environmental Protection Program	12/07/2005
DOE-STD-3020-2005	Specification for HEPA Filters Used by DOE Contractors	12/31/2005
DOE O 420.1B	Facility Safety	12/22/2005

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

**Series 100—Leadership/Management/Planning**

**DOE O 151.1C, *Comprehensive Emergency Management System***

Establishes policy, 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 226.1, *Implementation of Department of Energy Oversight Policy***

Provides direction for implementing Department of Energy (DOE) P 226.1, Department of Energy Oversight Policy, which establishes DOE policy for assurance systems and processes established by DOE contractors and oversight programs performed by DOE line management and independent oversight organizations.

**DOE O 231.1A, Chg 1, *Environment, Safety, and Health Reporting***

Ensures timely collection, reporting, analysis, and dissemination of information on environment, safety, and health issues as required by law or regulations or as needed to ensure that the Department of Energy (DOE) and National Nuclear Security Administration are kept fully informed on a timely basis about events that could adversely affect the health and safety of the public or the workers, the environment, the intended purpose of DOE facilities, or the credibility of the Department.

**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.

**Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as “of Interest”, Continued**

**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***

Established requirements and responsibilities for occupational medical, employee assistance, and workers' compensation programs for Federal employees.

**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 Chg 1, *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 414.1C, *Quality Assurance***

Establishes quality process requirements to be implemented under a QA program (QAP) for the control of suspect/counterfeit items (S/CIs), safety issue corrective actions, and safety software. Ensures that Department of Energy (DOE), including National Nuclear Security Administration (NNSA), products and services meet or exceed customers' expectations.

**DOE O 420.1B, *Facility Safety***

Establishes facility safety requirements for the Department of Energy, including National Nuclear Security Administration.

**Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as “of Interest”, Continued**

**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.

**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, Chg 2, *Environmental Protection Program***

Implements 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.

**Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as “of Interest”, Continued**

**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 452.1C *Nuclear Explosive and Weapon Surety Program***

Establishes DOE requirements and responsibilities to ensure safety, security, and control of nuclear explosives and nuclear weapons in the Nuclear Explosive Weapons Surety Program.

**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.

**DOE O 452.3, *Management of the Department of Energy Nuclear Weapons Complex***

Defines and affirms the authorities and responsibilities of the National Nuclear Security Administration (NNSA) for the management of the Department of Energy Nuclear Weapons Complex and emphasizes that the management of the United States nuclear weapons stockpile is the DOE’s highest priority for the NNSA and the DOE Nuclear Weapons Complex.

**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 requirements and responsibilities for management of Department of Energy (DOE), including National Nuclear Security Administration (NNSA), materials transportation and packaging to ensure the safe, secure, efficient packaging and transportation of materials, both hazardous and nonhazardous.

**Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as “of Interest”, Continued**

***DOE O 461.1A, Packaging and Transfer or Transportation of Materials of National Security Interest***

Establishes requirements and responsibilities for offsite shipments of naval nuclear fuel elements, Category I and Category II special nuclear material (SNM), nuclear explosives, nuclear components, special assemblies, and other materials of national security interest; onsite transfers of naval nuclear fuel elements, Category I and II SNM, nuclear components, special assemblies and other materials of national security interest; and certification of packages for Category I and II SNM, nuclear components, 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.

**Series 5400—Environmental Quality and Impact**

***DOE O 541.1B, Appointment of Contract Offices and Contracting Offices Representative***

Establishes procedures governing the selection, appointment, and termination of Department of Energy (DOE)/National Nuclear Security Administration (NNSA) contracting officers and contracting officer representatives. Also, ensures that, within the scope of this Order, only trained, qualified procurement and financial assistance professionals serve as contracting officers.

**Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as “of Interest”, Continued**

**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 5480.20A, 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 uses 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.

**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.

**Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as “of Interest”, Continued**

**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 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.

**Related Documents Setting Forth Safety-Related Requirements**

**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 226.1, *Department of Energy Oversight Policy***

Establishes the expectations for effective oversight of performance in security, cyber security, emergency management, environment, safety and health, and business operations.

**Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as “of Interest”, Continued**

**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 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 413.2, *Value Engineering***

Establishes Department of Energy value engineering policy that meets the requirements of Public Law 104-106, Section 4306 as codified by 41 United States Code 432. This law states that each agency shall establish and maintain cost-effective value engineering (VE) procedures and processes.

**Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as “of Interest”, Continued**

***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.

***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 450.2A, Identifying, Implementing, and Complying with ES&H Requirements***

Sets forth the framework for identifying, implementing and complying with environment, safety and health (ES&H) requirements so that work is performed in the DOE complex in a manner that ensures adequate protection of workers, the public and the environment.

***DOE P 450.3, Authorizing Use of the Necessary and Sufficient Process for Standards-Base Environment, Safety and Health Management***

Provides requirements and guidance for near term use of the Necessary and Sufficient Process. The Necessary and Sufficient Process should be applied where substantial benefit - in terms of worker and public safety, environmental protection, mission accomplishment, and cost - can be realized.

***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.

***DOE P 450.7, Environment, Safety and Health (ES&H) Goals***

Establishes Environment, Safety and Health (ES&H) goals for Department of Energy (DOE) personnel and its contractors. These goals are designed to establish Departmental ES&H expectations for: 1) DOE and contractor personnel ES&H behaviors and attitudes in the conduct of their daily work activities, and 2) operational performance regarding worker injuries and illnesses, regulatory enforcement actions, and environmental releases.

**Table A.3 – Descriptions of Department Orders and Safety Directives designated by the Board as “of Interest”, Continued**

**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***

Focuses 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 particular, to achieve compliance with the DOE Nuclear Safety Requirements by all persons subject to those requirements.

**10 CFR Part 830, Nuclear Safety Management, 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, Nuclear Safety Management, 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 2005

#### Albuquerque

- On January 24, 2005, the Board's staff visited **Albuquerque** to observe the Energy Facility Contractors Group's Safety Analysis Working Group Workshop.
- On February 13-18, 2005, the Board's staff visited **Albuquerque** to support the Board's site visit and to review integrated safety management at Sandia National Laboratory, Sandia Site Office, and the NNSA Albuquerque Service Center.
- On March 7-11, 2005, the Board's staff visited **Albuquerque** for polygraph testing for Human Reliability Program, to access the Lawrence Livermore National Laboratory facilities, and to observe the Annular Core Research Reactor readiness assessment.
- On May 2-6, 2005, the Board's staff visited **Albuquerque, New Mexico** to participate in the Annual Nuclear Explosive Safety Workshop.
- On July 11-15, 2005, the Board's staff visited **Albuquerque** to attend the working group meetings for the Nuclear Explosive Safety top-down review process.
- On July 18-22, 2005, the Board's staff visited **Albuquerque** to participate in the NNSA workshop on integrating ISM/QA into activity-level work planning and control.
- On July 26-28, 2005, the Board's staff visited **Albuquerque** to attend the NNSA sponsored Contractor Assurance System meeting.
- On July 27-29, 2005, the Board's staff visited **Albuquerque** to attend the Energy Facility Contractors Group Integrated Safety Management working group, the DOE HQ Office of Environment, Safety, and Health and the NNSA Electrical Safety program meeting.
- On September 26-30, 2005, the Board's staff visited **Albuquerque** to attend the Probabilistic Seismic Hazard Assessment Peer Review meeting.
- On October 17-21, 2005, the Board's staff visited **Albuquerque** to attend the DOE STD-3013 Materials Identification and Surveillance Program year-end review.
- On October 26-28, 2005, the Board's staff visited **Albuquerque** to attend a NNSA meeting regarding the review of proposed weapon dismantlement.
- On October 31-November 3, 2005, the Board's staff visited **Albuquerque** to attend the Integrated Safety Management working group meeting.
- On November 1-3, 2005, the Board's staff visited **Albuquerque** to attend the Energy Facility Contractors Owners Group Integrated Safety Management meeting.

*The Department supported 142 site visits in 2005*

### **Atlanta**

- On June 28-29, 2005, the Board's staff visited **Atlanta** to attend the Energy Facility Contractors Group/DOE HQ Executive Subcontractor Safety Summit.

### **Brookhaven National Laboratory**

- On June 13-17, 2005, the Board's staff visited **Brookhaven National Laboratory** to attend the Department's Annual Fire Protection Conference.

### **Carlsbad Field Office**

- On January 18-21, 2005, the Board's staff visited the **Waste Isolation Pilot Plant** to review operations of the National Transuranic Program and observe the remote-handled TRU waste double canister insertion demonstration.
- On May 2-4, 2005, the Board's staff visited the **Waste Isolation Pilot Plant** to review the safety of contact-handled transuranic waste disposal operations and future plans for contact-handled TRU and remote-handled TRU waste disposal operations.

### **Fernald**

- On March 8-11, 2005, the Board's staff visited **Fernald** to review oversight of Silo 3 readiness reviews.
- On April 12-15, 2005, the Board's staff visited **Fernald** to observe the start-up readiness review for Silos 1 and 2 Remediation Facility.

