



The Secretary of Energy  
Washington, DC 20585

February 23, 2004

The Honorable John T. Conway  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW, Suite 700  
Washington, D.C. 20004

Dear Mr. Chairman:

I am pleased to forward the Annual Report for calendar year 2003, 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 2003, the Department received no new recommendations from the Board. The Department continues to make excellent progress on resolving existing open Board recommendations and implementing other initiatives to assure public health and safety. These include upgrading the Department's Federal technical capability, reducing risk through stabilization of excess nuclear materials, and reviewing the NASA Columbia Accident for applicable lessons learned.

If you have any questions, please contact me or Mr. Rick A. Dearborn, 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,

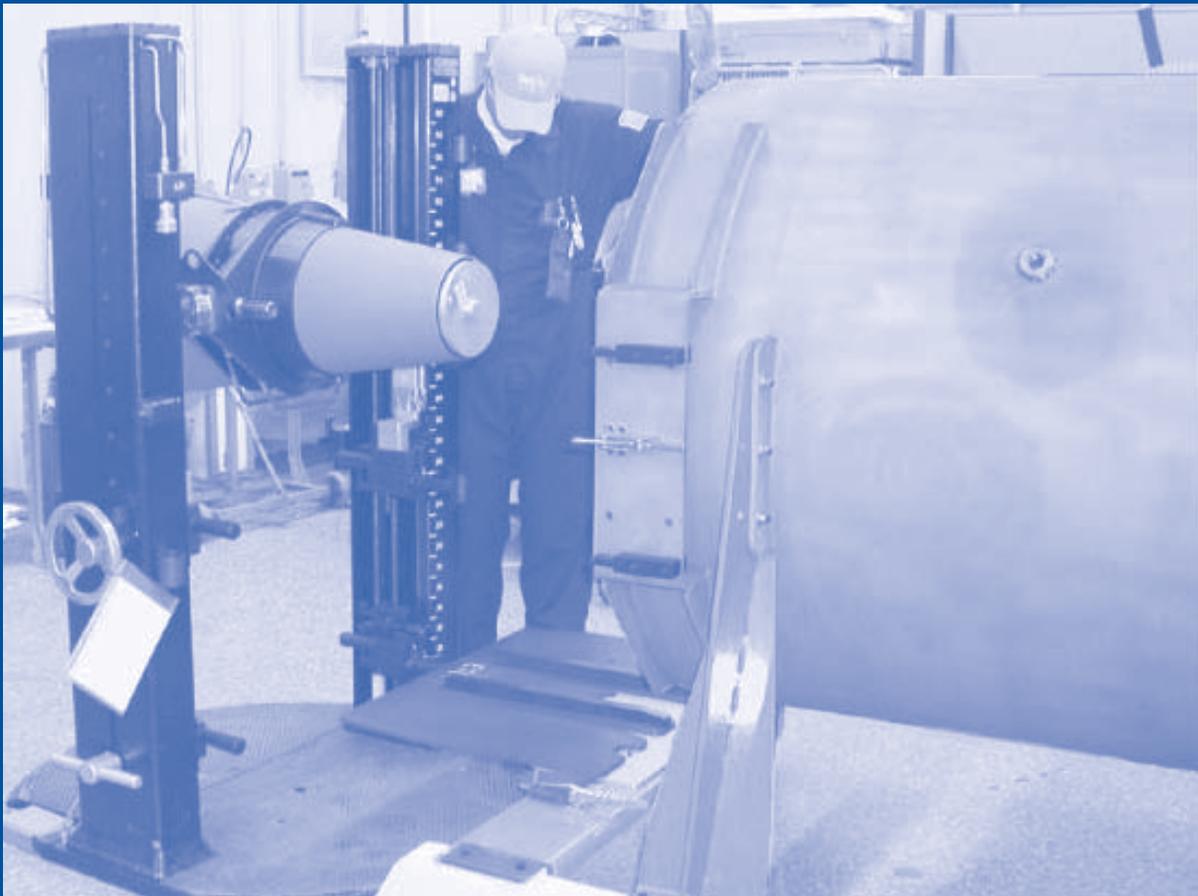
A handwritten signature in black ink that reads "Spencer Abraham".

Spencer Abraham

Enclosure



# 2003 Annual Report To Congress



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

# Annual Report To Congress

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

Calendar Year 2003



U.S. Department of Energy  
Washington, DC 20585

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February 2004



**The Secretary of Energy**  
Washington, DC 20585

February 23, 2004

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

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Sincerely,

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Spencer Abraham

Enclosure



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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 2003, the Department continued ongoing activities to resolve issues identified by the Board in formal recommendations and correspondence, staff issue 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: safety culture and review of the Columbia accident investigation; risk reduction through stabilization of excess nuclear materials; the Facility Representative Program; independent oversight and performance assurance; the Federal Technical Capability Program (FTCP); executive safety initiatives; and quality assurance activities. The following summarizes the key activities addressed in this Annual Report.

### Activities Pertaining to Board Recommendations

#### New Board Recommendations

- The Department received no new recommendations during 2003. This is the first year since the Board began issuing recommendations in 1990 that the Secretary received no new recommendations.

#### Recommendations Closed

- The Board closed one recommendation during 2003: recommendation 97-2, *Criticality*

*Safety.* The Department had completed all actions in its associated implementation plan as of April 2001. The Department continues to pursue a wide range of activities to ensure that criticality remains a well understood phenomenon and appropriate measures are taken to prevent criticality events.

#### Recommendations Proposed for Closure

- The Secretary has proposed closure of three other Board recommendations prior to 2003: (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 13 Board recommendations are currently open. The Secretary has proposed closure of three of these recommendations, and the Department has completed all implementation plan deliverables for four others. These seven implementation plans are no longer active.
- The Department has provided implementation plans for all of the open recommendations.
- The Department is actively working through its remaining implementation plans to resolve the safety issues identified in the Board recommendations.

- Of the six currently active implementation plans, three have projected completion dates in 2004, two in 2005, and the final one in 2010.
- Reasons for recommendations remaining open vary by recommendation, and include: (1) additional time required to ensure 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**

#### Safety Culture and Review of the Columbia Accident Investigation

- The Department continued to define and implement an appropriate safety culture committed to protecting the health and safety of the American public. The Department's senior leadership is driving managers to embrace safety as a core business value and to identify and eliminate barriers to achieving excellence in safety management throughout the Department.
- The Department has completed development and initial implementation of Integrated Safety Management (ISM) throughout the complex. The ISM program has been institutionalized and is now in sustenance /maintenance phase. The Department's senior managers and field managers continue to strongly endorse and support ISM as the

foundation of the Department's safety management strategy.

- The Department thoroughly reviewed the Columbia accident investigation report for applicable lessons learned and took actions where appropriate.

#### Risk Reduction Through Stabilization of Excess Nuclear Materials

- Since fiscal year 2001, the time to complete the total Environmental Management project has been reduced from 2070 to 2035, a *decrease of 35 years*. This represents a significant reduction in risk based on accelerated stabilization and disposal of excess nuclear materials.
- In implementing its Top-to-Bottom review report, the Office of Environmental Management (EM) developed four key management reforms: a new budget structure, human capital revitalization, acquisition strategy, and strict configuration management.
- Over the past two years, EM has restructured or re-competed all major contracts. Through the Contract Management Advisory Council, contracts are reviewed from a corporate perspective and a five-year Acquisition Plan was put in place.
- In coordination with regulators, EM has developed Performance Management Plans, which describe the end states, strategies, and milestones that will achieve site cleanup faster and cheaper than originally anticipated.

#### Facility Representative Program

- The Department's Facility Representative Program continues to be a centerpiece of Department

efforts to upgrade Federal technical capabilities. Approximately 200 Facility Representatives across the complex provide real-time oversight of operational activities important to mission accomplishment and public safety. The Department requires Facility Representatives to initially qualify to rigorous technical standards and to requalify every three years.

- In 2003, Field Office Managers nominated 15 people for the Department's Facility Representative of the Year award, indicating strong management support for the program and a high level of achievement across the Department.
- The percentage of fully qualified Facility Representatives increased to over 90% in 2003; this is the highest qualification level since the program's inception.

#### Independent Oversight and Performance Assurance

- The Department's Office of Independent Oversight and Performance Assurance, the single focal point for Department independent oversight, conducted four major inspections of Defense Nuclear Sites and a study of the Department's management of suspect counterfeit items that included evaluating implementation at seven sites.

#### Federal Technical Capability Program Activities

- The Department increased its overall technical qualification rate from 67% to 78% during 2003 for over 1400 federal technical personnel; this is the

highest qualification level since the Technical Qualification Program (TQP) was established.

- The Department developed responsibilities and qualification requirements for new federal Safety System Oversight Personnel (SSOP).

#### Executive Safety Initiatives

- As a result of Executive Safety Summits on "Moving Integrated Safety Management to the Next Level," the Department has completed or initiated the following major activities:
- The Department implemented its newly designed Occurrence Reporting and Processing System (ORPS) providing a more effective system for the communication and analysis of significant events to senior Department management.
- The revised Conditional Payment of Fee clause was submitted for rulemaking. This revised clause will allow fee penalties to be appropriately proportioned to offenses, and require partial mitigation of penalties to be considered for self-identification, self-correction, effective operating experience review programs, and strong safety programs.
- The Department initiated a re-engineering of its lessons learned program into a new Corporate Operating Experience Program to implement industry best practices and to improve line management focus and accountability for using operating experience to reduce recurrence of significant adverse operational events and trends.
- The Office of Fossil Energy, the Office of Energy Efficiency, and the



*Waste Drums at Rocky Flats  
Awaiting Shipment Off-Site*

Office of Nuclear Energy held an ISM Workshop at the Idaho National Engineering laboratory in September 2003. The workshop brought together key safety and operational personnel to work improvement items resulting from the December 2002 Executive Safety Summit.

### Quality Assurance Activities

- In July 2003, the Office of Environment, Safety and Health (EH) established an Office of Quality Assurance Programs to provide additional corporate leadership in the area of quality assurance.
- The Department defined a plan for upgrading its quality assurance for safety-related software and made steady progress in implementing this plan.
- The Department implemented a new corporate process for the identification, review, dissemination, and action on suspect/counterfeit and defective items.

### **Other Board Interface Activities**

- The Department responded to 27 reporting requirements from the Board during 2003.
- The Department issued 32 new or revised safety directives in 2003 that were reviewed by the Board's staff. In addition, another 36 draft safety directives received Board staff review and are being finalized prior to issuance.
- The Department exchanged 222 pieces of correspondence with the Board during 2003.

- The Department hosted 162 site visits by Board members or Board staff members during 2003.

### **Summary of the Department's Major Safety Accomplishments**

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

- Since fiscal year 2001, EM has reduced the time to complete the total complex-wide clean-up project from 2070 to 2035, a **decrease of 35 years**. During this period, EM has also reduced the life-cycle cost to complete the total clean-up by approximately \$50 billion.
- By the end of July 2003, all Rocky Flats Special Nuclear Material was packaged into suitable certified containers and shipped to other Department sites, predominately the Savannah River Site (SRS).
- For fiscal year 2003 EM achieved a Total Recordable Case Rate of **1.9** cases per 200,000 work hours and a Lost Workday Case Rate **0.6** cases per 200,000 work hours. In comparison to fiscal year 2001, this represents a **31% reduction in total reportables** and a **34% reduction in lost workdays**.
- At Oak Ridge's East Tennessee Technology Park, the Department has completed removal of the converters from the K-31 Building, initiated decontamination of the K-33 building, and initiated equipment removal in the K-29 building. The project is on track for completion in 2004. This will be the largest completed Decontamination & Decommissioning (D&D) job in the complex in terms of area covered, and tons of material disposed.

- The National Nuclear Security Administration (NNSA) developed and issued its Functions, Responsibilities, and Authorities Manual delineating safety management responsibilities.
- For fiscal year 2003 NNSA achieved a Total Recordable Case Rate of **2.4** cases per 200,000 work hours and a Lost Workday Case Rate **1.0** cases per 200,000 work hours. In comparison to fiscal year 2001, this represents a **9% reduction in total reportables** and an **11% reduction in lost workdays**.
- NNSA stabilized remaining organic solutions, nitrides, and cellulose rags at the Los Alamos National Laboratory (LANL).
- NNSA developed and delivered to Pantex prototype tooling for the W78 and W88 weapon systems.
- NNSA established weapons points-of-contact at each weapons laboratory for end users in the defense nuclear complex.
- NNSA developed and issued the Nuclear Air Cleaning Handbook, a major revision to the previous standard issued in 1976.
- NNSA completed dismantlement activities for the W79 weapon system.
- NNSA reduced long-term risks by re-packaging 2,414 pits during fiscal year 2003.

# TABLE OF CONTENTS

## I. INTRODUCTION

A. Background.....	I-1
B. Overview of the Department’s Policy for Interfacing with the Board.....	I-1
C. Overview of the Department’s 2003 Activities Pertaining to Board Recommendations.....	I-2
D. Report Preview.....	I-7

## II. KEY DEPARTMENT SAFETY INITIATIVES

A. Department Safety Culture and Review of the Columbia Accident Investigation.....	II-1
B. Risk Reduction Through Stabilization of Excess Nuclear Materials.....	II-2
C. Facility Representatives Program Activities.....	II-3
D. Independent Oversight and Performance Assurance.....	II-6
E. Federal Technical Capability Program Activities.....	II-7
F. Federal Executive Initiatives.....	II-9
G. Quality Assurance Activities.....	II-10

## III. IMPLEMENTATION OF BOARD RECOMMENDATIONS

A. Recommendation Closures.....	III-1
B. Recommendations Previously Proposed for Closure.....	III-3
C. New Recommendations.....	III-6
D. Other Open Recommendations.....	III-6
E. Report on Implementation Plans Requiring More than One Year.....	III-20
F. Categorization of Board Recommendations.....	III-21

## IV. SAFETY ACCOMPLISHMENTS AND ACTIVITIES AT MAJOR DEFENSE

### NUCLEAR SITES

A. Carlsbad Field Office.....	IV-1
B. Idaho Operations Office.....	IV-2
C. Nevada Site Office.....	IV-3
D. Livermore Site Office.....	IV-5
E. Los Alamos Site Office.....	IV-7
F. Oak Ridge Operations Office.....	IV-8
G. Office of River Protection.....	IV-9
H. Ohio Field Office.....	IV-14
I. Pantex Site Office.....	IV-15
J. Richland Operations Office.....	IV-16
K. Rocky Flats Field Office.....	IV-19
L. Sandia Site Office.....	IV-20
M. Savannah River Operations Office and Savannah River Site Office.....	IV-21
N. Y-12 Site Office.....	IV-23

## V. OTHER BOARD INTERFACE ACTIVITIES

A. Coordination of Board Review of Department Safety Directives.....	V-1
B. Briefings, Site Visits, and Other Board Interactions.....	V-1
C. Responses to Board Reporting Requirements.....	V-2
D. Board Public Meetings.....	V-2
E. Secretary Periodic Briefings with the Board Members.....	V-2
F. Safety Issues Management System.....	V-2
G. Information Archive of Board-Related Documents.....	V-3
H. Interface Manual.....	V-3

## APPENDICES

A. Orders and Department Safety Directives “of interest” to the Board.....	A-1
B. Site Visits Supported by the Department in 2003.....	B-1
C. Key Correspondence Between the Department and the Board.....	C-1
D. Abbreviations and Acronyms.....	D-1

## LIST OF TABLES AND FIGURES

Figure 1.A	Location of Major Department Facilities.....	I-1
Table 1.A	Historical Trend of Open Board Recommendations.....	I-2
Figure 1.B	New Board Recommendations for Each Year (1990 - 2003).....	I-3
Figure 1.C	Net Open Board Recommendations at Year End (1990 - 2003).....	I-3
Figure 1.D	Recommendation Closures per Year (1990 - 2003).....	I-3
Table 1.B	Key Dates for Open Board Recommendations.....	I-4
Table 1.C	Summary Status of Board Recommendations.....	I-5
Table 2.A	Summary of Environmental Management Accomplishments for 2003.....	II-4
Figure 2.A	Percentage of Fully Qualified Facility Representatives.....	II-6
Table 3.A	Implementation Plans with All Commitments Complete.....	III-22
Table 3.B	Implementation Plans with Projected Completion Dates in 2004.....	III-22
Table 3.C	Implementation Plans with Projected Completion Dates After 2004.....	III-22
Table 5.A	Formal Reporting Requirements Established by the Board.....	V-5
Table A.1	Department Safety Orders and Directives “of Interest” to the Board Group 1 - Currently Active Orders.....	A-1
	Group 2 – Archived or Deleted Orders of Interest to the Board Cited in Current Contracts.....	A-3
	Group 3 – Related Documents Setting Forth Safety-Related Requirements.....	A-5
Table A.2	Department Safety Directives Coordinated with the Board Staff and Issued in 2003.....	A-6
Table A.3	Descriptions of Department Orders and Safety Directives Designated by the Board as “of Interest”.....	A-8

## 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 2003 pertaining to the Board. This report details the Department's key safety initiatives, implementation of Board recommendations, implementation of 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*
- 99-1, *Storage of Pits at Pantex*
- 98-1, *Resolution of Oversight Findings \**
- 97-1, *Safe Storage of Uranium-233*
- 95-2, *Safety Management*
- 94-1, *Improved Schedule for Remediation \**
- 92-4, *Multi-Function Waste Tank Facility at Hanford \**

\* Secretary has proposed closure.

**C. Overview of the Department's 2003 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 2004, there are 13 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 13 open recommendations (as noted with an “\*” in the list on page I-1).

In 2003, the Board issued no new recommendations to the Secretary. This

**Table 1.A – Historical Trend of Open Board Recommendations**

<b>Year</b>	<b>Recs Issued</b>	<b>Recs Closed</b>	<b>Net Change in Open Recs for the Year</b>	<b>Open Recs at Year End</b>
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*

is the first year since the Board began issuing recommendations in 1990 that the Board did not issue a recommendation.

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.

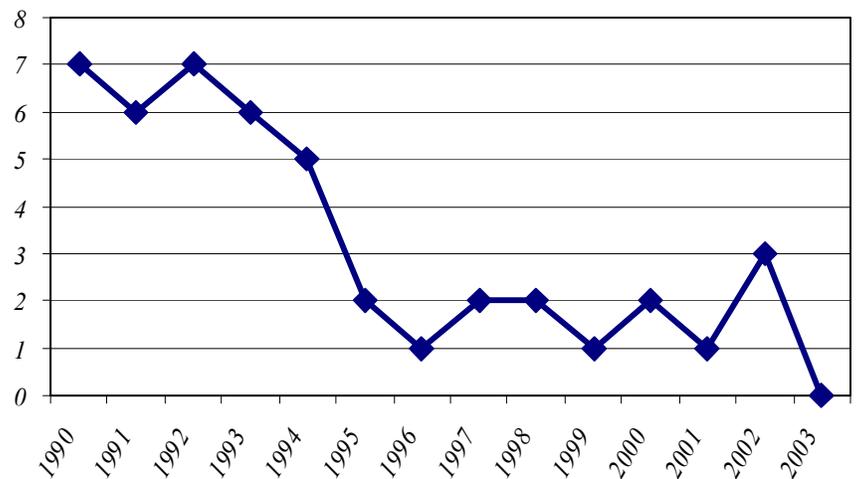
Figure 1.C provides the net open Board recommendations at year end from 1990 - 2003.

Figure 1.D shows the number of recommendations closed by the Board each year from 1990-2003.

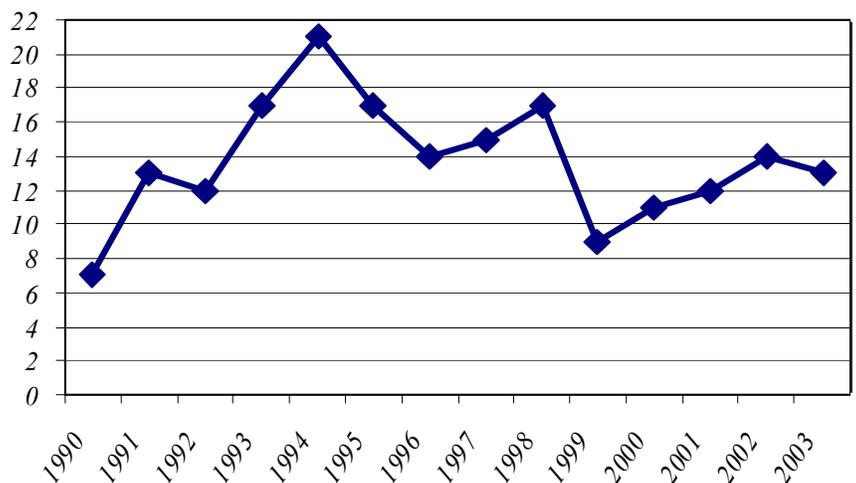
Table 1.B provides key dates for active Board recommendations.

Table 1.C provides a summary status of Board recommendations. The Board closed recommendation 97-2, *Criticality Safety*, in August 2003.

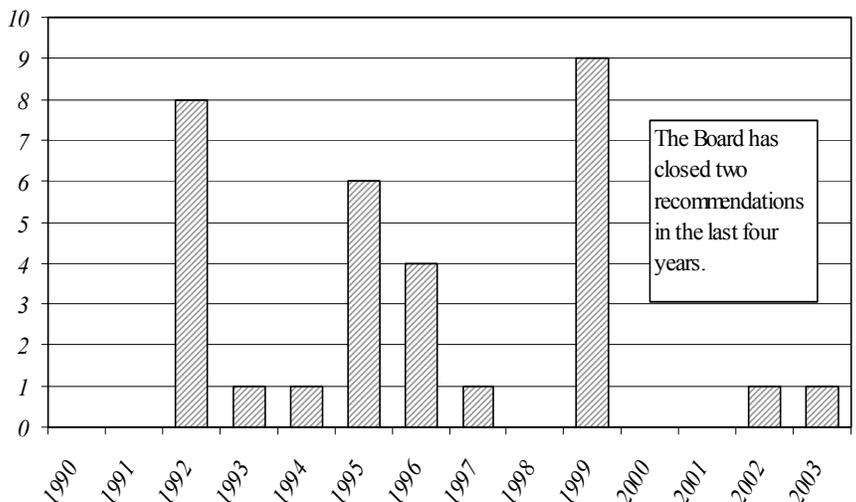
**Figure 1.B New Board Recommendations (1990 - 2003)**



**Figure 1.C Net Open Board Recommendations At Year End (1990 - 2003)**



**Figure 1.D Recommendation Closures Per Year (1990 - 2003)**



**Table 1.B– Key Dates for Open Board Recommendations**

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

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**

<b>Rec</b>	<b>Subject</b>	<b>Open</b>	<b>Closed</b>
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.

<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>
92-6	Operational Readiness Reviews		10/24/95
92-7	Training and Qualification		11/4/93
93-1	Standards Utilization in Defense Nuclear Facilities		3/25/99
93-2	Critical Experiments Capability		12/30/97
93-3	Improving Technical Capability		11/9/99
93-4	Environmental Restoration Management Contracts		6/28/96
93-5	Hanford Waste Tanks Characterization Studies		11/15/99
93-6	Nuclear Weapons Expertise		4/27/99
94-1	Improved Schedule for Remediation	X <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>	

**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	X	
99-1	Safe Storage of Pits at Pantex	X	
2000-1	Stabilization and Storage of Nuclear Material	X	
2000-2	Configuration Management, Vital Safety Systems	X	
2001-1	High-Level Waste Management at the Savannah River Site	X	
2002-1	Quality Assurance for Safety-Related Software	X	
2002-2	Weapons Laboratory Support of the Defense Nuclear Complex	X	
2002-3	Design, Implementation, and Maintenance of Administrative Controls	X	

**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 2003 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 the public health and safety.

### A. Department Safety Culture and Review of the Columbia Accident Investigation

The Department's senior leadership is committed to fulfilling the Department's missions in a manner that protects workers and public health, and the environment. The Secretary has made this clear since his first year in office. For example, the Secretary stated, in remarks at the 2001 Executive Safety Conference, "I want to speak about safety because nothing is more important. If we do this well, everything else will fall into place. If we fail, nothing else we do can make up for that failure." All of Department leaders are committed to conducting business in a manner that protects workers, and public health and safety, and the environment. The Department honors this commitment by understanding ongoing operations and the associated hazards and establishing appropriate systems for controlling the hazards and managing the inherent risks. The Department leaders strive to cultivate a questioning attitude at every level of the organization. The Department is committed to continuous improvement of its operations. The Department's goal is to establish and maintain a strong and enduring safety culture, with safety as an integral part of all work practices.

An effective safety management system includes senior leadership commitment and focus on safety, a comprehensive set of safety requirements, a technically skilled and qualified federal workforce, and effective contracts that communicate clear expectations and allows the Department to hold

contractors accountable. Oversight is conducted to ensure all parts of this safety management system work as intended. ISM remains the foundation of the Department's safety strategy. In addition to safety hazards, safeguard, security, and environmental issues are considered when planning an activity. Over the past five years, ISM has proven to be an effective system for improving safety performance by ensuring that safety is an integral part of all work activities from the initial planning stages through project closure.

The Department's safety philosophy is built upon the following tenets that are shared by the Secretary and all of the Department's senior leaders:

- (1) The Department is committed to conducting its business in a manner that protects workers, and public health and safety, and the environment.
- (2) The Department expects its contractors to perform work safely and will hold them accountable to this expectation. Contractors that do not perform work safely will *not* remain contractors of the Department.
- (3) The Department must provide oversight of its contractor activities, and this oversight function must be adequately staffed with technically-competent personnel. Department oversight is most effective when concentrated on the work activities in the field.
- (4) Lines of communication between the work activities and the headquarters management must be direct so that important information affecting safety is rapidly brought to the attention of Department senior managers for review and decision-making.
- (5) Department independent oversight must provide an additional check of

the safe performance of the whole system.

On August 26, 2003, the Columbia Accident Investigation Board issued its final report on the recent space shuttle tragedy. The Columbia Accident Investigation Board identified organizational causes as a key element in the failure to identify and resolve critical safety issues. The Department has recognized similarities in its missions and safety responsibilities with those of the National Aeronautics and Space Administration (NASA). Both the Department and NASA perform highly technical work with the goal of no major accidents. Both the Department and NASA rely on contractors to perform significant portions of their missions. Both the Department and NASA share a pride in a long history of technical accomplishment which could lead to overconfidence and the loss of the critical eye and questioning attitude essential for sustained excellence. Noting the similarities between the organizations, the Department management has emphasized the need to study and learn from the Columbia accident.

One of the hallmarks of a strong safety culture is learning from experience, including the experience of others such as in the tragic Columbia accident. The Department's senior leaders have each reviewed the Columbia accident investigation report for parallels and lessons learned. The Secretary has directed headquarters and field senior managers to take necessary actions based on lessons learned. Senior Department leaders have met with NASA senior managers on specific topics of common interest. The Department is committed to learn from the events that led up to the Columbia accident, and make changes to the Department's policies and procedures as appropriate.

Within the NNSA, the NNSA Administrator established a review team to address the following questions in light of the Columbia accident report:

- Is NNSA's management and safety culture appropriate for an organization managing high technology, high-risk activities?
- Are there issues raised by the accident report that should be considered as we implement NNSA's new organizational model?
- Will the re-engineered NNSA provide for the necessary technical capability for properly executing NNSA's safety management and regulatory responsibilities?
- What changes would you recommend that NNSA adopt in light of the lessons learned by NASA?

The NNSA review team is scheduled to provide its report in early 2004.

## **B. Risk Reduction Through Stabilization of Excess Nuclear Materials**

In February 2002, the Top-to-Bottom Review was released, which concluded that the Environmental Management program, during its 12-year history, was focused on risk management, rather than risk reduction. The key challenge identified by the Review was the need for major management reforms and strategies that would allow for accelerated risk reduction and site closure. EM has laid the strategic groundwork for program reform through actions taken since the release of the Top-to-Bottom Review, including development and implementation of management reforms and innovative strategies. Four key management reforms have been developed: (1) a new budget structure, (2) human capital revitalization, (3) acquisition strategy, and (4) strict configuration control. In

addition, in coordination with regulators, EM has developed Performance Management Plans, which describe the end states, strategies, and milestones that will achieve site cleanup faster and cheaper than originally anticipated.

To continue the momentum toward accelerated risk reduction and site closure, continued management leadership, resolve and focus are needed to implement the key reforms to overcome the barriers that have been encountered in the past. EM has revised performance measures that are aligned with specific outcomes and end-states. Persistent and aggressive federal leadership has already made a difference in accomplishments for fiscal year 2003. A summary of these accomplishments is provided in Table 2.A. Management reforms, focused and capable federal staff, and relentless pursuit of mission completion will allow for continued risk reduction.

