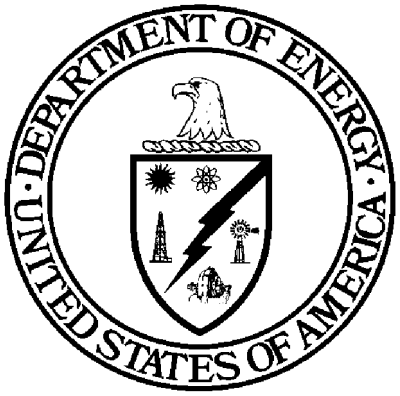
ANNUAL REPORT TO CONGRESS

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

Calendar Year 1997



Washington, D.C. 20585

February 1998

The Secretary of Energy
Washington, DC 20585

February 18, 1998

The Honorable Al Gore, Jr.
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

Section 316(b) of the Atomic Energy Act of 1954 as amended (42 U.S.C. §2286e(b)) requires the Department of Energy (Department) to submit a written report to Congress addressing the Department's activities in response to formal recommendations and other interactions with the Defense Nuclear Facilities Safety Board (Board). I am pleased to forward the Department's Annual Report for calendar year 1997.

The Department's highest priority throughout 1997 continued to be its commitment to the protection of its workers, the public, and the environment while conducting its vital and complex missions. In support of this, we also focused on continuing and enhancing the effective working relationship between the Department and the Board.

Our efforts yielded measurable success. During 1997, departmental activities resulted in the formal closure of one Board recommendation and the completion of all implementation plan milestones associated with an additional four recommendations. Formal closure of these four recommendations by the Board will reduce the number of open recommendations by over 25 percent (from 15 to 11) and will bring the number of open recommendations to its lowest level since 1991. Two new Board recommendations were received and accepted by the Department in 1997, and in turn, two new implementation plans were developed to address these recommendations.

The Department has also made significant progress with a number of broad-based initiatives to improve safety. These include implementing integrated safety management at field sites, establishing comprehensive criticality safety programs, and stabilizing excess nuclear materials to achieve significant risk reduction.

If you have any questions, please contact me or have a member of your staff contact Mr. Mark B. Whitaker, Jr., Departmental Representative to the Board, at (202) 586-3887.

Sincerely,

Federico Peña

Enclosure

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I. EXECUTIVE SUMMARY

This is the eighth Annual Report to the Congress describing Department of Energy (Department) activities in response to formal recommendations and other interactions with the Defense Nuclear Facilities Safety Board (Board). The Board, an independent executive-branch agency established in 1988, provides advice and recommendations to the Secretary of Energy 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, as well as other requirements, relating to the design, construction, operation, and decommissioning of the Department's defense nuclear facilities. Figure 1 provides the locations of the major Department facilities.

The Department's highest priority throughout 1997 continued to be an absolute commitment to the protection of its workers, the public, and the environment while conducting its vital and complex missions. As a related priority, we also focused on continuing and enhancing the effective working relationship between the Department and the Board. Our efforts have yielded measurable success. During 1997, departmental activities resulted in the formal closure of one Board recommendation and the completion of all implementation plan milestones associated with an additional four recommendations. Formal closure of these four Board recommendations would reduce the number of open recommendations by over 25 percent (from 15 to 11), and would bring the number of open recommendations to its lowest level since 1991. Two new Board recommendations were received and accepted by the Department in 1997, and in turn, two new implementation plans were developed to address these recommendations.

Closed Recommendations

Table 1 provides a summary status on Board recommendations. Department activities culminating in 1997 led to closure of the following Board recommendation:

- Recommendation 93-2, Critical Experiment Capability

In addition, the Department has completed all of the milestone deliverables in the implementation plans for the following Board recommendations:

- Recommendation 95-1, Improved Safety of Cylinders Containing Depleted Uranium
- Recommendation 94-5, Rules, Orders, and Other Requirements
- Recommendation 94-3, Rocky Flats Seismic and Systems Safety
- Recommendation 93-6, Nuclear Weapons Expertise

New Recommendations and Implementation Plans

In 1997 the Department formally accepted two new recommendations received from the Board and developed implementation plans for these two recommendations:

- Recommendation 97-2, Criticality Safety
- Recommendation 97-1, Safe Storage of Uranium-233

Implementation plans establish the Department's approach and schedule to resolve the associated safety issues. The Department also developed an implementation plan revision for Board recommendation 92-4, Multi-Function Waste Tank Facility at Hanford. Table 2 provides key dates for active Board recommendations.

Trend in the Number of Open Board Recommendations

The following trending data illustrate the change in the number of open Board recommendations for each year since the inception of the Board.

Year	Recommendations Issued	Recommendations Closed	Net Change in Open Recommendations	Open Recommendations at Year End
1990	7	0	+7	7
1991	6	0	+6	13
1992	7	8	-1	12
1993	6	1	+5	17
1994	5	1	+4	21
1995	2	6	-4	17
1996	1	4	-3	14
1997	2	1	+1	15

Since 1994, the Department has made sustained and substantial progress in maintaining the number of open Board recommendations at a relatively low level. As of December 1997, the Department has met all implementation plan deliverables associated with an additional four recommendations. When these four "effectively complete" recommendations are formally closed, a more significant reduction will be achieved. As a result, the Department intends to pursue closure of applicable recommendations as a priority in 1998. This will allow the Department to focus resources on resolution of the fundamental safety issues addressed by the remaining open recommendations or identified through other mechanisms.

The Department believes the following factors have contributed to strong performance and focus on closure of Board issues:

- Increased attention by Department senior management to Board issues, resulting in a coordinated approach to identify and resolve safety issues;

- Improved communications and understanding between the Board and the Department, leading to resolution of issues before recommendations are needed;

- Increased use by the Board of mechanisms other than formal recommendations, such as public meetings and correspondence, to identify safety issues for attention; and

- Increased emphasis on the use of the formal Departmental Directives System to identify the safety roles and responsibilities throughout the Department, implement integrated safety

management, and issue safety policies, requirements and guidance that are tailored to address site/mission-specific conditions, and reflect the prompt and quality resolution of Board comments.

Summary of the Department's Major Safety Accomplishments (1993-1997)

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

- Developing and accelerating the implementation of a Department-wide safety management system at ten priority facilities;
- Extending the scope of the integrated safety management program where it is appropriate to all Department facilities;
- Improving the technical capability of the Department's federal work force;
- Promulgating and implementing new safety orders and rules;
- Stabilizing the majority of high risk excess nuclear materials;
- Establishing qualified Facility Representatives at key sites and facilities;
- Institutionalizing highly effective Operational Readiness Reviews;
- Instituting contract reform to clarify safety management expectations for Department contractors;
- Archiving irreplaceable expertise and experience on criticality, weapons operation, and testing;
- Formalizing the safety roles and responsibilities throughout the Department by issuing the Functions, Responsibilities, and Authorities Manuals; and
- Developing a process to improve the effectiveness of the criticality safety program.

Department Focus for 1998

In 1998, the Department intends to keep focus on assuring that existing implementation plans remain valid and workable, managing plan actions to completion by the identified plan due dates, and proposing closure of recommendations when the underlying safety issues are resolved. The most significant challenges involve safety issues which are complex-wide in nature and involve culture changes:

- systematically implementing a consistent safety management system which integrates all elements of safety (e.g., public health, occupational safety, environmental protection) into management and work practices at all levels so that work can be accomplished while protecting the public, the worker, and the environment,

- sustaining progress on stabilizing excess nuclear material and identifying ultimate disposition pathways,

- implementing an integrated, Department-wide material disposition process,

- establishing planned improvements in the effectiveness of the criticality safety program, and

- continuing progress toward technical qualification and training of the Department's federal work force.

The above listed items are long-term issues which will take a dedicated, multi-year effort to successfully resolve. The Department is committed to these ongoing efforts and does not foresee major shifts or re-direction in these core safety initiatives, thus providing continuity of direction for headquarters, field, and contractor organizations. The primary challenge associated with these safety initiatives continues to be the need to effectively integrate them in a manner that assures a consistent level of protection.

Report Preview

The remaining portions of the annual report provide the contents described below:

- Section II, KEY DEPARTMENT SAFETY INITIATIVES, describes broad-based Department activities which affect health, safety, and the environment;

- Section III, IMPLEMENTATION OF BOARD RECOMMENDATIONS, describes Department activities completed in 1997 to implement Board recommendations accepted by the Secretary; and

- Section IV, BOARD INTERFACE INITIATIVES, describes Department activities to maintain communications and improve interaction between the Department and the Board.