- On April 20-22, 2005, the Board's staff visited **Fernald** to review the Silo 1 & 2 Readiness Assessment.
- On April 25-27, 2005, the Board's staff visited **Fernald** to review the Silo 1 and 2 Readiness Assessment.

### **Hanford**

- On January 10-14, 2005, the Board's staff visited **Hanford** to participate in site access training, to review the Waste Treatment Plant High-Level Waste Summary Structural Report and to review the status of ground motion issues.
- On March 7-11, 2005, the Board's staff visited **Hanford** to observe the Integrated Safety Management Phase II review.
- On March 28-April 1, 2005, the Board's staff visited **Hanford** to support three Board members' site visit.
- On April 18-22, 2005, the Board's staff visited **Hanford** to review the deactivation and decommissioning, criticality, and fire protection programs.
- On April 25-29, 2005, the Board's staff visited **Hanford** to attend the sludge review board meeting.
- On May 16-20, 2005, the Board's staff visited **Hanford** to review the K-Basin Closure Project.
- On May 23-27, 2005, the Board's staff visited **Hanford** to review the Demonstration Bulk Vitrification Systems Project.
- On July 11-15, 2005, the Board's staff visited **Hanford** to review the Waste Treatment and Immobilization Plant design, and the hydrogen in pipes and ancillary vessels.

- On August 16-19, 2005, the Board's staff visited **Hanford** to support one Board member's site visit.
- On October 10-14, 2005, the Board's staff visited **Hanford** to observe the peer review team meeting regarding seismic qualification of mechanical equipment for the Waste Treatment and Immobilization Plant.
- On November 14-18, 2005, the Board's staff visited **Hanford** to review soil-structure interaction response for the high-level waste and pretreatment facilities for revised ground motion, and other structural issues.
- On December 12-16, 2005, the Board's staff visited **Hanford** to review the U Plant disposal strategy, Plutonium Finishing Plant issues, the River Corridor Closure Project scope, K-Basin sludge removal status, the Waste Treatment Plant design for addressing hydrogen in pipes and ancillary vessels, and overall DOE oversight.

#### **Idaho National Engineering and Environmental Laboratory**

- On February 21-25, 2005, the Board's staff visited **Idaho** to review the Idaho Nuclear Technology and Engineering Center, Advanced Mixed Waste Treatment Project, Accelerated Retrieval Project in the Radioactive Waste Management Complex, and Neptunium-237 (Np-237) at Argonne National Laboratory – West .
- On May 16-20, 2005, the Board's staff visited the **Idaho National Laboratory** to review progress on the Battelle Energy Alliance plan to upgrade Documented Safety Analyses and contractor transition.
- On July 25-29, 2005, the Board's staff visited the **Idaho National Laboratory** to review progress at the Idaho Nuclear Technology & Engineering Center, Accelerated Retrieval Project, and Advanced Mixed Waste Treatment Project, to review the Neptunium program at the Materials and Fuel Complex, and Np-237 and Pu-238 activities.
- On November 7-11, 2005, two Board members visited **Idaho** for a site visit.
- On November 7-11, 2005, the Board's staff visited **Idaho** to review the Neptunium-237 storage at the Materials and Fuels Complex, the Accelerated Retrieval Project, the Advanced Mixed Waste Treatment Plant, and site-wide decontamination and decommissioning activities.

#### **Lawrence Livermore National Laboratory**

- On January 17-21, 2005, the Board's staff visited **Lawrence Livermore National Laboratory** to review the Department's health physics and radiological protection practices.
- On January 24-28, 2005, the Board's staff visited **Lawrence Livermore National Laboratory** to review the Department's health physics and radiological protection activities.
- On April 11-15, 2005, the Board's staff visited **Livermore** to review Lawrence Livermore National Laboratory and Los Alamos National Laboratory high explosive test results applicability to Pantex

- and other topics, and for a Weapons Response Review.
- On June 6-10, 2005, the Board's staff visited the **Lawrence Livermore National Laboratory** to observe the B332 Management Self-Assessment.
  - On August 8-12, 2005, the Board's staff visited the **Lawrence Livermore National Laboratory** to observe the B332 Readiness Assessment.
  - On August 15-19, 2005, the Board's staff visited the **Lawrence Livermore National Laboratory** to observe Building 332 readiness assessment.
  - On October 3-7, 2005, the Board's staff visited the **Lawrence Livermore National Laboratory** to attend the Energy Facility Contractors Group meeting on Integrated Safety Management.
  - On October 17-21, 2005, the Board and the Board's staff visited the **Lawrence Livermore National Laboratory** for a site visit.
  - On December 12-16, 2005, the Board's staff visited the **Lawrence Livermore National Laboratory** to review the resumption of limited activities at Building 332.

#### **Los Alamos National Laboratory**

- On February 28-March 4, 2005, the Board's staff visited the **Los Alamos National Laboratory** to review fire protection and emergency management.

- On March 7-11, 2005, the Board's staff visited the **Los Alamos National Laboratory** to meet with NNSA officials on the Pit Disassembly and Conversion Facility demonstration and testing program and review recommendation 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, training.
- On May 23-27, 2005, the Board's staff visited the **Los Alamos National Laboratory** to review the Plutonium-238 scrap recovery and nuclear material management.
- On June 13-17, 2005, the Board's staff visited the **Los Alamos National Laboratory** to attend the Seismic Source Models workshop for the ongoing Los Alamos National Laboratory probabilistic seismic hazard analysis updates.
- On July 19-21, 2005, the Board's staff visited the **Los Alamos National Laboratory** to review training.
- On October 24-28, 2005, the Board's staff visited **Los Alamos** to attend the Department's Nuclear Criticality Safety review of the Los Alamos National Laboratory program, and to review the Los Alamos Site Office's oversight and the continuity of corrective action plans during contract transition.
- On October 31-November 4, 2005, the Board's staff visited **Los Alamos National Laboratory** to review activity level integrated safety management and incorporating safety and design into programmatic work.

## Nevada

- On March 22-25, 2005, the Board's staff visited **Las Vegas** to review the Department's implementation of recommendation 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, training at the Nevada Test Site.
- On April 25-29, 2005, the Board's staff visited **Las Vegas** to review the Preliminary Document Safety Analysis for the Criticality Experiments Facility at the Device Assembly Facility and the mapping of Device Assembly Facility leaks and cracks.
- On May 16-19, 2005, the Board's staff visited **Las Vegas** to attend the DOE Facility Representative Workshop and the Annual Federal Technical Capability Panel Face-to-Face meeting.
- On September 19-23, 2005, the Board's staff visited **Las Vegas** to review the G-tunnel at the Nevada Test Site.
- On October 17-20, 2005, the Board's staff visited **Las Vegas** to attend the workshop for recommendation 2004-2, *Active Confinement Systems* implementation plan.
- On December 5-9, 2005, the Board's staff visited **Las Vegas** to attend the 60% design review for the Criticality Experiment Facility at the Device Assembly Facility and attend the NNSA Quality Assurance Workshop.

## Nevada Test Site

- On January 24-28, 2005, the Board's staff visited the **Nevada Test Site** to review electrical safety and lightning protection systems, design for the Critical Experiments Facility projects, and the Device Assembly Facility.
- On March 7-10, 2005, the Board's staff visited the **Nevada Test Site** to support a Board member's visit, to support the Integrated Safety Management review and to observe and review damaged nuclear weapons disposition activities.
- On March 14-17, 2005, the Board's staff visited the **Nevada Test Site** to attend the criticality safety support group meeting at the NNSA Nevada Support Facility.
- On May 9-13, 2005, the Board's staff visited the **Nevada Test Site** to review the NNSA operational readiness review for the Device Assembly Facility and the T-18 early move material.
- On May 17-20, 2005, the Board's staff visited the **Nevada Test Site** to support the Board's visit to the Device Assembly Facility and the G-Tunnel.
- On May 23-27, 2005, the Board's staff visited the **Nevada Test Site** to review Disposition Team and G-tunnel activities including electrical and lightning protection systems for the capability to dispose of potentially damaged nuclear weapons.

- On June 6-10, 2005, the Board's staff visited the **Nevada Test Site** to review the Critical Experiments Facility project and the Preliminary Documented Safety Analysis safety basis review.
- On June 27-July 1, 2005, the Board's staff visited the **Nevada Test Site** to review the Krakatau Safety Basis.
- On July 18-22, 2005, the Board's staff visited the **Nevada Test Site** to review structural cracks at the Device Assembly Facility.
- On August 15-19, 2005, the Board's staff visited the **Nevada Test Site** to review the Nuclear Materials Management Team progress and to review the nuclear materials storage.
- On August 29-September 2, 2005, the Board's staff visited the **Nevada Test Site** to review the Damaged Weapon Disposition exercise.
- On September 19-23, 2005, the Board's staff visited the **Nevada Test Site** to review the implementation of the safety basis and emergency response exercises at the Device Assembly Facility, and the Subcritical Experiment Safety Bases, and to participate in the 30% design review of the criticality experiments facility for the Device Assembly Facility.
- On September 26-29, 2005, the Board's staff visited the **Nevada Site Office** and **Sandia National Laboratory** to attend the weapons dismantlement meeting.
- On October 24-28, 2005, the Board's staff visited the **Nevada Test Site** to accompany the Containment Review Panel visit to the U6C Site to observe subcritical experiment "Unicorn," and to observe the Containment Review Panel meeting on "Unicorn," and visit G-Tunnel.
- On October 24-28, 2005, the Board's staff visited the **Nevada Test Site** for a fire protection review.
- On December 5-9, 2005, the Board's staff visited the **Nevada Test Site** to observe the Sub-Critical Assembly, Radiography and Downdraft and UNICORN sub-critical experiment readiness assessment.
- On December 12-16, 2005, the Board's staff visited the **Nevada Test Site** to review the training and qualification review for the Los Alamos National Laboratory sub-critical experiment.