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

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

Facility Representatives are competent and technically qualified to perform their job. Key components of the program include:

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

The Facility Representative Program experienced several notable achievements in 2003. The most significant accomplishment is that over 90% of the Department's Facility Representatives were fully qualified (see figure 2.A). This is the highest qualification rate since program inception. The Department's goal of 75% was raised to 80% in November 2003. This goal reflects the facts that full qualification often requires 1-2 years, and turnover is often high as Facility Representatives are frequently

## Table 2.A - Summary of Environmental Management Accomplishments for 2003

### Environmental Management Corporate Level

- At the end of fiscal year 2001, EM Total Recordable Case Rate/Lost Workday Case Rate was **1.9/0.8**. At the end of EM fiscal year 2003, Total Recordable Case Rate/Lost Workday Case Rate Case Rates were **1.1/0.6**; representing a **31% reduction in total recordable cases** and a **34% reduction in lost workdays**.
- The cost and scope of the EM program did not increase/expand for the second consecutive year and only the second time ever in EM's history.
- Two EM geographic sites were completed in fiscal year 2003: Maxey Flats in Kentucky and the Salmon Site in Mississippi.
- Since fiscal year 2001, the life-cycle cost to complete EM cleanup has been **reduced by approximately \$50 billion**. Since fiscal year 2001, the time to complete the EM project has been reduced from 2070 to 2035, a **decrease of 35 years**.
- Through the Contract Management Advisory Council contracts are reviewed from a corporate perspective and a 5-year Acquisition Plan put in place.
- Over the past two years, EM has restructured or re-competed all major contracts.
- EM Program was re-organized and re-aligned to accelerate risk reduction and site closure goals.

### Idaho

- Completed construction of the Idaho CERCLA Disposal Facility and began waste disposal. The Idaho CERCLA Disposal Facility will be used for disposal of CERCLA waste from Idaho National Engineering and Environmental Laboratory (INEEL) remediation activities, thus substantially reducing transportation and disposal costs for off site disposal.
- Completed Idaho Settlement Agreement milestones for disposal of stored transuranic (TRU) waste:
  - Completed shipment of 3,100 cubic meters of stored TRU waste to the Waste Isolation Pilot Plant (WIPP) (October 2002)
  - Completed construction of the Idaho Advanced Mixed Waste Treatment Project facility (March 2003)
  - Began operation of the Idaho Advanced Mixed Waste Treatment Project facility in March 2003.

### Idaho (Grand Junction Office, Colorado)

- Received Environmental Protection Agency Certificate of Completion for the Maxey Flats Disposal Site Cleanup. The Department's Office of Legacy Management will provide long-term oversight on the site as well as maintain the site records.

### Oak Ridge

- Completed three of five truck shipments of used nuclear fuel to the INEEL. Removal of the used fuel is an important prerequisite for the Melton Valley Closure Project.
- Completed removal of converters from the K-31 building, initiated decontamination of the K-33 building, and initiated equipment removal in the K-29 building. The project is on track for completion in 2004. This will be the largest completed D&D job in the complex in terms of area covered, and tons of material disposed.
- Shipped 9,378 cubic meters of legacy low level and mixed low level waste for treatment and disposal. This is part of the Oak Ridge Accelerated Cleanup end state that all legacy low level and mixed low level wastes are to be disposed by the end of fiscal year 2005.

### Oak Ridge (Portsmouth, Ohio)

- Completed the Deposit Removal Program for 145 cells at the Portsmouth site, which completes the contractual scope of work for this effort.

#### Ohio Field Office (Ohio Closure Projects)

- Battelle Columbus completed three shipments of TRU waste to Hanford for interim storage. This shipment was the first remote-handled TRU waste shipment from Battelle in thirteen years.
- With the approval of the Fernald Closure Project baseline, the projected Total Project Cost has been reduced from \$2.9 billion to \$2.5 billion, a projected savings of over \$400 million.
- The Mound Closure Project completed shipping all its legacy transuranic waste (266 cubic meters) to the SRS for interim storage. Completion of this activity frees up “T” Building (where the waste was stored), for D&D.
- All Pu-238 has been removed from Mound.

#### Ohio Field Office (West Valley Demonstration Project; West Valley, New York)

- 125 used nuclear fuel elements were shipped via rail to the INEEL for interim storage. This was one of the largest spent fuel rail movements ever undertaken by the Department.
- All Spent Nuclear Fuel (SNF) has been removed from West Valley.

#### Richland

- Completed “cocooning” of the “F” Reactor (one of Hanford’s nine former plutonium production reactors next to the Columbia River). Inspection requirements have been reduced from one year, to every five years.
- Completed stabilization and packaging of all residues at the Plutonium Finishing Plant residues eight months ahead of schedule. (August 2003).
- Over 70 percent of SNF removed from the K-basins.

#### River Protection

- Met interim stabilization criteria for 8 tanks, leaving only 9 tanks of the 149 yet to be stabilized.
- Completed Tri-Party Agreement milestone of first placement of structural steel for Low Activity Waste Facility.

#### Rocky Flats

- In July 2003, the Plutonium Stabilization and Packaging System completed operations. The Plutonium Stabilization and Packaging System processed and packaged 1,895 canisters of plutonium metal and oxide.
- By the end of July 2003, all Rocky Flats Special Nuclear Material was packaged into suitable certified containers and shipped to other Department sites, predominately the SRS.

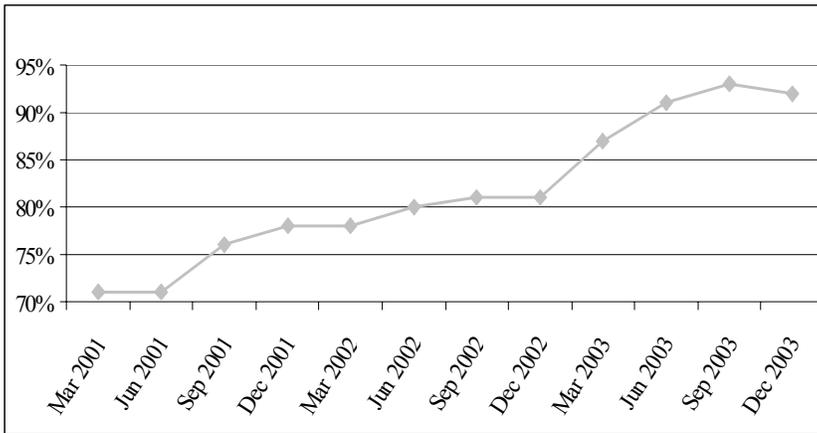
#### Savannah River

- Completed the Defense Waste Processing Facility melter replacement and resumed production of vitrified high level waste (HLW) canisters.
- Accelerated shipments of TRU waste to WIPP from the planned 4,000 drums to over 5,800 drums.
- Commenced stabilization and packing of the SRS plutonium inventory.

#### Small Sites

- Two canisters of irradiated fuel materials were shipped from the General Atomics site in San Diego, California to the INEEL. This shipment, along with disposal of the associated residual materials completes the EM work (except contract closeout) at General Atomics.
- The entire inventory of TRU waste at the Missouri University Research Reactor was shipped to Argonne National Laboratory–East. The TRU was characterized, certified, and shipped to WIPP.
- Rocky Flats eliminated the final Protected Area on site in August 2003, resulting in significant reduction in site security expenses.

**Figure 2.A - Percentage of Fully Qualified Facility Representatives**



selected for roles with added responsibilities.

Another achievement for 2003 is that a total of 15 Facility Representatives were nominated for the Facility Representative of the Year award by their field offices. This ties the previous record for the number of nominees and demonstrates continued strong performance as well as management support for the program.

The 2003 Annual Facility Representatives Workshop was held in Las Vegas, Nevada, from May 13-15, 2003. Departmental personnel in attendance totaled 101, representing every major program and field office. Included in the total were 52 Facility Representatives, representing one-quarter of the Department's Facility Representative community. Twenty-two field and headquarters managers participated. The workshop agenda included a combination of joint sessions, panel discussions, breakout sessions, and small group discussions. The themes of the three days were: Program Successes and Challenges, Effective Operational Oversight, and Enhancing Your Career.

Also at the workshop, the Department-wide 2002 Facility Representative of

the Year Award was presented to an employee of the Los Alamos Site Office (LASO). His noteworthy accomplishments included the discovery of previously unrecognized beryllium operations at the Los Alamos Chemistry and Metallurgy Research Facility. He actively worked with facility personnel to develop a plan for characterization of the legacy material. He also identified and helped resolve significant deficiencies during the restart of the uranyl nitrate extraction process at the Chemistry and Metallurgy Research Facility.

Oversight performed by Facility Representatives provides Department line managers with accurate and objective information on the effectiveness of contractor work performance and practices, including implementation of 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**

The Office of Independent Oversight and Performance Assurance (OA) provides an independent assessment of the effectiveness of policies and programs in safeguards and security; cyber security; emergency management; environment, safety and health (ES&H); and other critical functions of immediate interest to the Secretary, the Deputy Secretary, or the Administrator of the NNSA. During 2003, the OA conducted four major inspections of defense

nuclear sites and a study of the Department's management of suspect counterfeit items that included evaluating implementation at seven sites. All findings were entered into the corrective action system in accordance with the Department's response to Board recommendation 98-1, *Resolution of Safety Issues Identified by Internal Independent Oversight*.

During 2003, OA issued *Lessons Learned Report - Environment, Safety, and Health Evaluations* to provide feedback to line organizations on the overall strengths and weaknesses identified during inspection activities. The report summarized that the implementation of ISM has led to improvements in ES&H programs; however, further improvements are necessary in several areas including; programs and processes for assuring safety system functionality, unreviewed safety question (USQ) processes, conducting non-radiological hazard assessments, self assessments, and ensuring that Department requirements are fully communicated to subcontractors.

OA ES&H inspections continued to emphasize three key areas consistent with ISM. 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 environment. This area is consistent with Board recommendation 2002-2, *Configuration Management, Vital Safety Systems*. The third area was Department line management's oversight of contractors, Department and contractor self-assessment, and corrective action management.

OA's *Special Study of the Department of Energy's Management of Suspect/Counterfeit Items (S/CI)* was conducted

in response to the Board's concerns regarding the timeliness in acting on information regarding S/CI. The results of the study identified the need for increased formality and rigor in the communication and processing of information regarding S/CI. The Department has responded by initiating several actions to achieve improvements in processes for managing S/CI.

Also during 2003, at the request of the Under Secretary for Energy, Science and Environment, OA chaired a Department-wide working group for the development of a new policy and notice on oversight. The new policy and notice will provide for increased effectiveness of oversight processes and consistency across functional areas.

### **E. Federal Technical Capability Program (FTCP) Activities**

Under the auspices of the Deputy Secretary of Energy, the Department's FTCP activities represent a significant effort aimed at improving the Department's overall technical capability of its Federal workforce. In part, this program was established in response to Board recommendation 93-3, *Improving Technical Capability*. The Deputy Secretary established a Federal Technical Capability Panel to oversee and resolve issues affecting the FTCP. The Panel consists of senior managers designated as Agents to represent headquarters and field elements with defense nuclear facility responsibilities, including the NNSA.

Specific functions of the FTCP Panel include overseeing the TQP which encompasses the Senior Technical Safety Manager Program, conducting periodic assessments of the effectiveness of the FTCP Panel using internal and independent experts, and providing recommendations to senior Departmental officials regarding the Department's technical capability.

During 2003, the FTCP Panel completed a number of activities which were detailed in the *FTCP FY2003 Annual Plan*, dated September 2002. This report is available on the FTCP's web site at <<https://www.hss.doe.gov/deprep/ftcp>>.

One of the Deputy Secretary's main challenges to the FTCP Panel for 2003 was to use performance measures to monitor and trend progress in the TQP. This information has proven to be a beneficial tool in identifying areas requiring additional attention and resources. The performance indicators target the status of filling technical skill gaps including overall qualification percentage in the TQP, the availability of technical positions at closure sites, and the number and retention rate of entry-level technical interns in the Department's technical intern programs. The Departmental target goal for overall qualification in the TQP is 75 percent. The November 13, 2003 Quarterly Performance Indicator Report showed the status as of September 30, 2003. The Department showed significant improvement with 78.9 percent qualified of the over 1,400 DOE personnel in the TQP. During its December 2003 meeting, the FTCP Panel raised the target goal for the overall qualification in the TQP to 80 percent, to be achieved by December 2004.

A major action for 2003 was to review and update the 29 functional area qualification standards that are the technical underpinning of the TQP and to incorporate them into the Department's Technical Standards Program. At the time of this report 18 functional area qualification standards have been revised and approved. The remaining 11 have been drafted and are nearing the final stage of the approval process. The anticipated date for all 29 functional area qualification standards to be approved is March 2004.

Additionally, a new functional area qualification standard was created in response to Board recommendation 2002-1, *Software Quality Assurance*. This standard establishes common functional area competency requirements for Department personnel who provide assistance, direction, guidance, oversight, or evaluation of safety software that includes software used for consequence analysis for potential accidents and design basis events, design for structures, systems and components, instrumentation and controls, and databases used for safety management functions.

The FTCP Panel placed priority on updating the mechanical systems, electrical systems, instrumentation and control, fire protection, and criticality safety qualification standards since technical skill gaps have been identified in those areas.

Another key effort undertaken by the FTCP Panel in 2003 was to establish the Safety System Oversight Program which is documented in the revised FTCP Manual. This program is a key part of the TQP, considered an additional level of technical qualification, and will build upon technical discipline competencies. The Safety System Oversight Personnel (SSOP) are a key technical resource assigned to oversee contractor management of safety systems at Department defense nuclear facilities. Unlike Facility Representatives who are responsible for monitoring the safety performance of Department defense nuclear facilities and day-to-day operational status, federal SSOPs are responsible for overseeing assigned systems to ensure they will perform as required by the safety basis and other applicable requirements. The FTCP Panel will conduct assessments in 2004 to ensure that this program is effectively implemented.

As part of its ongoing mission, the FTCP Panel ensures work force analyses and staffing plans are maintained by organizations with responsibility for defense nuclear facility safety. The analyses identify critical technical skills that must be maintained to assure safe operations of those facilities. Existing shortages and plans to deal with the shortages in the near-term are also identified. The analyses are being used as part of the strategy to ensure that the Department has the critical technical skills necessary to carry out its missions and as a basis for recruitment and development programs.

In January 2002, the FTCP Panel compiled a Department-wide analysis identifying the need for 30.75 additional Full-Time Equivalent persons to provide necessary oversight of contractor safety systems. Over the past two years, the Department has reduced this skill gap to 7.4 Full-Time Equivalent-persons. The remaining technical skill gaps are in mechanical engineering, electrical engineering, instrumentation and control engineering, fire protection, and radiation protection. The skill gaps reside at four site offices: Los Alamos Site Office (LASO), Sandia Site Office (SSO), Pantex Site Office (PXSO), and Y-12 Site Office (YSO). The FTCP Panel continues to monitor this area using performance indicators to help ensure that the identified gaps are closed.

The FTCP Panel continues to support and work to increase participation in the Departmental Intern programs, focused on recruiting and training highly talented new federal employees. As part of the Department's Human Capital Management Initiative, the FTCP Panel continues to actively support recruitment of highly qualified interns for the corporate Career Intern Program, a two-year entry-level

program for technical and business new hires, and focuses on addressing technical skills gaps and succession planning issues. Recruiting is currently taking place and is based on identified departmental skills needs. The Department is on target to reach the targeted 25 participants.

The two intern programs that concluded this year: the Technical Intern Program and the Technical Leadership Development Program. These programs successfully graduated and placed 31 interns. This is largest graduation of interns participating in a corporate program since the 1995 Technical Leadership Development Program. These graduates represented over 20 colleges and universities and were located at 7 different field and headquarters locations. The 31 graduates represented a 94 percent retention rate. Nearly 40 percent of the participants hold advanced degrees. Over a third of the participants had degrees directly related to environmental areas of study, and over 55 percent are women and/or members of minority groups.

## F. Executive Safety Initiatives

In December 2002, Secretary Abraham, Deputy Secretary McSlarrow, and Under Secretaries Card and Brooks held a follow-on Executive Safety Summit in Washington, DC with senior Department and contractor managers from all sites to continue progress on initiatives, to embrace safety as a core business value, to manage safety more efficiently and effectively, and to emphasize senior management's role in ensuring accountability for safety performance. The Department's senior management endorsed ISM as a foundation of the Department's safety management strategy and is expanding the concept to Integrated Management that would include all Department functions such as, Safeguards and

*DOE Offices with at least 75% of its technical personnel fully qualified*

- Chicago Operations Office
- Idaho Operations Office
- Nevada Site Office
- Ohio Field Office
- Office of River Protection
- Richland Operations Office
- EH Headquarters Office
- EM Headquarters Office
- Y-12 Site Office
- Savannah River Site Office
- Oak Ridge Operations Office
- Carlsbad Field Office

Security. A central Department safety objective is to achieve safety performance and reliability to enable reliable and efficient delivery of the Department's nuclear and high hazard missions. The Department accomplished the following during 2003:

#### Occurrence Reporting and Processing System (ORPS)

The Department completed transition to a re-engineered ORPS that will make the Department's reporting system more effective in communicating operating events. The new ORPS includes revised reporting criteria, revised reporting thresholds, new causal analysis methodology, and a new requirement for conducting performance analysis to facilitate more effective corrective actions on significant and recurring operating events.

#### Lessons Learned Re-Engineering

The Department is currently developing a new corporate approach to the current lessons learned program. The new process will incorporate industry best practices in making significant operating experience information available for use throughout the Department. This Corporate Operating Experience Program is based on components of lessons learned programs developed by the Institute for Nuclear Power Operations and World Association of Nuclear Operators for sharing operating experience with commercial nuclear operators. The new program will also improve the focus and accountability of senior line management's role in using operating experience to reduce the recurrence of significant adverse operational events and trends.

#### Contract Clause Requirements for Safety Management

Three main contract clauses contain requirements for safety management at Department sites: the ISM clause (DEAR 970.5223-1), the Laws clause (DEAR 970.5204-2), and the Conditional Payment of Fee clause (DEAR 970.5215-3). The Department submitted its revised Conditional Payment of Fee, Profit and Incentives clause for formal rulemaking. This revised clause, when finally implemented, will require fee penalties to be appropriately proportioned to offenses, and provide for partial mitigation of penalties based on consideration of the self-identification, self correction, implementation of effective operating experience review programs, and strong safety programs.

#### **G. Quality Assurance Activities**

In July 2003, EH established an Office of Quality Assurance Programs to provide additional corporate leadership in the area of quality assurance. This Office will serve as the Department's corporate focal point for quality assurance programs, processes, and procedures. The Office will identify and resolve Departmental crosscutting Quality Assurance (QA) issues, and will support line management in their implementation of policy and requirements for the design, procurement, fabrication, construction, and operation of facilities across the Department.

Two key quality assurance initiatives have received considerable attention since the Office of Quality Assurance Programs was established. Each initiative described below involves significant changes from past practices.

## Software Quality Assurance (SQA)

The Department has recognized the need to establish a rigorous and effective SQA program. In evaluating Board recommendation 2002-1, previous correspondence from the Board's public meetings, and the Board's Technical Report 25, Quality Assurance for Safety-Related Software at Department of Energy Defense Nuclear Facilities, the Department concluded that an integrated and effective SQA infrastructure must be in place throughout Department's defense nuclear complex. This is now being accomplished through the 2002-1 implementation plan.

The scope of the implementation plan includes safety software at the Department's defense nuclear facilities. Safety software includes both safety system software and safety analysis and design software. Safety system software is computer software and firmware that performs a safety system function as part of a structure, system, or component that has been functionally classified as Safety Class or Safety Significant. This also includes computer software such as human-machine interface software, network interface software, programmable logic controller, programming language software, and safety management databases, that are not part of a structure, system, or component but whose operation or malfunction can directly affect Safety Significant and Safety Class structure, system, or component function. Safety analysis and design software is software that is not part of a structure, system, or component but is used in the safety classification, design and analysis of nuclear facilities to ensure: (1) the proper accident and design basis event analysis of nuclear facilities, (2) the proper analysis and design of safety

structure, system, or components, or (3) the proper identification, maintenance, and operation of safety structure, system, or components.

Actions are being taken in the following four areas to ensure the quality and integrity of safety software at defense nuclear facilities:

- Roles and Responsibilities - (1) Identify, document, and communicate roles, responsibilities, and authorities for all aspects of SQA. This will initially be documented and communicated in a Department Notice, and will eventually be included in updated directives, the Functions, Responsibilities, and Authorities Manual, and related documents. (2) Identify Federal personnel in both Headquarters and Field Elements that have responsibility related to safety software. These personnel will be required to satisfy the competency requirements identified in a Technical Qualification Standard.
- Computer Codes - (1) Assess safety system software to determine its current status and assess the effectiveness of SQA programs for safety analysis and safety design software. Corrective actions will be identified and completed as appropriate. (2) Identify safety analysis codes that are commonly used across the Department (also known as "toolbox" codes), evaluate these codes against prescribed software qualification criteria, provide guidance on their proper application, and establish a Central Registry to facilitate maintenance, technical support, configuration management, training, and notification to users of problems and revisions on these codes.
- Requirements and Guidance - Identify and develop requirements and

guidance for safety software quality assurance based on existing industry or Federal agency standards. These requirements and guidance will be sufficiently rigorous to ensure the reliability of safety software at defense nuclear facilities based on risk and complexity.

- Continuous Improvement - Implement a continuous improvement process that includes the formation of an Office of Quality Assurance and the identification of SQA experts across the Department to provide support to that Office and assistance in implementing this implementation plan. This process will also provide for interfacing with outside organizations and agencies to enable an exchange of lessons learned and new technology.

#### Suspect/Counterfeit and Defective Items

The Department is committed to establishing and implementing a process to ensure that suspect/counterfeit items (S/CI) are quickly identified and that items and components installed in safety-related or mission-sensitive applications affecting defense nuclear facilities meet the intended function and operability requirements. In making revisions to the S/CI process, the Department considered the recent experience investigating Temperform USA, reviewed the QA Working Group lessons learned document from the Solid State Devices, Incorporated incident, and also the Report of the Senior Managers' Task Group to Resolve Outstanding Issues Concerning Suspect/Counterfeit Items in Response to Inspector General Report DOE/IG-0340.

There are several differences in this improved process that will ensure that problems previously identified will not

occur again. EH has taken a corporate leadership role and is accountable for ensuring the effective implementation of this process, rather than a Department-wide committee. Weekly review meetings are conducted by the EH Operating Experience Group to ensure the timely consideration of issues. S/CI incidents determined to be significant will be dealt with immediately by the Assistant Secretaries or Deputy Administrator level rather than by staff. EH will continue to review and seek improvements in the process used to collect and distribute potential S/CI related information across the Department. An example of this is the modification to the EH website to include a link to S/CI information. Other actions taken to date to further improve the S/CI process include:

- To ensure that appropriate actions were taken for matters of high priority, such as the current issue associated with Temperform USA, EH developed lines of inquiry for the investigation. The Assistant Secretary for Environment, Safety and Health sent a memorandum to the applicable Program Secretarial Officers requesting action in accordance with those lines of inquiry. The Program Secretarial Officers conducted investigations, took appropriate actions when S/CI were identified, and documented the results of their reviews. EH reviewed the Program Secretarial Officers responses for completeness. On August 25, 2003, the Secretary provided the Board with the results of the Temperform USA investigation.
- S/CI matters that are not designated as a high priority but of concern to individual organizations are sent out for information using the Department's Operating Experience Program.

- EH developed a Semi-Annual S/CI report that documents actions taken as a result of potential S/CI issues. This includes both high priority matters and those matters sent out for information. This report also included a “lessons learned” section and identified potential S/CI training issues.
- EH developed an internal process guide and checklists to initiate the process within EH and to provide criteria to assist the Operating Experience Group in identifying and dispositioning potential S/CI issues.
- EH staff received S/CI training as part of their professional development and Office-specific qualifications have been established that include the S/CI process.
- A complex wide video conference was conducted to communicate the improved S/CI process.
- EH reviewed the results of the OA Special Study on S/CI and performed a gap analysis of the S/CI process and Temperform issues to ensure efforts made thus far, and future efforts, to improve the Department’s S/CI identification, notification and investigation process are correct and effective.
- Directives are being revised to reflect the process and the roles and responsibilities of EH and other organizations.

### NNSA Quality Assurance

- In addition, NNSA has completed a number of accomplishments in its Quality Assurance Improvement Plan:
- NNSA conducted reviews of Site Offices not previously reviewed to evaluate the effectiveness of resolutions to existing QA issues.
- NNSA developed and issued its *Functions, Responsibilities, and Authorities* document, and directed site offices to complete their documents by February 2004.
- NNSA validated that its major contractors are complying with 10CFR830.121(c)(2) regarding the integration of QA with ISM.
- NNSA verified that programs and processes are in place to provide oversight of QA programs consistent with DOE P 450.5, *Line Environment, Safety and Health Oversight*, and DOE Order 414.1, *Quality Assurance*.
- NNSA held QA workshops in July and November 2003 to ensure its site office and contractor personnel understood QA expectations and were implementing expected improvement 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 45 days of publication of the recommendation in the *Federal Register*. In addition, the Secretary must submit an implementation plan to the Board within 90 days of publication in the *Federal Register* of the Secretary's acceptance of the recommendation. The Department's policy is to begin implementation plan development in parallel with the development of the Department's response as outlined in Department M 140.1-1B, *Interface with the Defense Nuclear Facilities Safety Board*.

The Board has issued 45 recommendations to the Secretary since the Board was established in 1988. The Secretary has accepted 42 of the Board's recommendations in their entirety, and accepted 3 with minor exceptions and clarifications. For each recommendation, the Secretary approved the Department's implementation plan. Thirty two of the Board's recommendations are now closed. Thirteen recommendations remain open, of which, the Secretary has proposed closure for three. For four additional recommendations, the Department has completed all implementation plan activities and commitments. The Department is actively taking steps to resolve the safety issues from the remaining recommendations.

#### A. Recommendation Closures

The Board closed one recommendation in 2003. On August 7, 2003, the Board closed Recommendation 97-2, *Criticality Safety*, and established an annual reporting requirement for the

Department on the status of its Nuclear Criticality Safety Program.

#### Recommendation 97-2, Criticality Safety

The Board issued 97-2 on May 19, 1997. This recommendation outlined the Board's vision for a robust criticality safety infrastructure within the Department and suggested specific actions necessary to achieve this vision. The specific actions built upon the foundation established by the Department in response to the Board's recommendation 93-2, *The Need for Critical Experiment Capability*. In addition, 97-2 raised issues related to assuring that criticality safety is effectively and efficiently addressed in current and future operations.

The Department accepted the recommendation on July 14, 1997. The Secretary approved the 97-2 implementation plan and provided it to the Board on December 12, 1997. Implementation leadership was assigned to the Assistant Secretary for Defense Programs. The Department began executing the plan in January 1998 by formally establishing the Nuclear Criticality Safety Program, which includes seven program elements:

- Integral Experiments;
- Benchmarking;
- Analytical Methods Development and Code Maintenance;
- Nuclear Data;
- Training and Qualification;
- Information Preservation and Dissemination; and
- Applicable Ranges of Bounding Curves and Data.

Each program element is dependent upon the others for a successful program.

As of April 2001, the Department has completed all 30 of the milestones in the 97-2 implementation plan. Although all plan milestones were complete, stability of funding for the Nuclear Criticality Safety Program was an ongoing concern. In May 2002, NNSA decided to fully fund and manage the Nuclear Criticality Safety Program for fiscal year 2003 and beyond. This was a significant departure from the shared funding approach used with limited success in previous years. The Nuclear Criticality Safety Program and its funding requirements have been defined in the Readiness in Technical Base and Facilities portion of the NNSA's annual budget request. This new approach is providing better overall program management and a reasonable degree of funding stability necessary to institutionalize the Nuclear Criticality Safety Program.

Some key accomplishments in implementing and institutionalizing the Department's 97-2 implementation plan during 2003 are:

- The Nuclear Criticality Safety Program Manager, with support from the Criticality Safety Support Group, reviewed the Nuclear Criticality Safety Program in detail, and updated the Five-Year Program Plan to reflect identified funding requirements. The updated Plan was provided to the Board as part of the criticality safety annual reporting requirement.
- The Criticality Safety Support Group continued to conduct technical reviews of operational criticality safety issues at the request of field elements and also provided

input to EH on criticality safety policy and standards issues.

- The Department continued training efforts through the Nuclear Criticality Safety Program. Two new Nuclear Criticality Safety Engineer Training modules were started during fiscal year 2003 and one of them was placed on the Nuclear Criticality Safety Program Web Site at Lawrence Livermore National Laboratory (LLNL). Hands-on criticality safety training continued at the Los Alamos National Laboratory (LANL).
- The Nuclear Data Advisory Group established itself as the forcing function for recommending specific data acquisition and evaluation activities given identified operational criticality safety needs, and expediting publication of new differential data through the Cross Section Evaluation Working Group process.

On August 7, 2003, the Board established an annual reporting requirement on nuclear criticality safety. Annual reports, due in January, are to address the following items:

- Updates to the Department's five-year Nuclear Criticality Safety Program Plan, including the status of individual projects in the program.
- The status of actual and projected funding for nuclear criticality safety activities.
- The status of the Department's capability to conduct criticality experiments and a summary of any new results obtained during the past year. In particular, until it is completed, the Department should provide explicit details regarding the proposed relocation of LANL Technical Area-18 capabilities and materials.