Figure 1 - Major Department of Energy Facilities

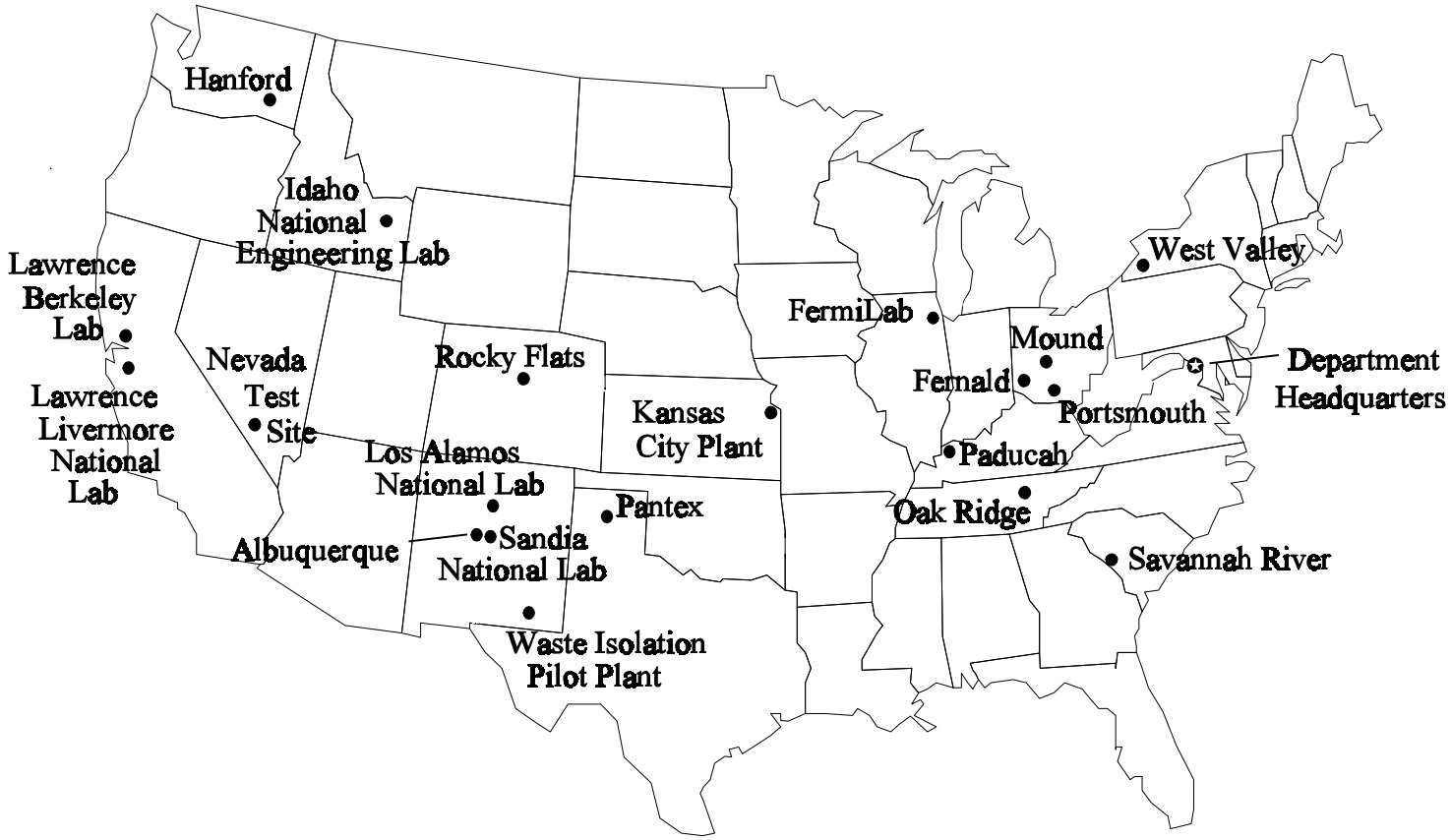

Table 1
Summary Status of Board Recommendations

REC	SUBJECT	OPEN	CLOSED
90-1	Savannah River Operator Training		10/27/92
90-2	Codes and Standards		10/24/95
90-3	Hanford Waste Tanks		5/1/92
90-4	Rocky Flats Operational Readiness Reviews		2/16/95
90-5	Systematic Evaluation Plans		10/24/95
90-6	Rocky Flats, Plutonium in the Ventilation Ducts		10/24/95
90-7	Hanford Waste Tanks - Ferrocyanide 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	
92-5	Discipline of Operations		10/24/95
92-6	Operational Readiness Reviews		10/24/95
92-7	Training and Qualification		11/4/93
93-1	Standards Utilization in Defense Nuclear Facilities	X	
93-2	Critical Experiments Capability		12/30/97
93-3	Improving Technical Capability	X	
93-4	Environmental Restoration Management Contracts		6/28/96
93-5	Hanford Waste Tanks Characterization Studies	X	
93-6	Nuclear Weapons Expertise	X	
94-1	Improved Schedule for Remediation	X	
94-2	Safety Standards for Low Level Waste	X	
94-3	Rocky Flats Seismic and Systems Safety	X	
94-4	Deficiencies in Criticality Safety at Oak Ridge Y-12	X	
94-5	Rules, Orders, and Other Requirements	X	
95-1	Improved Safety of Cylinders Containing Depleted Uranium	X	
95-2	Safety Management	X	
96-1	In-Tank Precipitation System at Savannah River	X	
97-1	Safe Storage of Uranium-233	X	
97-2	Criticality Safety	X	

Table 2
Key Dates For Active Board Recommendations

REC	SUBJECT	REC DATE	RESPONSE DATE	IMPL. PLAN DATE
92-4	Multi-Function Waste Tank Facility at Hanford	7/6/92	8/28/92	8/13/97 (Rev. 2)
93-1	Standards Utilization in Defense Nuclear Facilities	1/21/93	4/22/93	7/19/93
93-3	Improving Technical Capability	6/1/93	6/23/93	11/4/93 * (Rev.1)
93-5	Hanford Waste Tanks Characterization Studies	7/19/93	8/31/93	6/17/96 (Rev. 1)
93-6	Nuclear Weapons Expertise	12/10/93	2/2/94	2/13/96 (Rev. 1)
94-1	Improved Schedule for Remediation	5/26/94	8/31/94	2/28/95
94-2	Safety Standards for Low Level Waste	9/8/94	10/28/94	5/7/96 (Rev. 1)
94-3	Rocky Flats Seismic and Systems Safety	9/26/94	11/18/94	6/30/95
94-4	Deficiencies in Criticality Safety at Oak Ridge Y-12	9/27/94	11/18/94	2/24/95
94-5	Rules, Orders, and Other Requirements	12/29/94	2/21/95	7/21/95
95-1	Improved Safety of Cylinders Containing Depleted Uranium (at Oak Ridge)	5/5/95	6/29/95	10/16/95
95-2	Safety Management	10/11/95	1/18/96	4/18/96
96-1	In-Tank Precipitation System at Savannah River	8/14/96	9/16/96	11/12/96
97-1	Safe Storage of Uranium-233	3/3/97	4/25/97	9/29/97
97-2	Criticality Safety	5/19/97	7/14/97	12/12/97

* - Implementation plan currently under revision.

II. KEY DEPARTMENT SAFETY INITIATIVES

Each of the key initiatives described below involves significant changes from past operating practices. They involve systems-based solutions, cross-organizational/site integration, cross-program integration, and fundamental culture changes to address the underlying safety and management issues. For example, Department determinations about ultimate pathways and long-term dispositions for hazardous materials require deliberate study and integration across the defense nuclear facilities complex. Funding and management of Department-wide efforts to maintain strong criticality prediction and control capabilities requires cross-program coordination. The ongoing transition from expert-based safety management to requirements-based safety management systems continues to be a significant cultural adjustment which needs to be achieved in all parts and at every level of the organization. These changes undo many years of practices developed by sites, facilities, programs, and organizations operating largely independently and autonomously. Nevertheless, the Department is making progress overcoming these difficult challenges to establish a safety culture which is systems-based, requirements-based, and integrated across programs, organizations, and facilities.

A. Integrated Safety Management

Department leadership remains committed to implementing the integrated safety management system as the centerpiece and foundation of the Department's efforts to establish a lasting framework for ensuring safety at the Department's defense nuclear facilities. In 1997, the Department accelerated its efforts to implement integrated safety management systems at the ten priority facilities described in the Department's April 1996 implementation plan. In 1997, the Department also extended the scope of the program to begin encompassing remaining defense nuclear facilities, as well as all other Department facilities where appropriate. The guiding principles for the integrated safety management program remained unchanged:

- Line management responsibility for safety,
- Clear roles and responsibilities,
- Competence commensurate with responsibilities,
- Balanced priorities,
- Identification of safety standards and requirements,
- Hazard controls tailored to the work being performed, and,
- Operations authorization.

In 1997, the Department issued a comprehensive guide, the *Integrated Safety Management System Guide*, defining the appropriate implementation rigor for each of the core safety management functions:

- Define the scope of work,
- Analyze the hazards,
- Develop and implement hazard controls,
- Perform work within controls, and,
- Provide feedback and continuous improvement.

The Guide recognizes that individual facility and activity missions vary widely in terms of risks and hazards, and that a "one size fits all" approach will not succeed.