### **Oak Ridge**

- On January 11-14, 2005, the Board's staff visited **Oak Ridge** to review the status of all radioactive waste facilities and activities.
- On April 27-29, 2005, the Board's staff visited **Oak Ridge** to review the Y-12 electrical upgrade project, electrical panels, and Highly-Enriched Uranium Materials Facility issues.
- On August 23-24, 2005, the Board's staff visited **Erwin, TN** to review the Steam Reforming Process at the Studsvik Facility.
- On September 13-16, 2005, the Board's staff visited **Oak Ridge, TN** to attend the Human Performance Improvement Workshop.

- On September 15-16, 2005, the Board's staff visited **Knoxville, TN** to attend the DOE Criticality Safety Support Group meeting.
- On September 19-23, 2005, the Board's staff visited **Knoxville, TN** to attend the DOE Criticality Safety Support Group meeting.
- On September 20-22, 2005, the Board's staff visited **Oak Ridge** to review the design and construction of the Highly Enriched Uranium Materials Facility.
- On October 31, 2005, the Board's staff visited **Oak Ridge** to review the W1A Tank Recovery Project sampling and characterization.
- On November 15-18, 2005, the Board's staff visited **Oak Ridge** to observe the Melton Valley Waste Processing Facility.
- On March 7-11, 2005, the Board's staff visited **Pantex** to observe the B83 Nuclear Explosive Safety Study.
- On March 28-April 1, 2004, the Board's staff visited **Pantex** to observe the B83 Nuclear Explosive Safety Study.
- On April 4-8, 2005, the Board's staff visited **Pantex** to observe the B83 Nuclear Explosive Safety Study, to review the safety strategy for the Special Nuclear Material Component Requalification Facility, the project status of the Component Evaluation Facility, and the 12-64 Upgrade Project.
- On April 11-15, 2005, the Board's staff visited **Pantex** to observe the B83 Nuclear Explosive Safety Study.
- On April 18-22, 2005, the Board's staff visited **Pantex** to review recommendation 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, oversight activities.

### **Pantex**

- On January 4, 2005, the Board's staff visited **Pantex** to review Integrated Safety Management.
- On January 17-21, 2005, the Board's staff visited **Pantex** to observe the Nuclear Explosive Safety process and discussions regarding electrostatic discharge and lightning protection.
- On February 14-18, 2005, the Board's staff visited **Pantex** to review the W56 Dismantlement Program.
- On February 28-March 4, 2005, the Board's staff visited **Pantex** to observe the B83 Nuclear Explosive Safety Study.
- On April 25-29, 2005, the Board's staff visited **Pantex** to review the emergency management program, the B83 Seamless Safety for the 21st century Nuclear Explosive Safety Study Evaluation, and start-up preparations for the contact-held transuranic solids processing.
- On June 6-10, 2005, the Board's staff visited **Pantex** to observe the W80 Tester Nuclear Explosive Safety Change Evaluation.
- On July 12-15, 2005, the Board's staff visited **Pantex** to support the Board's visit.

- On September 6-9, 2005, the Board's staff visited **Pantex** to review Electrostatic Discharge issues, Cell Gap Calculations, and Software Quality Assurance activities for Interactive Electronic Procedures.
- On October 3-7, 2005, the Board's staff visited **Pantex** to review the fire protection systems.
- On November 15-18, 2005, the Board's staff visited **Pantex** to review lightning protection and electrical systems.
- On December 5-9, 2005, the Board's staff visited **Pantex** to review the conduct of operations.

### **Rocky Flats**

- On April 4-6, 2005, the Board's staff visited the **Rocky Flats Environmental Technology Site** to shut down the Rocky Flats Environmental Technology Site Office and review the Pit Disassembly Conversion Facility Time and Motion Model at the Washington Group International office in Denver, Colorado.
- On August 8-12, 2005, the Board's staff visited **Denver** to attend the American Nuclear Society topical meeting on decommissioning, decontamination, and reutilization, to present a paper entitled, "Hazard Analysis for decontamination and decommissioning Work at DOE Sites."
- On August 23-25, 2005, the Board's staff visited **Denver** for an electrical design review of the Pit Disassembly Conversion Facility and a final visit to the **Rocky Flats Environmental Technology Site**.

- On December 12-16, 2005, the Board's staff visited **Golden, CO** to observe testing of the steam reforming process at the sodium bearing waste test bed at Hazen Research, Inc.

### **Sandia National Laboratory**

- On May 2-5, 2005, the Board's staff visited **Santa Fe, New Mexico** to attend the Annual Energy Facility Contractors Group Safety Analysis Working Group Workshop.
- On June 6-10, 2005, the Board's staff visited the **Sandia National Laboratory** and the **Los Alamos National Laboratory** for Board briefings.
- On August 16-18, 2005, the Board's staff visited the **Sandia National Laboratory** to attend a meeting regarding weapons dismantlement.
- On December 5-9, 2005, the Board's staff visited the **Sandia National Laboratory** to review nuclear materials and participate in the recommendation 2005-1 working group meeting.
- On December 19-22, 2005, the Board's staff visited **Sandia** to review open significant finding investigations for the defense nuclear facilities in Test Area V, the Research and Technology Organization, and weapon aging.

### **Savannah River Site**

- On January 10-14, 2005, the Board's staff visited the **Savannah River Site** to review High-Level Waste Tank Farm.

- On February 1-4, 2005, the Board's staff visited the **Savannah River Site** to review nuclear waste processing activities.
- On February 22-25, 2005, the Board's staff visited the **Savannah River Site** to review the H-Canyon, HB-Line utilization, and transuranic waste retrieval.
- On March 7-11, 2005, the Board's staff visited the **Savannah River Site** to observe in the recommendation 94-1, *Improved Schedule for Remediation*, Materials Identification and Surveillance Program quarterly meeting, to review the radiological protection program, High-Level Waste Salt Disposition, Tank 48, and Modular Caustic Side Solvent Extraction Unit.
- On March 14-18, 2005, the Board's staff visited the **Savannah River Site** to review the Tritium Extraction Facility's testing, training, and software programs and to review plutonium storage.
- On March 28-April 1, 2005, the Board's staff visited the **Savannah River Site** to support a Board member's visit, to review the Integrated Safety Management Program at the tritium facilities, the progress of NNSA efforts to improve Quality Assurance and Integrated Safety Management, and to review the design for the Salt Waste Processing Facility.
- On May 4-6, 2005, the Board's staff visited the **Savannah River Site** to review the semi-integrated Pilot Plant and hydrogen in pipes and ancillary vessels issues at the Defense Waste Processing Facility and to attend the As Low As Reasonably Achievable Workshop.
- On August 1-4, 2005, the Board's staff visited the **Savannah River Site** to review the H-Canyon and HB Line operations and canyon utilization, old HB-Line modifications, F-Canyon and FB-Line decommissioning, and to participate in the Materials Identification and Surveillance Program meeting.
- On August 22-26, 2005, the Board's staff visited the **Savannah River Site** to attend Radworker Training and to review the geotechnical and foundation design of the Salt Waste Processing Facility.
- On September 12-15, 2005, the Board's staff visited the **Savannah River Site** to review high level waste operations.
- On October 11-14, 2005, the Board's staff visited the **Savannah River Site** to review the Tritium Extraction Facility.
- On October 14, 2005, the Board's staff visited **Columbia, SC** to review the Salt Waste Processing Facility and structural and geotechnical analysis.
- On October 26-28, 2005, the Board and the Board's staff visited the **Savannah River Site** for a site visit.
- On December 12-13, 2005, the Board's staff visited **Columbia, SC** to attend a presentation to the Citizen's Advisory Board on the Salt Waste Processing Facility and follow up on K-Area Materials Storage Facility issues.

## **Washington, DC**

- On June 13-17, 2005, one of the Board's site representatives visited **Washington, DC** to participate in a review of the Department's Nuclear Explosives Safety process.
- On August 1-5, 2005, a Board's site representative visited **Washington, DC** to attend the top-down Nuclear Explosive Safety Workshop.