- The status of the contractor nuclear criticality safety engineer programs at each site, including staffing levels, plans to address vacancies, interim compensatory measures, and progress on training and qualification.
- The status of the federal nuclear criticality safety engineer programs at each site, including staffing levels, plans to address vacancies, interim compensatory measures, and progress on training and qualification.
- A summary of the results and any lessons learned from contractor and federal assessments of criticality safety conducted throughout the year. This summary should highlight such factors as the quality of contractor self-assessments, the adequacy of criticality safety evaluations, and the consistency of sites' nuclear criticality safety programs.
- A summary of the results and any lessons learned from contractor, federal, or Nuclear Criticality Safety Support Group reviews of proposed nuclear criticality safety controls for new facility designs.
- A summary of the results of trending and analysis of each site's reportable and nonreportable occurrences related to criticality, as conducted by personnel from Department Headquarters or the Nuclear Criticality Safety Support Group.
- The status of open issues identified in the previous year's annual report.

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

These three recommendations remain open.

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

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

The Department submitted a Final Report to the Board on Recommendation 98-1 in November 2001. The report outlined a summary

**B. Recommendations  
Previously Proposed for  
Closure**

The Department proposed closure of three recommendations prior to 2003:

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, and ES&H – issued their FRA documents. All of these FRA documents have now been updated. The conditions outlined in the Board's January 2002 letter have been met.

The Department Corrective Action Management Program (CAMP) has continued to expand coordination and direct assistance to line managers in improving the tracking, reporting, and completion of over 4000 corrective actions in response to 800 findings reported in OA ES&H and Emergency Management assessments, Type A Accident Investigations, and other assessments directed by the Secretary and Deputy Secretary to be reported in accordance with the CAMP since inception of the program. This has included:

- Implementation of new features and enhancements of the Corrective Action Tracking System (CATS) database, which have assisted line managers in tracking and reporting the status of corrective action plans and associated corrective actions.
- Enhancing the quality and continuous updating of information on the Department CAMP web site.
- Completion of Department-wide validation of authorized CATS editors and effectively enforcing implementation of reader-only access registration of the database to

enhance database security and operability; and conference call meeting with the editors to discuss and exchange information on CATS enhancements.

- Continuous close coordination with the Department Corrective Action Management (CAM) Team members, a cross-organizational working group of representatives from Department Headquarters and field elements, to inform, discuss and receive feedback on all CAMP activities and direction. This has included conducting periodic meetings, individual discussions, and exchange of correspondence on all CAMP initiatives.
- Increased dissemination of information and direct assistance to Headquarters and field element managers on the CAMP. This has included initiation of additional periodic reports to managers on their CAMP status prior to publication of the Department Quarterly CAMP Report, and conduct of meetings and briefings to Secretarial Office representatives on CAMP activities.

The Department designed, developed, and coordinated the Department Corrective Action Management Program Manual, M 414.1-1, which provides the requirements and guidance for implementing the CAMP as a supplement to O 414.1A, *Quality Assurance*.

EH is preparing to place the CAMP requirements in an attachment to the next revision to Department Order 414.1B, *Quality Assurance*. Publication of the CAMP guidance, to include various methods line managers may consider in the conduct of corrective action effectiveness reviews, in a Department Guide has also been proposed. The proposed CAMP attachment to the QA Order will clearly address all the CAMP requirements and responsibilities that have been in effect

and implemented by all Department elements since the inception of the program. Two requirements to improve the feedback and improvement core function of ISM are also being added to the Order.

Recommendation 94-1, *Improved Schedule for Remediation*

The Secretary proposed closure of 94-1 in a June 8, 2000 letter to the Board. This recommendation addressed the hazards and risks involving the storage of nuclear materials within the Department's defense nuclear facilities complex. The most urgent safety issues described in the recommendation have either been corrected or had compensatory measures put in place to protect workers and the public until stabilization can be completed. To re-emphasize the urgency the Board places 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 worked.

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

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

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

- Project management structure;
- Design bases (systems engineering) for 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 38 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 92-4 implementation plan required more than one year to complete due to the magnitude of applying systems engineering principles to projects at the Hanford Site. 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 11 years ago, and proposed for closure over 5 years ago.

### C. New Recommendations

The Department received no new Board recommendations in 2003. This is the first calendar year since the Board began issuing recommendations in 1990 that the Department received no new ones.

### D. Other Open Recommendations

In 2003, the Department issued three new implementation plans for Board recommendations received in 2002: (1) 2002-1, *Quality Assurance for Safety-Related Software*, (2) 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*, and (3) 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*. Department progress for these implementation plans as well as for the remaining implementation plans for open Board recommendations is described below.

#### Recommendation 2002-3, Requirements for the Design, Implementation, and Maintenance of Administrative Controls

On January 31, 2003, the Secretary accepted recommendation 2002-3 regarding the design, implementation, and maintenance of administrative controls. The Board's recommendation included two specific sub-recommendations:

- (1) The Department should promulgate a set of requirements for safety-class and safety-significant administrative controls to establish appropriate expectations for the

design, implementation, and maintenance of these important safety controls. The requirements should address the following at a minimum:

- (a) Specific design attributes to ensure effectiveness and reliability;
  - (b) Specific Technical Safety Requirements (TSRs) and limiting conditions of operation;
  - (c) Specific training and qualifications to ensure that the appropriate facility operators, maintenance and engineering personnel, plant management, and other staff properly implement each control;
  - (d) Periodic re-verification that each control remains effective; and
  - (e) Root cause and failure analyses, similar to those required upon failure of an engineered system.
- (2) The Department should ensure that existing administrative controls that serve the function of a safety-class or safety-significant control are evaluated against these new requirements and upgraded as necessary and appropriate to meet the Department's expectations.

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.

The Department provided the first three plan deliverables to the Board on time. The first, provided on July 31, 2003, satisfied Commitment 4.1 of the plan to review and analyze existing requirements and guidance and assess the need for expanded or more focused requirements and guidance. The report detailed current applicable requirements and guidance documents, and provided

an analysis as to their adequacy, and the planned actions to resolve any inadequacies.

The second deliverable, provided to the Board on October 29, 2003, was a Nuclear Safety Technical Position that supplements and clarifies the Department's policy expectations for the proper understanding and implementation of administrative controls that perform a specific safety function. The technical position is expected to be used in the development, review, and approval of administrative controls until more formal guidance can be promulgated.

The third deliverable, provided to the Board on December 31, 2003, was a draft technical standard issued for review and comment as DOE-STD-XXXX-03, *Specific Administrative Controls*. The new standard provides additional Department guidance and standards for the identification, implementation and maintenance of administrative controls that perform specific safety functions and incorporates concepts from the Nuclear Safety Technical Position. The new standard will be referenced in DOE-STD-3009-94, *Preparation Guide for U.S. DOE Nonreactor Nuclear Facility Safety Analysis Reports*, and DOE-STD-3011-94, *Guidance for Preparation of Basis for Interim Operations (BIO) Document*. These Department standards are referenced as acceptable methods (safe harbors) to implement the requirements of the Department's nuclear safety basis rule, 10 CFR Part 830, Subpart B. When finalized and referenced in DOE-STD-3009 and DOE-STD-3011, this will complete Commitment 4.2.2 of the implementation plan.

Implementation of the 2002-3 plan 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 for December 2005.

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

The Board issued 2002-2 on October 3, 2002. The recommendation addressed the Board's concerns that the number of nuclear weapons experts is declining and the focus of remaining experts is being diverted to other areas. The Board recommended for action to be taken to reverse this trend, and to re-emphasize that the primary role and obligation of the weapons laboratories is to support the Department's nuclear weapon-related activities, including the formal training and development of new experts. The Department's three nuclear weapons laboratories are LANL, LLNL, and Sandia National Laboratory (SNL).

The Secretary accepted the recommendation in January 2003 and provided an implementation plan on June 4, 2003 to accomplish the following: (1) address the Department's need to re-emphasize the policy that the nuclear weapons program as the top priority among all activities at the weapons laboratories; (2) identify a senior weapons points-of-contact at each Laboratory and enumerate their responsibilities; (3) ensure appropriate selection, training, mentoring, and succession planning for weapons points-of-contacts, and (4) identify a Federal function at each site office managing a weapons laboratory contract to ensure that requirements related to safety of operations of the defense nuclear weapons complex are being tracked and met.

The Department made significant progress in 2003 in executing the 2002-2 implementation plan. A total of eleven of the thirteen milestones in the

plan were complete as of December 2003. They are highlighted as follows:

- The Standing Management Team charter was revised to reflect the new business approach to Laboratory contract management. This was accomplished via a revision to Chapter 11.1 of the Development and Production Manual which expands on the Board's recommendation and more definitively communicates Standing Management Team roles and responsibilities, introduces Contracting Officer Representative authorities in concert with the NNSA re-engineering effort, and provides for Standing Management Team decisions to be contractual obligations that the charter could not fulfill. This chapter was approved and incorporated in the Development and Production Manual, and replaced the previous Standing Management Team charter. A copy of this chapter was provided to the Board on June 30, 2003.
- NNSA Contracting Officer Representative letters were issued to NNSA sites with designees who oversee work of the laboratory. The letters outline Contracting Officer Representative responsibilities and authorities in relation to business conducted at the Laboratory. Authorities include, but are not exclusive to, providing program direction, initiating timely work authorizations, and performing oversight activities for directed stockpile work maintenance, and research and development (R&D); weapon R&D associated with safety; Seamless Safety for the 21st Century (SS-21); Laboratory weapons response; the Integrated Weapons Activity Plan; pit manufacturing and certification, science, and engineering campaigns; and Readiness in Technical Base Facilities program readiness. Contracting Officers will ensure Laboratory support requirements related to safety of operations of the defense nuclear weapons complex are tracked and met within the current resources of the contract. The letters were provided to the Board on June 30, 2003. In subsequent meetings the Board asked the NNSA Deputy Administrator for Defense Programs to revise the letters to make them more specific. He agreed, and the revisions are in process.
- The Department issued a Secretarial Memorandum, *Priority of the Nuclear Weapons Program at the National Laboratories*, which re-emphasized the nuclear weapons program is the Department's top priority for the Laboratories in supporting the nuclear weapons complex. The memorandum was provided to the Board on July 8, 2003.
- The Department issued Contracting Officer Representative letters from the Managers of the Sandia Site Office, Los Alamos Site Office, and Livermore Site Office, to designated individuals on their staff who will be responsible for overseeing directed stockpile work at the respective national laboratories. The letters were provided to the Board on July 28, 2003 and augmented information previously submitted to the Board on June 30, 2003.
- NNSA requested LLNL, LANL, and SNL to review and revise, if necessary, their existing processes for selection criteria, training and mentoring, and succession planning for weapons points-of-contact, and provide documentation describing the roles, responsibilities, and authorities of the weapons points-of-contact. This information was submitted to the Board on August 11, 2003.

- Interagency Engineering Procedure, Processing Changes to Pantex Technical Procedures, EP401104, was revised to ensure a single points-of-contact is named for each weapon system, a points-of-contact is identified for those issues that span multiple weapon systems, and weapons points-of-contact roles and responsibilities are updated. The Interagency Engineering Procedure was submitted to the Board on August 29, 2003.
- NNSA briefed the Board on NNSA roles, responsibilities and processes for ensuring safe nuclear explosive operations as required by the implementation plan.
- Information Engineering Releases were issued from the LLNL, LANL, and SNL identifying the points-of-contacts for each weapon system to the end users in the defense nuclear complex. The Information Engineering Releases were submitted to the Board on September 30, 2003.
- NNSA received certifications from LLNL, LANL, and SNL that processes exist for the selection, training, mentoring, and succession planning for weapons points-of-contact. The certifications were submitted to the Board on November 21, 2003. NNSA plans to brief the Board on their review of the laboratory submittals in accordance with the implementation plan.
- NNSA is replacing the obsolete DOE Order 5600.1 with a policy consistent with the Secretary's emphasis on Laboratory support of the nuclear weapons program, reflecting current functions and responsibilities. The policy was due in December 2003 and is in process.
- NNSA is obtaining responses from the Laboratories that describe

weapons points-of-contact roles, responsibilities, and authorities, and plans for improvement if necessary. Laboratory response letters to NNSA were due in December 2003 and are in process.

The Department currently projects that all plan deliverables will complete by December 2004. The Department anticipates that it will propose closure at that time. Closure of this recommendation will take more than one year due to additional time that the Department and the Board may need to evaluate successful institutionalization of the measures put in place.

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

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

The Secretary accepted the recommendation on November 21, 2002. The Secretary approved the implementation plan on March 13, 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 2003 are:

- The Department identified the safety analysis codes to be included as part of the Safety Analysis Code Toolbox. Codes were identified when the implementation plan was provided to the Board on March 13, 2003.
- The Department established a corporate QA function within EH that is responsible and accountable for the identification and resolution of Departmental crosscutting QA issues, such as SQA. The Office of Quality Assurance Programs was established within EH in July 2003.
- The Department issued a Notice that identifies, documents, and communicates roles, responsibilities, and authorities for SQA by organizational element. Department Notice 411.1 was issued August 27, 2003.
- The Department established and implemented a Central Registry for the long-term maintenance and control of the safety analysis “Toolbox” codes. The Deputy Secretary of Energy established the Central Registry on August 28, 2003.
- The Department established SQA criteria for safety analysis toolbox codes. The SQA plan and criteria were developed and provided to the Board on September 30, 2003.
- The Department conducted a review to identify the industry or Federal agency standards that are appropriate for Department safety software. A report identifying the standards was provided to the Board on September 30, 2003.
- The Department issued code-specific guidance reports on use of the “toolbox” codes identifying applicable regimes in accident analysis, default inputs, and special conditions for use. Code specific guidance reports were prepared and provided to the Board on September 30, 2003.
- The Department briefed the Board on the status of 2002-1 activities on June 20, 2003 and October 16, 2003.
- The Department identified methods for capturing and clearly communicating SQA lessons learned, new technology, innovative techniques and areas in software development in which R&D is needed to ensure software quality. Methods were established and documented in a letter to the Board on October 31, 2003.
- The Department developed criteria and guidance to assess that the processes in place to ensure that safety software currently used to support the analysis and design of defense nuclear facilities are adequate. Criteria and guidance were developed and provided to the Board on October 28, 2003.
- The Department developed criteria and guidance for the identification, selection and assessment of safety system software and firmware at defense nuclear facilities. Criteria and guidance were developed and provided to the Board on October 28, 2003.
- The Department established a schedule to develop, revise, approve and issue required SQA directives. The schedule was provided to the Board on October 31, 2003.
- The Department established technical qualification requirements for Federal personnel whose duties and responsibilities require them to provide assistance, guidance, direction, oversight, or evaluation of safety software QA activities. The SQA Functional Area Qualification

Standard was provided to the Board on November 20, 2003.

- The Department performed a gap analysis on the toolbox codes to determine the actions needed to bring the code into compliance with SQA qualification criteria and estimate the resources needed to upgrade each code based on the gap analysis results. Initial reports for three of the six gap analyses were provided to the Board on December 3, 2003.
- The Department identified the Federal positions whose duties and responsibilities require them to provide assistance, guidance, direction, oversight, or evaluation of safety software QA activities. EM Federal positions were identified on October 31, 2003 and NNSA Federal positions on December 9, 2003.
- The Department established relationships and actively participated with outside groups, organizations, companies and agencies that have an interest in SQA similar to that being addressed by this implementation plan. This participation will assist the Department in benchmarking, research and development, and sharing of lessons learned and new technologies. A report describing relationships with outside groups, organizations, companies and agencies was provided to the Board on December 18, 2003.
- The Department conducted a survey of design codes currently in use to determine if any should be included as part of the toolbox codes. Design code survey results were provided to the Board on December 24, 2003.
- The Department revised the Functions, Responsibilities and Authorities Manual to incorporate

Federal responsibility and authority for SQA. The revised Functions, Responsibilities and Authorities Manual was issued December 31, 2003.

- The Department established a schedule to complete the assessment of the processes in place to ensure that safety software currently used to support the analysis and design of defense nuclear facilities are adequate. Schedules were developed and provided to the Board by NNSA on December 22, 2003, and by EM on January 29, 2004.
- The Department established a schedule to complete the identification, selection and assessments of safety system software and firmware at defense nuclear facilities. Schedules were developed and provided to the Board by NNSA on December 22, 2003, and by EM on January 29, 2004.

The 2002-1 implementation plan requires more than one year to complete due to the technical complexity and widespread actions necessary to fully meet all commitments outlined in the plan. By the end of 2003, the Department had completed 15 of 26 (58 percent) commitments in the implementation plan. The Department estimates completion of all actions and milestones for this plan in 2005.

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

The Board issued recommendation 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.

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

In 2003, the Department's progress in executing the 2001-1 implementation plan has been a mixture of success and setbacks. A total of 24 of the 28 milestones in the plan are complete as of December 2003. Five commitments were completed in 2003, and are highlighted as follows:

- Tank 37 was successfully modified to become a new support tank for the 3H evaporator. This removed a significant operating restriction and allowed improved evaporator operations.
- Tank 50 was emptied and returned to normal operating service. This milestone was accomplished later than projected but the delay did not significantly impact the accelerated cleanup activities.
- The Programmatic Risk Assessment for the Salt Disposition Program and the status report on the Low Curie Salt Disposition Program were both prepared during 2003. Transmittal of both reports to the Board has been delayed due to the ongoing litigation relative to the Department's process for classifying waste for disposal.

- The Department provided a periodic briefing to the Board on plan status in June 2003.

One milestone scheduled for 2003 was not met. Actual processing of Low Curie Salt in Saltstone was not completed. Due to the ongoing litigation relative to the Department's process for classifying waste for disposal, the State of South Carolina has not issued a landfill permit for Saltstone disposal of treated HLW. This is the second time this milestone has been missed; the first time was due to delays in emptying Tank 50 and returning it to normal service.

Overall technical progress has been made in preparing facilities for accelerated waste disposition, however legal and permitting issues have hindered the Department in executing the strategy. In the interim, progress in reducing tank inventories continues to be made with a reduction of over 160,000 gallons since January 2003.

As previously described, completion of this plan has taken more than one year due to the associated assessments, construction, and project work required to fully meet the plan deliverables. The implementation plan projects completion of the remaining activities during 2004, subject to resolution of outstanding legal and permitting issues. The Department is not able currently to make a more definitive projection on completion.

Recommendation 2000-2, Configuration Management, Vital Safety Systems

The Board issued 2000-2 on March 8, 2000. This recommendation addressed the Board's concerns 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 amplified 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 EH with responsibility for leadership in plan implementation. Key accomplishments in implementing the plan during 2003 are as follows:

- The Department completed all assessments of operational readiness for vital safety systems (VSS) that were identified in the implementation plan for key facilities at defense nuclear sites. These detailed assessments were performed using the Criteria Review and Approach Document developed in 2001.
- The Department took steps to institutionalize the assessment of safety systems to ensure, on a continuing basis, the operability/reliability of VSS as well as the effectiveness of associated programs such as configuration management, System Engineers, maintenance, and surveillance and testing.
- The Department re-iterated its decision to test all High Efficiency Particulate Air (HEPA) filters at the Filter Test Facility prior to use in

VSS, and provided implementation history on a site-by-site basis.

- The contractor System Engineer Program at the Department's defense nuclear facilities was implemented and initial staffing and training for this function were completed.
- The Department reviewed safety system assessments conducted during the 2002 calendar year for generic issues and lessons learned. NNSA assigned responsibility for performing such reviews on an ongoing basis in its Program Office *Functions, Responsibilities and Authorities* document.
- EM conducted oversight visits to its primary field sites to observe the implementation status of VSS assessments, and system engineering programs. NNSA obtained similar information through reports from its site offices.
- The Department's FTCP Panel identified safety system expertise needed at the Federal level. The panel compiled needs for Federal personnel capable of providing oversight of safety systems and programs essential to systems operability, and plans of field offices to address critical technical skill gaps. The panel issued two progress reports on staffing these positions at field sites. With few exceptions, Federal personnel were selected for these positions.
- The FTCP Panel also developed a set of qualification requirements for Federal SSOP and incorporated these requirements in a revision to Department Manual 426.1-1A, *Federal Technical Capability Manual*. This was finalized in early 2004.

- The Department completed its revision to the *Nuclear Air Cleaning Handbook*. After resolving some 2,200 comments from many sources, the handbook was issued in December 2003.
- Program Offices that manage defense nuclear facilities instructed field elements to review facility safety documentation with respect to the revised *Nuclear Air Cleaning Handbook* and develop any necessary corrective actions using the USQ process. These direction memoranda were issued in December 2003. This is the last deliverable to be completed in the implementation plan for Recommendation 2000-2.

As previously described, the 2000-2 implementation plan is a Department-wide effort that has required more than one year to execute and institutionalize due to the complex and widespread actions necessary to fully meet all commitments outlined in the plan. By January 2004, the Department had completed all of the 43 commitments in the implementation plan. The Department plans to summarize actions taken and propose closure of this recommendation in early 2004.

Recommendation 2000-1, *Stabilization and Storage of Nuclear Material*

The Board issued 2000-1, on January 14, 2000. The recommendation addressed the urgency of completing nuclear material stabilization activities that the Department previously agreed to under the implementation plan for 94-1. Recommendation 2000-1 calls for an 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 environment.

Revision 1 of the 2000-1 implementation plan was provided to the Board 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 Board's July 2000 letter. On July 22, 2002, the Secretary approved the revision 2 of the 2000-1 implementation plan that incorporates 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 activities in EM sites and the NNSA Deputy Administrator for Defense Program as the Responsible Manager for activities at LANL and LLNL.

The key accomplishments related to implementing the Department's 2000-1 implementation plan during 2003 are as follows:

- The Department completed the final Rocky Flats Environmental Technology Site (RFETS) commitment with the repackaging of all metal and oxides into DOE-STD-3013 containers.
- The Department completed stabilization and packaging of residues and poly-cubes and resolved weld porosity issues associated with metals and packaged remaining alloys to meet DOE-STD-3013 criteria at Hanford.
- The Department completed stabilization of all solutions and complete stabilization of nitrides and cellulose rags at LANL.
- The Department completed fuel removal of 957 metric tons heavy metal from the K-West Basin to the Cold Vacuum Drying Facility at Hanford.

- The Department completed converting pre-existing H-Canyon plutonium-239 solution to oxide and completed the transfer of americium/curium solution to the high-level waste system.
- The Department began packaging plutonium metal into welded DOE-STD-3013 outer-cans and began operation of the new furnaces and high firing plutonium oxide for stabilization and packaging to DOE-STD-3013 at SRS.
- The Department began disposition of pre-existing enriched uranium solution and enriched uranium solution resulting from MK-16/22 SNF dissolution.
- The Department began the blend-down of highly-enriched uranium solutions to low-enriched uranium solutions at SRS and are ready to ship the material off-site for disposition.

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. The Department estimates completion of all actions and milestones for the 2000-1 implementation plan in the year 2010.

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

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

The Secretary accepted 99-1 on October 12, 1999. The Secretary approved the implementation plan on February 1, 2000, and assigned

implementation leadership to the assistant Deputy Administrator for Military Application and Stockpile Operations in NNSA's Office of Defense Programs.

On March 18, 2002, the Department proposed a revision to one of the commitments in the implementation plan. This revision satisfied the Department's objective of accomplishing an acceleration of the pit repackaging rate through process improvements and operational efficiencies without two shifts. The Department had fulfilled all implementation plan deliverables in 2002.

The Department continues to make significant progress towards fully accomplishing pit re-packaging objectives. The key accomplishments related to implementing and institutionalizing the Department's 99-1 implementation plan during 2003 are:

- The Department reduced long-term risks by repackaging 2,414 pits during fiscal year 2003.
- The Department conducted surveillance on 126 storage containers during fiscal year 2003 to ensure the continued integrity of these containers, thereby, successfully eliminating the container surveillance backlog.

As previously reported, the 99-1 implementation plan has required more than one year to complete due to the magnitude of the effort. Pit repackaging is proceeding as planned. The Department expects to propose closure of this recommendation in 2004.

Recommendation 98-2, *Safety Management at Pantex*

The Board issued 98-2 on September 30, 1998. The recommendation addressed the need to accelerate safety

improvements for nuclear explosive operations at the Pantex Plant. Recommendation 98-2 represents a combination of issues raised in prior Board recommendations and staff observations of Pantex activities.

The Secretary accepted 98-2 on November 28, 1998. The Secretary approved the implementation plan and provided it to the Board on April 22, 1999. Leadership for implementation was assigned to the Assistant Deputy Administrator for Military Applications and Stockpile Management (formerly the Deputy Assistant Secretary for Military Application 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 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-three of the 27 milestones have been met. Key accomplishments during 2003 are as follows:

- All required quarterly reports were delivered to the Board on schedule;
- The Department validated implementation of the improved site-wide TSRs for fire protection and delivered the Department Readiness Assessment report to the Board on April 24, 2003;
- The Department took delivery of the prototype tooling for W88 bay operations and W78 bay and cell operations.
- The following documents were submitted to the Board on July 1, 2003: Authorization Basis (AB) Change Proposal AB-02-25, Transportation Safety Analysis Report; AB Change Proposal AB-02-69, Zone 12 and Zone 4 Staging Facilities Safety Analysis Report Module; Approval of AB Change Proposal AB-02-25, Transportation Safety Analysis Report and TSRs; and Approval of AB Change Proposal AB-02-69, Zone 12 and Zone 4 Staging Safety Analysis Report and TSRs.
- PXSO approved W88 tooling implementation on September 8, 2003, and operations commenced on September 9, 2003.
- NNSA approved the W88 Nuclear Explosive Safety Study (NESS) on September 5, 2003 and provided the report to the Board on September 30, 2003.
- The Transportation Safety Analysis Report implementation plan was integrated with plans to implement

other new Safety Analysis Report controls in an effort to consolidate and coordinate available resources. The Pantex Plant TSR Integrated Implementation Plan was provided to the Board on September 30, 2003.

- The PXSO Readiness Assessment TSR Module I Group II Implementation final report was provided to the Board on October 31, 2003. The remaining Transportation Phase I controls were incorporated into the Pantex Plant TSR Integrated Implementation Plan.
- The Nevada Site Office (NSO) issued revisions to NV Orders NV O 452.1B and NV O 452.2B (to align them with Department orders) on April 15, 2002 and April 18, 2002, respectively. The Department 452 series orders are officially in the LLNL contract. The draft LLNL revision to the Nuclear Explosive Safety Implementation Plan for the Device Assembly Facility was received by NSO on October 1, 2003 and was approved on November 13, 2003. The plan details the scope, cost, and schedule to implement the DOE 452 Series Order requirements for Device Assembly Facility operations and a schedule for updating the Device Assembly Facility Nuclear Explosive Safety Master Study. The Nuclear Explosive Safety Implementation Plan for Device Assembly Facility was provided to the Board on December 22, 2003.

The 98-2 implementation plan has 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 TSR integrated implementation plan. The Department currently estimates completion of all actions and

milestones for the 98-2 implementation plan in 2005. Remaining activities are:

- Commitment 4.4.5 to authorize startup of the W78. The NESS and Contractor Readiness Assessment are underway and reauthorized operations are expected in February 2004.
- Commitment 4.4.6 to authorize startup of B83 SS-21 process. Scheduled completion was May 30, 2004, however due to the magnitude of weapons response, the schedule is expected to be delayed two months, in July 2004.
- Commitment 4.3.4 to validate the implementation of on-site transportation controls of nuclear explosives. The deliverable to the Board is the Department's readiness assessment report. NNSA is planning to complete and issue the final readiness assessment report 90 days after the Pantex contractor declares readiness. This declaration of readiness will be issued upon the completion of the final Contractor Readiness Assessment scheduled for March 2005 and the resolution and/or corrective action plans (post-start findings only) for any identified Contractor Readiness Assessment findings.
- Commitment 5.2.2, continuance of quarterly reports and briefs to the Board.

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

The Board issued 97-1, on March 3, 1997. The recommendation addressed safety issues for storing the existing inventories of un-irradiated uranium-233 bearing materials. The Department accepted the recommendation on April 25, 1997. The Secretary approved the implementation plan and provided it to

the Board on September 29, 1997. The Secretary assigned leadership of plan implementation to a Task Team reporting to the Department's Assistant Secretaries for Defense Programs and Environmental Management.

The Department has an inventory of approximately two metric tons of uranium-233 in many different chemical and physical forms, and stored under a variety of conditions throughout the complex. The largest quantities are located at the Oak Ridge National Laboratory (ORNL) and the INEEL, with lesser quantities at LANL. Smaller quantities exist at numerous other sites such as the LLNL. Some of the uranium-233 bearing material is managed under the Department's National SNF Program.

The Department has completed all milestones in its 97-1 implementation plan as of July 1999. The last milestone, which was the development of the Program Execution Plan, was completed in July 1999.

Regarding the material stored at ORNL, in January 2001, the Department released a draft Request For Proposal for a private contract to process and package the uranium-233 inventory in ORNL Building 3019 to render it suitable for safe, long term, economical storage, including the extraction of thorium-229 for medical use. Issuance of a final Request For Proposal was later placed on hold pending submission of a detailed project plan to Congress. The Department provided this plan in May 2002. In June 2002, the Department issued Request For Proposal No. DE-RP05-00OR22860, "Uranium-233 Disposition Medical Isotope Production, and Building 3019 Complex Shutdown" to process the uranium-233 in Building 3019 to eliminate criticality and proliferation concerns through down blending, to extract thorium-229, and to remove the

uranium-233 so that the 3019 Complex can be deactivated.