In 1997, *Functions, Responsibilities, and Authorities Manuals* (FRAMs) were issued for Department headquarters and for the applicable program and field offices associated with the priority facilities. These manuals supersede outdated predecessor documents and will be updated periodically to reflect evolving roles and responsibilities. The FRAM development effort was accomplished with a sense of urgency due to the importance of having a clearly defined organizational infrastructure responsible for implementing the Department's integrated safety management program.

Verification of Integrated Safety Management System Implementation

In 1997, the Department developed requirements for verifying implementation of the Department's safety management system. The verification protocol embodies a team verification concept and relies heavily upon previous operations and management experience of the verification team leader. Team leaders are selected from an approved list and report directly to the Head of Contracting Activity at the site, the responsible line manager. Team members are selected based upon their applicable experience, mission familiarity, and safety management understanding. The verification protocol provides sample Criteria and Review Approach Documents to guide the verification process.

Verification reviews are typically conducted in two steps. Phase I consists primarily of a review of the site's or facility's documented safety management system description. Phase II consists of a review of the implementation of that documented system. In 1997, the Department conducted verification reviews at the Savannah River Site, started

reviews at Rocky Flats, and scheduled reviews at Hanford and Oak Ridge.

Future Emphasis is on "Implementation"

The Department has concluded that sufficient infrastructure supporting integrated safety management is now in place for most sites and facilities and that future efforts will focus on implementation activities. The Phase I and pilot Phase II verification reviews at Savannah River Site provided several valuable lessons learned which are benefitting the complex as the Department presses ahead with this initiative. These lessons learned are being shared throughout the Department to assist follow-on sites and facilities. The Savannah River Site experience indicated that many elements of a safety management system are already in place at the many Department facilities at that site, and the expectation is that other sites also have similar elements in place and functioning effectively. An aggressive approach to demonstrating those elements and adding any "missing elements" -- both on paper and in practice -- is needed in the near-term to make the program become a reality across the defense nuclear facilities complex. The safety management program undertaken by the Department is already providing significant benefits in the way of improved organization, better defined roles and responsibilities, and a willingness of line managers to acknowledge and accept the safety responsibilities that accompany their positions.

Field Implementation

The objective of integrated safety management is to do work safely. The focus of the system's principles and functions is on actual work performance. The planning, analysis, and follow-up activities are designed to ensure work is performed in a manner that protects the health and safety of the worker, the public, and the environment. The ten priority facilities identified for initial implementation are located at seven sites, as follows:

- Savannah River Site/Canyons
- Rocky Flats/Buildings 371 and 771
- Hanford Site/K-Basins and Tank Farms
- Oak Ridge/Y-12 Facility
- Pantex/Bays and Cells
- Los Alamos National Laboratory/Technical Area-55 (TA-55) and Chemical Metallurgical Research Facility (CMR)

- Lawrence Livermore National Laboratory/Building 332 ("Superblock")

Highlights of safety management implementation are provided below for these and other facilities across the defense nuclear facilities complex.

Savannah River Site. A safety management system description document was developed by the site contractor, Westinghouse Savannah River Company, and submitted to the Department in May 1997. In August 1997, the first safety management system verification (Phase I) review was conducted at the Savannah River Site. This review confirmed the adequacy of the integrated safety management system and recommended approval of the system description document to the Savannah River Operations Office. In October 1997, a pilot Phase II review of one facility was conducted. Site management is currently implementing the enhancements recommended in the two review reports and plans to conduct an additional Phase II review in the future. The regulatory and environmental, health, and safety clauses of the Department of Energy Acquisition Regulation (DEAR) were incorporated into the site management and operations contract in December 1997. Authorization agreements have been completed and signed for all designated nuclear facilities except for the HB-Line for which an agreement will be completed prior to restart currently scheduled for early 1998.

Rocky Flats Environmental Technology Site. An integrated safety management system description addressing all site operations was provided to the Rocky Flats Field Office in March 1997. A joint Phase I and Phase II verification for Buildings 371 and 664 began in December 1997, and is scheduled to be completed in early 1998. Rocky Flats is institutionalizing the Phase II verification review process into the readiness determination process. The institutionalization of the Phase II verification review process into the readiness determination process supports the activity-based approach to closure used at Rocky Flats. All activities ongoing at Rocky Flats are covered by formal authorization agreements. In January 1998 the safety management-related DEAR clauses were incorporated into the Kaiser Hill contract.

Oak Ridge Site. A documented safety management system description for the Y-12 priority facility is expected to be issued in May 1998. Phase I and Phase II verification reviews are expected to be initiated shortly thereafter. An authorization agreement for the Y-12 Plant operation is currently anticipated to be signed in March 1998. The Oak Ridge

Operations Office incorporated the safety management DEAR clauses into its contract with its principal contractor during 1997.

Hanford Site. An integrated safety management system (ISMS) description document, required by safety management-related DEAR clauses in the current Project Hanford Management Contract, was delivered by the Hanford management and integration contractor, Fluor Daniel Hanford Company, and approved by the Richland Operations Office Manager in September 1997. Development of facility-specific versions of the safety management system descriptions for Hanford's priority facilities, the K-Basins and the Tank Waste Remediation System (TWRS), through a "mapping" against the management expectations defined in the Contractor's safety management plan, was proceeding satisfactorily at year end. Phase I verification activities were started in January 1998 at the K-Basins, and are expected to commence at the TWRS in June 1998. Formal Authorization Agreements for the two priority facilities are expected to be signed in February and June 1998, respectively. Implementation of ISMS at other, non-priority facilities has been started. Battelle Northwest Laboratories submitted a safety management system description for the Pacific Northwest National Laboratory for Richland Operations Office review in November 1997.

Pantex Site. Mason and Hanger Corporation, the management and operations contractor at Pantex, has prepared its integrated safety management system description and implementation plan, and twelve standards/requirements identification documents. The contractor is currently developing its path forward for implementing these requirements at the facility/activity level. All milestones from the ISMS implementation plan are on schedule, except at one facility.

Los Alamos National Laboratory. A Laboratory-wide roles and responsibilities document was published in November 1996. The Laboratory published its ISMS implementation plan in January 1997. Los Alamos is committed to building this system at the institutional, facility, and activity levels. Within this plan were numerous milestones for completing actions to implement ISMS at Los Alamos. Most of the items scheduled for completion in 1997 were completed on schedule.

Lawrence Livermore National Laboratory. A safety management system description document for the Lawrence Livermore National Laboratory's priority facility, Building 332 ("Superblock") was issued on schedule in October 1997, but was subsequently withdrawn by the Laboratory for

necessary revisions. A reissue is expected in early 1998. Full implementation of Livermore's safety management system is projected by the end of 1998. An Authorization Agreement between the contractor and the Oakland Operations Office for the operation of Building 332 was executed in June 1997. The Oakland Operations Office incorporated the safety management DEAR clauses into the University of California contract for the Laboratory, effective in October 1997.

Sandia National Laboratory. The Albuquerque Operations Office approved Lockheed Martin's ISMS description and implementation plan. ISMS prototypes have been installed in two key organizations, with other organizations progressing toward implementation by October 1998. Institutional improvements to computer-driven hazard analysis, self assessment, standards/requirements identification, and authorization agreements have been addressed. The change control procedure has been finalized and implemented.

Kansas City Plant. The Albuquerque Operations Office approved Allied Signal's ISMS plan, which consisted of an Environment, Safety and Health (ES&H) management plan, operating system requirements, and site-specific performance measures. The Kansas City Area Office and the Albuquerque Operations Office are in the process of developing a verification approach for ISMS at the Kansas City Plant.

Idaho National Engineering and Environmental Laboratory. The Management and Operations contractor, Lockheed Martin Idaho Technologies, prepared a draft Safety Management description for site-wide activities. This description document defines how work processes across the site ensure the integration of environment, safety and health requirements into the planning, hazard identification, hazard control, work execution, and improvement assessment/feedback which are the core elements of an ISMS. The draft Idaho National Engineering and Environmental Laboratory Safety Management Description is undergoing review by the Idaho Operations Office and Department Headquarters. Approval and issuance is anticipated in August 1998 (Phase I) with full implementation planned by August 1999 (Phase II).

Nevada Test Site. The Nevada Operations Office has drafted a safety management FRAM, consistent with the Department level FRAM; it is pending final review and approval. The Nevada Office has also established milestones for implementing safety management at the Device Assembly Facility (DAF) and the Area 3/5/Transuranic (TRU)

Radioactive Waste Management Sites (RWMS). For the DAF, the scope is defined, the authorization basis is developed, hazard controls have been implemented, an Operational Readiness Review was conducted, pre-start findings are being resolved, and an authorization agreement for facility start-up is in preparation. For the RWMS, all milestones are complete including approval of the RWMS authorization agreement. Negotiations between Operations Office officials and the contractor to incorporate the safety management acquisition requirements clauses (DEAR clauses 970.5402-2 and 970.5402-78) into the applicable site contracts are proceeding.