## **Y-12**

- On January 24-28, 2005, the Board's staff visited **Y-12** to support the Board's visit and to review NNSA operational readiness review for the Oxide Conversion Facility.
- On January 31-February 4, 2005, the Board's staff visited **Y-12** to review the operational readiness review for the Oxide Conversion Facility and to review control system software issues.
- On March 8-10, 2005, the Board's staff visited **Y-12** to review a Criticality Safety incident.
- On March 14-16, 2005, the Board's staff visited **Y-12** to support a Board member's visit, to review Quality Evaluation and the Uranium Processing Facility.
- On March 28-April 1, 2005, the Board's staff visited **Y-12** to observe the Department's readiness assessment for the microwave Caster project and to discuss development projects.
- On April 19-20, 2005, the Board's staff visited **Y-12** to support a Board member's review of Integrated Safety Management.
- On May 9-13, 2005, the Board's staff visited **Y-12** to attend the NNSA Inactive Actinide Working Group meeting.
- On August 1-3, 2005, the Board's staff visited **Y-12** to attend the Readiness Workshop.
- On August 8-10, 2005, the Board's staff visited **Y-12** to review the Quality Evaluation Relocation.
- On August 25-26, 2005, the Board's staff visited **Y-12** for a site visit.
- On October 12-14, 2005, the Board's staff visited **Y-12** to review HEPA filters.
- On October 24-26, 2005, the Board's staff visited **Y-12** to review the fire protection systems.
- On October 31-November 3, 2005, the Board's staff visited **Y-12** to attend an Expert Panel meeting on Building 9212.
- On November 14-18, 2005, the Board's staff visited **Y-12** to attend the DOE readiness assessment for the new disassembly glove box.
- On December 5-9, 2005, the Board's staff visited **Y-12** to review the documented safety analysis for Building 9212.

## APPENDIX C

### KEY CORRESPONDENCE BETWEEN THE DEPARTMENT AND THE BOARD IN 2005

#### From the Board to the Department

##### January

- On **January 4, 2005**, the Board sent a letter to the Department regarding structural design of the Pit Disassembly and Conversion Facility.
- On **January 18, 2005**, the Board sent a letter to the Department with a 45-day reporting requirement regarding long-term management of waste retrieval and tank space and the implementation of the Expert Panel's recommendations on Hanford Site's double-shell tank waste chemistry control.
- On **January 31, 2005**, the Board sent a letter to the Department with a 90-day reporting requirement regarding writing, tracking, and closing conditions of approval for 10 CFR 830 documented safety analyses.

##### February

- On **February 2, 2005**, the Board sent a letter to the Department with a reporting requirement on actions taken prior to start-up authorization of Fernald's Silos 1 and 2 Remediation Facility to ensure safe operations.
- On **February 4, 2005**, the Board sent a letter to the Department with a 60-day reporting requirement regarding Sludge Retrieval and Disposition Project.

- On **February 4, 2005**, the Board sent a letter to the Department regarding fire protection for the Waste Treatment Plant at Hanford.
- On **February 4, 2005**, the Board sent a letter to the Department regarding Preliminary Documented Safety Analysis for the Pit Disassembly and Conversion Facility.
- On **February 10, 2005**, the Board sent a letter to the Department granting an additional 45 days to respond to Recommendation 2004-2, *Active Confinement Systems*.
- On **February 11, 2005**, the Board sent a letter to the Department with a 60-day reporting requirement regarding Nuclear Criticality Safety issues at the Plutonium Finishing Plant.
- On **February 14, 2005**, the Board sent a letter to the Department with a 60-day reporting requirement regarding fire response procedures at the Plutonium Finishing Plant at the Hanford Site.
- On **February 14, 2005**, the Board sent a letter to the Department providing feedback on the Department's 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*.

*The Department received 52 letters from the Board in 2005.*

- On **February 24, 2005**, the Board sent a letter to the Department with a 30-day reporting requirement regarding issues on the use of a design-build approach for the Chemistry and Metallurgy Research Facility Replacement Project at the Los Alamos National Laboratory.

#### March

- On **March 8, 2005**, the Board sent a letter to the Department with a reporting requirement regarding resumption of programmatic operations in the Plutonium Facility.
- On **March 10, 2005**, the Board sent a letter to the Department forwarding Recommendation 2005-1, *Nuclear Material Packaging*.
- On **March 14, 2005**, the Secretary sent a letter to the Board forwarding its Annual Report to Congress for Calendar Year 2004, on its activities relating to the Defense Nuclear Facilities Safety Board.
- On **March 18, 2005**, the Board sent a letter to the Department with a 45-day reporting requirement regarding the seismic and structural adequacy of the Device Assembly Facility.
- On **March 18, 2005**, the Board sent a letter to the Department forwarding its Fifteenth Annual Report to Congress describing the Board's health and safety activities relating to the Department of Energy's defense nuclear facilities in 2004.

- On **March 28, 2005**, the Board sent a letter to the Department establishing a 120-day reporting requirement regarding electrical and lightning protection systems for several facilities at the Nevada Test Site.

#### April

- On **April 19, 2005**, the Board sent a letter to the Department regarding seismic design criteria for the Waste Treatment Plant.
- On **April 20, 2005**, the Board sent a letter to the Department with a 30-day reporting requirement regarding structural deficiencies of Building 9212 at Y-12.

#### May

- On **May 2, 2005**, the Board sent a letter to the Department with a 30-day reporting requirement regarding NNSA's path forward to improve conduct of operations at the Pantex Plant.
- On **May 31, 2005**, the Board sent a letter to the Department with a 90-day reporting requirement regarding fire protection at the Los Alamos National Laboratory.
- On **May 31, 2005**, the Board sent a letter to the Department with a 60-day reporting requirement regarding effective safety-class system at the Plutonium Facility at Los Alamos National Laboratory.

## June

- On **June 1, 2005**, the Board sent a letter to the Department with a 90-day reporting requirement regarding high-level waste tank integrity program for double-shell tanks at the Hanford Site.
- On **June 10, 2005**, the Board sent a letter to the Department forwarding its Second Annual Report to Congress on Plutonium Storage at the Department of Energy's Savannah River Site.
- On **June 21, 2005**, the Board sent a letter to the Department commending Messrs. Jeffrey Craven and Robert Knighten of the Y-12 Site Office and Idaho Operations Office, respectively, as the 2004 DOE Facility Representatives of the Year.
- On **June 22, 2005**, the Board sent a letter to the Department regarding electrical systems at the Y-12 National Security Complex.
- On **June 22, 2005**, the Board sent a letter to the Department regarding DOE's Second Annual Nuclear Criticality Safety Program Report.

## July

- On **July 21, 2005**, the Board sent a letter to the Department regarding resumption of laboratory operations and corrective action plans at the Los Alamos National Laboratory.
- On **July 21, 2005**, the Board sent a letter to the Department acknowledging receipt of the Department's letter dated July 11, 2005 regarding implementation plan 2004-2, *Active Confinement Systems*.

- On **July 25, 2005**, the Board sent a letter to the Department commending Admiral Kirkland H. Donald, Deputy Administrator for Naval Reactors of the NNSA and the Naval Reactors' program for their superior performance.
- On **July 29, 2005**, the Board sent a letter to the Department with a 60-day reporting requirement regarding NNSA Policy Letter system.

## August

- On **August 5, 2005**, the Board sent a letter to the Department accepting the implementation plan for Board recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*, and forwarding its recommended additions to the *Project Execution Plan to Improve Oversight of Nuclear Operations*.

## September

- On **September 1, 2005**, the Board sent a letter to the Department granting NNSA additional time to prepare an adequate response regarding confinement ventilation systems at Los Alamos National Laboratory's Plutonium Facility.
- On **September 7, 2005**, the Board sent a letter to the Department with a reporting requirement no later than January 2006 regarding the Demonstration Bulk Vitrification Project at Hanford; and a 60-day reporting requirement regarding the Office of River Protection's technical and programmatic oversight of this project.

- On **September 9, 2005**, the Board sent a letter to the Department with an annual reporting requirement regarding the Pit Management Plan and the pit packaging program at Pantex and closing Recommendation **99-1**, *Safe Storage of Fissionable Material Called "Pitts."*
- On **September 13, 2005**, the Board sent a letter to the Department accepting implementation plan for Board recommendation 2005-1, *Nuclear Material Packaging*.
- On **September 14, 2005**, the Board sent a letter to the Department with a 90-day reporting requirement regarding Operational Readiness Review.
- On **September 19, 2005**, the Board sent a letter to the Department accepting implementation plan for Board recommendation 2004-2, *Active Confinement Systems*.
- On **October 11, 2005**, the Board sent a letter to the Department establishing a 45-day reporting requirement regarding the Department's Action Plan on *Lessons Learned from the Columbia Space Shuttle Accident and Davis-Besse Reactor Pressure Vessel Head Corrosion Event*, relative to Commitment 17 in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*.
- On **October 11, 2005**, Board announcement of a Public Meeting regarding Safety in Design scheduled on December 7, 2005 at 9:00 A.M. at the Defense Nuclear Facilities Safety Board Headquarters in Washington, DC.
- On **October 17, 2005**, the Board sent a letter to the Department regarding review of electrical system of the Pit Disassembly and Conversion Facility.
- On **October 17, 2005**, the Board sent a letter to the Department regarding the Board's review of the design and construction of the Waste Treatment Plant at the Hanford Site.