The key accomplishments in accordance with institutionalizing the Department's 97-1 implementation plan during 2003 are as follows:

- In October 2003, the contract called for in Request For Proposal DE-RP05-00OR22860 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.
- The Department continued retrieving and inspecting packages containing Uranium-233 material from storage tube vaults in Oak Ridge Building 3019. As of September 2003, the planned inspection program at ORNL for Recommendation 97-1 was completed. A total of 66 containers were visually inspected, weighed, and x-rayed. Of these containers, eight were destructively inspected, the material repackaged and returned to storage. In addition, 52 containers were inspected as part of efforts to consolidate uranium-233 at ORNL which included shipments from LLNL as well as those from the thorium-229 and Molten Salt Reactor Experiment programs on site. LLNL shipments to ORNL of uranium-233 material have been completed at this time. A schedule of shipments from LANL to ORNL is being developed with expectations that shipments will be completed before the end of Phase I of the contract (late 2004-early 2005). The Department is considering various options on what to do with the Molten Salt Reactor Experiment uranium-233 material

contained in sodium fluoride traps that are stored in Building 3019, as well as the other uranium-233 bearing material still located in the Molten Salt Reactor Experiment facility. A pressurization concern necessitated depressurization of these traps. The effort started in February 2003 and 24 traps have successfully been depressurized with one remaining to be done.

- The special inspection equipment, tooling and procedures developed for the inspection program have been effective in confirming the integrity of the containers of uranium-233 stored in the Oak Ridge Building 3019. To date, two packages were found to have significant corrosion of an inner container. One was a tin-plated steel can in direct contact with ammonium diuranate. The other canister was one received from Rocky Flats that exhibited corrosion of the inner container, initially detected by radiography (gamma imaging). Materials from both canisters were stabilized, repackaged in new canisters, and stored in Building 3019.
- At INEEL, sample analysis on the dry vaults used to store un-irradiated Uranium-233 fuel materials during 2003 was performed. The samples have been obtained and are currently in the laboratory awaiting analysis. Sample data from 2002 was reported in February of 2003. The data from 2002 did not indicate any suspected corrosion of the vault or fuel materials for the un-irradiated uranium-233 material.
- The vaults used to store the uranium-233 material were refurbished in late 2002 with replacement of the seal gaskets, the exposed surfaces were painted to limit external corrosion and other minor repairs were made.

No additional video inspections were made on the un-irradiated storage vaults.

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

The 97-1 implementation plan required more than one year to complete 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 previously anticipated that it would propose closure of this recommendation in 2002. Subsequent to delays associated with the recent contract initiative to extract thorium from the uranium-233 material at ORNL, the Department now expects to propose closure in early 2004.

Recommendation 95-2, Integrated Safety Management

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

technical expertise to implement the streamlined process effectively.

The Secretary accepted the recommendation on January 17, 1996. The Secretary approved the implementation plan and provided it to the Board on April 18, 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. Activities to maintain and sustain ISM programs during 2003 are summarized below:

- In June 2003, the Department issued its first Annual Report on Department ES&H Performance. This report analyzed the Department's environment, safety and health performance, compared to the private sector where appropriate, using several industry standard performance metrics and other Department specific performance indicators in the areas of occupational safety and health, radiological safety, environmental management, nuclear and criticality safety, and worker advocacy. The report also highlighted areas of concern for additional trending in the areas of electrical safety, hoisting and rigging, and conduct of operations, particularly lockout-tagout.
- In June 2003, the EH initiated a re-engineering of the Department's Corporate Lessons Learned program to a Corporate Operating Experience Review Program to incorporate industry best practices in making significant operating experience

information available for use throughout the Department and enhance senior management accountability. The first phase of this program will include a revision to the Department Lessons Learned Standard, and the implementation of several new or modified Headquarters Operating Experience products. Follow-on implementation will include a re-design of the Department's Lessons Learned Web page and database and a more effective method of pushing the operating experience to managers and users.

- On December 1, 2003, all Departmental sites completed the transition to the new occurrence reporting system.

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.

### **E. Report on Implementation Plans Requiring More than One Year**

When Congress established the Board, it envisioned that the Department would typically be able to resolve Board recommendations within a relatively short period of time, such as within one year after the Department submits the associated implementation plan. To monitor the Department's performance in completing implementation plans, Congress included a provision in the Board's enabling legislation that requires the Department to notify Congress whenever the Department requires more than one year to complete a recommendation implementation plan. The enabling legislation also requires the reasons for requiring more than one year and the expected completion date.

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

- 92-4, *Multi-Function Waste Tank Facility at Hanford*<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>
- 99-1, *Safe Storage of Pits 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*
- 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*
- 2002-3, *Requirements for Administrative Controls*

<sup>1</sup> Previously reported to require more than one year to implement.

#### **F. Categorization of Board Recommendations**

The 2002 Annual Report to Congress provided categorization of Board recommendations by scope of organizations involved and lead implementation organization. No substantive changes have occurred in these categorizations; the previous report remains valid.

In terms of categorization by progress toward completion of implementation, the tables on the following page provide updated information.

**Table 3.A – Implementation Plans with All Commitments Complete**

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

**Table 3.B – Implementation Plans with Projected Completion Dates in 2004**

<b>Open Recommendations</b>
2002-2, Weapons Laboratory Support of the Defense Nuclear Complex
98-2, Safety Management at Pantex
2001-1, High-Level Waste Management at the Savannah River Site

**Table 3.C – Implementation Plans with Projected Completion Dates After 2004**

<b>Open Recommendations</b>
2000-1, Stabilization and Storage of Nuclear Material (2010)
2002-1, Quality Assurance for Safety-Related Software (2005)
2002-3, Requirements for Administrative Controls (2005)

## 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 TRU waste in subterranean salt beds 2,150 feet beneath the desert of southeastern New Mexico. Since the opening for TRU waste disposal in 1999, WIPP has played a crucial role in helping the Department meet its commitments to environmental cleanup around the nation. WIPP has been successful in integrating safety into programmatic mission, as demonstrated by safe characterization, transportation and disposal of TRU waste. The following are examples of WIPP safety accomplishments:

- In 2003, WIPP received, handled, and disposed of over 7,500 cubic meters of TRU waste. Operational throughput averaged about 20 shipments per week for the year.
- The WIPP safety culture continued to receive high-level recognition under the Department Voluntary Protection Program. While the amount of waste handled increase by about 50 percent from the previous year, WIPP maintained its newly re-certified Voluntary Protection Program Star status in 2003 by keeping the recordable incident rate well below the industry average. WIPP staff has achieved over 1,300,000 work hours (12 months) without a day away from work injury.
- During 2003, WIPP received the 17th consecutive Mine Operator of the Year award from the New Mexico Mining Association, along with the Certificate of Merit and the Safety Excellence Award from the New Mexico Inspector of Mines. The Certificate of Merit recognizes

WIPP's underground operations for "superior performance in promoting safety in the mining industry."

- The WIPP Remote-Handled TRU Waste Preliminary Safety Analysis Report was converted to a draft Remote-Handled-TRU Documented Safety Analysis (DSA). The DSA was developed to comply with 10CFR830 and the Department's Technical Standard 3009.
- WIPP augmented existing site processes and procedures to institutionalize the Phase II assessment criteria for annual site VSS assessments per the Department's 2000-2 implementation plan. As formalized, the WIPP site Engineering Conduct of Operations includes a system engineer program with annual assessments of VSS Safety Function Definition, Configuration Management, System Maintenance and System Surveillance and Testing.
- WIPP continues to enhance safety and productivity through an effective ISM system. The CBFO conducted a thorough review of the WIPP ISM system in September 2003 following the annual management and operating contractor self-assessment. The CBFO review concluded that the WIPP ISM system is effective, with one deficiency noted for the management and operating contractor and one deficiency for CBFO. The CBFO review team also made 13 recommendations to improve safety performance. CBFO and the contractor are implementing a Corrective Action Plan (CAP) to enhance safety integration at WIPP.



*An important WIPP milestone was realized with the delivery of the first Nuclear Regulatory Commission certified RH-72B cask to the site. The cask will be used to transport remote-handled TRU waste to the WIPP for permanent disposal.*

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

The nuclear posture of INEEL continues to improve as ID approves and INEEL contractors implement DSAs under the nuclear safety management rule, 10CFR830. The INEEL's management and operating contractor has experienced five years of improving performance in TSR compliance and in accident statistics. For example, the INEEL total recordable case rate has been reduced to a record low of 1.27 cases per 200,000 work hours, as of November 30, 2003.

ID continues to monitor the integrity of its contractor's ISM system following a major contractor re-organization. The contractor recently completed the annual evaluation of its ISM implementation. ID concurs with the conclusion of this evaluation that its primary contractor is performing work safely.

In addition, ID and INEEL have completed a number of specific Board-related activities described below during 2003 to improve safety.

### Recommendation 2000-2, Configuration Management, Vital Safety Systems

ID has met all commitments to the Board that are required by the Department's 2000-2 implementation plan. These included identifying all VSS at INEEL Defense Nuclear Facilities and completing 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 assessments noted that

improvements are needed in the areas of configuration management and maintenance of the VSS. Because areas for improvement were found, the INEEL performed an additional Phase II assessment of the Idaho Nuclear Technology and Engineering Center Tank Farms. This assessment was completed in May 2002. The contractor's performance significantly improved when compared to the previous assessments. Additionally, Phase II assessments are institutionalized by the added scope to the contractor-run (Department-evaluated) Facility Evaluation Boards as well as in the ID assessment schedule. Four Facility Evaluation Boards were completed in 2003 and assessments of VSS were included as part of the review.

Commitments 14 through 19 of the Department's 2000-2 implementation plan discuss the use of "system engineers" in defense nuclear facilities. The concept of a system engineer is that an individual is assigned to a VSS and given the responsibility to ensure that all requirements for configuration management, maintenance, and safety analysis are met. Bechtel BWXT Idaho has established and implemented the System Engineer Program for the INEEL. ID has established the SSOP qualification for federal employees, and facility specific technical qualification cards have been modified to incorporate the additional requirements. ID qualified an electrical and mechanical engineer as a SSOP. The INEEL-wide list of VSS has been refined based on completion of a DSA that complies with the Nuclear Safety Management Rule 10CFR830. An independent team from EM headquarters reviewed INEEL implementation in October 2003 and concluded that recommendation 2000-2 was being effectively implemented at the INEEL. ID's nuclear safety posture continues to improve as it approves and implements DSAs under the Nuclear Safety Management Rule.

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

The ID evaluation of administrative controls used for INEEL nuclear facilities supports the Department's commitments in the 2002-3 implementation plan. EM has developed draft guidance for TSR level administrative controls for EM nuclear facilities. ID follows Department Guide 423.1-1, "Implementation Guide For Use in Developing Technical Safety Requirements," for proper development of these controls. ID's review and approval process for DSAs and TSRs includes reviews of the proper use of administrative controls.

Recommendation 2002-1, Quality Assurance for Safety-Related Software at Department of Energy Defense Nuclear Facilities

ID delivered on all its commitments relating to the Department's 2002-1 implementation plan on or before the associated due dates.

Starting in December of 2002, in anticipation of actions required in the 2002-1 implementation plan, ID and its contractor worked together to revise their SQA procedures, incorporating best practices from throughout the Department complex. Employees have been trained. Implementation is in progress and its effectiveness will be assessed in the summer of 2004.

Federal personnel who provide assistance, guidance, direction, oversight, or evaluation of safety SQA activities were identified in July 2003, and the Technical Qualification Standards have been developed and issued.

The criteria for identification, selection, and assessing safety system software have been developed. These criteria will be implemented in 2004.

**C. Nevada Site Office (NSO)**

During 2003, NSO was proactive in meeting the 10CFR830 compliance date of April 10, 2003, and enhancing NSO 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.

In 2003, DSAs and TSRs for the following Nevada Test Site (NTS) nuclear facilities/activities were approved by appropriate headquarters personnel pursuant to 10CFR830, subpart B: (1) Area 5 Radioactive Waste Management Complex, (2) Area 3 Radioactive Waste Management Site DSA/TSR, (3) On-site Transportation DSA/TSR, (4) PIANO Subcritical Experiment DSA/TSR, and (5) DAF DSA/TSR. Lastly, Operational Readiness Reviews (ORRs) were conducted for the Area 5 Radioactive Waste Management Complex as well as Area 3 Radioactive Waste Management Complex pursuant to the requirements of Department Order 425.1B. The ORRs identified no pre-start findings.

PIANO, the first Subcritical Experiment required to meet 10CFR830 requirements, was successfully accomplished, and met the safe-harbor methods of Department STD 3011-94. The Bounding Hazards Analysis, which identifies the facility level controls for the Subcritical Experiments performed by the National Weapons Laboratories, was completed, and NSO orders were updated to comply with the new regulations. NSO is on schedule to complete ARMANDO, the second



*Drums Containing Low-Level Waste are Unloaded and Staged Prior to Disposal in Pit 8 at the Area 5 Radioactive Waste Management Site Located on NTS.*

10CFR830 compliant Subcritical Experiment.

NSO's contractor, Bechtel Nevada, completed implementation of its Nuclear Operations Plan including establishment of a Nuclear Operations Department. This new department ensures formal, disciplined operations, stringent safety management, and quality performance documents for Hazard Category 2 and 3 non-reactor nuclear facilities. NSO's contractor is also pursuing improvements in QA, in the areas of conventional QA and SQA.

NSO is responsible in part for four open Board recommendations including 98-2, 2000-2, 2002-1, and 2002-3.

NSO is aggressively addressing Departmental commitments through establishment of a NSO QA functional manager and designation of an SQA Subject Matter Expert as required by the Department's 2002-1 implementation plan. NSO has completed actions required for survey of design codes. An NSO Bechtel Nevada joint assessment was performed in December 2003 to assess Bechtel Nevada's SQA processes. This assessment used SQA Criteria Review and Approach Documents developed by the Department SQA working group. Follow-on SQA assessments are scheduled for the national laboratories and other NTS users during the first part of 2004.

NSO is proactive in supporting the implementation of the Department's 2002-3 implementation plan on administrative controls. NSO supports the development of Nuclear Safety Technical Position 2003-1 and the follow-on technical standard for critical administrative controls. The NSO Manager will direct formal implementation of 2003-1 ensuring timely completion of DSA reviews. NSO is establishing validation review schedules through integration with

existing annual DSA/TSR update reviews.

To assist in closure of Board recommendation 2000-2, NSO has responded to numerous headquarters information requests on HEPA filter ventilation systems designation, functionality, and quality control at NTS nuclear facilities. The NTS management and operating contractor has established facility specific VSS programs as well as formal periodic assessment programs. Interim VSS designations have been established as well as federal system engineers assigned. A NSO federal systems engineer functional manager has been assigned to further formalize the administration of the VSS programs at NTS nuclear facilities. NSO has evaluated the training and qualification of contractor system engineering staff through the NSO ORR process. A 2004 VSS periodic assessment schedule will be developed and formally transmitted to Headquarters in January 2004.

Board staff members made 17 trips to Nevada in 2003 for reviews, observations of activities, and workshops including:

- Review Tri-Lab Work Smart Standard Set;
- Observe committee meeting on ground motion and seismic evaluation;
- Review electrical systems and lightning protection and detection systems;
- Attend planning meeting and review the inactive actinides program;
- Review Criticality Safety Five-Year Program;
- Review the readiness assessment and readiness for start-up of JASPER;

- Observe oversight workshop of the NNSA;
- Attend Facility Representative Annual Workshop and observe the FTCP face-to-face meeting;
- Review U1a, Device Assembly Facility, and Subcritical Experiment;
- Observe conference on NNSA oversight and contractor assurance;
- Observe and review ORR for Area 5 Radioactive Waste Management Complex;
- Review damaged nuclear weapons activities;
- Review safety basis for G-Tunnel and damaged nuclear weapon disposition activities;
- Review hoisting and rigging program and its activities;
- Observe QA working group;
- Review Test Readiness and disposition activities for damaged nuclear weapons; and
- Review safety evaluation activities for ARMANDO and disposition activities for damaged weapons

During 2003, the Nevada Facility Representatives were actively engaged in Board activities and support of staff member visits and requests. The Facility Representatives participated in three readiness reviews, Subcritical Experiment DSA reviews, and VSS reviews. Throughout the year, the Board was kept abreast of the accomplishments of Facility Representatives through quarterly performance indicators supplied by NNSA Headquarters. The NSO Facility Representative program's most important achievement for 2003 was reaching the goal of qualifying 100

percent of NSO Facility Representatives through detailed written testing and strenuous oral examinations. NSO was the first major NNSA site to achieve this goal.

NSO also met the goal of maintaining Facility Representative staff in the field for no less than 40 percent of the time with the remaining 60 percent of their time spent on contractor oversight, an Department-wide goal. At the Facility Representative Annual Conference, NSO was singled out as meeting this goal consistently for the past two years.

The NSO ISM 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 two years, the Council highlighted achievements and opportunities for improvement in an Annual Report to the Manager, NSO. In the fiscal year 2002 Annual Report to the Manager, NSO identified five issues that were resolved in fiscal year 2003. The 2003 report identified four new site-wide issues for resolution by the Council.

The NSO ISM Council was able to achieve several significant milestones that markedly improved the implementation of ISM across the NSO complex. Most notable was the continued open dialog among Council members, which enhanced the feedback mechanism and provided an outstanding forum for sharing lessons learned. These achievements, coupled with the strong commitment of Integrated Safety Management Council members, have reinforced the strength of the NSO ISM program and provided a path forward for the continued improvement and institutionalization of NSO ISM systems and culture.

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

During 2003 several major initiatives were underway at LLNL. Significant

progress was demonstrated in the following areas:

- Implementation on actions associated with 2000-1, *Stabilization and Storage of Nuclear Material*;
- Implementation on actions associated with 2000-2, *Configuration Management, Vital Safety Systems*;
- Implementation on actions associated with the Plutonium Facility Emergency Power Systems;
- Implementation on actions associated with Safety Basis deficiencies; and
- Implementation of 10CFR830 Subpart B requirements.

LLNL completed repackaging of its highly enriched uranium inventory as required under 2000-1. LLNL also made significant progress on the repackaging of plutonium metals and oxides, and is on schedule to complete the repackaging by February 29, 2004.

In fiscal year 2003, LLNL completed all actions associated with the CAP for Board Recommendation 2000-2. These actions included: performing a Phase II assessment of LLNL's configuration management program and developing and implementing the CAP associated with the assessment, hiring a dedicated lead system engineer for the LSO, filling LSO's federal oversight staffing gaps as part of the FTCP, and institutionalization of LLNL's safety system assessment program for ongoing periodic evaluations. LLNL Safety System Assessments program includes elements consistent with the Model Assessment Criteria and Guidelines for Performing Phase II Assessments of Safety Systems at Defense Nuclear Facilities. All actions are complete for LSO and LLNL; however, the LLNL System Engineer program will be reviewed annually by LSO as part of

continual oversight and Appendix F performance metrics.

LLNL has made substantial progress on the corrective actions associated with the Plutonium Facility emergency power system that resulted from a Board staff visit in 2002. These actions included significant upgrades to both the normal and emergency power systems to increase redundancy and improve reliability. The Board was briefed on the progress in February and August. The remaining actions are to replace a transformer and to do a final briefing to the Board.

In February, 2003, the Board staff conducted a review of several safety basis documents. In response to the issues raised by the staff, LLNL and LSO developed an Action Plan. The plan addressed the primary concerns from the Board which were:

- Potential inadequacies in certain nuclear safety basis documents; and
- Cognizance and control of external hazards.

Substantial progress on the corrective actions for these areas was made, including submitting revised safety analysis documents, signing memorandum of agreement with external agencies, identifying needed upgrades for a chemical inventory system, and proposing an integrated hazard analysis strategy.

LLNL continued to progress towards compliance with 10CFR830 Subpart B. The Laboratory submitted four DSAs and TSRs by April 10, 2003. The remaining compliant submittals had been granted schedule exemptions. The Department reviewed three of the four submittals (B-239 Radiography Facility, B-331 Tritium Facility and B-334 Hardened Engineering Test Facility) and determined each to be compliant with some conditions of approval. The

fourth document (B-231 Vault) was downgraded from Hazard Category 3 to radiological status in May 2003 due to reduction of inventory. The LLNL also submitted two DSA/TSRs for B-332 Plutonium Facility and On-site Transportation in October 2003 consistent with the allowed schedule exemption in 10CFR830, Subpart B. The Department is currently reviewing these documents. The LLNL will be submitting the Radioactive Hazardous Waste Management Facilities DSA/TSR during Calendar Year 2004. The B-251 Heavy Element Facility has been working aggressively to reduce their excess radionuclide inventory from Hazard Category 2. LLNL has removed 80% of the initial inventory and is working to remove the remaining material. It is anticipated that the inventory in B-251 would allow a downgrade to radiological status prior to the compliant DSA/TSR submittal date in 2005. The Department approved two 10CFR830 submittals for both new operations (the WIPP mobile vendor activity and the B-695 Decontamination and Waste Treatment Facility) during 2003.

An area of weakness in LLNL's compliance is the USQ process. LLNL performed an assessment of implementation of the new LLNL USQ procedure. The LLNL Assurance Review Office assessment was a result of implementation issues at the B-231 Vault. The Assurance Review Office assessment identified five findings and four concerns that indicated incomplete implementation of the USQ procedure. The Laboratory developed a CAP in response to the Assurance Review Office assessment. During October 2003, the LSO reviewed implementation of progress on the LLNL CAP. Issues were identified with both adequacy of the corrective actions and completion. The LSO also reviewed technical adequacy of 28 USQ Determinations. Issues were

identified with the technical quality of the Laboratory's USQ Determinations. The Laboratory will be developing a revised CAP that addresses both the technical adequacy of USQ determinations and the original USQ CAP.

The annual update of the LLNL ISM System Description was approved by LSO on April 9, 2003. LLNL satisfactorily maintained ISM implementation across the institution. Progress was made as demonstrated by the development of the Work Smart Standards for Safety Basis Requirements for Non-nuclear Facilities, and the completion of the implementation plan of the standards. Some improvements were also observed in the identification of hazards function, a weakness area identified last year, through the continued trend in using the electronic Integrated Work Sheet system by the line programs, to document the hazards identification and controls implementation process. However, weakness in the feedback for improvement function, also identified last year, still required attention from Laboratory Management to ensure completeness and effectiveness of corrective actions.

The Laboratory hosted several visits by the Board's staff during calendar year 2003 on topics including, safety basis documentation, Heavy Element risk reduction activities, TRU waste mobile vendor activities, and work planning and worker protection.

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

The LASO accomplished the following during 2003:

- LASO and LANL partnered in the development and implementation of an integrated process for work control for both facility and programmatic work. This effort was in response to continuing concerns in the area of

work control, noted by both EH and the Board staff.

- LASO implemented the Integrated Project Team concept for LANL construction projects in order to enhance review by subject matter experts during early phases of project design.
- LANL, with encouragement from LASO, established a Senior Executive Review Board, composed of LANL Associate Directors in charge of nuclear facilities and chaired by the Laboratory Director. Monthly, this Board reviews items of safety and operational concern with special emphasis on communicating lessons learned from past events. This Board also reviews the corrective action plans associated with events reported in the Department's Non-compliance Tracking System.
- LASO actively encouraged LANL to meet the April 10, 2003, date for compliance with 10CFR830 requirements. LANL submitted required material for all 17 nuclear sites. Some submittals are still in review by LASO. LANL has proposed a schedule for categorizing and meeting 10CFR830 requirements for all on-site potential release sites.
- LANL continued efforts to D&D excess facilities. During 2003, LANL completed demolition and removal of the Omega West Reactor facility. This operation was completed in a timely manner with limited exposure of personnel.
- LASO efforts to expedite transfer of waste to the WIPP facility include a cooperative effort with the CBFO, commonly termed the "Quick to WIPP" initiative. Movement of wasted material to WIPP is a significant part of the management of

risks associated with LANL operations.

- LASO/LANL hosted 11 on-site Board staff reviews (23.5 days total), four video teleconferences, and one teleconference.

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

### Documented Safety Analyses

All 18 DSAs required under 10CFR830 subpart B by the required April 2003 compliance date were developed and submitted. The Department has approved all but one of the DSAs, and the first four DSAs were implemented. Preparations for implementation of the remaining approved DSAs are in progress including DSA Implementation Validation Reviews prior to the implementation milestone date. In addition to the 18 DSAs required by 10CFR830, Bechtel Jacobs Company developed two DSAs for new scope, both of which were approved by the Department and implemented.

### Other Activities

- ISM System – The Department conducted a Phase I/II Reverification of Bechtel Jacobs Company ISM System from June 2 through June 11, 2003 and on June 26, 2003, the Manager, OR approved the Bechtel Jacobs ISM System Description.
- ISM System – A Phase I/II Reverification was conducted of the Department OR ISM program from October 20-24, 2003 by a team external to OR. The team recommended that the OR Manager recertify the OR program.
- Sodium Fluoride Traps Depressurization – The ORR for the project was completed in January 2003. Sodium fluoride traps

depressurization commenced in February 2003 and 24 traps have successfully been depressurized to date. One trap remains to be depressurized.

- Systems Engineering—During 2003 a full System Engineering Program was implemented at Bechtel Jacobs Company. This program matches system engineers with identified VSS to control configuration and make ongoing operability determinations. The list of VSS is now controlled as the list of active safety systems/list of design features.

#### Recommendation 97-1, Safe Storage of Uranium-233

The planned inspection program at ORNL for Recommendation 97-1 was completed in September 2003. A total of 66 cans were visually inspected, weighed, and x-rayed. Of these cans, eight were destructively inspected, the material repackaged and returned to storage.

The contract called for in RFP No. DE-RP05-00OR22860, *Uranium-233 Disposition Medical Isotope Production, and Building 3019 Complex Shutdown*, was awarded in October to Isotek, LLC, a consortium of Duratek, Burns and Roe, and the Office of Nuclear Fuel Security and Uranium Technology.

This contract is for a three-phased project to process the uranium-233 in Building 3019 to eliminate criticality and proliferation concerns through down blending, to extract thorium-229, and to remove the uranium-233 so that the 3019 Complex can be deactivated.

#### Recommendation 2000-1, Stabilization and Storage of Nuclear Material

ORNL committed to the disposition of 1409 grams of excess plutonium in the

2000-1 implementation plan 2000-1. ORNL has shipped 537 grams to LLNL for disposition in their Plutonium Stabilization and Packaging System facility. Fifty-three grams will be disposed of as TRU waste by February 27, 2004. In addition, 798 grams will be returned to programmatic use at ORNL and the Office of Nuclear Energy, Science and Technology. Finally, 21 grams of this material has been eliminated through radioactive decay.

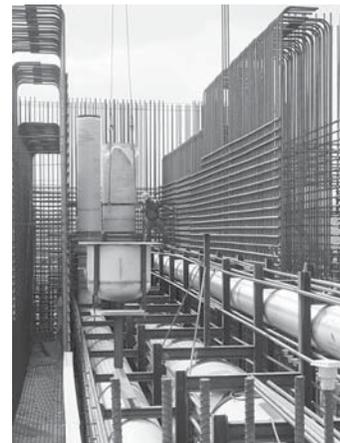
#### **G. Office of River Protection (ORP)**

##### Start of Construction of Waste Treatment and Immobilization Plant (WTP)

In November 2002 full construction began on both the HLW and the Low Activity Waste facilities. Prerequisite to the start of construction, ORP issued a Safety Evaluation Report and a Construction Authorization Agreement.

Also in November 2002, ORP authorized the start of construction for the Pretreatment Facility pits, tunnels, and basemat. Similarly, ORP documented that the Pretreatment Facility pits, tunnels, and basemat design had adequate strength to withstand seismic and other design basis events, and should provide adequate safety.

The ORP authorized full construction of the WTP Pretreatment facility on March 17, 2003, with the issuance of a Construction Authorization Agreement. Before issuing this authorization, ORP performed a comprehensive readiness review for the Pretreatment Facility in March 2003. In the Readiness Assessment, ORP found that the WTP contractor had initiated extensive corrective actions to improve engineering work performance.



*Construction Of Waste Treatment Plant at Hanford - View of HLW Vitrification Facility Thickened Slab Area.*

### Low Activity Waste Facility Cold Joint Concrete Placement

ORP worked closely with the Board to resolve its concerns associated with the Low Activity Waste cold joint. The Low Activity Waste cold joint occurred on July 11, 2002, when the WTP contractor halted the basemat concrete placement due to concerns about placement temperature remaining below the required 70 degrees Fahrenheit. The contractor completed an extensive recovery plan that included: obtaining concrete experts to evaluate the soundness of the existing concrete; qualifying/installing over 2500 number 5 dowels to restore shear basemat strength, and documenting an engineering evaluation of the acceptability of the cold joint for the placement. The Department reviewed and approved the contractor's engineering evaluation.

On December 23, 2002, ORP conducted an inspection of WTP contractor's preparations to resume placement of concrete in the north and south portions of the WTP Low Activity Waste facility basemat cold joint. The contractor completed the cold joint placement for the Low Activity Waste basemat in mid-January 2003.

### Oversight of the WTP Design and Construction Programs

In fiscal year 2003, the ORP continued with its integrated oversight program of WTP design and construction activities. Oversight of WTP design and construction included eleven construction inspections; eight design inspections, and about 500 surveillances. These oversight activities identified strengths and weaknesses in engineering and construction processes, in addition to several issues of noncompliance.

### Authorization Basis Maintenance Activities

In February 2003, ORP issued the AB Management Assessment Inspection Report (A-03-OSR-RPPWTP-007). The inspection report identified several implementation issues that resulted in four Findings. The WTP contractor subsequently provided satisfactory responses to these Findings.