Fernald Environmental Management Project. At Fernald, the scope of work is defined, the authorization basis is developed, and hazard controls have been implemented. The safety basis for all nuclear facilities at Fernald was established through the implementation plan for Safety Analysis Reports and Technical Safety Requirements at Fernald. This Plan was approved by the Assistant Secretary for Environmental Management in December 1996. Efforts to add the safety management acquisition requirements clauses (DEAR Clauses 970.5402-2 and 970.5402-78) into the applicable contract are ongoing. The Technical Management Plan is undergoing annual updating and constitutes a FRAM. Performance Objective Criteria for implementing integrated safety management in accordance with DOE P 450.4 for Fiscal Year 1998 have been established.

Chicago Operations Office. The Chicago Operations Office issued its FRAM in July 1997. The safety management DEAR clause has been included in contract modification packages for each of the contractor-operated laboratories under Chicago's cognizance (Argonne National Laboratory, Princeton Plasma Physics Laboratory, Ames Laboratory, and Fermilab). As part of its continuous efforts to enhance technical capabilities, Chicago is voluntarily implementing the Department's technical qualification standards program for its federal technical employees. Baseline evaluations have been accomplished at each contractor-operated laboratory to determine how well existing management systems implement the ISMS principles and functions. Based upon the results of these evaluations, actions are being instituted to work towards full implementation at each laboratory. The progress of the laboratories to fully establish their ISMS is being monitored by the Chicago Operations Office, and ISMS verification reviews will be conducted as appropriate.

B. Criticality Safety

Criticality safety refers to measures taken to protect personnel from an uncontrolled criticality event. Safety measures range from maintaining adequate geometric spacing of fissile materials to the proper prediction of subcriticality under various conditions. Where operations involve significant quantities of fissile material, accidental criticality is a hazard for which analysis must be performed and controls must be identified and implemented. The Department recognizes that identifying and analyzing credible accident scenarios and implementing appropriate controls to prevent or mitigate an accidental criticality must involve an efficient process that does not use excessive resources and that allows work to be accomplished in a timely manner.

The Department's recent criticality safety activities have progressed from actions associated with the Nuclear Criticality Predictability Program, which was first implemented in late 1996, to those associated with the recently-approved implementation plan for Board recommendation 97-2. In the Nuclear Criticality Predictability Program, the Department established the necessary infrastructure to address nuclear criticality predictability needs. The five elements of this program, Nuclear Data, Analytical Methods, Experiments, Benchmarking, and Training, preserve criticality experiment capabilities and provide a resource base of data vital to current and future missions of the Department.

With promulgation of the implementation plan for Board recommendation 97-2, approved by the Secretary in December 1997, the Department is taking the following steps to improve the effectiveness of the criticality safety program to alleviate the potential adverse impacts on safety and productivity of operations:

- A Nuclear Criticality Safety Program Management Team (NCSPMT) and support group were established from recognized criticality safety experts from Department and contractor communities, and will help resolve present and future technical criticality safety issues and institutionalize funding.

- The Department is improving the technical knowledge of criticality safety personnel. This will be accomplished by updating and improving the training offered at Department's critical experiments facility, improving site training and qualifications programs by identifying and incorporating best

practices, and by identifying exceptional criticality safety curricula offered at institutions outside the Department.

- The Department is improving the availability and use of criticality safety information (i.e., experimental data, calculational studies, and evaluations) and guidance. Effective use of criticality safety Internet web pages will ensure widespread availability of information, and guidance will stress the appropriateness and application of simplified methods of criticality safety analysis.

- The Department is verifying that sites having fissile material operations have appropriately considered criticality safety in the work planning process through the implementation of the integrated safety management system, and that their criticality safety programs are organized as a staff function advising line management.

In addition to these improvements, the Department will ensure that funding for the criticality safety program is institutionalized in a manner that ensures a lasting, equitable arrangement between the affected Secretarial Officers.

C. Stabilization of Excess Nuclear Materials

In February 1995, the Department established a program and plan for expediting remediation and stabilization of excess nuclear materials into safe, stable states for interim and long-term storage pending ultimate disposition. The halt in materials production for nuclear weapons froze the manufacturing pipeline in an intermediate state that was not optimal for long-term storage. Specifically, certain liquids and solids containing fissile materials and other radioactive substances located in spent fuel storage pools, reactor basins, reprocessing canyons, and various other facilities once used for processing and weapons manufacture needed to be stabilized.

Stabilization efforts were grouped by material types to take advantage of synergies. Six major categories of excess nuclear materials were identified: plutonium solutions, plutonium metals and oxides, plutonium residues and oxides, special isotopes, certain uranium, and spent nuclear fuel. To date, the majority of high risk materials have in fact been stabilized, specifically:

- All known plutonium metal in direct contact with plastic has been repackaged.

- The largest volumes of plutonium solutions have been stabilized.

- Significant progress has been achieved in stabilizing high risk spent fuel and spent fuel storage facilities.

As the remaining high risk material stabilization activities continue to be pursued, other activities are focusing on managing the stabilization of more difficult, diverse material groups such as plutonium residues.

The Nuclear Materials Stabilization Task Group, established in February 1995, integrates the Department's programs for stabilizing excess nuclear material to achieve safe, stable states for interim and long-term storage pending ultimate disposition. The Task Group has established an integrated, complex-wide program for managing nuclear materials stabilization activities. To date, stabilization activities have been addressed complex-wide in the following areas:

- Developing integrated Department-wide approaches to stabilization issues;

- Evaluating facility stabilization capabilities;

- Preparing facilities to support spent fuel and nuclear material removal and consolidation for long term storage; and

- Procuring standardized equipment to support plutonium oxide stabilization and packaging for long-term storage.

In addition, the following activities were accomplished during 1997 to improve the Department's ability to accomplish the requirements during the remaining stabilization phase of the 94-1 activities.

Studies/Special Assessments

The Department completed a study in July 1997 to evaluate alternatives for stabilization and storage of metals and oxides at the Hanford site. The objective of the study was to determine the recommended strategy for packaging of plutonium metals and oxides to ensure adequate safety and security pending implementation of the disposition alternatives

identified in the Storage and Disposition Programmatic Environmental Impact Statement Record of Decision of January 1997. The study evaluated worker risk, public risk, worker exposure, waste generation, discharge to the environment, cost, timeliness, regulatory compliance, applicability of storage standards, and technical maturity of processes as performance measures for comparison of options. The results of the study reaffirmed the need to stabilize and package for long-term storage the Hanford metal and oxide currently stored at the Plutonium Finishing Plant (PFP). The study also revealed that off-site storage of the PFP plutonium allows for earlier-than-planned deactivation and dismantlement of PFP. The Department is reviewing alternatives for shipment and storage of Hanford's material.

A special assessment, the Nuclear Materials Processing and Needs Assessment, was initiated in August, 1997, to identify whether any additional nuclear materials may require the Savannah River Site canyon facilities for stabilization or preparation for disposition prior to canyon decommissioning. This effort is focused on defining the most desirable technical pathways to the acceptable material end-states using efficiency, cost, waste, facility capabilities, and worker and public safety as performance measures. Completion is expected in early 1998.

Research and Development

Research and development activities to provide the necessary stabilization technologies continued in 1997. Los Alamos National Laboratory, the lead Laboratory for plutonium research and development, managed 34 technical projects with 81 specific milestones in Fiscal Year 1997. Of the 34 technical projects, six were performed at other Department laboratories throughout the country. At the end of Fiscal Year 1997, 52 of these milestones were completed as scheduled. Of the incomplete milestones, 19 are associated with projects continued in Fiscal Year 1998.

Activities directed at assuring the process for stabilizing and characterizing materials consisted with the technical requirements of the long-term storage standard were continued at Los Alamos National Laboratory using stabilizing and characterizing representative items from Hanford and Rocky Flats. Thermal analysis of metal and oxide in long-term storage containers and more efficient and cost-effective methods for material characterization were also explored. Stabilization technology development progressed on a low-temperature vitrification process to

stabilize Rocky Flats incinerator ash and graphite fines in a form suitable for disposition at the Waste Isolation Pilot Plant. Final verification of the combustible washing flowsheet was largely completed. The coupling of salt oxidation with distillation, a requirement to meet the issue of safeguards termination limits, has been demonstrated on a full-scale production unit, but has run into some technical difficulties due to the oxidation chemistry. These issues should be resolved in time for the start of operations at Rocky Flats. Two off-gas technologies were demonstrated in Fiscal Year 1997 to support the pyrolysis of polycubes at Hanford, with a final process flowsheet and equipment design to be completed in Fiscal Year 1998.

D. Department Pilot Program on External Regulation

On June 3, 1997, the Secretary of Energy and the Chairman of the Nuclear Regulatory Commission (NRC) agreed to pursue NRC regulation of Department nuclear facilities on a pilot program basis. The Department and the NRC executed a Memorandum of Understanding to establish the framework for this joint effort on November 21, 1997. Under the pilot program, the NRC will simulate regulation and test regulatory approaches on approximately six to ten pilot facilities over two years.