#### October

- On **October 3, 2005**, the Board sent a letter to the Department regarding the Board's responsibilities under the *Memorandum of Understanding Governing Regulation and Oversight of Department of Energy Activities in the Rocky Flats Environmental Technology Site Industrial Area*.

#### November

- On **November 22, 2005**, the Board sent a letter to the Department closing Recommendation 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*, and requesting NNSA to update the list of weapon-specific points of contact at each laboratory and include this in the periodic briefings to the Board on the status of laboratory research and development work for weapon safety.

- On **November 22, 2005**, the Board sent a letter to the Department of Labor regarding 10 CFR Part 835, *Occupational Radiation Protection*.
- On **November 23, 2005**, the Board sent a letter to the Department with a 60-day reporting requirement regarding draft policy on nuclear risk assessment.
- On **November 28, 2005**, the Board sent a letter to the Department with a 60-day reporting requirement regarding safety management programs and vital safety systems at the Device Assembly Facility at the Nevada Test Site.
- On **November 28, 2005**, the Board sent a letter to the Department with a 60-day reporting requirement regarding structural deficiencies in the 9212 complex at Y-12.
- On **November 29, 2005**, the Board sent a letter to the Department with a 7-day reporting requirement regarding federal oversight responsibilities of the Los Alamos Site Office.

#### December

- On **December 14, 2005**, Board letter establishing a 30-day reporting requirement regarding the path forward for developing the guidance in the draft technical business practice in evaluating and documenting weapon responses to potential accident and stimuli relative to the 98-2 implementation plan, *Accelerating Safety Management Improvements at the Pantex Plant*.

- On **December 16, 2005**, Board letter regarding the new DOE Manual on Integrated Safety Management.

#### **From the Department to the Board**

##### January

- On **January 3, 2005**, the Deputy Chief Operating Officer for the Office of Environmental Management sent a letter to the Board reporting completion of the Office of Environmental Management portion of Commitment 4.5 in implementation plan 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which requires a report to the Secretary of Energy on the results of the safety basis document reviews.
- On **January 4, 2005**, the Administrator of the National Nuclear Security Administration sent a letter to the Board forwarding an interim report regarding configuration management for vital safety systems at Lawrence Livermore National Laboratory.
- On **January 5, 2005**, the Administrator of the NNSA sent a letter to the Board regarding NNSA's Draft Request for Proposal for the Los Alamos National Laboratory Management and Operating Contract.
- On **January 10, 2005**, the Manager of Pantex sent a letter to the Board regarding special tooling program at the Pantex Plant.

*The Department sent 114 letters to the Board in 2005.*

- On **January 10, 2005**, the Acting Assistant Secretary for the Office of Environment, Safety and Health sent a letter to the Board regarding status of Commitment 4.3.2.1 in implementation plan 2002-1, *Quality Assurance for Safety-Related Software*, which requires the Department to establish a schedule to develop, revise, approve, and issue software quality assurance directives.
  - On **January 12, 2005**, the Administrator of the NNSA sent a letter to the Board regarding Lawrence Livermore National Laboratory's draft Building 332 Documented Safety Analysis.
  - On **January 19, 2005**, the Director of the Office of Management, Budget and Evaluation/Chief Financial Officer sent a letter to the Board regarding applicability issues related to DOE Order 251.1A, *Directives System*.
  - On **January 28, 2005**, the 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, *Safety Management at the Pantex Plant*, for the period October 1 - December 31, 2004.
  - On **January 31, 2005**, the Secretary sent a letter to the Board requesting an additional 45 days to respond to Board recommendation 2004-2, *Active Confinement Systems*.
- February
- On **February 1, 2005**, the Administrator of the NNSA sent a letter to the Board regarding NNSA commitments from the 98-2 implementation plan, *Safety Management at the Pantex Plant*.
  - On **February 1, 2005**, the Assistant Deputy Administrator for Research, Development, and Simulation of the Defense Programs sent a letter to the Board forwarding a report on Criticality Safety for Calendar Year 2004.
  - On **February 8, 2005**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding Device Assembly Facility operations at the Nevada Test Site.
  - On **February 15, 2005**, the Deputy Administrator for Defense Programs sent a letter to the Board forwarding a report regarding activities in relation to the 93-6 implementation plan, *Maintaining Access to Nuclear Weapons Expertise in the Defense Nuclear Facilities Complex*.
  - On **February 25, 2005**, the Manager of the Office of River Protection sent a letter to the Board regarding status of activities relative to process engineering for the Waste Treatment and Immobilization Plant.

- On **February 28, 2005**, the Deputy Assistant Secretary for the Office of Corporate Performance Assessment sent a letter to the Board regarding interim status of Commitment 4.3.2.1 in the 2002-1 implementation plan, *Quality Assurance for Safety-Related Software*, which requires the Department to establish a schedule to develop, revise, approve, and issue software quality assurance directives.
- On **February 28, 2005**, the Administrator for the NNSA sent a letter to the Board forwarding NNSA Safety Management Functions, Responsibilities and Authorities Manual Revision 1.

### March

- On **March 4, 2005**, the Principal Deputy Assistant Secretary for Environmental Management sent a Department letter forwarding a report on The Long-Term Management of Tank Waste at Hanford.
- On **March 4, 2005**, the Assistant Deputy Administrator for Military Application and Stockpile Operations for Defense Programs sent a letter to the Board providing updated information and a revised schedule for the issuance of nuclear explosive surety directives.
- On **March 9, 2005**, the Deputy Administrator for Defense Programs sent a letter to the Board forwarding status report on configuration management at Lawrence Livermore National Laboratory.
- On **March 14, 2005**, the Secretary sent a letter to the Board regarding 2004-1 implementation plan, *Oversight of Complex High Hazard Nuclear Operations*.
- On **March 15, 2005**, the Deputy Administrator for Defense Programs sent a letter to the Board regarding design-build approach for the Chemistry and Metallurgy Research Facility Replacement at the Los Alamos National Laboratory.
- On **March 16, 2005**, the Principal Deputy Assistant Secretary for the Office of Environmental Management sent a letter to the Board forwarding the report, *Site-Specific Seismic Site Response Model for the Waste Treatment Plant, Hanford, Washington*, addressing seismic design issues for the Waste Treatment Plant.
- On **March 18, 2005**, the Secretary sent a letter to the Board accepting Board Recommendation 2004-2, *Active Confinement Systems*.
- On **March 18, 2005**, the Assistant Deputy Administrator for Military Application and Stockpile Operations of the Defense Programs sent a letter to the Board providing the Los Alamos National Laboratory portion of Commitments 4.3.2 and 4.3.3 in the 2002-2 implementation plan, *Weapons Laboratory Support of the Defense Nuclear Complex*, which requires a description of weapons point of contact roles, responsibilities, and authorities; and a briefing to the Board to present the roles, responsibilities, and authorities, respectively.

- On **March 21, 2005**, the Manager of the Los Alamos Site Office sent a letter to the Board reporting completion of action regarding the conduct of engineering and implementation of DOE O 420.1A, *Facility Safety*, at the Los Alamos National Laboratory.
- On **March 23, 2005**, the Administrator for the NNSA sent a letter to the Board regarding implementation of nuclear safety requirements for a nuclear facility located at Sandia National Laboratories, New Mexico.
- On **March 25, 2005**, the Manager of the Los Alamos Site Office sent a letter to the Board providing the status on a long-overdue commitment to upgrade electrical power at the Plutonium Processing and Handling Facility (TA-55, PF-4) at Los Alamos National Laboratory.
- On **March 28, 2005**, the Assistant Deputy Administrator for Military Application and Stockpile Operations of the Defense Programs sent a letter to the Board regarding Nuclear Explosive Safety Directives.
- On **March 30, 2005**, the Assistant Secretary for the Office of Environment, Safety and Health sent a letter to the Board regarding fire safety performance measures and reporting methodology.
- On **April 8, 2005**, the Principal Deputy Assistant Secretary for the Office of Environmental Management sent a letter regarding sludge retrieval and disposition issues at the K-Basin Project at Hanford.
- On **April 19, 2005**, the Assistant Deputy Administrator for Military Application and Stockpile Operations for Defense Programs sent a letter to the Board reporting completion of actions under Commitment 4.1.2 in the 2002-2 implementation plan, *Weapons Laboratory Support of the Defense Nuclear Complex*, which requires the replacement of obsolete DOE Order 5600.1.
- On **April 19, 2005**, the Manager of the Office of River Protection sent a letter to the Board thanking and commending Mark Sautman for his dedicated service as Board Site Representative at Hanford.
- On **April 26, 2005**, the Associate Deputy Secretary sent a letter to the Board forwarding the newly established roles and responsibilities for the Central Technical Authorities and Nuclear Research Office, deliverables in the Department's 2004-1 implementation plan for Oversight of Nuclear Operations.
- On **April 27, 2005**, the Principal Deputy Assistant Secretary for Environmental Management sent a letter to the Board providing results of the independent Tank Farm Integrated Safety Management System improvement validations.