- On June 12, 2003, ORP approved an extensive revision of the WTP Safety Requirements Document. The Safety Requirements Document establishes all of the safety requirements for the WTP. The revision consolidated and reduced the number of Safety Criteria, which contain the documents implementing safety standards.
- On September 23, 2003, ORP completed a second assessment of the WTP AB Management. This assessment was conducted to verify the WTP contractor had corrected issues identified in February and to determine if the contractor was ready to implement a proposed revision to its AB maintenance process. ORP concluded that the quality of the contractor safety evaluations had improved since the last inspection in January 2003. ORP found that the procedures governing the AB maintenance process have also improved.
- During fiscal year 2003, the ORP also approved 15 AB Amendment Requests, which were significant changes to the WTP's design or safety standards. Additionally, ORP reviewed and concurred in over 150 AB Change Notices.

## Software Quality Assurance

On March 13, 2003, the Secretary signed the letter forwarding the response to Board Recommendation 2002-1. ORP was a participant in drafting the complex-wide response. The response satisfied the statutory commitment and required revision to or development of new directives, as well as the development of at least one new technical qualification standard.

## Hydrogen Release through Pulse Jet Mixing and Air Sparging

Throughout fiscal year 2003, the Department and its contractors have worked closely with the Board to resolve its concerns with respect to potential flammable accumulations of hydrogen in the ORP WTP. By October 2003 pulse jet mixer configurations were confirmed to be underpowered to provide adequate mixing in WTP Facilities. Mixing is required to 1) achieve a homogenous mixture to assure that representative samples can be taken and 2) avoid substantial accumulations of hydrogen gas. Subsequent tests conducted for treatment facility process vessels met the criteria but they required additional pulse jet mixers and considerably more air than specified in the baseline design. In order to reduce cost and schedule impacts, the Department and its contractors have developed innovative hybrid designs that include pulse jet mixers to keep sediments from accumulating on the bottom of the process vessels and air spargers to strip hydrogen from the process wastes. The test program is currently evaluating the effectiveness of the new test configurations to effectively keep hydrogen accumulation from reaching the lower flammability limit.

## Hydrogen Generation, Retention and Release

Throughout fiscal year 2003, the Department and its contractors have worked closely with the Board to resolve its concerns with respect to predictions of hydrogen generation, retention, and release in the ORP's WTP. Previous hydrogen gas generation models were determined to be inadequate to predict the generation of hydrogen under the range of conditions expected in the WTP. A comprehensive study of the WTP facility indicated that there were a number of factors that might affect the application of existing models. The primary hydrogen generation mechanisms of concern to the WTP are thermolysis (breakdown of organic compounds) and radiolysis of water. As a result, a new model has been developed that predicts the hydrogen generation rate for the WTP. Laboratory tests are currently being conducted to provide a basis for estimating the retention and release characteristics of hydrogen in Hanford wastes.

## HLW Load Path Analysis

HLW became the initial focus of concerns over WTP structural design adequacy because of the significant design changes added late in the design cycle to a very complicated facility. Major changes in story elevations, slab and wall discontinuities, recent additions of exterior concrete slabs for buttressing walls, and the WTP contractor's position on design margin management had caused the Board to question the wisdom of the close-coupled design process. It was clear from initial questioning that ORP would have to take a very active role in addressing the structural engineering issues. A series of workshops were established to better define the Board

staff questions, agree on technical approaches for resolving them, and determining how best to convey our findings formally to the Board. By assuming a proactive leadership role, ORP has developed an accepted methodology for developing a Summary Structural Report which will satisfy Board staff questions. Planned for release in late February, the Summary Structural Report chapters are currently in draft form and are being reviewed by workshop members for sufficiency.

### Under Strength Concrete

On July 31st, the WTP contractor issued the first nonconformance report on several Pretreatment Facility concrete wall placements due to poor 28-day cylinder breaks and suspended concrete operations. Additional non compliance reports on other placements followed as more 28-day breaks failed. ORP initiated a nonconformance report investigation in parallel with efforts to determine the root cause of the failures. The Board staff requested and was furnished an investigation plan and recovery plan for resuming concrete operations. ORP received testimony from several recognized concrete experts on potential causes of the reduced strength. Several tests were conducted including microscopic petrography evaluation. ORP participated on the contractor's root cause challenge team and made several recommendations which were included in the corrective actions. A formal briefing to the Board staff on the causes and corrective actions taken to improve concrete quality was made on October 16-17, 2003, and the issue was closed.

### HLW Basemat Concrete Subsidence

Two HLW concrete basemat placements made in December 2002 developed an unusual pattern of surface cracks which mirrored underlying reinforcing steel. ORP assembled a small team of experts, including Corps of Engineers personnel, to investigate the cause of the cracking which was determined to be subsidence. Once the cause was determined, ORP worked with BNI in investigating code requirements, design capacity of the basemat, and with the assistance of American Concrete Institute Code members, developed calculations for evaluating the adequacy of the basemat. These findings were presented to Board staff and their panel of experts together with the results of concrete borehole samples of suspected trouble areas. The concrete samples confirmed the calculations and the subsidence issue was resolved without further impact to construction efforts.

### ORP Structural Peer Review Team

In early April, ORP received feedback on the contractor's finite element analysis indicating that errors were being made through inappropriate application of dynamic modeling. ORP assembled an independent review board to evaluate this issue as well as future complex structural concerns. On May 20th a team charter was signed establishing the panel which included experts in structural analysis, concrete detailing, concrete mix design, and constructability. The Pretreatment Facility was examined first together with an overall evaluation of the design processes. A final report on the Pretreatment Facility was issued in August. The report concluded that the risks of continuing with construction of the Pretreatment Facility were acceptable and the probability of rework minimal.

The ORP completed its review of the HLW building in December 2003 covering the basemat and walls to grade and concluded that continuing construction represented a low level of risk to the project. The peer review team was also utilized for highly specialized technical reviews during resolution of several issues. Their expertise in reinforcing steel detailing and concrete mix designs helped resolve the subsidence issue and recover from the low compressive strength concrete problem. They have assisted in determining code requirements for boundary element reinforcement for wall piers and openings, assisted in static and dynamic design code validation, provided structural engineering support for AB Amendment Request reviews and pipe stress analysis and were instrumental in defining the requirements for the Summary Structural Report.

### Major Tank Farm Field Activities

- The ORP completed Interim Stabilization and Retrieval of Single-Shell Tanks to meet the Consent Decree Milestone of 2 percent pumpable liquid remaining in the Single-Shell Tanks.
- The ORP initiated HLW retrieval from two Single-Shell Tanks.
- The ORP completed construction of the transfer pipelines from the Tank Farms to the WTP.
- The ORP has completed initial Supplemental Treatment Demonstration activities.

### Tank Farms DSA Implementation

DSA and TSR for the Hanford Tank Farms have been developed, approved and implemented in accordance with the Nuclear Safety Rule (10CFR830). This new Tank Farms safety basis

provides added operational flexibility to support accelerated tank retrieval and closure.

### Ultrasonic Inspection of Tanks

Ultrasonic inspection of four double shell tanks was performed in 2003. Ultrasonic inspections are complete on 21 of the 28 Double Shell Tanks. Inspections are performed in small spaces with hazardous radiation levels using specialized remotely operated equipment.

### Safety System Oversight Personnel

ORP has upgraded its Safety System Oversight program to require written examination, system walk down, and oral boards for SSOP qualification. ORP plans to requalify existing SSOP using these additional requirements in 2004. The first comprehensive Qualification Standard incorporating the new program requirements was prepared, issued, and is in the process of being implemented.

### Additional Accomplishments

In addition, other key accomplishments by ORP during 2003 are as follows:

- Responsibility for the 242-A Evaporator and the 222-S Laboratory was transferred from the Richland Operations Office (RL) to ORP.
- DSA and TSR for the 242-A Evaporator were implemented in accordance with the Nuclear Safety Rule (10CFR830).
- Chemical additions have been completed to correct out-of-specification waste chemistry in the four outstanding Double Shell Tanks. This work is expected to minimize corrosion and extend the useful life of these Double Shell Tanks.

- Additional TSRs were implemented to minimize tank corrosion and extend the useful life of Double Shell Tanks.
- ORP has institutionalized Phase II assessments of VSS in its assessment program. ORP performed four Phase II assessments of VSS at Hanford Tank Farms during fiscal year 2003. An additional four VSS assessments are planned for fiscal year 2004.

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

OH has three major sites of interest to the Board: Fernald Closure Project (Fernald), Miamisburg Closure Project (Miamisburg) and West Valley Demonstration Project (West Valley). ISM review and update schedules for these key sites are as follows:

- Fernald – March 2004
- Miamisburg – June 2004
- West Valley – December 2003

Each of these three OH sites (Fernald, Miamisburg, and West Valley) conducts a formal, annual review. The basis for each site's review is established in a formal ISM annual review plan. The review plans are approved at the project office level, and two OH representatives participate on each review team.

##### Fernald

Board staff visited the Fernald site twice in 2003. The Board sent a letter to the Assistant Secretary, Office of Environmental Management, on August 7, 2003, identifying safety performance issues at the Fernald site following their visit in June 2003. Although no formal response to the letter was requested, the Board requested a briefing to address the safety issues at Fernald. The Ohio Field Office Manager and Fluor Fernald, Inc. Project Director provided

this briefing on October 7, 2003. Further, the Manager, Ohio Field Office, provided a memorandum to the Assistant Secretary, Office of Environmental Management, on November 14, 2003, summarizing the results of this briefing and the actions taken to address the safety issues.

Several notable actions taken by Fluor Fernald, Inc. included self-performance of the remaining D&D work activities and reaffirming line manager accountability for all projects at Fernald. The Department took additional actions to improve oversight and exercise authorities under the contract to clearly address the identified safety performance issues. As a result of these actions, the final 2003 calendar year quarter demonstrated marked improvement in safety performance based upon reduced Occupational Safety and Health Administration Lost-Workday and Restricted and Total Recordable Case Rates.

##### Miamisburg

Biweekly conference calls were conducted throughout the year between the Board and Miamisburg staff regarding ORPS reporting, project progress and accomplishments (especially Main Hill project), significant issues related to integrated safety management system, safety impact, PRS66, and Operable Unit-1. The Board staff site visit in July 2003 resulted in no issues related to safe work performance. Based upon the overall reduction of risk, the Department also proposed ending Board oversight for the Miamisburg site.

##### West Valley

West Valley has a mature ISM system in place. West Valley completed its fourth ISM Annual Review in December 2003. The review team reported that ISM systems continue to be effectively maintained and implemented.



*A Specially Designed Shielded Forklift will be Used to Transport Debris to the Remote-Handled Facility for Processing at West Valley .*

West Valley was initiated by the Department, as a result of the West Valley Demonstration Project Act of 1980 (PL 96-368). It is on the site of a former commercially operated SNF reprocessing facility that had reprocessed commercial fuel, as well as fuel from Hanford's N Reactor. The Act requires the Department to conduct a high-level radioactive waste solidification demonstration project and decommission facilities used for the Project.

With the completion of vitrification in 2002, the Department initiated the decontamination of the Vitrification Facility this year. The Project shipped 125 SNF assemblies to INEEL and decontaminated the former Fuel Receiving and Storage Facility during the summer of 2003. During this time frame, the Project also completed construction of a new facility for sorting and packaging of high-activity radioactive waste. The Nuclear Regulatory Commission licenses the site's owner, New York State. The technical specifications of the license are being held in abeyance while the Department conducts the project.

### **I. Pantex Site Office**

The PXS0 accomplished the following during 2003:

- PXS0 supported the Board and its staff in 2003 by responding to numerous requests for information, which totaled more than 300 individual documents. Additionally, the Board conducted 15 on site reviews in 2003.
- The Department has met the 10CFR830 Subpart B requirements for establishing DSAs at Pantex. Pantex is complying with the provisions of the temporary exemption request for weapon programs undergoing SS-21 upgrades.

- Pantex had two reviews (March and October 2003) over the last year related to SQA. Although not completely implemented, Pantex SQA plans are viewed favorably by EH and the Board. Some of the key SQA areas of improvement are: benchmark of SQA program, independent external assessment of SQA program, policies and procedures rewritten to establish a formalized set of processes with a defined set of deliverables, SQA Training Program established on policies and procedures, and creation of the SQA Implementation Office.
- The Department has approved an integrated, resource loaded plan for the implementation of site-wide TSR controls at Pantex. This plan, coupled with the readiness assessment based validation of controls, should assure the 230 controls are of high quality and are implemented in a timely manner.
- ISM - The Pantex Plant ISM system was initially verified in November 2000. The PXS0 has the contractor's annual update to the ISM system description for review and approval.
- The Department continues to make progress in delivery of 98-2 implementation plan commitments. The W62 Step II SS-21 project was completed and authority to operate was granted by the PXS0 Site Manager in the Third quarter. Additionally, the W88 Accelerated Bay Tooling was implemented in September 2003. The plan for implementing and verifying implementation of all site-wide TSRs was delivered to the Board this year. Associated with 98-2, the W88, W78, W76, and W62 Enhanced Transportation Cart for both ETC-I and ETC-II were implemented. The ETC-II was implemented for the B83.

The Fire Alarm System Replacement is on schedule and progressing well to upgrade the nuclear facilities. Significant progress was accomplished towards the Building 12-64 upgrade design for seismic and internal explosion scenarios.

- NNSA has made significant progress in 2003 toward closure of 99-1. *Safe Storage of Pits at Pantex*. The AL-R8 2030 Sealed Insert container surveillance backlog reduction was completed as well as the final design of the AL-R8 2040 Sealed Insert container. Funding has been identified for providing enough containers to finish the Sealed Insert Repack Project in fiscal year 2005.
- Pantex successfully completed VSS Assessments and Crane/Hoist Corrective Actions required by the Department's 2000-2 implementation plan. In March 2003, the BWXT System Engineering section was transferred from the Infrastructure Division to the Engineering Division. The Configuration Control section was also transferred because of its close ties with System Engineering. The new department has shown significant improvements in building a reliable System Engineering program in a very short time period. The immediate improvements have resulted in building a strong foundation that will encourage good System Engineering practices for the future. The reorganized department has successfully created a System Engineering Department Manual that has clearly defined roles and responsibilities. A training and qualification program has also been created and significant progress is being made towards implementation. Project schedules are being utilized to proactively allocate resources. A pilot Tracking & Trending Program has also been initiated.

## J. Richland Operations Office

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

### Risk Reduction

RL met or exceeded fiscal year 2003 goals for reducing risk in all areas, except for SNF at K-Basins. Specific examples include:

#### **Plutonium Finishing Plant**

- The Plutonium Finishing Plant completed stabilization and packaging of the remaining polycubes in February 2003, one month ahead of schedule, and residues in August 2003, eight months ahead of the milestone date. In addition, the Plutonium Finishing Plant was awarded the Voluntary Protection Program Star Status in August 2003.

#### **Spent Nuclear Fuel**

- Placed 805 metric tons of Spent Fuel into safe, dry, compliant storage, slightly under the 855 metric tons planned for fiscal year 2003. This brings the total to 1443 metric tons of Spent Fuel removed from the Columbia River shoreline. Over 50% of the K East fuel has also been removed using the Fuel Transfer System.

#### **Waste Disposal Project, including Groundwater Remediation**

- An estimated 1,000 kg of carbon tetrachloride was removed from the groundwater and vadose zone during fiscal year 2003.
- During fiscal year 2003, 3600 cubic meters of Low-Level Waste (LLW) and Mixed Low-Level Waste were disposed in the Low Level Burial Grounds, exceeding the 2300 cubic meters planned.



*A Plutonium Finishing Plant Worker Handles a Polycube Inside a Glovebox. Plutonium Finishing Plant Personnel Have Finished Stabilizing One of the Riskiest Forms of Plutonium-Bearing Materials at Hanford.*

- During the fiscal year 2003, the Waste Disposal Project (including Groundwater) worked 1.2 million hours without a lost-time injury.
- Completed 233-S facility contaminated equipment removal, immobilization of all interior loose plutonium contamination, and demolition of all support areas up to the three-story Process Hood. Demolition debris with approximately 13,000,000 dpm alpha has been safely removed in an open air environment. Lessons learned are being shared with Rocky Flats.

### **TRU Waste Disposal**

- During fiscal year 2003, 238 cubic meters of TRU waste was shipped to the WIPP, exceeding the 78 cubic meters planned.
- Commenced retrieval of suspect TRU waste from the 218-W-4C burial grounds.

### **Environmental Restoration Disposal Project**

- The Environmental Restoration Project completed 35,000 shipments representing 645,000 tons of LLW to the Environmental Restoration Disposal Facility Project. The Central Waste Complex transferred 5,655 drums of waste to the Environmental Restoration Disposal Facility Project. There have been no lost time injuries at the landfill since operations began in 1996.
- The Environmental Restoration Project completed Safe Store of the F Reactor in fiscal year 2003 and all pre-Safe Store Enclosure activities completed for D Reactor (90% Complete). At the end of fiscal year 2003, H Reactor was 56% complete. No lost-time injuries were incurred.

### **Safety Basis and Lessons Learned**

- DSAs, compliant with the requirements of 10CFR830, Subpart B, have been approved for all nuclear facilities under RL's purview. This includes the approval of DSAs for 15 facilities during fiscal year 2003. In addition, RL approved a DSA to address D&D of the Plutonium Finishing Plant.
- Distributed a criticality safety document complex-wide summarizing lessons learned in a D&D environment. This document was developed for use by nuclear facility operations managers.

### **Board Recommendations and Safety Issues**

- Board Recommendation 2000-2 is fully institutionalized at RL in both the contractor and RL engineering operations. Institutionalization was completed on schedule.
- The Plutonium Finishing Plant is on track to complete stabilization and packaging of oxides by February 2004, a commitment in the Department's 2000-1 implementation plan.
- RL completed commitment 4.1.3 from the Department's 2002-1 implementation plan to identify the federal positions whose duties and responsibilities require them to provide assistance, guidance, direction, oversight, or evaluation of safety SQA activities.
- RL performed an assessment of electrical and instrument and control systems at the Plutonium Finishing Plant to verify completion of all corrective actions and to verify performance has been improved, in response to a Board request.

- In response to the Board's reporting requirement related to SNF Multi-Canister Overpack Welding, RL provided a technical summary describing the Multi-Canister Overpack welding process to provide assurance that Multi-Canister Overpacks are properly sealed and inerted prior to welding, the lifting stresses imposed on the mechanical seal during movement have been properly analyzed and the disposition of previously welded Multi-Canister Overpacks is satisfactory. Currently, over one hundred Multi-Canister Overpacks have been prepared for final disposition, including the welding of the cover cap. This includes all 66 Multi-Canister Overpacks that concerned the Board due to suspect mechanical seals, except for Multi-Canister Overpack #1, which is a monitored Multi-Canister Overpack and cannot be welded at this time.
  - In response to concerns related to readiness preparations and the readiness review process at Hanford, RL completed formal readiness review training, incorporated the use of senior advisor/mentor to enhance ORR team performance, and revised RL procedures to incorporate improvements of the readiness process.
  - RL continues to inform the Board staff of the status of K-Basin Sludge Removal. The problems at SNF affect both commitments to the Board and the Tri-Party Agreement milestones to complete removal of all K-Basin spent nuclear fuel and all K-Basin sludge. RL is evaluating alternate strategies to accelerate K-Basin sludge disposal. These strategies are shared with the Board staff.
  - RL is presently working on a response to Board concerns related to the TRU Waste Retrieval Project. RL will provide its actions planned to safely retrieve and handle specific drums of concern, verify drum integrity, ensure safe storage, and provide for disposition of the drums.
- Contractor Oversight
- RL developed and issued a program description document defining how RL performs contractor oversight. The document describes regulatory oversight authority, the types of oversight, and establishes oversight responsibilities. The document also describes what areas will be assessed and sets minimum oversight expectations and frequencies. RL documented its oversight process in a procedure within the RL Integrated Management System. RL maintains an Integrated Evaluation Plan, which is updated quarterly.
  - The RL QA Program Description was revised and reissued. The Quality Assurance Program Description requires each RL organization perform a minimum of one management assessment annually. In addition, the RL Manager issued a memorandum further defining management assessment expectations and requiring that each organization complete its management assessment in the first quarter of fiscal year 2004. RL staffs an Office of Independent Oversight to perform independent assessments of RL organizations and functions.
  - RL oversight is based on an assessment of hazards, the importance of activities to the site mission, performance indicators, past performance, and input from our Facility Representatives. During fiscal year 2003, RL completed 192

oversight assessments. During fiscal year 2004, RL plans to conduct 255 oversight assessments. This increase recognizes that contractor and RL problem identification and quality improvement processes are not sufficiently robust or mature to reduce oversight.

### Lessons Learned

Based on lessons learned from the Columbia accident, internal and external oversight activities – including Board staff visits, and events across the Department’s complex, RL completed the following actions:

- Modified organization structure to increase independence of safety oversight;
- Increased expectations for oversight of the 8 RL projects by the responsible project directors;
- Improved the RL corrective action system;
- Developed project metrics for safety;
- Completed project risk assessments; and
- Began holding plan-of-the-day meetings to hear key issues directly from project directors and Facility Representatives.

### ISM Continuous Improvement

The annual RL review of the ISM system and related declaration found contractor implementation was adequate with two exceptions:

- (1) Implementation at the K-Basins facility was inconsistent; and
- (2) Implementation of the site-wide hazardous energy control program was not adequate.

Corrective actions at the K-Basins included directing development of a CAP, significantly increasing RL oversight, elevating approval authorities, and invoking the Conditional Payment of Fee clause. Corrective actions in the hazardous energy control program included implementing compensatory actions site-wide and directing revisions to the program to meet Department Order 5480.19, *Conduct of Operations Requirements for Department facilities*.

Related to RL, the annual review found that the RL Integrated Management System was effective and compliant with core ISM system expectations. However, the review found problems with implementation of Department Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*, areas where the RL corrective action system was ineffective, and that the RL self-assessment program was not fully effective. Based on these concerns, the RL Manager withheld his declaration of ISM implementation pending completion of corrective actions. These will be completed in early calendar year 2004 and the Office of Independent Oversight will conduct a revalidation in March 2004.

### **K. Rocky Flats Field Office (RF)**

The principal accomplishments of RF during 2003 related to the 2000-1 implementation plan:

- Residues. Residue repackaging was completed in 2002. RF continues to ship the residues to the WIPP. As of December 2003, approximately 92% of the residues have been shipped to the WIPP with the remainder being shipped by the end of 2004.
- Metal and Oxides. On July 8, 2003 RF completed packaging all plutonium metals and oxides for



*3013 Canisters and Pipe Component Container*

long-term storage in DOE-STD-3013 containers. The Plutonium Stabilization and Packaging System safely and compliantly packaged a total of 1,895 3013 containers from June 2001 through July 2003. The containers were shipped to the SRS for storage at the K Area Material Storage facility. The removal of all weapons usable plutonium from the RF has allowed the RF to focus on the final decontamination and decommissioning of the site. Additionally, approximately 970 kilograms of low-purity oxides were repackaged as TRU waste for shipment to the WIPP. This decision significantly reduced the amount of material that was processed through the Plutonium Stabilization and Packaging System, reducing the amount of rework required and reducing the total number of 3013 containers stored at the K Area Material Storage facility.

#### **L. Sandia Site Office**

The Annular Core Research Reactor was safely restarted after successful completion of a readiness assessment, conducted by SSO and SNL, to evaluate modifications made to the Reactor Console and Rod Control System. This activity concluded a multi-month effort by SNL to update these key systems at the Annular Core Research Reactor.

The Gamma Irradiation Facility safely increased its inventory of sources by adding 100,000 curies of cobalt-60 and a krypton-85 source. Furthermore, the Low Intensity Cobalt Array was relocated from Technical Area 1 at SNL to the Gamma Irradiation Facility. The addition of these sources provides greater flexibility in the exposure conditions the facility can provide for its customers.

The Burnup Credit Critical Experiments, which confirmed the benefit of fission product poisons in spent fuel for transport and storage, were successfully completed. Follow on experiments are planned with higher enriched fuel. The fuel to support the next set of experiments has been safely transferred to SNL from Pennsylvania State University where it had been in storage.

SSO revised an existing procedure titled, *Startup and Restart of Sandia National Laboratories Facilities/Activities*. This procedure provides local guidance for startup and restart of nuclear and non-nuclear activities. This procedure has been shared with SNL to ensure their understanding of SSO expectations.

SSO, in accordance with the Department's 2000-2 implementation plan, now has a Mechanical Systems Engineer on board and is in the process of selecting an Instrumentation and Control Systems Engineer specifically to oversee the site's VSS activities. These activities include oversight of the contractor system engineer activities and independent assessments of the vital safety systems at SNL. Qualification Standards are being developed for these two positions.

SNL supported four visits of Board staff members, and one visit with a Board member. The visits focused on topics ranging from legacy material storage to weapons issues.

SSO has developed assessment schedules for VSS, Safety System Software, Safety Design/Analysis Software, and AB Administrative Controls to gauge the performance of these elements. These assessments are driven by Department's implementation plans for Board recommendations 2000-2, 2002-1 and 2002-3.

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

Key accomplishments for SR and SRSO during 2003 are as follows:

- SRS supported the Board and its staff in 2003 by providing them more than 500 documents in support of their oversight activities. Additionally, the Board conducted 25 on site reviews in 2003, including 3 visits by the Board members.
- Americium/Curium F-Canyon inventories were neutralized and successfully transferred to H-Area Waste Tanks. This achieved an important Department risk reduction and allowed acceleration of some 2000-1 implementation plan activities.
- All of the RFETS metal was packaged into inner DOT-STD-3013 containers. This activity was completed months ahead of schedule. With the completion of RF composite metal, FB Line personnel have reached another major milestone in deinventory activities necessary to support deactivation of the facility.
- SRS continued efforts to institutionalize activities under the Department's 2000-2 implementation plan. Of particular note is the use of "System Health Reports," which is a comprehensive means of periodically addressing safety health by the system engineer and reporting results to facility management.
- SRS is supporting the Department's 2002-3 implementation plan. Reviews of the existing administrative control TSR development and implementation reveal a comprehensive and systematic process to achieve and

maintain compliance with 10CFR830. The site is participating in continuing discussions and reviews through the Energy Facilities Contractors Group Safety Analysis Working Group.

- An AB change was approved for the HLW Concentration, Storage and Transfer DSA that establishes a new Removed-from-Service tank mode. This new mode allows relaxation of most controls for tanks that meet stringent waste inventory and isolation criteria.
- At the Defense Waste Processing Facility, waste loading was increased by about 25 percent for current Slurry Mix Evaporators batches. This activity is part of SRS's Cleanup Reform Initiative.
- The Department and the Board reviewed the SQA practices and procedures of SRS's primary contractor. Comments and conclusions were very positive and the contractor was requested to support other Department field office operations as well as contribute to Department-wide efforts on SQA. Selected personnel are now on the Department's Subject Matter Expert panel for SQA.
- The SRS implementation strategy for compliance with 10CFR830 for all nuclear facilities was accomplished by the April 2003 rule requirement date.
- The Department-Headquarters Voluntary Protection Program Review Team visited SRS and will recommend recertifying the contractor's Star Status to the Department's Assistant Secretary for Environment, Safety and Health. Overall, the Department's Team stated they were very impressed with the facilities and personnel during their visit. The team reported



*A Savannah River Site Welder Shows Dr. Everett Beckner (Far Right) of the Department of Energy's National Nuclear Security Administration, How He Sets Up his Work For Fabricating and Installing the Internals of the First Two Glove Boxes of the Site's New Tritium Extraction Facility.*

employees feel comfortable raising safety issues and feel they have a safe place to work.

- In F-Area, 12 buildings—encompassing about 24,000 square feet—were safely demolished.
- SRS contracted with a commercial vender to manufacture and test six new hazardous material shipping containers for use as Department of Transportation approved, radioactive liquid shipping containers. In the highly regulated world of U.S. and international shipping containers, successful completion of these tests marked a new milestone in the certification level of the containers being supplied to SRS. The new containers completed manufacture and testing.
- FB Line received shipments of plutonium oxide from the International Atomic Energy Agency in Vienna, Austria. The International Atomic Energy Agency campaign consisted of three shipments that occurred in April, July and September 2003. The materials being returned were samples of United States origin that were used for treaty purposes by the International Atomic Energy Agency Laboratory.
- The Receiving Basin for Offsite Fuels removed the last unit of fuel from the basin, shipping the bundle across the site to its new location, in preparation for Receiving Basin for Offsite Fuels's closure. All of the fuel once stored in Receiving Basin for Offsite Fuels has now been moved to the site's canyon facilities for processing or to the storage basin in the site's L Area.
- In September 2003, the 247-F D&D Project reached a major milestone, known as Proof of Concept. A glovebox was removed from 247-F and shipped to the Solid Waste and Infrastructure Facility, where it will be buried.
- SRS reached another milestone in the removal of nuclear waste from the site, sending its 200th shipment to the WIPP in New Mexico. In reaching this milestone, the site also reached a new peak in the rate that it is shipping this type of nuclear waste.
- Building 313-M was demolished 13 days before the scheduled start date for this final phase of demolition. The successful demolition of 313-M was hailed as an important step in changing the atmosphere from that of “managing risk” to “eliminating risk.”
- The Department and the SRS primary contractor agreed to a renegotiated contract that more fully supports the site's accelerated cleanup program. This modified contract continues a commitment to reduce risk while moving quickly and safely to complete many of the EM missions.
- Automated Hazard Analysis was developed and implemented as a disciplined, comprehensive software program, providing structured questions to help users identify hazards and controls associated with assigned work. Automated Hazard Analysis was developed after internal and external assessments concluded the processes for performing work at SRS, including Work Clearance Permits and Job Hazards Analyses, were not fully integrated. Automated Hazard Analysis integrates diverse, independent processes into a “one stop” process with linkages to procedures, forms, permits, checklists, lessons learned and even subject matter experts, when required.
- BSRI Construction, one of the SRS contractors, achieved its first ever

safety milestone of 12 million safe hours without a lost-time injury resulting in days away from work.