The overall objective of the pilot program is to provide sufficient information to determine the desirability of NRC regulatory oversight of Department nuclear facilities and to support a decision whether to seek legislation to authorize external regulation of Department nuclear facilities. Specifically, the Department and the NRC seek to obtain, with respect to a set of Department facilities, information to:

- Determine the value added by external regulatory oversight.
- Test regulatory approaches that could be used by the NRC in overseeing activities at Department nuclear facilities.
- Determine the status of pilot facilities in meeting existing NRC requirements.
- Determine the costs (to both organizations) related to NRC regulation.
- Evaluate alternative regulatory relationships between NRC, Department and Department contractors.
- Identify transition issues and solutions.
- Identify necessary legislative and regulatory changes.

- Evaluate stakeholder involvement.

Facilities selected by the Department and the NRC for the pilot program will be limited to facilities under the cognizance of the Nuclear Energy, Science and Technology, Energy Research and Environmental Management program offices. At least two pilots will be conducted during fiscal year 1998. They are the Lawrence Berkeley National Laboratory (LBNL), and the Radiochemical Engineering and Development Center at Oak Ridge, Tennessee. The LBNL pilot has already begun. Preparations for the pilot at the Radiochemical Engineering and Development Center are just getting underway. Efforts to identify additional pilots are ongoing.

At the end of two years, the Department and the NRC will provide a joint report to the Secretary of Energy and the Chairman of NRC on the advantages and disadvantages of NRC regulation of Department nuclear facilities based on experience obtained during the pilot program. If the Secretary of Energy and the Chairman of NRC determine that some or all of the Department's nuclear facilities should be regulated by NRC, then the Department and the NRC will prepare draft legislation designed to give NRC such authority.

E. Department Directives

The Department has established its safety requirements in the form of appropriate rules and Department directives. These directives, along with non-mandatory safety guides and non-mandatory technical standards, provide a solid foundation for implementing an effective safety management system Department-wide.

The Department has reviewed and revised its safety-related orders over the past few years in response to three separate initiatives including: 1) an action plan to strengthen departmental standards, 2) departmental order reduction and improvement, and 3) transition to new safety requirements. While the main goal of these initiatives was to reduce burden and redundancy, they also expanded coordination with customers, clarified contractor requirements, and separated requirements from guidance. In parallel to the effort to revise and consolidate departmental directives, the Department has also continued its work on promulgating generally applicable nuclear safety requirements for its contractors into rules promulgated in accordance with the Administrative Procedure Act.

In 1997, the Department updated Department Order, 251.1A, "Directives System," and its associated Department Manual 251.1-1. The directives order and manual, expected to be issued in February 1998, have been revised to strengthen and clarify: 1) technical control over the content of safety orders and directives, 2) exemptions from safety requirements, 3) technical justification for deviation from guides, 4) technical definitions, 5) the application of the sunset/expiration process and two-year review for directives that contain safety and health requirements and, 6) appropriate Department and Board reviews prior to issuance.

Process improvement measures have been put in place between the Department and the Board staff in order to improve the directives review process. Not only have these measures led to enhanced communication between the Department and the Board staff, the documents are now reviewed in a more timely and effective manor.

III. IMPLEMENTATION OF BOARD RECOMMENDATIONS

A. Recommendation Closures

The entire process of opening, acknowledging, addressing, resolving, and closing Board recommendations provides a model for safety oversight processes used in various organizations and at various levels throughout the Department's nuclear complex. The manner in which the Department management acknowledges, addresses, and resolves Board safety issues provides an example throughout the Department. Similarly, the manner in which the Board opens safety issues, evaluates resolution approaches, monitors implementation, and ultimately closes safety issues also sets a tone for Department and contractor safety oversight organizations. To be effective, these processes must be understandable and predictable.

When a safety issue is identified by an oversight organization for special attention, there is a tendency to reduce line management control over the resolution of the issue by providing additional management direction and organizational support and advice. For example, additional Department headquarters personnel typically get involved and provide direction to the field for implementation. This can conflict with the guiding safety principle that safety is best served through strong line management ownership which integrates safety into normal work processes at the working level. The more quickly that ownership of safety issues is fully integrated into normal line management functions at the working level, the better for safety.

Safety oversight processes which periodically open safety issues and then routinely close them upon substantial resolution serve safety by supporting line management's responsibility for and ownership of safety issues. A routine and orderly process for opening, resolving, and closing safety issues serves safety by reinforcing the concepts of openness to improvement opportunities, addressing safety issues when identified, and strong line management ownership of safety. Similarly, closure of Board recommendations is beneficial to safety when the fundamental safety issues are acknowledged and addressed, the resolution approach is appropriate, the resolution is substantially on target and achieving results, and the organizations and systems are sufficiently mature to integrate continued implementation into ongoing activities. A predictable process for opening, resolving, and closing Board recommendations is also consistent with the original Congressional intent for completion of implementation plans within a relatively short period of time, such as one

year. Continued oversight and monitoring is expected on closed Board recommendations to ensure that safety programs and resolutions continue to be implemented as needed. If implementation were to degrade, the safety issue would demand renewed management attention.

Department activities culminating in 1997 led to Board closure of the following Board recommendation:

- Recommendation 93-2, Critical Experiment Capability

Recommendation 93-2, Critical Experiment Capability

Recommendation 93-2 recommended the Department retain its program of general purpose critical experiments and improve the information base used by criticality engineers in the prediction of criticality. The Board emphasized the importance of maintaining a base of information in criticality control covering the physical situations that would be encountered in future operations involving the handling and storing of fissile material. This recommendation also emphasized the need to maintain a community of individuals who are experienced and competent in practicing criticality control.

Established in December 1993, the Nuclear Criticality Experiments Steering Committee developed priorities, scope, and funding requirements for criticality experiments, analytical methods, nuclear criticality data acquisition and processing, experimental benchmarking, and criticality training. The committee process established by the Department's implementation plan has not only succeeded in addressing key technical issues relative to this important capability, but has secured a stable long-term program commitment within the Department.

The Nuclear Criticality Experiments Steering Committee began implementation of the five-year Nuclear Criticality Predictability Program Plan. The plan is designed to sustain the necessary infrastructure to address the Department's nuclear criticality predictability needs and serve as a basis for a stable long-term program commitment within the Department. Significant accomplishments occurred in 1997 in each of the five key program elements of the Nuclear Criticality Predictability Program.

Experiments.

Nine experiments from the priority experiments list are underway at the Los Alamos Critical Experiments Facility. Aside from the ongoing experiments, perhaps the greatest accomplishment in 1997 was the construction and initial testing of the Zeus critical assembly. Zeus, which is scheduled to go critical in February 1998, is a very important addition to the six operational critical assemblies at Los Alamos. This assembly was designed to exacting physical specifications and will be used to produce benchmark quality data for a myriad of intermediate energy spectrum fissile systems important to current and future Department missions.

Benchmarking.
The International Criticality Safety Benchmark Evaluation Program published 48 new evaluations in the 1997 Edition of the "International Handbook of Evaluated Criticality Safety Benchmark Experiments." This handbook now contains a total of 176 evaluations with benchmark specifications for 1316 critical or near critical configurations.

Analytical Methods.
In addition to capability maintenance and user training and assistance for the nuclear modeling and criticality analysis software, necessary improvements were supported in several analytical areas. At Argonne National Laboratory, it was demonstrated that extensive statistical sampling would overcome long-standing problems in assuring fission source convergence in Monte Carlo calculations. At Oak Ridge National Laboratory and Los Alamos National Laboratory, advanced techniques for problem-dependent resolved and unresolved resonance processing were implemented and tested.

Nuclear Data.
The Oak Ridge Electron Linear Accelerator was utilized in making cross section measurements on chlorine, potassium, aluminum, and uranium-233. New evaluations were produced for silicon, oxygen, and uranium-235. Multigroup covariance matrices were developed for investigating the importance of cross section uncertainties in uranium-235 and plutonium-241. The multipole resonance representation developed at Argonne National Laboratory was implemented in cross section processing methods at Oak Ridge National Laboratory. These evaluations are performed cooperatively at Oak Ridge, Los Alamos, and Argonne, and the subsequent data testing is performed across the data community through the Department's Cross Section Evaluation Working Group.

Training.
Los Alamos conducted five three-day courses and one five-day course during 1997. Over 90 individuals attended these courses. This hands-on training plays an important role in the Department's criticality safety posture.

On May 19, 1997, the Board issued recommendation 97-2, Criticality Safety. The Department viewed this recommendation as building upon the success of activities initiated in response to Board recommendation 93-2. The Department's implementation plan for recommendation 97-2 establishes a management structure and funding arrangement to implement recommendation 97-2 and to continue ongoing criticality safety activities established in response to Board recommendation 93-2. The Department proposed closure of Board recommendation 93-2 when the implementation plan for recommendation 97-2 was provided to the Board. On December 30, 1997, the Board closed Recommendation 93-2.