#### April

- On **April 1, 2005**, the Manager of the Office of River Protection sent a letter to the Board regarding fire protection for the Hanford Waste Treatment and Immobilization.

- On **April 28, 2005**, the Deputy Administrator for Defense Programs sent a letter to the Board providing a requested report on resolution of in-core temperature monitoring system issues at the Los Alamos National Laboratory Technical Area-18.

#### May

- On **May 2, 2005**, the Assistant Deputy Administrator for Military Application and Stockpile Operations for Defense Programs sent a letter to the Board forwarding the Quarterly Report for Implementation Plan 98-2, Safety Management at the Pantex Plant, for the period January 1 through March 31, 2005.
- On **May 4, 2005**, the Assistant Secretary for Environment, Safety, and Health sent a letter to the Board forwarding the draft interim revision to DOE G 420.1-2, *Guide for the Mitigation of Natural Phenomena Hazards for DOE Nuclear and Nonnuclear Facilities*.
- On **May 6, 2005**, the Secretary sent a letter to the Board accepting Board Recommendation 2005-1, *Nuclear Material Packaging*.
- On **May 10, 2005**, the Deputy Secretary sent a letter to the Board forwarding a report on the use of conditions of approval in safety evaluation reports for nuclear facility safety bases.
- On **May 16, 2005**, the Administrator for the NNSA sent a letter to the Board regarding results of a condition assessment and mapping of building leaks and structural cracks at the Device Assembly Facility at the Nevada Test Site.

- On **May 26, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Commitment 4.4 in the 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which requires the submission of a report of completed training and changes to relevant training plans or programs related to DOE-STD-1186-2004, *Specific Administrative Controls*.
- On **May 31, 2005**, the Administrator for NNSA sent a letter to the Board forwarding NNSA's Roadmap for Nuclear Facility Quality Assurance Excellence, NNSA's planning basis for effective Quality Assurance at NNSA facilities.

#### June

- On **June 1, 2005**, the Principal Deputy Assistant Secretary for Environmental Management sent a letter to the Board regarding retrieval, storage, and disposal of Hanford waste drums containing Pu-238.
- On **June 3, 2005**, the Principal Deputy Assistant Secretary for Environmental Management sent a letter to the Board reporting completion of Commitment 212 in the 2000-1 Revision 2 implementation plan, *Stabilization and Storage of Nuclear Material*, which requires the complete stabilization and packaging of all plutonium at the Savannah River Site.

- On **June 3, 2005**, the Principal Deputy Assistant Secretary for Environmental Management sent a letter to the Board providing the status of Environmental Management actions on Commitment 4.4 in the 2002-3 implementation plan, *Requirement for the Design, Implementation, and Maintenance of Administrative Controls*.
- On **June 10, 2005**, the Deputy Secretary sent a letter to the Board forwarding DOE Policy 226.1, *Department of Energy Oversight Policy*.
- On **June 10, 2005**, the Secretary sent a letter to the Board forwarding the 2004-1 Implementation Plan, Revision 1, *Oversight of Complex, High-Hazard Nuclear Operations*.
- On **June 10, 2005**, the Acting Chief Operating Officer for Environmental Management sent a letter to the Board regarding last shipment of transuranic waste from Rocky Flats Environmental Technology Site.
- On **June 13, 2005**, the Administrator for NNSA sent a letter to the Board regarding Corrective Action Plan for the skin contamination incident and Integrated Safety Management at the Sandia National Laboratories Technical Area V.
- On **15, 2005**, the Administrator for the NNSA sent a letter to the Board regarding building leaks and structural cracks at the Device Assembly Facility at the Nevada Test Site.
- On **June 28, 2005**, the Administrator of the NNSA sent a letter regarding Facility Representative program in the NNSA.
- On **June 29, 2005**, the Deputy Assistant Secretary of the Office of Corporate Performance Assessment sent a letter to the Board reporting completion of Commitments 4.3.2 and 4.4.1 in the Department's Software Quality Assurance implementation plan.

July

- On **July 11, 2005**, the Secretary sent a letter to the Board notifying the Board that it requires an additional 45 days to complete the implementation plan for Board recommendation 2004-2, *Active Confinement Systems*.
- On **July 11, 2005**, the Secretary sent a letter to the United States Congress forwarding the Second Annual Report to Congress on Plutonium Storage at the Savannah River Site.
- On **July 13, 2005**, the Principal Deputy Assistant Secretary for Environmental Management sent a letter to the Board regarding laboratory studies on Double-Shell Tank corrosion at Hanford Tank Farms.
- On **July 15, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board providing the status of commitments 4.5 and 4.6.2 in the 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which calls for document reviews of Specific Administrative Controls and implementation reviews of Specific Administrative Controls, respectively.

- On **July 21, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board regarding confinement ventilation systems at the Plutonium Facility (PF-4) at Technical Area 55 of the Los Alamos National Laboratory.
- On **July 25, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Commitment 4.1.4 in the 2002-1 implementation plan, *Quality Assurance for Safety Software at Department of Energy Defense Nuclear Facilities*, which requires NNSA personnel assigned to Software Quality Assurance positions to achieve qualifications according to the requirements of the Safety Software Quality Assurance Functional Area Qualification Standard.
- On **July 25, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board regarding G-Tunnel upgrades at the Nevada Test.
- On **July 26, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board forwarding Report on Livermore Site Office's evaluation of Lawrence Livermore National Laboratory's Configuration Management in Buildings 331, 334, 239, 251, and Radioactive and Hazardous Waste Management Facilities.
- On **July 28, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board reporting completion of Commitment 4.6 in the 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which calls for the Office of Environmental Management to review the field implementation of existing critical administrative controls.
- On **July 28, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Commitments 4.2.3.3 and 4.2.4.2 in the 2002-1 implementation plan, *Quality Assurance for Safety Software at Department of Energy Defense Nuclear Facilities*, which requires NNSA to complete the identification, selection, and assessment of safety system software and firmware at defense nuclear facilities and for NNSA to complete the assessments of the processes in accordance with the schedule established in 4.2.4.2, respectively.
- On **July 29, 2005**, the Chairman of the Federal Technical Capability Panel sent a letter to the Board reporting completion of Commitment 11 in the 2004-1 implementation plan, Revision 1, *Oversight of Complex, High-Hazard Nuclear Operations*, which requires the identification of highly-qualified and experienced personnel in the areas of Criticality Safety, Fire Protection Engineering, Civil/Structural Engineering, Nuclear Explosives Safety, and Software Quality Assurance.

- On **July 29, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board reporting completion of EM's portion of Commitment 4.4 in the 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which calls for the submission of a report on completed training and copies of changes to relevant training plans on DOE Standard 1186-2004, *Specific Administrative Controls*.
- On **July 29, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board providing interim status on Commitments 120E and 119E in Revision 2 of implementation plan 2000-1, *Prioritization for Stabilizing Nuclear Materials*, which requires the transfer of sludge from the K East Basin to the K West Basin and completion of sludge containerization in the K East Basin, respectively.
- On **July 29, 2005**, the Deputy Secretary sent a letter to the Board forwarding the Department's Action Plan, "*Lessons Learned from the Columbia Space Shuttle Accident and Davis-Besse Reactor Pressure-Vessel Head Corrosion Event*," completing Commitment 17 in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*.

#### August

- On **August 1, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Commitment 4.6.2 in the 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which requires documentation of completed implementation reviews of existing Specific Administrative Controls at defense nuclear facilities
- On **August 4, 2005**, 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, *Safety Management at the Pantex Plant* for the period April 1 through June 30, 2005.
- On **August 5, 2005**, the Associate Deputy Secretary sent a letter to the Board reporting completion of Commitment 21 in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*, which calls for a decision on whether to issue the updated Integrated Safety Management vision as complementary Integrated Safety Management Policy or Notice.
- On **August 8, 2005**, the Secretary sent a letter to the Board forwarding the Final Report regarding the 99-1 implementation plan, *Safe Storage of Fissionable Materials Called "Pits,"* and proposing closure of the 99-1 recommendation.

- On **August 17, 2005**, the Secretary sent a letter to the Board forwarding the Department's implementation plan in response to the Board's recommendation 2005-1, *Nuclear Material Packaging*.
- On **August 22, 2005**, the Secretary sent a letter to the Board forwarding DOE's implementation plan for Board recommendation 2004-2, *Active Confinement Systems*.
- On **August 24, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board requesting a 60-day extension to submit a report to the Board regarding fire protection issues at the Los Alamos National Laboratory.
- On **August 29, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board reporting completion of Commitment 225 in the 2000-1 implementation plan, *Stabilization and Storage of Nuclear Material*, which calls for the complete disposition of pre-existing enriched uranium solution and enriched uranium solution resulting from Mk-16/22 Spent Nuclear Fuel dissolution at the Savannah River Site.
- On **August 30, 2005**, the Deputy Secretary sent a letter to the Board forwarding the *Federal Technical Capability Program Corrective Action Plan*, completing Commitment 13 of the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*.