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

YSO accomplished the following in 2003:

- Having been shutdown since 1994, Enriched Uranium Operations Wet Chemistry was restarted after successfully passing restart reviews.
- Physically eliminated 101,067 square feet (51 buildings) of floor space that was excess to the Y-12 mission.
- Processing of Tennessee Valley Authority Off-Specification Material was begun after successful completion of startup reviews.
- In a review by OA, Y-12 received the top rating in all categories but one (configuration management). As a result, Y-12 initiated a Configuration Management Upgrade program.
- Y-12's 100th International Atomic Energy Agency inspection was held this year.
- The largest uranium solution inventory in building 9206 was removed with the draining of the primary and secondary extraction columns. Thus, the facility is no longer a Material Access Area.
- Ground breaking for the Purification Facility took place. Construction continues.
- Repaired seven acres of roofing.
- Provided the programmatic lead on the NNSA Russian Highly Enriched Uranium Purchase Agreement for Domestic Research Reactor use. Y-12 provided the specification for the material, developed the contract for NNSA, and provided recommendations and negotiation support of the purchase price.
- In compliance with 10CFR830, DSAs were developed and approved. An extension to submit the 9212 DSA in calendar year 2004 was granted.
- Modernization continued with the deployment of multiple new electronic technologies to improve effectiveness of Y-12 facilities and systems. Examples include the Applied Instructional System for Machinists, the Integrated Resource Planning Model, and Process Simulation Modeling of 29 Y-12 Manufacturing Processes.
- Developed a Nuclear Materials Control and Accountability Improvement Plan
- Supported NASA in direct funded work of the Jupiter Icy Moons Orbiter.
- Met "As Low As Reasonably Achievable" goals and reduced personnel contaminations by 40 percent.
- Removed more radioactive waste this year than in any of the previous 20 years.
- YSO met with the Board Members as follows:
  - January 14, 2003 - Restart and Criticality Safety televideo;
  - July 29-30, 2003 - Board Members Visit to Y-12;
  - October 15-17, 2003 - One Board Member Visited Y-12; and
  - December 3, 2003 - YSO Site Manager and BWXT General Manager testified at Board Public Meeting.

## 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 aimed to further ensure adequate protection of public and worker health and safety and the environment at the Department's defense nuclear facilities. These activities include:

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

### A. Coordination of Board Review of Department Safety Directives

One of the Board's significant responsibilities is to review and evaluate the Department's safety directives and standards that apply to the design, construction, operation, and decommissioning of Department's defense nuclear facilities. The Board reviews the body of the Department's directives (including rules, policies, notices, orders, manuals, handbooks, guides, and standards) that it has identified as "of interest" to the Board due to their applicability to 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 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 2003.

### 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 2003. 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 2003, the Board issued 27 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.B.

### **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 2003, the Department supported six public meetings conducted by the Board.

### **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 Secretary, and the Departmental Representative typically represent the Department in these periodic reviews. Two periodic briefings were held during 2003.

### **F. Safety Issues Management System (SIMS)**

The Department established a Department-wide commitment management tool, SIMS, in August 1995. Using this tool, the Department has reduced the number of outstanding commitments related to Board recommendations from 694 in August 1995 to 77 in December 2003. The total number of overdue commitments related to Board recommendations has also declined significantly, from 245 in August 1995 to 16 in December 2003. 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 2003, the Department is tracking 53 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 2003; 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 online at <https://www.hss.doe.gov/deprep/>. The website provides an efficient way for the Department to share information, except information classified as official use only or higher, pertaining to defense nuclear facilities activities.

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

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

#### **H. Interface Manual**

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

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

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

**Table 5.B – Formal Reporting Requirements Established by the Board in 2003**

<b>Date</b>	<b>Reporting Requirements</b>	<b>Days to Report</b>
1/9/03	A report documenting the implementation history for each action listed in the enclosure to the Secretary's June 4, 2001, letter related to HEPA filter testing, and the justification and technical basis for any changes.	45
1/24/03	A report documenting how the Department plans to address the hazards and implement the safety improvements that were the focus of the safety-related action plans being defunded by the Department.	30
2/6/03	A report providing assurance that Multi Canister Overpacks are properly sealed and inerted prior to welding, and the proposed disposition of any Multi Canister Overpacks that have already been welded.	15
2/14/03	A report documenting implementation of the actions required to verify that no aluminum parts heat-treated by Temperform USA are in use in safety-related or mission-sensitive applications.	30
2/14/03	A report with a plan that outlines the corrective actions to be taken to ensure adequate deposition of any future issues that involve S/CI.	60
3/7/03	A briefing on the Advanced Mixed Waste Treatment Project at INEEL.	30
3/7/03	A report documenting plans for flood retention at LANL.	90
3/20/03	A report addressing flood retention at LANL.	60
3/25/03	A report addressing SQA at Pantex.	30
4/04/03	A report regarding the measures that are being taken to address training deficiencies at Pantex.	60
4/10/03	A report addressing identified deficiencies in the current safety bases for some of LLNL's facilities.	60
4/10/03	A report providing a path forward for completing sludge removal from the Hanford K-Basins.	60
6/9/03	A briefing on the recovery schedule for accelerated implementation of SS-21 tooling at Pantex.	As Soon As Possible
6/9/03	A report demonstrating that the high-temperature scrams will operate reliably and effectively to prevent critical assemblies from overheating at LANL TA-18.	No later than 9/04

**Table 5.B – Formal Reporting Requirements Established by the Board in 2003, Continued**

<b>Date</b>	<b>Reporting Requirements</b>	<b>Days to Report</b>
6/12/03	A briefing on the resolution of 2000-2, Configuration Management, Vital Safety Systems, issues.	6 months
6/12/03	A report on Safety Bases for SRS Pu Facilities.	60
7/9/03	A report describing the scope and periodicity of the training assessments conducted as required under Department Order 5480.20A for all NNSA site offices.	30
7/9/03	A report on NNSA's plans and schedules for addressing the recommendations made by the Senior Technical Advisory Panel and for institutionalizing a separation in time of the NESS and readiness reviews.	90
7/10/03	A briefing on the status of corrective actions for a number of hoisting-related maintenance and training safety issues at Pantex.	120
7/31/03	A report on the Rocky Flats glovebox fire follow-up.	15
8/7/03	An annual report on the status of the Department's Nuclear Criticality Safety Program.	2/04
8/7/03	A briefing regarding further actions that may be undertaken to improve operational safety at the Fernald site.	90
8/8/03	A report explaining how the Department plans to provide effective, detailed guidance to contractors on electrical safety programs.	30
8/19/03	To be informed of NNSA's plans for establishing and maintaining defensible lightning protection at LANL.	30
11/7/03	A report on TRU Waste Retrieval Project at Hanford.	90
12/2/03	A CAP on how the Department and its contractor at RFETS will address the findings documented in this letter and the enclosed reports.	60
12/8/03	A plan and schedule for NNSA directive changes.	When the NNSA site FRA manuals are provided.

## 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 151.1A	Comprehensive Emergency Management System
DOE O 210.1, Chg 2	Performance Indicators and Analysis of Operations Information
DOE O 225.1A	Accident Investigations
DOE O 231.1, Chg 2	Environment, Safety, and Health Reporting
DOE O 232.1A	Occurrence Reporting and Processing of Operational Information
DOE O 251.1A	Directives System
DOE O 252.1	Technical Standards Program
DOE O 360.1B	Federal Employee Training
DOE O 413.3	Program and Project Management for the Acquisition of Capital Assets
DOE O 414.1A	Quality Assurance
DOE O 420.1, Chg 3	Facility Safety
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 O 425.1B	Startup and Restart of Nuclear Facilities
DOE O 430.1A	Life Cycle 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 451.1B	National Environmental Policy Act Compliance Program

**Table A.1 - Group 1 - Currently Active Orders, Continued**

<b>Order Number</b>	<b>Title</b>
DOE O 452.1B Chg 1	Nuclear Explosive and Weapon Surety Program
DOE O 452.2B	Safety of Nuclear Explosive Operations
DOE O 460.1A	Packaging and Transportation Safety
DOE O 460.2, Chg 1	Departmental Materials Transportation and Packaging Management
DOE O 461.1	Packaging and Transfer or Transportation of Materials of National Security Interest
DOE O 470.2A	Security and Emergency Management Independent Oversight and Performance Assurance Program
DOE O 474.1A	Control and Accountability of Nuclear Materials
DOE O 3790.1B	Federal Employee Occupational Safety and Health Program
DOE O 4700.1, Chg 1	Project Management System
DOE O 4700.4	Project Manager Certification
DOE O 5400.1, Chg 1	General Environmental Protection Program
DOE O 5400.5, Chg 2	Radiation Protection of the Public and the Environment
DOE O 5480.4, Chg 4	Environment Protection, Safety, and Health Protection Standards
DOE O 5480.19, Chg 2	Conduct of Operations Requirements for DOE Facilities
DOE O 5480.20A Chg 1	Personnel Selection, Qualification, Training and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities
DOE O 5480.30, Chg 1	Nuclear Reactor Safety Design Criteria
DOE O 5530.1A, Chg 1	Accident Response Group
DOE O 5530.2	Nuclear Emergency Search Team
DOE O 5530.3	Radiological Assistance Program
DOE O 5530.4	Aerial Measuring System
DOE O 5600.1	Management of the Department of Energy Weapon Program and Weapon Complex
DOE O 5632.1C	Protection and Control of Safeguards and Security Interests
DOE O 5660.1B	Management of Nuclear Materials

**Table A.1 – Group 2 – Archived or Deleted Orders of Interest to the Board Cited in Current Contracts**

<b>Order Number</b>	<b>Title</b>
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 4330.4B	Maintenance Management Program
DOE O 5000.3B, Chg 1	Occurrence Reporting and Processing of Operations Information
DOE O 5400.2A, Chg 1	Environmental Compliance Issue Coordination
DOE O 5400.3	Hazardous and Radioactive Mixed Waste Program
DOE O 5400.4	Comprehensive Environmental Response, Compensation, and Liability Act Requirements
DOE O 5480.21	Unreviewed Safety Questions
DOE O 5480.22, Chg 2	Technical Safety Requirements
DOE O 5480.23, Chg 1	Nuclear Safety Analysis reports
DOE O 5440.1E	National Environmental Policy Act Compliance Program
DOE O 5480.1B, Chg 5	Environmental, Safety and Health Program for DOE Facilities
DOE O 5480.3	Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes
DOE O 5480.5, Chg 2	Safety of Nuclear Facilities
DOE O 5480.6	Safety of Department of Energy-Owned Nuclear Reactors
DOE O 5480.7A	Fire Protection
DOE O 5480.8A, Chg 2	Contractor Occupational Medical Program
DOE O 5480.9A	Construction Safety and Health Program
DOE O 5480.10	Contractor Industrial Hygiene Program
DOE O 5480.11	Radiation Protection for Occupational Workers
DOE O 5480.15	Department of Energy Laboratory Accreditation Program for Personnel Dosimetry
DOE O 5480.17	Site Safety Representatives
DOE O 5480.18B	Nuclear Facility Training Accreditation Program
DOE O 5480.24	Nuclear Criticality Safety

**Table A.1 – Group 2 – Archived or Deleted Orders of Interest to the Board Cited in Current Contracts**

<b>Order Number</b>	<b>Title</b>
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 5484.1B	Environmental Protection, Safety and Health Protection Information Reporting Requirements
DOE O 5500.1B	Emergency Management System
DOE O 5500.2B, Chg 1	Emergency Categories, Classes, and Notification and Reporting Requirements
DOE O 5500.3A, Chg 1	Planning and Preparedness for Operational Emergencies
DOE O 5500.4A	Public Affairs Policy and Planning Requirements for Emergencies
DOE O 5500.7B	Emergency Operating Records Protection Program
DOE O 5500.10	Emergency Readiness Assurance Program
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 5632.11	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 3 – Related Documents Setting Forth Safety-Related Requirements**

<b>Order Number</b>	<b>Title</b>
DOE N 203.1	Software Quality Assurance
DOE P 410.1A	Promulgating Nuclear Safety Requirements
DOE P 411.1	Safety Management Functions, Responsibilities and Authorities
DOE P 426.1	Federal Technical Capability for Defense Nuclear Facilities
DOE P 441.1	Radiological Protection for DOE Activities
DOE P 450.1	Environment, Safety, and Health Policy for the Department of Energy Complex
DOE P 450.2A	Identifying, Implementing, and Complying with ES&H Requirements
DOE P 450.3	Authorizing Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health
DOE P 450.4	Safety Management System Policy
DOE P 450.5	Line Environment, Safety and Health Oversight
DOE P 450.6	Secretarial Policy Statement on Environment, Safety, and Health
10CFR820	Procedural Rules for DOE Nuclear Activities
10CFR830, Subpart A	Quality Assurance Requirements
10CFR830, Subpart B	Safety Basis Requirements
10CFR835	Occupational Radiation Protection
48CFR970.5204-2	Laws, Regulations, and DOE Directives
48CFR.5215-3	Conditional Payment of Fee, Profit, or Incentives
48CFR.5223-1	Integration of Environment, Safety, and Health Into Work Planning and Execution
Various	DOE Manuals, Guides, Handbooks, and Technical Standards Associated with Safety Management

**Table A.2 – Department Safety Directives Coordinated with the Board Staff and Issued in 2003**

*The Department issued 32 new directives that were reviewed by the Board's staff. In addition, another 36 draft safety directives have received Board staff review and are being finalized prior to issuance.*

<b>Order Number</b>	<b>Title</b>	<b>Date Issued</b>
DOE O 425.1C	Startup and Restart of Nuclear Facilities	3/13/03
STD-1160-2003	Occupational Safety Functional Area Qualification Standard	3/26/03
STD-1159-2003	Waste Management Functional Area Qualification Standard	3/26/03
DOE M 413.3-1	Program and Project Management Manual	3/28/03
DOE O 460.1B	Packaging and Transportation Safety	4/4/03
DOE M 474.1-1B	Manual for Control and Accountability of Nuclear Materials	6/13/03
STD-1161-2003	Mechanical Systems Functional Area Qualification Standard	6/26/03
STD-1162-2003	Instrumentation and Control Functional Area Qualification Standard	6/26/03
DOE P 455.1	Use of Risk-Based End States	7/15/03
DOE O 231.1A	Environment, Safety, and Health Reporting	8/19/03
DOE M 231.1-2	Occurrence Reporting and Processing of Operations Information	8/19/03
DOE M 474.1-2A	Nuclear Materials Management and Safeguards System Reporting and Data Submission	8/19/03
DOE G 231.1-2	Occurrence Reporting Casual Analysis Guide	8/20/03
DOE G-231.1-1	Occurrence Reporting and Performance Analysis Guide	8/20/03
DOE N 411.1	Safety Software Quality Assurance Functions, Responsibilities, and Authorities	8/27/03
DOE O 430.1B	Real Property Asset Management	9/24/03
HDBK-1139-2003	Chemical Management Handbook, Volume 3: Chemical User Safety and Health Requirements	9/30/03
STD-1165-2003	Aviation Manager Functional Area Qualification Standard	9/30/03
STD-1013-2003	Configuration Management	10/1/03
HDBK-3012-2003	Guide to Good Practices for Operational Readiness Reviews Team Leader's Guide	10/1/03
STD-1160-2003	Deactivation and Decommissioning Functional Area Qualification	10/10/03
DOE G 441.1-1A	Management and Administration of Radiation Protection Programs Guide for use with Title 10, Code of Federal Regulations, Part 835, Occupational Radiation Protection	10/20/03

**Table A.2 Department Safety Directives Coordinated with the Board Staff and Issued in 2003, Continued**

<b>Order Number</b>	<b>Title</b>	<b>Date Issued</b>
STD-1164-2003	Aviation Safety Officer Functional Area Qualification Standard	10/22/03
HDBK-1163-2003	Integration of Multiple Hazard Analysis Requirements and Activities	11/1/03
DOE O 151.1B	Comprehensive Emergency Management System	11/7/03
STD-1170-2003	Electrical Systems Functional Area Qualification Standard	12/1/03
STD-1171-2003	Safeguards and Security Functional Area Standard	12/1/03
STD-1172-2003	Computer Software Functional Area Qualification Standard	12/1/03
STD-1169-2003	Nuclear Air Cleaning Handbook	12/11/03
STD-1173-2003	Criticality Safety Functional Area Qualification Standard	12/15/03
STD-1175-2003	Senior Technical Safety Manager Functional Area Qualification Standard	12/20/03
DOE M 411.1-1C	Safety Management Functions, Responsibilities, and Authorities Manual	12/31/03

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

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

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

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

**Series 200—Information and Leadership**

**DOE O 210.1, *Chg 2, Performance Indicators and Analysis of Operations Information***<sup>3</sup>

Identifies, monitors, and analyzes data that measures the ES&H performance of facilities, programs, and organizations. The data is to be used to demonstrate improving or deteriorating performance relative to identified goals and, in conjunction with a program to analyze and correlate data, as a means to suggest further improvement through the identification of good practices and lessons learned.

**DOE O 225.1A, *Accident Investigations***

Prescribes requirements and responsibilities related to the Department’s accident investigation program. It provides an organized and proven methodology for effectively and efficiently conducting Type A and Type B accident investigations.

**DOE O 231.1, *Chg 2, Environment, Safety, and Health Reporting***

Ensures collection and reporting of information on environment, safety and health that is required by law or regulation to be collected, or that is essential for evaluating DOE operations and identifying opportunities for improvement needed for planning purposes within the DOE.

**DOE O 232.1A, *Occurrence Reporting and Processing of Operational Information***

Establishes and maintains a system for reporting operations information related to DOE-owned and -leased facilities and processing that information to identify the root causes of Unusual, Off-Normal, and Emergency Occurrences and provide for appropriate corrective action. This system performs timely identification, categorization, notification, and reporting to DOE management of reportable occurrences and evaluation of root causes and corrective actions.

**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 – Department Orders and Directives Descriptions, 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 360.1B, *Federal Employee Training***

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

**Series 400—Work Process**

**DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets***

Provides DOE, including NNSA, project management direction for the acquisition of capital assets that are delivered on schedule, within budget, and fully capable of meeting mission performance and environmental, safety, and health standards.

**DOE O 414.1A, *Quality Assurance***

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

**DOE O 420.1A, *Facility Safety***

Establishes facility safety requirements for DOE and NNSA.

**DOE G 421.1-2, *Implementation Guide for use in Developing Documented Safety Analyses to meet Subpart B of 10 CFR 830***

Supports implementation of Title 10 Code of CFR Part 830, Subpart B, “Safety Basis Requirements,” and provides guidance in meeting the provisions for DSAs defined in that subpart. Describes the analytical methods, documentation requirements, and safety commitments that go into the development of a comprehensive safety basis and DSA.

**DOE G 423.1-1, *Implementation Guide for use in Developing Technical Safety Requirements***

Provides guidance in identifying important safety parameters and developing the content for the Technical Safety Requirements that are requires contractors

**Table A.3 – Department Orders and Directives Descriptions, Continued**

to prepare and submit Technical Safety Requirements for DOE approval (10 CFR 830.205).

***DOE G 424.1-1, Implementation Guide for use in Addressing Unreviewed Safety Question Requirements***

This Guide provides information to assist in the implementation and interpretation of Title 10 CFR Part 830.203, “Unreviewed Safety Question Process,” of the Nuclear Safety Management Rules for applicable nuclear facilities owned or operated by the DOE, including the NNSA. The purpose of the USQ process is to alert DOE of events, conditions, or actions that affect the DOE-approved safety basis of the facility or operation and ensure appropriate DOE line management action.

***DOE O 425.1B, 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 430.1A, Life Cycle 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 451.1B, National Environmental Policy Act Compliance Program***

Establishes DOE internal requirements and responsibilities for implementing

**Table A.3 – Department Orders and Directives Descriptions, Continued**

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

**DOE O 452.1B, *Nuclear Explosive and Weapon Surety Program (NEWS)***

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

**DOE O 452.2B, *Safety of Nuclear Explosive Operations***

Establishes requirements and responsibilities for ensuring the safety of both routine and planned DOE nuclear explosive operations and associated activities and facilities, address the safety of nuclear explosive operations in nuclear explosive safety and ES&H; and address requirements and responsibilities for planned nuclear explosive operations.

**DOE O 460.1A, *Packaging and Transportation Safety***

Prescribes a comprehensive safety program for the DOE and DOE-contractor packaging and transportation operations.

**DOE O 460.2, Chg 1, *Departmental Materials Transportation and Packaging Management***

Establishes DOE policies and requirements to supplement applicable laws, rules, regulations, and other DOE Orders for materials transportation and packaging operations.

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

Establishes requirements and responsibilities for the Transportation Safeguards System packaging and transportation and online transfer of nuclear explosives, nuclear components, Naval nuclear fuel elements, Category 1 and Category II special nuclear materials, special assemblies, and other materials of national security interest.

**DOE O 470.2B, *Independent Oversight and Performance Assurance Program***

Enhances the the Department's safeguards and security, cyber security, and emergency management programs and to provide 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.

### Table A.3 – Department Orders and Directives Descriptions, Continued

#### **DOE O 474.1A, *Control and Accountability of Nuclear Materials***

Prescribes DOE requirements, including those for the NNSA, for nuclear material control and accountability for DOE-owned and -leased facilities and DOE-owned nuclear materials at other facilities that are exempt from licensing by the Nuclear Regulatory Commission.

#### **Series 3700—Personnel Relations and Services**

#### **DOE O 3790.1B, *Federal Employee Occupational Safety and Health Program***

Establishes policy for the implementation and administration processes to ensure places and conditions of employment that are as free as possible from recognized hazards that cause or are likely to cause illness or physical harm. Provides assurance that employees and employee representatives shall have the opportunity to participate in the Federal Employee Occupational Safety and Health Program, and establishes programs in safety and health training for all levels of Federal employees.

#### **Series 4700—Project Management**

#### **DOE O 4700.1, Chg 1, *Project Management System***

Establishes DOE project management system and provides implementation instructions, formats, and procedures, and sets forth the principles and requirements, which govern the development, approval, and execution of DOE's outlay program acquisitions as embodied in the Project Management System.

#### **DOE O 4700.4, *Project Manager Certification***

Establishes certification requirements for DOE project managers at identifiable skill levels and to encourage development of project managers

#### **Series 5400—Environmental Quality and Impact**

#### **DOE O 5400.1, Chg 1, *General Environmental Protection Program***

Establishes environmental protection program requirements, authorities, and responsibilities for DOE operations for assuring compliance with applicable Federal, state, and local environmental protection requirements that are generally established in DOE 5480.1B.

#### **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 conduct 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

**Table A.3 – Department Orders and Directives Descriptions, Continued**

reference ES&H standards; and identifies the sources of the mandatory and reference ES&H standards.

**DOE O 5480.19, Chg 2, *Conduct of Operations Requirements for DOE Facilities***

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

**DOE O 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities***

Establishes requirements for the development and implementation of contractor-administered training programs that provide consistent and effective training for personnel at DOE nuclear facilities and contains the minimum requirements that must be included in training and qualification programs.

**DOE O 5480.30, Chg 1, *Nuclear Reactor Safety Design Criteria***

Establishes requirements for the design of all safety class structures, systems and components of DOE nuclear reactor facilities. Each covered DOE contractor use these criteria in the review and development of existing and proposed directives, plans, or procedures relating to the design of new and existing DOE nuclear reactor facilities.

**Series 5500—Emergency Preparedness**

**DOE O 5530.1A, Chg 1, *Accident Response Group***

Establishes DOE policy for maintaining a continuing capability to provide immediate response to peacetime accidents and significant incidents involving nuclear weapons or radiological nuclear weapon components.

**DOE O 5530.2, *Nuclear Emergency Search Team***

Establishes DOE policy to establish and maintain capabilities for technical response to potential and actual threats and incidents as may be requested by the Lead Federal Agency.

**DOE O 5530.3, Chg 1, *Radiological Assistance Program***

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

**DOE O 5530.4, *Aerial Measuring System***

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

**Table A.3 – Department Orders and Directives Descriptions, Continued**  
**Series 5600—Defense Programs**

**DOE O 5600.1, *Management of the Department of Energy Weapon Program and Weapon Complex***

Provides the steps to assure the effective management of the weapon complex and the weapon program, assure the continuing capability of the weapon complex to carry out its primary mission, to conduct the weapon program, and to encourage the effective use of the capabilities and resources of the weapon complex in support of DOE's nonweapon responsibilities or other programs of national interest, subject to the need to assure that such programs do not adversely impact the weapon program.

**DOE O 5632.1C, *Protection and Control of Safeguards and Security Interests***

Establishes policy, responsibilities, and authorities for the protection and control of safeguards and security interests (e.g., special nuclear material, vital equipment, classified matter, property, facilities, and unclassified irradiated reactor fuel in transit).

**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 N 203.1, *Software Quality Assurance***

Defines requirements and responsibilities for software quality assurance within the DOE to ensure that all software owned or maintained by DOE is subjected to formal quality assurance; all DOE software engineering follows identified standards and best practices throughout the project and product lifecycle; due to the spectrum of requirements, the degree of SQA is risk-based; and personnel are capable of correctly developing, using, and managing software.

**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.

**Table A.3 – Department Orders and Directives Descriptions, Continued**

***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 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 450.1, Environment, Safety, and Health Policy for the Department of Energy Complex***

Delineates guiding principles to promote daily excellence in the protection of the worker, the public, and the environment. Guiding principles include personal commitment, mutual trust, open communications, continuous improvement and full involvement of all interested parties.

***DOE P 450.2A, Identifying, Implementing, and Complying with Environment, Safety, and Health Requirements***

Establishes a policy for an integrated review of safety requirements for ensuring adequate protection for workers, the public and the environment. Establishes requirements for developing appropriate set of ES&H requirements to ensure adequate protection.

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

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

***DOE P 450.4, Safety Management System Policy***

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

***DOE P 450.5, Line Environment, Safety and Health Oversight***

Sets forth the Department's expectations for DOE line management ES&H

**Table A.3 – Department Orders and Directives Descriptions, Continued**

oversight and for the use of contractor self-assessment programs as the cornerstone for this oversight. An effective and efficient oversight program can be realized when a vigorous contractor self-assessment program is in place, similar to those used in successful companies. DOE line oversight and contractor self-assessments together ensure that field elements and contractors are adequately implementing the DOE Safety Management System.

***DOE P 450.6, Secretarial Policy Statement on Environment, Safety, and Health***

Rearticulates general policy for protection of public and worker health and safety, and the environment. Emphasizes implementation of ISM to prevent accidents, openness to feedback on safety concerns, and a goal of “zero tolerance” for serious accidents.

***10CFR820, 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.

***10CFR830, 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.

***10CFR830, 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.

***10CFR835, 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 2003

#### Albuquerque

- On January 13-16, 2003, the Board's staff visited **Albuquerque** to review the planning and adequacy of the W62 NESS.
- On January 27-30, 2003, the Board's staff visited **Albuquerque** to review WR 708 weapons development course.
- On March 31-April 4, 2003, the Board's staff visited **Albuquerque** to review SQA, QA for nuclear energy, and high strain rate loading.
- On April 9-11, 2003, the Board's staff visited **Albuquerque** to observe in the W62 lessons learned meeting.
- On April 14-18, 2003, the Board's staff visited **Albuquerque** to review instrumentation and control and SQA at SNL and LANL.
- On June 16-19, 2003, the Board's staff visited **Albuquerque** to observe the standard 3013 monitoring and surveillance quarterly meeting.
- On November 4-7, 2003, the Board's staff visited **Albuquerque** to observe in the Energy Facility Contractors Group ISM Workshop.

#### Fernald

- On June 2-5, 2003, the Board's staff visited **Fernald** to review the silos and Waste Pits Remedial Action Project safety issues.
- On October 27-28, 2003, the Board's staff visited **Fernald** to review the safety analysis for the Silos project.

#### Hanford

- On January 13-17, 2003, the Board's staff visited **Hanford** to observe the control decision meetings in support of the development of DSA document.
- On March 25-27, 2003 the Board's staff held a video teleconference with the **Hanford** Site to review the WTP Project's safety basis management, trending processes, hydrogen generation and retention, the cesium ion exchange system, the ultrafiltration system, the alternate resin evaluation, the technetium ion exchange system, and the HLW Facility space allocation.
- On April 14-16, 2003, the Board's staff visited **Hanford** to review the Plutonium Finishing Plant material stabilization and facility deactivation planning.
- April 21-23, 2003, the Board's staff visited **Hanford** to review the contractor ORR of the K-Basins sludge water system.
- On May 19-23, 2003, the Board's staff visited **Hanford** to review the tank farms DSA plan, the best basis inventory baseline, and accident scenarios.
- On June 2-6, 2003, the Board's staff visited **Hanford** to review the subject matter expert program, contractor system engineering program, Recommendation 2000-2 activities, and Tank Farms work planning activities.
- On June 9-12, 2003, the Board's staff visited **Hanford** to observe the Hanford Independent Structural Design Peer's review of the pre-

*The Department supported 162 site visits in 2003*

treatment of the WTP and HLW facilities.