B. New Recommendations and Implementation Plans

In 1997 the Department accepted two new recommendations received from the Board:

- Recommendation 97-2, Criticality Safety
- Recommendation 97-1, Safe Storage of Uranium-233

The Department also developed implementation plans for these two recommendations in 1997. These plans define the Department's approach and schedule to resolve the associated safety issues.

Recommendation 97-2, Criticality Safety

The Board issued recommendation 97-2 on May 19, 1997, addressing the effectiveness of criticality safety programs at defense nuclear facilities in the Department complex. This recommendation identified the need to ensure that criticality safety continues to be achieved efficiently in the Department’s current and future operations. It represents a continuation and expansion of Board recommendation 93-2, Critical Experiment Capability.

The Secretary accepted this recommendation on July 14, 1997. The Department developed an implementation plan which outlines a comprehensive strategy to improve the efficiency of criticality safety programs within the Department. The implementation plan was provided to the Board on December 12, 1997. The plan incorporates ongoing Nuclear Criticality Predictability Program activities, established in response to Board recommendation 93-2, and addresses the need for improved criticality safety practices and programs within the Department. This will be achieved by:

- Improving the technical knowledge of criticality safety personnel;
- Improving the availability and use of criticality safety information and guidance; and,
- Verifying that sites with fissile material operations have appropriately considered criticality safety in the work planning process through the implementation of the ISMS.

The Deputy Assistant Secretary for Research and Development, Office of Defense Programs (DP-10), is the responsible manager overseeing the execution of this plan and managing funds allocated for plan activities. A Nuclear Criticality Safety Program Management Team (NCSPMT), consisting of representatives from affected organizations and co-chaired by Defense Programs and Environmental Management, is responsible to DP-10 for the execution of this plan. The NCSPMT operates similar to a program office developing priorities, determining program requirements, and recommending appropriate funding levels to the Responsible Manager. The NCSPMT receives technical support from a group of criticality safety experts, the Criticality Safety Support Group. This group is composed of persons having collective knowledge in a broad spectrum of criticality safety areas and will advise the NCSPMT on programmatic and technical issues.

The Department’s implementation plan represents an aggressive strategy for improving criticality safety programs to ensure efficient support of ongoing fissile material activities. However, the Department will require more than one year to implement this plan due to the magnitude and scope of the actions required to improve the Department's criticality safety program. Of the plan's 30 milestone/deliverables, 25 are targeted to be completed within one year. The plans final action, qualifying

federal staff directly performing criticality safety oversight, is scheduled to be completed in December, 1999.

Recommendation 97-1, Safe Storage of Uranium-233

The Board issued recommendation 97-1 which deals with the safe storage of unirradiated uranium-233 (U-233) bearing material on March 3, 1997. The recommendation had been preceded in February 1997 by a Board technical report entitled "Uranium-233 Storage Safety at Department of Energy Facilities." The report described the Board's perspective of the safety of U-233 stored at various sites in the Department's complex. This formed the basis for the Board's recommendations. The report also acknowledged the Department's Highly Enriched Uranium Vulnerability Assessment completed in August 1996. As a result of that assessment, the Department was aware of the legacy issues surrounding the storage of U-233 bearing material. The Department's assessors had come to many of the same conclusions as those described in the Board's technical report. At the time of issuance of recommendation 97-1, the Department had initiated development of a plan describing the necessary corrective actions for the most significant vulnerabilities identified. The Department's Highly Enriched Uranium Vulnerability Management Plan was issued on June 13, 1997.

The Department has an inventory of approximately two metric tons of U-233 in many different forms stored under a variety of conditions throughout the complex. The majority is located at the Oak Ridge National Laboratory and the Idaho National Engineering and Environmental Laboratory, with much smaller quantities at Los Alamos National Laboratory and even smaller quantities at numerous other sites. The material exists in various forms, as oxides, metal, solutions, and fluorides.

U-233 is a man-made isotope of uranium primarily formed as a result of neutron bombardment of thorium-232. Because U-233 is fissile, its potential use as fuel for nuclear reactors and as nuclear weapons material was researched extensively by the Department beginning in the 1950s. Since the completion of these research programs, various feasibility studies have been undertaken, but no major U-233 programs have been funded. Thus, the bulk of the U-233 has remained in various storage packages and systems. Due to inherent radiation, many of these packages have not been inspected for years, and their condition is unconfirmed.

The Secretary accepted the recommendation on April 25, 1997. In developing the implementation plan, the Department assessed the relevant safety issues in terms of the history of U-233. The primary safety issue being addressed is the lack of material characterization and uncertainty of storage conditions for U-233. The implementation plan was completed on September 29, 1997.

The Department is using a systems engineering approach to manage the implementation of this recommendation. Recognizing that it will take time to perform the systems engineering efforts, there are near-term actions described in the implementation plan to further assess material characterization and storage conditions and make necessary changes to mitigate interim identified risks. Some of the near-term actions completed in 1997 include:

- At Idaho, completed video inspections and gas sampling of Light Water Breeder Reactor dry storage vaults.

- At Idaho, completed X-ray tomography of 12 U-233 storage drums and inspected, overpacked, and relocated 65 drums from the Intermediate Level Transuranic Storage Facility to enclosed storage.

- At Oak Ridge, performed gamma spectrometer scans and smear samples on suspect areas in U-233 storage vaults off-gas piping. (Video inspections of the interior of a portion of the storage vaults as well as video imaging of the concrete external structures of the vaults were also performed.)

- At Los Alamos, completed a streaming study to prepare for relocation of U-233 materials to the Chemical and Metallurgical Research facility floor hole storage array.

- At Los Alamos, radiographed U-233 material containers currently located in the TA-18 Hillside Vault.

The implementation plan requires more than one year to implement due to the magnitude of actions required at multiple sites and across multiple organizations, as well as the need to systematically develop a long-term Program Execution Plan. The final implementation plan deliverables are projected for completion in 1999.

C. Other Active Implementation Plans

Recommendation 96-1, In-Tank Precipitation System at the Savannah River Site

The Board issued recommendation 96-1 on August 14, 1996, to address concerns at the In-Tank Precipitation (ITP) facility related to potential generation and release of flammable benzene in the primary process tank. This recommendation identified the need for improved understanding of the mechanisms leading to the generation, retention, and release of benzene, and based on this understanding, evaluation of the adequacy of existing safety measures and development of additional safety measures as necessary.

ITP is the process step in the vitrification of unstable hazardous radioactive and chemical liquid wastes that precipitates the highly radioactive fraction of liquid high-level waste to allow for vitrification of the wastes by the Defense Waste Processing Facility. ITP began operations in September 1995, treating the first batch of high-level waste with sodium tetraphenylborate (TPB) and sodium titanate to precipitate cesium and strontium. Following several startup tests, slurry pumps were being operated on December 1, 1995, prior to sampling the tank, when benzene in quantities greater than expected was first observed. Since December 1995, the Department has been performing analysis and testing to better understand the observed benzene phenomenon.

The key accomplishments related to recommendation 96-1 during 1997 were:

- A report summarizing the basis for the selection of the primary safety strategy for the ITP was issued in January 1997 as scheduled. Reports documenting the test plans for soluble TPB, solid TPB decomposition, benzene retention mechanisms and capacity, benzene release, and actual waste confirming studies were issued as scheduled. Process Verification Testing in Tank 48 was completed and a report was issued in April 1997 as scheduled.

- All testing activities initially planned and described by the test plans have been completed. ITP chemistry understanding achieved as a result of the test program includes:

-- Identification of intermediate by-products produced from the decomposition of TPB compounds;

-- Identification of waste components which catalyze the decomposition reaction;

-- Potassium and cesium TPB (principal process products) can also decompose rapidly, threatening the ability to maintain decontamination of salt solutions

Although all initially planned test activities (as stated above) have been completed, the results indicated that additional testing was necessary. As a result, the remaining milestone deliverables were not completed in December 1997 as scheduled.

Additional testing activities were completed during the December 1997 - January 1998 timeframe, and test results were unfavorable. As a result, the Westinghouse Savannah River Company has taken action to suspend physical work supporting the ITP System. Westinghouse also recommended that the Department formally re-evaluate the ITP process capabilities and approach alternatives. The Department has accepted this recommendation, and it is expected that testing will be completed and documented, and recommendation 96-1 will be evaluated for proposed closure in the Spring of 1998.

Recommendation 95-2, Safety Management

Recommendation 95-2 called for: 1) an institutionalization process for ensuring 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 Department's April 1996 implementation plan describes the Department's approach for implementing these recommendations.