#### September

- On **September 9, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Commitment 4.1.6, with one exception, in the 2002-1 implementation plan, *Quality Assurance for Safety Software of Department of Energy Defense Nuclear Facilities*, which requires the NNSA to revise its Headquarters and Site Office Functions, Responsibilities and Authorities Manuals to incorporate Federal responsibilities and authorities for Software Quality Assurance.
- On **September 16, 2005**, the Administrator for NNSA sent a letter to the Board regarding resumption of programmatic operations in the Plutonium Facility at Lawrence Livermore National Laboratory.
- On **September 20, 2005**, the Director of the Office of Nuclear and Facility Safety Policy sent a letter to the Board reporting completion of Commitment 8.5.2 in the 2004-2 implementation plan, *Active Confinement Systems*, which requires the Department to assemble a group of subject matter experts to develop appropriate performance and/or design expectations as input to a guidance document for performing the Safety Related Ventilation System Evaluation.

- On **September 27, 2005**, the Undersecretary for Energy, Science and Environment and the Administrator for the NNSA sent a letter to the Board providing interim status and reporting partial completion of Commitment 12 in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*, which calls for structured training for safety professionals, senior managers and decision-makers responsible for nuclear safety.
  - On **September 28, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board reporting completion of the Office of Environmental Management's portion of Commitment 4.3.3 in the Department's Software Quality Assurance implementation plan which requires the issuance of new or revised directives for safety software quality assurance.
  - On **September 30, 2005**, the Director of the Office of Nuclear and Facility Safety Policy sent a letter to the Board reporting completion of Commitment 8.1 in the 2004-2 Implementation Plan, *Active Confinement Systems*.
  - On **September 30, 2005**, the Secretary sent a letter to the Board establishing a new due date for Deliverable 8.5.1, PF-4 Safety Related Ventilation System Evaluation Report, for the 2004-2 implementation plan, *Active Confinement Systems*.
  - On **September 30, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board reporting completion of Commitment 211 in the 2000-1, Revision 2 implementation plan, *Stabilization and Storage of Nuclear Material*, which calls for the dissolution of pre-existing residues in the H-Canyon at the Savannah River Site.
- October
- On **October 3, 2005**, the Director of the Office of Management sent a letter to the Board reporting completion of Commitment 4B in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*, which requires the Department to issue DOE Order 226.1 on Oversight.
  - On **October 6, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board regarding the Sludge Retrieval and Disposition Project at the K-Basins.
  - On **October 13, 2005**, the Administrator for the NNSA sent a letter to the Board regarding NNSA's "Directives System Manual".
  - On **October 18, 2005**, the Administrator for the NNSA sent a letter to the Board forwarding the Status Report of Recommendations from the NNSA Lessons Learned Review of NASA's Columbia Accident Investigation Board Report.

- On **October 18, 2005**, the Secretary sent a letter to the Board forwarding commitments completion information for the 2002-2 implementation plan, *Weapons Laboratory Support of the Defense Nuclear Complex* and requesting closure of recommendation 2002-2.
  - On **October 26, 2005**, the Administrator for NNSA sent a letter to the Board forwarding the Lawrence Livermore National Laboratory Nuclear Materials Technology Program Configuration Management Resource Loaded Schedule.
  - On **October 28, 2005**, 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, *Safety Management at the Pantex Plant* for the period July 1 through September 30, 2005.
  - On **October 31, 2005**, the Director of the Office of Nuclear Weapons Stockpile of the Defense Programs sent a letter to the Board forwarding draft of the "Technical Business Practice for Hazard Analysis and Weapon Response" for review and comment.
  - On **October 31, 2005**, the Director of the Office of Nuclear and Facility Safety Policy sent a letter to the Board forwarding the Exclusion Reporting Process to satisfy Commitment 8.2 of the 2004-2 Implementation Plan, *Active Confinement Systems*.
  - On **October 31, 2005**, the Assistant Secretary for Environment, Safety, and Health sent a letter to the Board reporting completion of Commitment 7A in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*.
- November
- On **November 4, 2005**, the Administrator of the National Nuclear Security Administration sent a letter to the Board forwarding the Los Alamos National Laboratory Corrective Action Plan for the DOE Order 5480.20A Training Review.
  - On **November 18, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board providing the status of two Environmental Management commitments, disposition of Low-Curie Salt to the Saltstone Facility and start of the Actinide Removal Process relative to the disposition of tank waste at the Savannah River, in the 2001-1 implementation plan, *High-Level Waste Management at the Savannah River Site*.
  - On **November 21, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board providing status on Commitment 4.3.3 in the 2002-1 implementation plan, *Quality Assurance for Safety Software at Department of Energy Defense Nuclear Facilities*, which requires the NNSA and Site Offices to review software quality assurance directives and determine actions to implement DOE Order 414.1C, *Quality Assurance*.

- On **November 23, 2005**, the Manager of the Savannah River Operations Office sent a letter to the Board regarding design approach for providing performance category 3 (PC-3) confinement for the Salt Waste Processing Facility.
- On **November 28, 2005**, the Secretary sent a letter to the Board forwarding the revision to Section 5.1 Hanford in the 2000-1 implementation plan, *Prioritization for Stabilizing Nuclear Materials*.
- On **November 29, 2005**, the Acting Assistant Deputy Administrator for Military Application and Stockpile Operations of the Defense Programs sent a letter to the Board providing updated information on the Nuclear Explosive Safety Top-Down Review and a revised schedule for issuing the nuclear explosive safety directives.
- On **November 30, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board forwarding the Office of Environmental Management Quality Assurance Program Plan, completing Commitment 10A in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*.
- On **November 30, 2005**, the Manager of Pantex Site Office sent a letter to the Board regarding NNSA readiness review validations of on-site transportation technical safety requirements.

#### December

- On **December 1, 2005**, the Chief Operating Officer for Environmental Management sent a letter to the Board providing new information on Hanford Tank AN-107 chemistry concerns and the Department's path forward.
- On **December 6, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board forwarding the Office of Defense Programs Quality Assurance Program, completing Commitment 10A in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*.
- On **December 6, 2005**, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board forwarding the Office of Environment, Safety and Health Management System for Quality and Safety Management, completing Commitment 10A in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*.
- On **December 8, 2005**, the Acting Deputy Assistant Secretary for the Office of Corporate Performance Assessment of the Environment, Safety and Health sent a letter to the Board regarding Quality Assurance audit of the Filter Test Facility in Baltimore, Maryland.
- On **December 13, 2005**, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board letter regarding proper interpretation and application of DOE's nuclear safety definitions.

- On **December 13, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Commitment 4.5 in the 2002-3 implementation plan, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*, which calls for document reviews of Specific Administrative Controls in Documented Safety Analyses at NNSA sites.
- On **December 15, 2005**, the Director of the Office of Nuclear and Facility Safety Policy sent a letter to the Board providing the status on deliverables 8.5.4, *Safety Related Ventilation System Evaluation Guidance* and 8.7, *Non Safety Related Ventilation System Evaluation Guidance*, in the 2004-2 implementation plan, *Active Confinement Systems*.
- On **December 20, 2005**, the Departmental Representative to the Defense Nuclear Facilities Safety Board sent a letter to the Board forwarding the revised version of the Department's draft Manual DOE M 450.4-X, *Integrated Safety Management System Manual*.
- On **December 21, 2005**, the Acting Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Commitment 510 in the 2000-1 implementation plan, *Stabilization and Storage of Nuclear Material*, which calls for a survey and reprioritization of all non-Technical Area-55 excess materials by December 2005.
- On **December 22, 2005**, the Assistant Secretary for Environmental Management sent a letter to the Board regarding the Comprehensive Flowsheet Review of the Waste Treatment Plant.
- On **December 27, 2005**, the Deputy Secretary sent a letter to the Board forwarding the memorandum regarding the Department's process criteria and attributes for delegations of safety responsibilities, completing Commitment 9A in the 2004-1 implementation plan, *Oversight of Complex, High-Hazard Nuclear Operations*.
- On **December 29, 2005**, the Director of the Office of Nuclear and Facility Safety Policy sent a letter to the Board transmitting Exclusion Reports consistent with Commitment 8.3 of the Department of Energy's Implementation Plan for Defense Nuclear Facilities Safety Board 2004-2, *Active Confinement Systems*.