- On June 17-19, 2003, the Board visited Hanford to review Department oversight of the contractor activities, the WTP project structural design and construction progress, Tank Farm authorization basis and tank waste retrieval activities, Plutonium Finishing Plant progress of material disposition, the SNF project activities associated with the sludge water system and deactivation planning, and 2000-2 VSS activities.
- On June 16-19, 2003, the Board's staff visited **Hanford** to support the Board's trip.
- On August 11-15, 2003, the Board's staff visited **Hanford** to review instrumentation and control systems at the tank farms and to review software development for the WTP.
- On August 18-21, 2003, the Board's staff visited **Hanford** to review Tank C-106 waste retrieval, and inactive facilities at the Tank Farms.
- On August 26-29, 2003, the Board's staff visited **Hanford** to review the TRU waste retrieval activities and tour the waste burial grounds and the waste characterization, handling and loading facilities.
- On September 15-18, 2003, the Board's staff visited **Hanford** to review the TRU waste retrieval activities and tour the waste burial grounds and the waste characterization, handling and loading facilities.
- On October 16-17, 2003, the Board's staff visited **Hanford** to review the WTP project activities associated with root cause analysis and non-conformance reports, testing, grab sampling, procedure changes, and design specifications.
- On November 3-7, 2003, the Board's staff visited **Hanford** to review the WTP project's HLW design release calculations for base slab and interior and exterior walls.
- On November 11-14, 2003, the Board's staff visited **Hanford** to review the Tank Farms vacuum retrieval systems, including discussions on system configuration, the waste transfer leak-slurry pump, articulated mast system, organic solvent fire, above ground tank failures, flammable gas, accident analyses, technical safety requirements, and criticality safety.
- On December 8-12, 2003, the Board's staff visited **Hanford** to review work planning activities at the tank farms.
- On December 15-19, 2003, the Board's staff visited **Hanford** to review the WTP and Fluor Hanford projects.
- On December 16, 2003, the Board's staff visited **Hanford** to review Fluor Hanford projects including discussions associated with SNF Project, Waste Management, Plutonium Finishing Plant, Surveillance and Maintenance and D&D of canyons and concentration facilities, project management order implementation, Waste Encapsulation and Storage Facility dry storage, the Department and Fluor Hanford corrective actions and oversight, ISM implementation for contractor SNF Project and Waste Management, readiness preparations, and SSOP qualification status.

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

- On June 9-12, 2003, the Board's staff visited the **Idaho National Engineering and Environmental Laboratory** to review INTEC's activities and Glovebox Excavation Method project.
- On June 17-20, 2003, the Board's staff visited **Idaho National Engineering and Environmental Laboratory** to review the automated criticality safety system.
- On July 3, 2003, the Board's staff visited the **Idaho National Engineering and Environmental Laboratory** to observe work at the TRU waste storage area and its retrieval enclosure.
- On August 18-22, 2003, the Board's staff visited the **Idaho National Engineering and Environmental Laboratory** to review drum retrieval operations at the Advanced Mixed Waste Treatment Project, Glovebox Excavation Method Project readiness, and a brief on the Idaho Nuclear Technology and Engineering Center.
- On November 10-14, 2003, the Board's staff visited **Idaho National Engineering and Environmental Laboratory** to review operations at the Idaho Nuclear Technology and Engineering Center Advanced Mixed Waste Treatment Project.

## **Lawrence Livermore National Laboratory**

- On January 6-10, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to review the deactivation readiness of Building 251.
- On January 13-17, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to review the system engineer relative to the 2000-2 implementation plan.
- On February 10-14, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to review safety analyses.
- On March 3-7, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to review the handling of Inactive Materials.
- On April 14-18, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to review the legacy activity at Building 332 and observe in the enhanced surveillance campaign review of the Department's NNSA.
- On May 6-8, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to follow-up on the Board's meeting held last November on ventilation matters.
- On June 16-20, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to review the TRU waste legacy project and WIPP's mobile vendor.
- On July 7-10, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to observe building 251 readiness assessment.
- On September 29-October 3, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to review readiness assessment closure at Building 251.
- On October 20-24, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to review work planning and worker protection.

- On November 17-21, 2003, the Board's staff visited **Lawrence Livermore National Laboratory** to review WIPP's Mobile Vendor and Building 251 activities.

### **Los Alamos National Laboratory**

- On January 6-10, 2003, the Board's staff visited **Los Alamos National Laboratory** to observe the DynEx Blue Ribbon Panel meeting.
- On January 27-31, 2003, the Board's staff visited **Los Alamos National Laboratory** to attend the Energy Facility Contractors Group's safety basis workshop, to review ventilation at Technical Areas 48 and 55, and to review staffing of the AB group of the LASO.
- On February 18-21, 2003, the Board's staff visited **Los Alamos National Laboratory** to observe the Preliminary Design Review for the DynEx Project Dual Axis Containment System Containment Vessel.
- On March 17-20, 2003, the Board's staff visited **Los Alamos National Laboratory** to review materials stabilization and disposition activities for excess materials covered under Recommendation 2000-1.
- On March 31-April 4, 2003, the Board's staff visited **Los Alamos National Laboratory** to review the safety aspects of work planning and work performance.
- On April 9-11, 2003, the Board's staff visited **Los Alamos National Laboratory** to observe the Burning/Rubble Pit meeting.
- On June 2-6, 2003, the Board's staff visited **Los Alamos National Laboratory** to review the electrical and lightning protection systems.
- On June 23-26, 2003, the Board's staff visited **Los Alamos National Laboratory** to review waste management and the D&D activities.
- On July 7-10, 2003, the Board's staff visited **Los Alamos National Laboratory** to observe the Blue Ribbon Panel Review of the DynEx.
- On August 4-8, 2003, the Board's staff visited **Los Alamos National Laboratory** to review fire protection.
- On September 22-25, 2003, the Board's staff visited **Los Alamos National Laboratory** to review DynEx safety vessel final design.
- On September 29-October 3, 2003, the Board's staff visited **Los Alamos National Laboratory** to review Integrated Hazard Analysis.
- On October 22-24, 2003, the Board's staff visited **Los Alamos National Laboratory** to review DynEx vessel design.
- On October 28-31, 2003, the Board's staff visited **Los Alamos National Laboratory** to review ground motion.
- On December 3-5, 2003, the Board's staff visited **Los Alamos National Laboratory** to review Independent Safety Vessel Design.
- On December 9-12, 2003, the Board's staff visited **Los Alamos National Laboratory** to review Plutonium 238 activities, 2000-1 implementation plan activities, and inactive materials activities.
- On December 15-17, 2003, the Board's staff visited **Los Alamos National Laboratory** to review independent safety vessel design.

## Mound

- On July 14-17, 2003, the Board's staff visited **Mound** to review the work authorization program, Department and contractor health and safety oversight programs, tritium facilities D&D and the Old Cave Project.

## Nevada

- On January 20-24, 2003, the Board's staff visited **Nevada Test Site** to review Tri-Lab work smart standards set.
- On February 12-14, 2003, the Board's staff visited **Nevada Test Site** to observe a committee meeting on ground motion and seismic evaluation at the NNSA Support Facility.
- On March 5-7, 2003, the Board's staff visited **Nevada Site Office** to observe the committee meeting on ground motion and seismic evaluation.
- On March 10-14, 2003, the Board's staff visited **Nevada Test Site** to review the electrical systems and lightning protection and detections systems.
- On March 17-20, 2003, the Board's staff visited **Nevada Site Office** to review the NNSA oversight and contractor assurance activities.
- On March 25-28, 2003, the Board's staff visited **Nevada Site Office** for a planning meeting and to review the inactive actinides program.
- On March 31-April 4, 2003, the Board's staff visited **Nevada** to review the Criticality Safety Five-Year Program.
- On April 7-11, 2003, the Board's staff visited the **Nevada Test Site** to

review the readiness assessment and readiness for start-up of the Joint Actinide Shock Physics Experimental Research facility.

- On May 13-15, 2003, the Board's staff traveled to **Las Vegas** to participate in the Annual Facility Representatives Workshop and observe the FTCP Panel's face-to-face meeting.
- On June 9-13, 2003, the Board's staff visited the **Nevada Test Site** to review U1a, the Device Assembly Facility, and subcritical experiments.
- On July 14-18, 2003, the Board's staff visited the **Nevada Test Site** to observe a conference on NNSA oversight and contractor assurance.
- On July 21-25, 2003, the Board's staff visited the **Nevada Test Site** to observe and review the NNSA/NSO ORR for the Area 5 Radiological Waste Management Complex.
- On August 4-8, 2003, the Board's staff visited the **Nevada Test Site** to review damaged nuclear weapons activities.
- On August 18-20, 2003, the Board's staff visited the **Nevada Test Site** to review safety basis for G tunnel and damaged nuclear weapons disposition activities.
- On September 30-October 3, 2003, the Board's staff visited the **Nevada Test Site** to review test readiness facilities and activities and the NNSA's containment evaluation panel.
- On October 28-29, 2003, the Board's staff visited **Las Vegas** to observe the National Spent Nuclear Fuel Program Strategy Meeting.
- On October 6-9, 2003, the Board's staff visited the **Nevada Test Site** to

review hoisting and rigging program and its activities.

- On November 12-14, 2003, the Board's staff visited the **Nevada Test Site** to observe the QA working group.
- On November 17-20, 2003, the Board's staff visited the **Nevada Test Site** to review test readiness and NNSA's Nevada Support Facility.
- On December 1-4, 2003, the Board's staff visited the **Nevada Test Site** to review safety evaluation activities for the ARMANDO subcritical experiment and disposition activities for damaged weapons.

### **Oak Ridge**

- On January 22-24, 2003, the Board's staff visited **Oak Ridge** to observe the surrogate supernatant processing at the Melton Valley TRU Waste Project.
- On January 27-29, 2003, the Board's staff visited **Oak Ridge** to observe the surrogate supernatant processing at the Melton Valley TRU Waste Project.
- On March 20-21, 2003, the Board's staff visited **Oak Ridge** to review surrogate supernatant processing at the Melton Valley TRU Waste Project.
- On March 24, 2003, the Board's staff visited **Oak Ridge** to review the resumed surrogate supernatant processing at the Melton Valley TRU Waste Project.
- On April 8-10, 2003, the Board's staff visited **Oak Ridge** to review the resumed surrogate supernatant processing at the Melton Valley TRU Waste Project.

- On April 15-17, 2003, the Board's staff visited **Oak Ridge** to review the electrical panel explosion events and dried Supernatant discharge valve problems at the Melton Valley TRU Waste Project.
- On July 14-16, 2003, the Board's staff visited **Oak Ridge** to review Building 3019 DSA.
- On August 20-21, 2003, the Board's staff visited **Oak Ridge** to review corrective actions progress from the failed corporate ORR at Foster-Wheeler Environmental Corporation's Melton Valley TRU waste project.
- On November 3-4, 2003, the Board's staff visited **Oak Ridge** to review line management assessment of readiness for the facility startup of the Melton Valley TRU waste project.
- On December 8-11, 2003, the Board's staff visited **Oak Ridge** to observe the Department's ORR for the Melton Valley TRU waste project facility startup.

### **Pantex**

- On January 7-9, 2003, the Board's staff visited **Pantex** to review the Pantex Plant training program and to review progress towards addressing previously identified issues related to procedural adherence and conduct of operations.
- On February 3-20, 2003, the Board's staff visited **Pantex** to observe the NNSA Readiness Assessment and Nuclear Explosive Safety Study for restart of the W62 Step 2 Disassembly and Inspection process.
- On March 11-13, 2003, the Board's staff visited **Pantex** to observe operations involving the Move Right system and to review the SQA program.

- On May 7, 2003, the Board and Board staff visited **Pantex** for briefings on seamless safety programs, training, procedural adherence, design agency support, and SQA. The Board also observed operations and tooling for several weapon programs.
- On May 20-22, 2003, the Board's representative visited **Pantex** to observe startup activities for the seamless safety tooling for several weapon programs.
- On May 27-29, 2003, the Board's staff visited **Pantex** to review hoisting and rigging operations in nuclear facilities, and the nuclear explosive safety review of W88 seamless safety tooling changes.
- On June 3-4, 2003, the Board's staff visited **Pantex** to review the inactive actinide materials and on-site staging of nuclear materials.
- On August 25-28, 2003, the Board's staff visited **Pantex** to review the nuclear explosive safety study for W88 accelerated bay tooling.
- On September 9-11, 2003, the Board's staff visited **Pantex** to review how safety is integrated into the work planning process.
- On October 14-16, 2003, the Board's staff visited **Pantex** to review the seamless safety project for the W87, to observe W87 and W62 operations, and to review the use and development of weapon response information.
- On October 21-23, 2003, the Board's staff visited **Pantex** to review resolution approaches for various issues, to observe operations, and to review the site's fire protection program.
- On October 27-30, 2003, the Board's staff visited **Pantex** to review plans for improving the SQA program.
- On November 17-21, 2003, the Board's staff visited **Pantex** to review actions planned to address the Board's concerns with Building 12-64 seismic and roof stability, and to observe NNSA nuclear explosive safety study for the W78 program.
- On December 10-11, 2003, the Board and its staff visited **Pantex** to review seamless safety programs, training, procedural adherence, design agency support, and SQA. The Board also observed operations and tooling for several weapon programs.

### Rocky Flats

- On March 3-7, 2003, the Board's staff visited **Rocky Flats** to review the safety and criticality analysis of the Pit Disassembly and Conversion Facility.
- On July 7-11, 2003, the Board's staff visited **Rocky Flats** to review the Building 371 fire and the damaged HEPA filters incident.
- On July 28-August 1, 2003, the Board's staff visited **Rocky Flats Environmental Technology Site** to review the Building 371 fire.
- On September 8-11, 2003, the Board's staff visited the **Rocky Flats Environmental Technology Site** to review conduct of operations and the combustible control program at Building 371.
- On November 4-6, 2003, the Board's staff visited **Denver** to review the ventilation design for the Pit Conversion and Disassembly Facility at the offices of the Washington Group International.

- On October 20-24, 2003, the Board's staff visited the **Rocky Flats Environmental Technology Site** to review conduct of operations and work implementation.
- On February 24-26, 2003, the Board's staff visited **Savannah River Site** to monitor implementation of Standard 3013 and to observe in the surveillance quarterly meeting.

### **Sandia National Laboratory**

- On January 21-23, 2003, the Board's staff visited **Sandia National Laboratory** to review lightning protection.
- On March 13-14, 2003, the Board's staff visited **Sandia National Laboratory** to review the draft 2002-2 implementation plan.
- On May 27-30, 2003, the Board's staff visited **Sandia National Laboratory** to review the weapons response generation processes and lab support of Pantex.
- On August 5-8, 2003, the Board's staff visited **Sandia National Laboratory** to review nuclear materials management.
- On August 18-22, 2003, the Board's staff visited **Sandia National Laboratory** to support the visit by a Board member.
- On September 8-12, 2003, the Board's staff visited **Sandia National Laboratory** to observe a meeting on nuclear materials management.
- On March 10-13, 2003, the Board's staff visited **Savannah River Site** to review the hoisting and rigging program.
- On March 17-21, 2003, the Board's staff visited **Savannah River Site** to review the K-Area Materials Storage facility, Building 235-F, and the F Canyon.
- On March 25-27, 2003, the Board's staff visited **Savannah River Site** to review the accelerated HLW cleanup.
- April 21-23, 2003, the Board's staff visited **Savannah River Site** to review the structural adequacy of the K-Area Materials Storage facilities and the construction and components of the tritium extraction facility.
- On April 28-May 2, 2003, the Board's staff visited **Savannah River Site** to observe the meeting on the pit disassembly and conversion/waste storage building design, review the K-Area Materials Storage Building 235F, and the FB-Line ventilation, and worker protection and maintenance activities for plutonium storage.

### **Savannah River Site**

- On January 14-16, 2003, the Board's staff visited **Savannah River Site** to review QA at the Tritium Extraction Facility.
- On February 18-20, 2003, the Board's staff visited **Savannah River Site** to review the accelerated HLW cleanup and the new FB-line activities.
- On May 5-9, 2003, the Board's staff visited **Savannah River Site** to review the electrical, fire protection and detection system for K-Area Materials Storage Facility, F-Line, and Building 235F.
- On May 19-21, 2003, the Board's staff visited **Savannah River Site** to support the Board's visit.
- On May 27-30, 2003, the Board's staff visited **Savannah River Site** to review the instrumentation and

control and structural adequacy for the K-Area Materials Storage Facility, FB-Line, and Building 235-F.

- On June 25-27, 2003, the Board's staff visited **Savannah River Site** to review surveillance activities for plutonium storage in the K-Area Materials Storage facility.
- On July 28-29, 2003, the Board's staff visited **Savannah River Site** to review implementation of the 2000-1 implementation plan.
- On September 15-17, 2003, the Board's staff visited **Savannah River Site** to review implementation of the DSA at SRS's HLW tank farm.
- On October 7, 2003, the Board's staff visited **Savannah River Site** to review salt processing activities.
- On October 21-24, 2003, the Board's staff visited the **Savannah River Site** to review the electrical systems for the HLW facilities.
- On October 27-29, 2003, the Board's staff visited **Savannah River Site** to support the Board's site visit and to review the ORR for the tritium consolidation project.
- On November 3-6, 2003, the Board's staff visited **Savannah River Site** to review HLW tank farm siphon events and Electrical Systems at HLW facilities and tank farms.
- On November 17-21, 2003 the Board's staff visited **Savannah River Site** to review work planning and worker protection.
- On December 1-5, 2003, the Board's staff visited **Savannah River Site** to review the readiness assessment on the actinide removal process for Building 512-S.

- On December 8-12, 2003, the Board's staff visited **Savannah River Site** to review the Tritium Extraction Facility and HEPA filters.

### **Waste Isolation Pilot Plant**

- On May 5-9, 2003, the Board's staff visited the **Waste Isolation Pilot Plant** to review the ongoing contract-handled TRU waste disposal operations and the planned remote-handled TRU waste disposal operations.
- On September 16-18, 2003, the Board's staff visited the **Waste Isolation Pilot Plant** to support the Board's visit.

### **Y-12**

- On January 27-31, 2003, the Board's staff visited **Y-12** to review the NNSA's ORR for Enriched Uranium Operations wet chemistry restart and to review the accelerated access authorization program.
- On February 3-6, 2003, the Board's staff visited **Y-12** to review the Highly Enriched Uranium Materials Facility and electrical/lightning protection design.
- On March 4-5, 2003, the Board's staff visited **Y-12** to review the Highly Enriched Uranium Materials Facility and Preliminary DSA related issues.
- On March 17-21, 2003, the Board's staff visited **Y-12** for the worker protection review.
- On April 15-18, 2003, the Board's staff visited to **Y-12** Site Office to review Title I and the Preliminary DSA.
- On May 5-7, 2003, the Board's staff visited **Y-12** to observe the readiness assessment workshop.

- On May 19-21, 2003, the Board's staff visited **Y-12** to review title 1, the Preliminary DSA, and the Technical Exchange.
- On May 22-23, 2003, the Board's staff visited **Y-12** to review the Criticality Safety Analysis storage and operational safety.
- On June 9-13, 2003, the Board's staff visited **Y-12** to review the Enriched Uranium Operations Wet Chemistry activities and the operational safety requirements of building 9212.
- On June 23-27, 2003, the Board's staff visited **Y-12** to review implementation of the operational safety requirements at Building 9212.
- On July 28-30, 2003, the Board's staff visited **Y-12** to support the Board on its visit.
- On August 26-29, 2003, the Board's staff visited **Y-12** to review Enriched Uranium Operations wet chemical activities.
- On September 1-4, 2003, the Board's staff visited **Y-12** to observe the Enriched Uranium Operations wet chemistry activities.
- On October 27-29, 2003, the Board's staff visited **Y-12** to review hydrogen fluoride safety.
- On November 11-14, 2003, the Board's staff visited **Y-12** to review R&D safety in the development division, corrective actions from the Saltless Direct Oxide Reduction accident, and Safety Basis.
- On November 17-20, 2003, the Board's staff visited **Y-12** to review the design for the Highly Enriched Uranium Materials Facility.
- On December 15-19, 2003, the Board's staff visited to review nuclear materials activities and the oxide conversion facility.

## APPENDIX C

### KEY CORRESPONDENCE BETWEEN THE DEPARTMENT AND THE BOARD IN 2003

#### From the Board to the Department

##### January

- On January 9, 2003, the Board sent a letter to the Department with a 45-day reporting requirement regarding the HEPA filter testing protocols and procedures.
- On January 9, 2003, the Board sent a letter to the Department regarding the Department's QA Improvement Plan for Defense Nuclear Facilities.
- On January 21, 2003, the Board sent a letter to the Department enclosing a staff issue report on Ground Motion Criteria for the Hanford WTP.
- On January 24, 2003, the Board sent a letter to the Department with a 30-day reporting requirement regarding safety-related action plans defunded by the LANL site-wide fire alarm system.
- On January 24, 2003, the Board sent a letter to the Department regarding review of the Department's Orders.
- On January 24, 2003, the Board sent a letter to the Department regarding six NNSA policy letters.

##### February

- On February 6, 2003, the Board sent a letter to the Department with a 15-day reporting requirement regarding the proper sealing of the Multi-Canister Overpack at the Hanford Site.
- On February 14, 2003, the Board sent a letter to the Department with

(1) a 30-day reporting requirement regarding use of aluminum parts heat-treated by Temperform USA, and (2) a 60-day reporting requirement regarding corrective actions for addressing future issues involving S/CI.

- On February 21, 2003, the Board sent a letter to the Department forwarding its Thirteenth Annual Report to Congress on its activities relating to the Department of Energy.
- On February 28, 2003, the Board sent a letter to the Department regarding proposed changes to existing Department Safety Orders and other standards.

##### March

- On March 7, 2003, the Board sent a letter to the Department forwarding a staff issue report on electrical distribution and instrumentation and control systems for the WTP at the Hanford Site.
- On March 7, 2003, the Board sent a letter to the Department with a 90-day reporting requirement regarding flood mitigation at the LANL following the Cerro Grande Wildfire.
- On March 7, 2003, the Board sent a letter to the Department with a 30-day reporting requirement regarding Advanced Mixed Waste Treatment Project at INEEL.

*The Department received 81 letters from the Board in 2003.*

- On March 7, 2003, the Board sent a letter to the Department forwarding a staff report reviewing ORRs for the startup of K-Basin Fuel Transfer System.
- On March 18, 2003, the Board sent a letter to the Department forwarding a staff report on the implementation of fire protection controls at the Pantex Plant.
- On March 20, 2003, the Board sent a letter to the Department with a 60-day reporting requirement regarding mission and funding level of the 94-1 R&D Program relative to the 94-1, *Improved Schedule for Remediation*, and 2000-1, *Stabilization and Storage of Nuclear Material*, implementation plans.
- On March 25, 2003, the Board sent a letter to the Department with a 30-day reporting requirement regarding SQA at Pantex.
- On March 27, 2003, the Board sent a letter to the Department regarding S/CI in safety-related applications and items heat-treated by Temperform USA.
- On March 31, 2003, the Board sent a letter to the Department regarding fire safety improvement projects at LANL.

#### April

- On April 4, 2003, the Board sent a letter to the Department regarding K-Basin sludge disposition.
- On April 4, 2003, the Board sent a letter to the Department with a 60-day reporting requirement regarding conduct of operations and training programs at Pantex.
- On April 10, 2003, the Board sent a letter to the Department with a 60-

day reporting requirement regarding hazard assessment and control at LLNL.

- On April 10, 2003, the Board sent a letter to the Department accepting implementation plan for 2002-1, *Quality Assurance for Safety-Related Software*.
- On April 10, 2003, the Board sent a letter to the Department with a 60-day reporting requirement regarding sludge removal from the Hanford K-Basins relative to the implementation plan 2000-1, *Stabilization and Storage of Nuclear Material*.
- On April 25, 2003, the Board sent a letter to the Department granting an additional 30-day extension to complete verifying that Temperform parts are not in safety applications and to complete outlining adequate corrective actions for disposition of future S/CI issues.

#### May

- On May 12, 2003, the Board sent a letter to the Department regarding the development and design activities for the DynEx Project at LANL.
- On May 13, 2003, the Board sent a letter to the Department regarding DSA and Criticality Safety Strategy for Pit Disassembly and Conversion Facility.
- On May 28, 2003, the Board sent a letter to the Department congratulating Mr. Jerold Lipsky as the 2002 Facility Representative of the Year and recognizing the contributions of the Facility Representatives Program.
- On May 29, 2003, the Board sent a letter to the Department regarding ORP's proposed changes to the WTP Safety Requirements Document.

## June

- On June 6, 2003, the Board sent a letter to the Department regarding exchanging plutonium material under International Atomic Energy Agency safeguards at Hanford with non- International Atomic Energy Agency plutonium at SRS.
- On June 12, 2003, the Board sent a letter to the Department regarding Quality Assurance Improvement Plan Commitment 1.1.2 to review Phase I and Phase II assessments relative to implementation plan 2000-2, *Configuration Management, Vital Safety Systems*.
- On June 12, 2003, the Board sent a letter to the Department with a six-month reporting requirement for a briefing on the status of various items related to completing the Department's 2000-2 implementation plan, *Configuration Management, Vital Safety Systems*.
- On June 12, 2003, the Board sent a letter to the Department with a 60-day reporting requirement regarding safety bases of plutonium storage and support facilities at SRS.
- On June 24, 2003, the Board sent a letter to Mr. Jeffrey L. Roberson commending him on the occasion of his departure from the NNSA, Office of Defense Programs.

## July

- On July 1, 2003, the Board sent a letter to the Department regarding review of electrical and lightning protection and detection systems for facilities at the NTS.
- On July 9, 2003, the Board sent a letter to the Department acknowledging receipt of an acceptable Department

implementation plan for recommendation 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*.

- On July 9, 2003, the Board sent a letter to the Department with a reporting requirement for a briefing as soon as possible on the accelerated implementation of SS-21 tooling for W88 bay operations and W78 nuclear explosive operations.
- On July 9, 2003, the Board sent a letter to the Department with a reporting requirement for the NNSA to provide a report, no later than September 2004, regarding safety-class instrumentation and control systems for the critical assemblies at Technical Area 18 at LANL.
- On July 9, 2003, the Board sent a letter to the Department with a 30-day reporting requirement regarding training and qualification programs for NNSA site office personnel.
- On July 9, 2003, the Board sent a letter to the Department with a 90-day reporting requirement regarding recommendations by the NNSA's Senior Technical Advisory Panel on NESS and readiness reviews.
- On July 10, 2003, the Board sent a letter to the Department with a 120-day reporting requirement regarding hoisting and rigging operations at Pantex.
- On July 10, 2003, the Board sent a letter to the Department regarding electrical and lightning protection systems for K-Area Material Storage Facility, FB-Line, and Building 235-F at SRS.
- On July 14, 2003, the Board sent a letter to the Department acknowledging receipt of an acceptable implementation plan for

recommendation 2002-3, *Design, Implementation, and Maintenance of Administrative Controls*.

- On July 31, 2003, the Board sent a letter to the Department with a 15-day reporting requirement regarding fire at Building 371 at the RFETS.

#### August

- On August 1, 2003, the Board sent a letter to the Department requesting a briefing regarding resolution of the development of safety basis controls and startup activities for the new aqueous recovery line for plutonium-238 scrap at LANL.
- On August 1, 2003, the Board sent an announcement of a Public Meeting regarding the Department's oversight, scheduled for September 10, 2003 at 9:00 A.M. at the Board's Public Hearing Room.
- On August 7, 2003, the Board sent a letter to the Department regarding work planning and practices at LANL.
- On August 7, 2003, the Board sent a letter to the Department with an annual reporting requirement on the status of the Department's Nuclear Criticality Safety Program and the closure of Recommendation 97-2.
- On August 7, 2003, the Board sent a letter to the Department with a 90-day reporting requirement on improving operational safety at Fernald.
- On August 7, 2003, the Board sent a letter to the Department with a 30-day reporting requirement regarding electrical safety programs relative to the *DOE Handbook on Electrical Safety*.
- On August 8, 2003, the Board sent a letter to the Department regarding

status of implementation plan 2000-2, *Configuration Management, Vital Safety Systems*, at the Hanford site.

- On August 8, 2003, the Board sent a letter to the Department with a 30-day reporting requirement regarding electrical safety programs in relation to the *DOE Handbook on Electrical Safety*.
- On August 14, 2003, the Board sent a letter to the Department requesting additional information about HEPA filters testing.
- On August 19, 2003, the Board sent a letter with a 30-day reporting requirement regarding lightning protection at the Weapons Engineering Tritium Facility and safety system functional classification issues at the Chemistry and Metallurgy Research at LANL.
- On August 25, 2003, the Board sent a letter to the Department regarding requirements and guidance associated with administrative controls in the defense nuclear complex in relation to implementation plan 2002-3, *Design, Implementation, and Maintenance of Administrative Controls*.