Key accomplishments for 1997 are summarized below:

- In June 1997, the Department promulgated a revision to the Department of Energy Acquisition Regulation (DEAR) which contained two clauses describing safety management system

requirements for contractors. The provisions of the revised regulation became effective on August 26, 1997. The Department's Executive subsequently issued Acquisition Letter 97-07, requiring the Department's Heads of Contracting Activity to incorporate the revised regulations into new or existing contracts by December 31, 1997.

- The Department's FY 1998 Strategic Plan incorporated specific provisions and completion expectations for the institutionalization of integrated safety management and safety functions, responsibilities, and authorities documents.

- The Department promulgated FRAMs for the priority facilities' cognizant field and headquarters offices for use in July 1997, while the headquarters FRAM was officially promulgated in October 1997. As experience with these documents is gained, revisions will be issued periodically to ensure they capture the relevant safety functions and responsibilities.

- The Department developed "tailoring" guidance to describe effective ways of implementing integrated safety management for a variety of facilities and activities with diverse hazards and risks.

- The Department developed and implemented protocols for approval and verifications of safety management system descriptions.

- In November 1997, the Department promulgated the "*The SMS Guide*," which includes tailoring guidance, verification protocols, and the generic format and content guide for Authorization Agreements to assist sites in developing these documents.

- The Department developed and conducted a pilot course of instruction in integrated safety management. The course is now available and being offered in two-hour and eight-hour versions.

- The Department developed schedules for implementation of integrated safety management at the ten priority sites identified in its implementation plan.

- The Department completed Phase I and partial Phase II safety management system verification reviews at the Savannah River

Site. Similar reviews are being conducted at the Rocky Flats Environmental Technology Site and were planned for facilities or activities at the Hanford and Oak Ridge sites in early 1998.

- The Department conducted a second, successful Integrated Safety Management Lessons Learned Workshop in May 1997.

- An integrated safety management Home Page on the World Wide Web was created and workshop presentations were disseminated.

- Department program officials and field office line managers participated in four public meetings, convened at the Board's facilities, to describe implementation accomplishments.

The Department made significant strides in implementing integrated safety management. Effective program integration and culture change remain the focus of the Department's attention as implementation expands. As reported in the 1996 Annual Report to Congress, the Department's 95-2 implementation plan will require more than one year to implement due to the magnitude of the fundamental changes involved in the Department's approach to safety management. Although the framework for safety management is now largely in place, full implementation will be an extensive effort extending beyond 1998.

Recommendation 95-1, Improved Safety of Cylinders Containing Depleted Uranium

Recommendation 95-1 identifies the Board's concerns about the storage conditions and plans for long-term management of depleted uranium hexafluoride at Portsmouth, Ohio, Paducah, Kentucky, and Oak Ridge, Tennessee. The Department is storing approximately 560,000 metric tons of depleted uranium hexafluoride in solid form in approximately 46,500 steel cylinders at the three gaseous diffusion plants. The recommendation calls for: 1) repainting or recoating the cylinders, 2) implementing protective measures to prevent future damage or corrosion, and 3) considering a study on alternative chemical forms for the long-term storage of the depleted uranium.

The Department had initiated a program in 1992 to ensure the safety of the long-term storage of depleted uranium hexafluoride. The Department's response to the Board's recommendation was to improve the cylinder management program through a systems engineering

approach to risk management. These improvements were developed and instituted concurrently with program activities that were underway. The steps in this systems engineering approach to risk management culminated in 1997 with the final implementation plan deliverables completed on schedule. The significant accomplishments in 1997 are included below.

- Approved safety analysis reports for the cylinder yards were delivered to the Board in March 1997. The safety analysis reports established the revised safety bases for storage and maintenance of cylinders containing depleted uranium hexafluoride at the three storage sites.

- A pilot cylinder painting program, which started in 1996, was completed at Paducah with approximately 1500 more cylinders being painted. A request for proposals was released in October 1997 to continue painting cylinders at both Paducah and Oak Ridge in 1998.

- A systems engineering requirements analysis was completed that determined the technical rationale for future cylinder painting plans.

- A requirements analysis was completed that resulted in additional controls to prevent or mitigate a cylinder handler fire scenario identified in the final safety analysis reports.

The Department evaluated, in the safety analysis reports, the adequacy of the safety basis for continued cylinder management, and considered the need for a study on alternative chemical forms for long-term storage of the depleted uranium. After that evaluation, the Department informed the Board in March 1997 that the safety basis was adequate for continued storage, and that such a study was, therefore, unnecessary.

Maintaining the cylinders and improving their storage condition is a multi-year activity. The systems engineering documents delivered to the Board require the construction of additional new cylinder yards, the reconstruction of additional existing cylinder yards, the restacking of cylinders to facilitate inspection and reduce exposure to moisture, and the recoating of cylinders to reduce the rate of external corrosion. Major elements of these tasks will be completed after the year 2000. Some elements, such as inspection, surveillance, yard maintenance, recoating

and spot-painting, will continue as long as the Department stores cylinders containing the depleted uranium hexafluoride.

The Department's 95-1 implementation plan has required more than one year to implement due to the magnitude of the Department's actions and the deliberate, systems approach employed to establish and implement handling and storage solutions. The final deliverables for this implementation plan (approved safety analysis reports on the technical adequacy of depleted uranium hexafluoride storage) was completed in March 1997 and the Department proposed closure of the recommendation in a June 17, 1997 letter to the Board. The Board decided to keep the recommendation open as it continues to monitor progress on the safety management of the depleted uranium cylinders. The Department agreed in a letter to the Board on December 15, 1997 that the recommendation should remain open.

Recommendation 94-5, Integration of Department of Energy Safety Rules, Orders, and Other Requirements

This recommendation suggests that further Department actions were needed to ensure there is no relaxation of plans made to achieve compliance with requirements of Department safety orders while new, streamlined orders were issued and proposed safety rules were under development. In September of 1996, the Board concluded that the orders of interest to the Board were successfully mapped to revised Department orders and proposed safety rules. Other major accomplishment in 1996 included the completion of crosswalks of requirements from the old safety orders to the new safety orders, and the development of policy statements P 450.2, "Implementation and Compliance with Environment, Safety and Health Requirements," and P 410.1, "Promulgating Nuclear Safety Requirements."

The key accomplishments related to recommendation 94-5 during 1997 were:

- On January 28, 1997, Policy 411.1, "Department Safety Management Functions, Responsibilities, and Authorities," was issued. The departmental (corporate level) FRAM was approved and issued on October 8, 1997, following the issuance on July 31, 1997, of the secretarial and field office FRAMs for those offices associated with the ten priority facilities for safety management implementation.

- The revision of Department Order and Manual 251.1, "Directive System," is near completion and is expected to be issued in February 1998.

- The review of standards between the Board staff and the Department has been formalized in order to resolve all technical and safety-related issues.

The actions described in the Department's implementation plan are either completed or were constructively incorporated into the Department's safety management (95-2) implementation plan. The Department's 95-2 implementation plan is the primary framework and driver for all aspects of programmatic safety management, including identification of safety standards and requirements, refinement of Federal roles and responsibilities for safety, and verifying effective safety management implementation. Recommendation 94-5 has clearly accomplished its primary objectives. The Department expects to formally propose closure for this recommendation in 1998.

Recommendation 94-4, Deficiencies in Criticality Safety at Oak Ridge Y-12 Plant

Recommendation 94-4 summarizes the Board's concern with criticality safety and conduct of operations at the Y-12 Facility at Oak Ridge. The recommendation acknowledges that the Department and its contractor have taken steps to correct deficiencies, and encourages more aggressive and comprehensive management actions.

The 94-4 implementation plan presented a schedule of near-term actions to support the Y-12 resumption effort. The plan also presented a path of programmatic improvements to assure the achievement of an adequate level of safety at Y-12 over the long-term. The implementation plan includes assessments of the level of conduct of operations at Y-12, reviews of personnel training, and compliance evaluations on Operational Safety Requirements, Criticality Safety Analyses, and operating procedure controls. The Department is using Operational Readiness Reviews and Readiness Assessments, conducted by senior technical managers augmented as necessary by independent experts, to ensure that needed program improvements and culture changes are institutionalized.

Significant accomplishments in 1997 include the following:

- A Department team conducted an assessment of the contractor's Criticality Safety Program, and a corrective action plan was published in January and is being tracked to completion.

- The fourth primary mission area, Quality Evaluation, resumed full operations in February. Four of the five primary mission areas at the Y-12 facility are now been fully resumed.

- A reassessment of the conduct of operations was completed August.

The 94-4 implementation plan requires more than one year to implement due to the magnitude of the Department's actions involved and the required changes to the safety culture. The remaining implementation plan deliverables are those associated with resumption of the final primary mission area, Enriched Uranium Operations, and quarterly reports. Enriched Uranium Operations, are being resumed in two phases. Phase A (casting, rolling and machining using existing metal) is scheduled to resume in March 1998, and phase B (full metal recovery capability) is scheduled to resume operation in February 1999. Enriched Uranium Operations is the most complex of the five missions areas and involves upgrade of the most requirements, criticality safety analyses, and operating procedures.