## APPENDIX D

### ABBREVIATIONS AND ACRONYMS

2000-1	Board recommendation 2000-1, <i>Stabilization and Storage of Nuclear Material</i>
2000-2	Board recommendation 2000-2, <i>Configuration Management, Vital Safety Systems</i>
2001-1	Board recommendation 2001-1, <i>High-Level Waste Management at the Savannah River Site</i>
2002-1	Board recommendation 2002-1, <i>Quality Assurance for Safety-Related Software</i>
2002-2	Board recommendation 2002-2, <i>Weapons Laboratory Support of the Defense Nuclear Complex</i>
2002-3	Board recommendation 2002-3, <i>Design, Implementation, and Maintenance of Administrative Controls</i>
2004-1	Board recommendation 2004-1, <i>Oversight of Complex, High-Hazard Nuclear Operations</i>
2004-2	Board recommendation 2004-2, <i>Active Confinement System</i>
2005-1	Board recommendation 2005-1, <i>Nuclear Material Packaging</i>
92-4	Board recommendation 92-4, <i>Multi-Function Waste Tank Facility at Hanford Tank Farms</i>
94-1	Board recommendation 94-1, <i>Improved Schedule for Remediation</i>
95-2	Board recommendation 95-2, <i>Safety Management</i>
97-1	Board recommendation 97-1, <i>Safe Storage of Uranium-233</i>
98-1	Board recommendation 98-1, <i>Resolution of Safety Issues Identified by Internal Independent Oversight</i>
98-2	Board recommendation 98-2, <i>Safety Management at Pantex</i>
99-1	Board recommendation 99-1, <i>Safe Storage of Pits at Pantex</i>
AB	Authorization Basis
ACP	Ashtabula Closure Project
AHA	Assisted Hazards Analysis
ARP	Actinide Removal Process
ASME	American Society of Mechanical Engineers
Board	Defense Nuclear Facilities Safety Board
CAAS	Criticality Accident Alarm System
CALM	Capability for Advanced Loading Missions
CAMP	Corrective Action Management Program
CATS	Corrective Action Tracking System
CBFO	Carlsbad Field Office

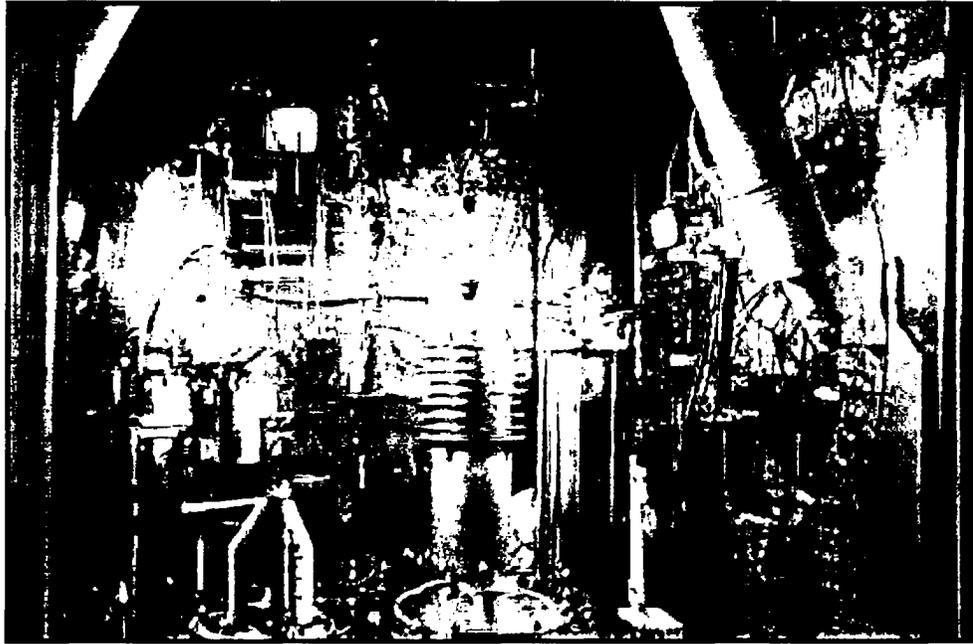
CDNS	Chief of Defense Nuclear Safety
CFR	Code of Federal Regulations
CH	Contact Handled
CRA	Compliance Recertification Application
CRADs	Criteria and Review Approach Documents
CRP	Containment Review Panel
CSSC	Container Storage and Stabilization Capability
CTAs	Central Technical Authorities
CY	Calendar Year
D&P	Development & Production
DAF	Device Assembly Facility
Department	Department of Energy
Departmental Representative	Departmental Representative to the Defense Nuclear Facilities Safety Board
DOE	The Department of Energy
DUN	Depleted Uranyl Nitrate
DWPF	Defense Waste Processing Facility
DSA	Documented Safety Analysis
DST	Double-shell tanks
EFCOG	Energy Facility Contractors Group
EIS	Environmental Impact Statement
EH	Office of Environment, Safety and Health
EM	Office of Environmental Management
EMS	Environmental Management System
EMS	Emergency Management System
ERDF	Environmental Restoration Disposal Facility
ES&H	Environment, Safety and Health
ESE	Energy, Science and Environment
ETTP	East Tennessee Technology Park
FACP	F-Area Closure Project
FAMS	F-Area Material Storage

FAQS	Functional Area Qualification Standards
Fernald	Fernald Closure Project
FLP	Future Leaders Program
FRA	Functions, Responsibilities, and Authorities
FRAM	Functions, Responsibilities, and Authorities Manual
FRC	Fan Room Conversion
FTCP	Federal Technical Capability Program
FY	Fiscal Year
HARs	Hazards Analysis Reports
HEU	Highly Enriched Uranium
HLW	High Level Waste
HQ	Headquarters
ID	Idaho Operations Office
IEPs	Interactive Electronic Procedures
INL	Idaho National Laboratory
INPO	Institute of Nuclear Power Operations
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
ISSM	Integrated Safeguards and Security Management
KAC	K-Area Complex
KIS	K-Area interim surveillance
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
LAW	Low Activity Waste
LES	Limited Extent Surveillance
LEU	Low Enriched Uranium
LLNL	Lawrence Livermore National Laboratory
LLW	Low-level Waste
LSO	Livermore Site Office
MC&A	Material Control and Accountability
Miamisburg	Miamisburg Closure Project

Mound	Miamisburg Closure Project
NDS	National Defense Stockpile
NES	Nuclear Explosive Safety
NESS	Nuclear Explosive Safety Study
NLOP	North load out pit
NMTP	Nuclear Materials Technology Program
NNSA	National Nuclear Security Administration
NSO	Nevada Site Office
NTC	National Training Center
NTS	Nevada Test Site
O&MS	Operations & Maintenance Services
OA	Operational Awareness
OH	Ohio Field Office
OHIO	Miamisburg Closure Project
OR	Oak Ridge Operations Office
ORNL	Oak Ridge National Laboratory
ORP	Office of River Protection
ORPS	Occurrence & Reporting Processing System
OSHA	Occupational Safety and Health Administration
OSR	Operational Safety Review
PAAA	Price-Anderson Amendments Act
PAD	Personnel Annunciation Device
PAN	Passive-active neutron
PBL	Performance-Based Leadership Program
PDSA	Preliminary documented safety analysis
PFPP	Plutonium Finishing Plant
PJM	Pulse Jet Mixer
POE	Point Of Entry
PRT	Peer Review Team
PT	Pretreatment Facility
Pu	Plutonium

PXSO	Pantex Site Office
QA	Quality Assurance
QAS	Quality Assurance Survey
QE	Quality Evaluation
R&D	Research and Development
RF	Rocky Flats Field Office
RFPO	Rocky Flats Project Office
RH	Remote Handled
RHWM	Radioactive and Hazardous Waste Management
RL	Richland Operations Office
RPL	Radiochemical Processing Laboratory
RPP	Hanford River Protection Program
RWMC	Radioactive Waste Management Complex
S/CI	Suspect/Counterfeit Items
SCAR'D	Sub-critical assembly, radiography & downdraft table
SCE	Sub Critical Experiment
Secretary	Secretary of Energy
SER	Safety Evaluation Report
SNL	Sandia National Laboratory
SQA	Software Quality Assurance
SR	Savannah River Operations Office
SRNL	Savannah River National Laboratory
SRS	Savannah River Site
SRSO	Savannah River Site Office
SS-21	Seamless Safety for the 21st Century
SIMS	Safety Issues Management System
SNL	Sandia National Laboratory
SQA	Software Quality Assurance
SSO	Sandia Site Office
SSOP	Safety System Oversight Personnel
SSTs	Single Shell Tanks
TA-18	Las Alamos National Laboratory's Technical Area 18

TA-V	Technical Area V
TBISs	Technical Baseline Index Summaries
TEF	Tritium Extraction Facility
The Panel	Federal Technical Capability Program Panel
TLDP	Technical Leadership Development Program
TPBAR	Tritium-producing burnable absorber rods
TQP	Technical Qualification Program
TRU	transuranic
TSR	Technical Safety Requirement
UPF	Uranium Processing Facility
USQ	Un-reviewed 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:

A view of simulated Tritium Producing Burnable Absorber Rod (TPBAR) cutting operations in the new Tritium Extraction Facility (TEF). TEF recently completed non-radioactive testing at the Savannah River Site and is scheduled to begin processing of TPBARs irradiated at the Watts Bar reactor in September 2006.