#### September

- On September 24, 2003, the Board sent an announcement of a series of Public Meetings regarding the Department of Energy's oversight scheduled for October 21 and October 23, 2003.

#### October

- On October 10, 2003, the Board sent a letter to the Department regarding Conceptual Design Report for Building 12-64 Production Bays Upgrade Project at Pantex.

- On October 16, 2003, the Board sent a letter to the Department regarding Operational Safety Requirements for Building 9212 Enriched Uranium Operations at Y-12.

### November

- On November 5, 2003, the Board sent a letter to the Department regarding safety issues at two LANL facilities.
- On November 7, 2003, the Board sent a letter to the Department with a 90-day reporting requirement regarding TRU waste retrieval at the Hanford Site.
- On November 7, 2003, the Board announced a series of Public Meetings regarding the Department of Energy's oversight scheduled for December 3 and 4, 2003 at 9:00 A.M. at the Board headquarters.
- On November 13, 2003, the Board sent a letter to the Department providing Technical Report DNFSB/TECH-33, *Control of Red Oil Explosions in Defense Nuclear Facilities*.
- On November 24, 2003, the Board announced a Public Meeting regarding the Department of Energy's oversight scheduled on December 16, 2003 at 9 A.M. at the Board headquarters.

### December

- On December 1, 2003, the Board sent a letter to the Department forwarding a Report to Congress regarding Plutonium Storage at the SRS.
- On December 2, 2003, the Board sent a letter to the Department with a 60-day reporting requirement for a CAP regarding the glovebox fire at

the RFETS.

- On December 8, 2003, the Board sent a letter to the Department with a reporting requirement for the NNSA to provide a plan and associated schedule for revising directives and procedures reflecting roles and responsibilities outlined in the NNSA headquarters and site office manuals
- On December 8, 2003, the Board sent a letter to the Department regarding expectations for Commitment 4.2.2, interim guidance for administrative controls, in implementation plan 2002-3, Requirements for the Design, Implementation, and Maintenance of Administrative Controls.
- On December 31, 2003, the Board sent a letter to the Department forwarding a staff report on the Oxide Conversion Facility in Building 9212 at Y-12.

## From the Department to the Board

### January

- On January 3, 2003, the Secretary sent a letter to the Board enclosing an Action Plan to address recommendations of the Department's Commission on Fire Safety and Preparedness.
- On January 8, 2003, the Secretary sent a letter to the Board accepting Board recommendation 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*.
- On January 14, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board forwarding Department memorandum on Submittal of Annual Integrated Safety Management System Declarations relative to the Quality Assurance Improvement Plan for Defense Nuclear Facilities.
- On January 15, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of two LANL's commitments relative to the 2000-1, *Stabilization and Storage of Nuclear Material*, implementation plan and proposing closure of these commitments.
- On January 15, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding continuous air monitor and radiation alarm monitor systems at the Pantex Plant relative to Department STD-3009-94.
- On January 17, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding deficiencies in

safety and design basis of the Hanford WTP.

- On January 21, 2003, the Chief Operating Officer of Environmental Management sent a letter to the Board regarding commitments 2.9, 3.4, and 3.7 in the implementation plan 2001-1, *High-Level Waste Management at the Savannah River Site*.
- On January 29, 2003, the Assistant Deputy Administrator for Military Application and Stockpile Operations of Defense Programs sent a letter to the Board forwarding the fourth quarter report on implementation plan, 98-2 *Safety Management at the Pantex Plant*, for fiscal year 2002.
- On January 31, 2003, the Secretary sent a letter to the Board accepting Board recommendation 2002-3, *Design, Implementation, and Maintenance of Administrative Controls*.

### February

- On February 3, 2003, the Chairman of the Federal Technical Capability Panel sent a letter to the Board with the status on the committed updated listing of Department personnel providing oversight of safety systems.
- On February 4, 2003, the Assistant Deputy Administrator for Research, Development, and Simulation of Defense Programs sent a letter to the Board forwarding the first quarterly report for fiscal year 2003 relative to implementation plan 97-2 and the publication of Department STD-1158-2002, *Self-Assessment for DOE Contractor Criticality Safety Programs*, completing all Technical Report 29 commitments.

- On February 5, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding completion of three material stabilization commitments by RL in the implementation plan 2000-1, *Stabilization and Storage of Nuclear Material*.
- On February 7, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board forwarding a report on the Management of Inactive Actinide Materials at the NNSA Sites.
- On February 14, 2003, the Acting Administrator for the National Nuclear Security Administration sent a letter to the Board regarding Board review of NNSA Policy Letters.
- On February 14, 2003, the Under Secretary sent a letter to the Board regarding Board's reviews on the Department's Orders.
- On February 20, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding Highly Enriched Uranium Materials Facility at Y-12.
- On February 25, 2003, the Departmental Representative sent a letter to the Board forwarding its Annual Report to Congress for Calendar Year 2002, *Activities Relating to the Defense Nuclear Facilities Safety Board*.
- On February 28, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board responding to Board reporting requirement regarding Multi-Canister Overpacks at the Hanford SNF Project.

### March

- On March 3, 2003, the Under Secretary sent a letter to the Board regarding proposed changes to existing Department safety orders and other standards.
- On March 3, 2003, the Administrator for the National Nuclear Security Administration sent a letter to the Board regarding safety-related action plans defunded by the Department at LANL.
- On March 6, 2003, the Secretary sent a letter to the Board regarding WTP at Hanford.
- On March 7, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding completed commitments 202, 210, and 213 of Revision 2 of implementation plan 2000-1, *Stabilization and Storage of Nuclear Material*.
- On March 11, 2003, the Secretary sent a letter to the Board regarding DSA.
- On March 13, 2003, the Secretary sent a letter to the Board forwarding implementation plan 2002-1, *Quality Assurance for Safety-Related Software*.
- On March 18, 2003, the Assistant Secretary for Environmental, Safety and Health sent a letter to the Board regarding suspect/counterfeit items in safety-related applications and items heat-treated by Temperform USA.
- On March 24, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board informing the Board of the completion of stabilization and packaging of polycubes at Hanford, relative to Revision 2 of the

***The Department provided 141 letters to the Board in 2003***

implementation plan 2000-1, *Stabilization and Storage of Nuclear Material*.

- On March 28, 2003, the Chairman of the Federal Technical Capability Panel sent a letter to the Board providing an updated listing of Department personnel serving as subject matter experts for safety system oversight.

#### April

- On April 1, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding Highly Enriched Uranium Materials Facility at Y-12.
- On April 7, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding NNSA plans for institutionalizing safety system assessments relative to the implementation plan 2000-2, *Configuration Management Vital Safety Systems*.
- On April 9, 2003, the Chief Operating Officer of the Office of Environmental Management sent a letter to the Board regarding vapor space corrosion in HLW waste tanks.
- On April 11, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding status of two SRS commitments, packaging of plutonium metal and disposition of pre-existing high-enriched uranium solutions, in Revision 2 of the implementation plan 2000-1, *Prioritization for Stabilizing Nuclear Materials*.
- On April 14, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding disposition of highly

enriched uranium solutions at the SRS.

- On April 21, 2003, the Secretary sent a letter to the Board regarding S/CI in safety-related or mission-sensitive applications.
- On April 21, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding readiness preparations and readiness review process at Hanford.
- On April 24, 2003, the Assistant Deputy Administrator for Military Application and Stockpile Operations of the Defense Programs sent a letter forwarding the quarterly report for implementation plan 98-2, *Safety Management at the Pantex Plant*, for the period January through March 2003
- On April 28, 2003, the Chief Operating Officer of the Office of Environmental Management sent a letter to the Board regarding delay in completing two commitments, transfer of low curie salt to Saltstone facility and return of Tank 50 to service, relative to implementation plan 2001-1.
- On April 28, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board providing status on a requested report on actions being taken to improve SQA for Integrated Electronic Procedures and the Move-Right system.
- On April 28, 2003, the Chief Operating Officer of the Office of Environmental Management sent a letter to the Board forwarding Revision 1 of the SRS HLW Tank In-Service Inspection Program.
- On April 30, 2003, the Secretary sent a letter to the Board notifying the Board that the Department will

require up to an additional 45 days to finalize and transmit the implementation plan for recommendation 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*.

## May

- On May 2, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board providing status on institutionalizing the periodic safety system assessments relative to the implementation plan 2000-2, *Configuration Management, Vital Safety Systems*.
- On May 30, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding interim storage of K-Basin sludge at the Hanford 221-T building.
- On May 30, 2003, the Assistant Deputy Administrator for Research, Development, and Simulation of the Defense Programs sent a letter to the Board forwarding the Quarterly Status Report for the second quarter of fiscal year 2003 relative to the 97-2 implementation plan.

## June

- On June 4, 2003, the Secretary sent a letter to the Board forwarding implementation plan 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*.
- On June 5, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding training deficiencies at Pantex.
- On June 10, 2003, the Assistant Secretary for Environmental Management sent a letter to the

Board regarding Sludge Removal at Hanford.

- On June 23, 2003, the Administrator for the National Nuclear Security Administration sent a letter to the Board regarding safety bases for LLNL's defense nuclear facilities.
- On June 24, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding completed action items on the Quality Assurance Improvement Plan.
- On June 25, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding completion of commitment 3.7, *Ensure that DOE and Contractor Annual Updates to ISMS and QA Program Description are Integrated and Occur*, on Quality Assurance Improvement Plan.
- On June 26, 2003, the Secretary sent a letter to the Board forwarding the Department's implementation plan 2002-3, *Design, Implementation, and Maintenance of Administrative Controls*.
- On June 30, 2003, the Senior Advisor for the National Nuclear Security Administration's Environment, Safety and Health sent a letter to the Board providing status update on the revision and re-issuance of the *Nuclear Air Cleaning Handbook* relative to implementation plan 2000-2, *Configuration Management, Vital Safety Systems*.
- On June 30, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board reporting completion of Quality Assurance Improvement Plan deliverable 1.3.4, which requires EM to conduct oversight reviews on schedule and track performance for

Headquarters and Field/Operations offices.

- On June 30, 2003, the Director of the Office of Nuclear Defense Programs Weapons Stockpile sent a letter to the Board reporting completion of commitment 4.4.1 in implementation plan 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*.

## July

- On July 1, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board reporting completion of commitment 3.6 of the Department's Quality Assurance Improvement Plan, which requires EM to establish and implement contract change control process, including establishing performance measures and incentives.
- On July 1, 2003, the Assistant Deputy Administrator for Military Application and Stockpile Operations Defense Programs sent a letter to the Board providing status of commitment 4.3.3, *Develop site-wide TSR controls for on-site transportation of nuclear explosives*, in the Department's 98-2 implementation plan.
- On July 8, 2003, the Director of the Office of Nuclear Defense Program Weapons Stockpile sent a letter to the Board reporting completion of commitment 4.1.1 in the Department's implementation plan 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*, with the issuance of a Secretarial Memorandum on the priority of the Nuclear Weapons Program at the National Laboratories.
- On July 10, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board providing status of the stabilization and packaging of excess plutonium and uranium at LLNL in relation to the Department's 2000-1, *Stabilization and Storage of Nuclear Material*, implementation plan.
- On July 11, 2003, the Secretary sent a letter to the Board regarding implementation of Department protocols for testing HEPA filters at defense nuclear facilities.
- On July 14, 2003, the Chief Operating Officer of the Office of Environmental Management sent a letter to the Board forwarding Revision 2 to SRS HLW Tank In-Service Inspection Program.
- On July 14, 2003, the Chief Operating Officer of the Office of Environmental Management sent a letter to the Board regarding completion of commitment 3.4 in the 2001-1 implementation plan with the return to service of the Savannah River HLW Tank 50.
- On July 14, 2003, the Deputy Administrator of the National Nuclear Security Administration sent a letter to the Board regarding completion of Action 3.1 in the Quality Assurance Improvement Plan, on integrating QA with ISMS.
- On July 16, 2003, the Assistant Secretary for Environment, Safety, and Health sent a letter to the Board providing status of two commitments in the implementation plan 2002-1, *Quality Assurance for Safety-Related Software*. Commitment 4.1.1 is to issue a DOE Notice that identifies roles, responsibilities, and authorities for SQA and commitment 4.2.1.2 is to establish SQA criteria for safety analysis toolbox codes.

- On July 16, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board providing examples of improvements in QA activities.
- On July 17, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding completion of commitment 305 in the 2000-1, *Stabilization and Storage of Nuclear Material*, implementation plan by completing the repackage of all metal and oxides (except classified metal) into 3013 containers at RFETS.
- On July 17, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding completion of Quality Assurance Improvement Plan deliverable 1.3.3, which requires the EM to establish oversight schedules, performance measures, and quarterly reports.
- On July 28, 2003, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board regarding Minutes of Meeting of the Department's Fire Safety Committee in relation to the Action Plan addressing the recommendations of the Department Commission on Fire Safety and Preparedness.
- On July 28, 2003, the Director of the Nuclear Weapons Stockpile of the Defense Programs sent a letter to the Board regarding commitment 4.4.1 in implementation plan 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*.
- On July 30, 2003, 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 period

of April 1 to June 30, 2003 for implementation plan 98-2.

- On July 31, 2003, the Director of the Office of Nuclear and Facility Safety Policy, of the Environment, Safety and Health sent a letter to the Board forwarding an expanded Requirements and Guidance for the use of administrative controls for specific safety functions relative to the implementation plan 2002-3, *Design, Implementation, and Maintenance of Administrative Controls*.

### August

- On August 1, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding the Sludge Removal Project at Hanford K-Basins.
- On August 8, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board requesting an additional 30 days to respond to Board reporting requirement regarding assessments of training programs for NNSA site personnel.
- On August 11, 2003, the Director of the Office of Nuclear Weapons Stockpile, Defense Programs sent a letter to the Board reporting completion of deliverables 4.2.1 and 4.3.1 in the implementation plan 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*.
- On August 15, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding glovebox fire at Building 371 at the RFETS.
- August 25, 2003, the Secretary sent a letter to the Board regarding S/CI and items heat-treated by Temperform USA in safety-related and mission-

sensitive applications at the defense nuclear facilities.

- On August 29, 2003, the Deputy Assistant Secretary for Corporate Performance Assessment sent a letter to the Board informing the establishment of the Central Registry for Department Toolbox Codes in completion of commitment 4.2.2 of implementation plan 2002-1, *Quality Assurance for Safety-Related Software*.
- On August 29, 2003, the Director of the Office of Nuclear Weapons Stockpile sent a letter to the Board providing status on commitment 4.2.2 in implementation plan 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*.
- On August 29, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding assessment of nuclear training at the Pantex.

### September

- On September 3, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board reporting completion of Quality Assurance Improvement Plan deliverable 3.8 regarding the integration of VSS assessments with existing assessment programs.
- On September 5, 2003, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board forwarding the report, *Analysis and Trending of Suspect/Counterfeit Items at Department of Energy Facilities*.
- On September 5, 2003, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board regarding proposed revision to the

Department Handbook on Electrical Safety.

- On September 10, 2003, the Assistant Deputy Administrator for Military Application and Stockpile Operations Defense Programs sent a letter to the Board regarding recommendations by the NNSA's Senior Technical Advisory Panel on NESS and readiness reviews.
- On September 11, 2003, the Departmental Representative to the Defense Nuclear Facilities Safety Board sent a letter to the Board regarding commencement of shipment of Low Enriched Uranium materials from SRS, completing commitment 224 in implementation plan 2000-1, *Stabilization and Storage of Nuclear Material*.
- On September 17, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding HEPA filter testing.
- On September 23, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding fire protection in the Wet Chemistry area of Building 9212 at Y-12.
- On September 26, 2003, the Chief Operating Office for Environmental Management sent a letter to the Board regarding Old HB-Line facility ventilation system.
- On September 26, 2003, the Senior Advisor for Environment, Safety and Health sent a letter to the Board regarding revision and re-issuance of the *Nuclear Air Cleaning Handbook* relative to implementation plan 2000-2, *Configuration Management, Vital Safety Systems*.
- On September 30, 2003, the Chairman of the FTCP sent a letter to the Board regarding updated listing of Department personnel serving as

Subject Matter Experts for safety system oversight.

- On September 30, 2003, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board regarding S/CI training and Office Specific Qualification Standard.
- On September 30, 2003, the Assistant Deputy Administrator for Military Application and Stockpile Operations, Defense Programs sent a letter to the Board reporting closure of commitment 4.3.3 in implementation plan 98-2, *Safety Management at the Pantex Plant*, with the integration of the Transportation Safety Analysis Report with other Safety Analysis Report controls.
- On September 30, 2003, the Assistant Deputy Administrator for Military Application and Stockpile Operations Defense Programs sent a letter to the Board providing status of commitment 4.4.7 in implementation plan 98-2, *Safety Management at the Pantex Plant*, which requires the delivery and implementation of accelerated critical tooling for the W78 and W88 weapon program.
- On September 30, 2003, the Director Office of Nuclear Weapons Stockpile, Defense Programs sent a letter to the Board reporting completion of commitment 4.2.3 in implementation plan 2002-2, *Weapons Laboratory Support of the Defense Nuclear Complex*, which requires identifying the point-of-contact for each weapon system in the defense nuclear complex.
- On September 30, 2003, the Deputy Assistant for Corporate Performance Assessment sent a letter to the Board reporting completion of commitments 4.2.1.2, requiring the

establishment of the SQA plan and criteria for the toolbox codes, and 4.2.1.4, requiring the issuance of code-specific guidance reports for the safety analysis toolbox codes, in implementation plan 2002-1 *Quality Assurance for Safety-Related Software*.

#### October

- On October 1, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board reporting completion of Commitment 116 in implementation plan 2000-1 Revision 2, Prioritization in Stabilizing Nuclear Materials, which requires the complete stabilization and packaging of residues at Hanford.
- On October 2, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding status of oversight assessments of NNSA contractor training programs.
- On October 8, 2003, the Manager of Oak Ridge Operations Office sent a letter to the Board regarding OR's response to Board letter regarding HEPA filter ventilation systems.
- On October 9, 2003, the Assistant Deputy Administrator for Military Application and Stockpile Operations Defense Programs sent a letter to the Board regarding recommendations by the Senior Technical Advisory Panel on NESS and readiness reviews.
- On October 10, 2003, the Manager of Idaho Operations Office sent a letter to the Board regarding Idaho Operations Center's response to Board letter regarding HEPA filter ventilation systems.
- On October 10, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board reporting that an additional 30 days is needed

- to respond to Board reporting requirement regarding lightning protection issues at the Weapons Evaluation Test Facility and safety system functional classification issues at the Chemistry and Metallurgy Research Facility at the LANL.
- On October 10, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board regarding commitments relative to gloveboxes at RF.
  - On October 16, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding completion of NNSA evaluations of site quality assurance programs as described in commitment 3.2.1 of the Department's Quality Assurance Improvement Plan.
  - On October 17, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board providing requested clarifications for NNSA sites regarding habitability-related HEPA filters.
  - On October 28, 2003, the Assistant Secretary for Environment, Safety, and Health sent a letter to the Board regarding S/CI training and establishment of an Office Specific Qualification Standard.
  - On October 28, 2003, the Deputy Assistant Secretary for the Office of Corporate Performance Assessment sent a letter to the Board providing status of Commitments 4.2.3.1 and 4.2.4.1 in implementation plan for 2002-1, *Quality Assurance for Safety-Related Software*.
  - On October 29, 2003, the Assistant Secretary for Environment, Safety, and Health sent a letter to the Board regarding Deliverable 4.2.1 in implementation plan 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls*.
  - On October 30, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board informing them that an additional 45 days to meet Commitment 4.2.3.2 and Commitment 4.2.4.2 of the Recommendation 2002-1, *Quality Assurance for Safety-Related Software*.
  - On October 31, 2003, the Deputy Assistant Secretary for the Office of Corporate Performance Assessment sent a letter to the Board reporting completion of Commitment 4.4.2 in implementation plan 2002-1, *Quality Assurance for Safety-Related Software*, which requires the identification of methods for capturing and communicating SQA lessons learned.
  - On October 31, 2003, the Deputy Assistant Secretary for the Office of Corporate Performance Assessment sent a letter to the Board regarding Commitment 4.3.2.1 in implementation plan 2002-1, *Quality Assurance for Safety-Related Software*, requiring the establishment of a schedule to develop, revise, approve, and issue software quality assurance directives.
  - On October 31, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board informing them of the approval of NNSA's Functions, Responsibilities and Authorities Manual.
  - On October 31, 2003, the Assistant Deputy Administrator for Military Application and Stockpile Operations Defense Programs sent a letter to the Board enclosing Quarterly Report for implementation plan 98-2, *Safety Management at Pantex*.

## November

- On November 10, 2003, the Secretary sent a letter to the Board regarding Safety Bases for the K-Area Material Storage Facility, Building 235-F, and FB-Line at the SRS.
- On November 13, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board informing the Board of the status of four EM commitments in the Department's implementation plan for Board recommendation 2002-1, *Quality Assurance for Safety-Related Software*.
- On November 14, 2003, the Chief Operating Office of the Office of Environmental Management sent a letter to the Board providing status of Environmental Management commitments on sludge removal at Hanford, low curie salt-waste processing at SRS, and the Quality Assurance Improvement Plan.
- On November 20, 2003, the Chairman of the Federal Technical Capability Panel sent a letter to the Board forwarding the Safety Software Quality Assurance Functional Area Qualification Standard relative to commitment 4.1.2 in implementation plan 2002-1, *Quality Assurance for Safety-Related Software*.
- On November 21, 2003, the Director of the Office of Nuclear Weapons Stockpile Defense Programs sent a letter to the Board regarding Commitment 4.2.4 in implementation plan 2002-2, *Weapons Laboratory Support of Defense Nuclear Complex*, on process for selection, training, mentoring, and succession planning for weapons points-of-contact.

- On November 24, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board regarding follow-up activities to ensure HEPA filter testing at NNSA sites.

## December

- On December 2, 2003, the Manager of Y-12 Site Office sent a letter to the Board providing update in the reduction of hazards at Building 9206 at Y-12.
- On December 3, 2003, the Assistant Secretary for Environment, Safety, and Health sent a letter to the Board reporting status and partial completion of Commitment 4.2.1.3 in implementation plan 2002-1, *Quality Assurance for Safety-Related Software*, which requires a gap analysis on toolbox codes relative to SQA criteria.
- On December 4, 2003, the Assistant Secretary for Environmental Management sent a letter to the Board reporting completion of Commitment 208 in Revision 2 of implementation plan 2000-1, *Prioritization for Stabilizing Nuclear Materials*, which is to begin operation of new furnaces and high firing plutonium oxide for stabilization and packaging.
- On December 9, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of Commitment 4.1.3 in implementation plan 2002-1, *Quality Assurance for Safety-Related Software*, which requires the NNSA to identify Federal positions whose duties and responsibilities is to provide assistance, guidance, direction, oversight, or evaluation of Safety SQA activities
- On December 15, 2003, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board

regarding proposed revision to the DOE Handbook: Electrical Safety.

- On December 17, 2003, the Director of the Office of Regulatory Liaison sent a letter to the Board reporting completion of Commitment 24, revision and issuance of the *Nuclear Air Cleaning Handbook*, in implementation plan 2000-2, *Configuration Management, Vital Safety Systems*.
- On December 18, 2003, the Deputy Assistant Secretary of the Office of Corporate Performance Assessment sent a letter to the Board reporting completion of Commitment 4.4.3 in implementation plan 2002-1, *Quality Assurance for Safety-Related Software*, which requires the Department to establish relationships and collaborate with outside organizations that have an interest in SQA.
- On December 22, 2003, the Assistant Deputy Administrator for Military Applications and Stockpile of the Defense Programs sent a letter to the Board reporting completion of Commitment 4.4.4 in implementation plan 98-2, *Safety Management at the Pantex Plant*, related to implementing revised NSO 452-Series Orders.
- On December 22, 2003, the Deputy Administrator for Defense Programs sent a letter to the Board reporting completion of site specific schedules required by Commitments 4.2.3.2 and 4.2.4.2 in implementation plan 2002-1, *Quality Assurance for Safety-Related Software*, with the submission of site specific schedules to complete the identification, selection, and assessment of safety system software and firmware at defense nuclear facilities and; to complete the assessment of the processes in place to ensure safety software used support the analysis and design of nuclear facilities is adequate.
- On December 24, 2003, the Deputy Assistant Secretary for Corporate Performance Assessment sent a letter to the Board regarding Commitment 4.2.1.5 in implementation plan 2002-1, *Quality Assurance for Safety-Related Software*, requiring the Department to conduct a survey of design codes currently in use to determine if any should be included as part of the toolbox codes.
- On December 31, 2003, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board reporting completion of Commitments 4.2.2 in implementation plan 2002-3, *Requirements for the Design, Implementation, and Maintenance of Administrative Controls* and Commitment 4.1.5 in the Department's *Software Quality Assurance Implementation Plan* with the submission of the Department's Technical Standard on *Specific Administrative Controls* and the revised *Safety Management Functions, Responsibilities and Authorities Manual*.

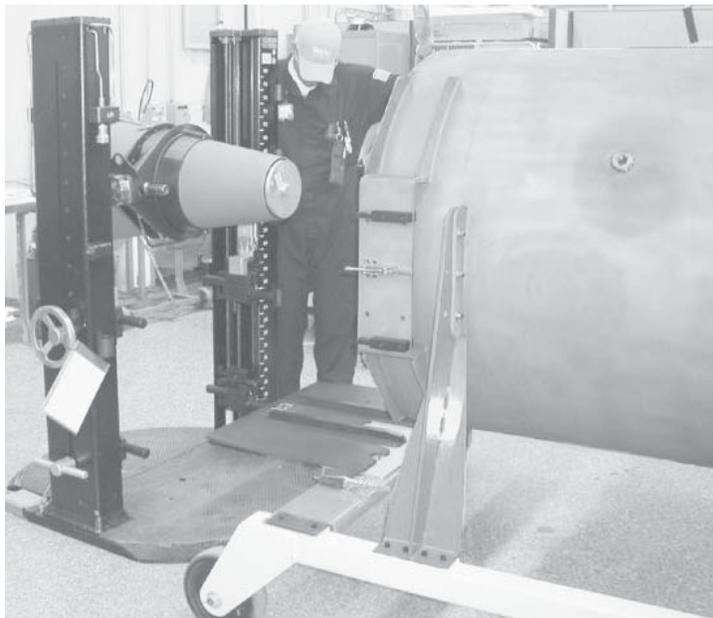
## APPENDIX D

### 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>
92-4	Board recommendation 92-4, <i>Multi-Function Waste Tank Facility at Hanford</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
Board	Defense Nuclear Facilities Safety Board
CAM	Corrective Action Management
CAMP	Corrective Action Management Program
CAP	Corrective Action Plan
CATS	Corrective Action Tracking System
CERCLA	The Comprehensive Environmental Response, Compensation, and Liability Act (1980)
CBFO	Carlsbad Field Office
D&D	Deactivation and Decommissioning
Department	Department of Energy
Departmental Representative	Departmental Representative to the Defense Nuclear Facilities Safety Board
DSA	Documented Safety Analysis
EH	Office of Environment, Safety and Health
EM	Office of Environmental Management

ES&H	Environment, Safety and Health
Fernald	Fernald Closure Project
FRA	Functions, Responsibilities, and Authorities
FTCP	Federal Technical Capability Program
HEPA	High Efficiency Particulate Air
HLW	High Level Waste
ID	Idaho Operations Office
INEEL	Idaho National Engineering and Environmental Laboratory
ISM	Integrated Safety Management
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
LLNL	Lawrence Livermore National Laboratory
LSO	Livermore Site Office
Miamisburg	Miamisburg Closure Project
NASA	National Aeronautics and Space Administration
NESS	Nuclear Explosive Safety Study
NNSA	National Nuclear Security Administration
NSO	Nevada Site Office
NTS	Nevada Test Site
OA	Office of Independent Oversight and Performance Assurance
OH	Ohio Field Office
OR	Oak Ridge Operations Office
ORNL	Oak Ridge National Laboratory
ORP	Office of River Protection
ORPS	Occurrence Reporting and Processing System
ORR	Operational Readiness Review
PXSO	Pantex Site Office
QA	Quality Assurance
R&D	research and development
RF	Rocky Flats Field Office
RFETS	Rocky Flats Environmental Technology
RL	Richland Operations Office
S/CI	suspect/counterfeit items

Secretary	Secretary of Energy
SNF	Spent Nuclear Fuel
SNL	Sandia National Laboratory
SQA	Software Quality Assurance
SR	Savannah River Operations Office
SRS	Savannah River Site
SRSO	Savannah River Site Office
SS-21	Seamless Safety for the 21st Century
SSO	Sandia Site Office
SSOP	Safety System Oversight Personnel
TQP	Technical Qualification Program
TRU	transuranic
TSR	Technical Safety Requirement
USQ	Unreviewed Safety Question
VSS	Vital Safety System
West Valley	West Valley Demonstration Project
WIPP	Waste Isolation Pilot Plant
WTP	Waste Treatment and Immobilization Plant
YSO	Y-12 Site Office



Cover Photograph:

Pantex worker transfers a weapon sub-assembly  
from assembly stand to Enhanced Transportation Cart.