Recommendation 94-3, Rocky Flats Seismic and Systems Safety

Recommendation 94-3 identifies the Board's concerns with the ability of Building 371 to provide reasonable assurance of protection of public health and safety should it be subjected to external forces from natural phenomena (earthquakes, extreme winds, and floods) in light of its special nuclear material consolidation mission at Rocky Flats.

In 1996, the Department submitted the final implementation plan deliverable, an Integrated Program Plan, to address the goals of Recommendation 94-3. The Integrated Program Plan identified 15 priority safety upgrades which the Department believes are needed to ensure public and worker safety. The first priority upgrade, modification of the column line "T" construction joint, was completed in 1996. Of the 14 remaining priority upgrades, seven were completed by September 1997, and three more were completed by December 1997. Work continues on the final four priority upgrades with completion expected in

1998. The Department also updated and approved the authorization basis documentation for Building 371 in September 1997.

In February 1997, the Department decided to suspend the review under the National Environmental Policy Act of a possible new passive storage vault in favor of an accelerated site closure mission for the site. In an October 15, 1997 letter to the Secretary, the Board requested a revision to the Integrated Program Plan to reflect the actions associated with the accelerated site closure. Rocky Flat's mission has changed from that of interim storage to accelerated site closure. The revised plan will detail the actions the Department plans to take for Building 371 in order to support accelerated closure at Rocky Flats, and will provide a contingency plan for further upgrading of Building 371 to provide an extra margin of safety should there be complications with off-site shipment of plutonium. This contingency plan will be developed through a systems engineering approach, consistent with Integrated Safety Management at Rocky Flats. The Integrated Program Plan revision was drafted at the end of 1997 and is expected to be finalized and delivered to the Board in 1998. The Integrated Program Plan actions are not scheduled to be completed until the year 2002.

Recommendation 94-2, Conformance with Safety Standards at Low-Level Nuclear Waste and Disposal Sites

Recommendation 94-2 expressed the Boards concern that the Department's low-level waste management program had not kept pace with the evolution of commercial practices. The Board also noted that no defense nuclear low-level waste disposal facilities had approved the radiological performance assessments required by Department Order 5820.2A, Radioactive Waste Management. The recommendation called for a comprehensive, complex-wide review of low-level waste management, similar to that conducted by the Department on spent fuel. The Board also recommended development of a regularized program of low-level waste disposal needs, issuance of additional requirements and guidance regulating the management of low-level waste, conduct of studies aimed at improving the waste management program, and completion of radiological assessments of low-level waste disposal facilities which account for all contributing source terms.

The Department continued to make good progress on completing the actions defined in the implementation plan. At the start of the year, all tasks in one task area (complex-wide review) were completed. At the

end of the year, all tasks in two additional task (regulatory structure, systems engineering) areas were completed. Most of the remaining plan deliverables (88 percent) are associated with radiological assessments of low-level waste disposal facilities, activities that were acknowledged in the implementation plan as requiring multiple years to complete.

Significant implementation plan accomplishments by the Department's during 1997 include:

- In March 1997, the Department issued a Low-Level Waste Program Management Plan, completing the one deliverable remaining in this task area. This plan is the culmination of the Systems Engineering Task Area described in the implementation plan.

- The three remaining deliverables in the Regulatory Structure Task Area were completed in February 1997 with the distribution of the draft, revised order on radioactive waste management. The low-level waste chapters of this order provided improvements in the requirements and guidance for low-level waste management. The Department is continuing the order revision effort and expects to issue a final version of the order in calendar year 1998.

- Under the Radiological Assessments Task Area, eight deliverables were completed. These deliverables included the issuance of performance assessment guidance, site preparation of performance assessments addressing three disposal facilities (LANL TA-54 Area G, ORNL Solid Waste Storage Area-6, Hanford 200-E Burial Ground) and composite analyses for four Department sites (LANL TA-54 Area G, ORNL Area-6, SRS E-Area Vaults/Saltstone). Review of these performance assessments and composite analyses are progressing under the direction of the Low-Level Waste Disposal Facilities Federal Review Group. The Group was convened during 1997 to oversee the technical and compliance review of radiological assessments and make recommendations to senior departmental management on authorization of disposal facility operation.

- The remaining deliverable in the Low-Level Waste Projections Task Area was prepared in draft form. This deliverable assesses the capacity of Department low-level waste disposal facilities versus the projected waste volumes and radiological inventories

that will need to be disposed of. The deliverable will be finalized in the first quarter of 1998.

- As the Department undertook the 1997 tasks in the Research and Development Task Area, it became apparent that the approach described in the implementation plan was not appropriate for addressing the recommendation made by the Board. As a consequence, the Department is in the process of re-evaluating the scope and approach to identifying and planning the research and development needs of the Low-Level Waste Management Program. The revised approach will be proposed by the Department and, if accepted by the Board, implemented during 1998 with a goal of identifying the highest priority research and development needs that should be undertaken in the near term.

The Department's implementation plan for this recommendation requires more than one year to implement due to the magnitude and complexity of certain the plan deliverables. In particular, the completion and approval of radiological assessments and composition analysis of the Department's disposal facilities, which has long-term implications to the Low-Level Waste Management Program, is expected to extend into the year 2000.

Recommendation 94-1, Improved Schedule for Remediation in the Defense Nuclear Facilities Complex

Recommendation 94-1 addresses the need within the Department to address the hazards and risks involving the storage of nuclear materials within the defense nuclear facilities complex. The recommendation 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 the environment. The Department continues to face increased requirements, competing needs, and additional challenges in remediation and storage of materials from disassembled nuclear weapons and materials, materials production processes, and reclamation of former production sites, equipment, and stored products and wastes. Resolving the safety issues encompassed by this recommendation continues to be of the utmost importance.

The Department made significant progress in 1997 toward completing plan deliverables. Significant accomplishments for 1997 include the following:

- Completed 94 of 167 (over 56 percent) total plan milestones through 1997.

- Issued the Savannah River Site Chemical Separation Facilities Multi-Year Plan, outlining the Phased Canyon Strategy for utilizing both F- and H-Canyons to accomplish stabilization activities.

- Completed stabilization of Mark-31 targets via dissolution in F-Canyon at Savannah River. Also, restarted the H-Canyon dissolving capability, and commenced dissolving Mark-16/22 spent nuclear fuel.

- Completed installation and startup of a bagless transfer capability for plutonium packaging at Savannah River.

- Completed construction and startup of a dry storage overpacking station for spent nuclear fuel at Idaho.

- Completed erection and began equipment installation in the spent fuel canister storage building at the Hanford site.

- Repackaged all remaining plutonium metal items known to be in contact with plastic at Rocky Flats and Mound.

- Completed draining of plutonium solutions from eight tanks in Building 771 and seven tanks in Building 371 at Rocky Flats.

- Prepared an Draft Environmental Impact Statement to evaluate alternatives for stabilization of certain residues and scrub alloy at Rocky Flats. A Record of Decision is scheduled to be issued in 1998.

- Completed activities to safely configure all "Category 1" deposits of enriched uranium at the East Tennessee Technology Park in Oak Ridge, Tennessee. The Category 1 deposits were determined to present the greatest criticality risk in the non-operational uranium enrichment plant.

- Conducted research and development activities related to a number of new technologies developed to address problems regarding plutonium stabilization and remediation. For example, a

low-temperature vitrification process is being examined for use at Rocky Flats to support meeting program milestones.

- Completed construction of a prototype system for plutonium stabilization and packaging at Rocky Flats. In-process startup and testing will occur in 1998. Similar standardized equipment is to be installed at several sites.

The Department's 94-1 implementation plan requires more than one year to complete due to the technical complexity and diversity of materials requiring stabilization at affected defense nuclear sites. The final implementation plan deliverables are scheduled for completion by May 2002.

Recommendation 93-6, Maintaining Access to Nuclear Weapons Expertise in the Defense Nuclear Facilities Complex

This recommendation expresses the Board's concern that the unique talents and experience of personnel have been and are being lost from the Department and its weapons complex as a result of changes in the Department's mission and emphasis, and its subsequent downsizing. The recommendation emphasized the need to retain access to, and capture the unique knowledge of, those individuals who have been engaged in weapons assembly, disassembly, and testing activities in order to avoid future safety problems in these areas. Retention of this information contributes to the Department's present and future capability to safely manage and maintain the weapons stockpile and disassemble existing weapons.

The Department completed the implementation plan deliverables by October 1996 and proposed closure of this recommendation in December 1996. The Department met with the Board in January 1997 to discuss completed actions and the path forward to closure. The Board indicated that it wanted to continue to monitor the actions which were started with this recommendation. Specific accomplishments in 1997 include:

- Completed archiving on weapons operations and testing, which included approximately 60 hours of videotaping, 16 group interview sessions, 25 contractor personnel interviews, 63 laboratory personnel interviews, and six Federal staff interviews.

- Completed five Weapon Safety Specifications under Seamless Safety-21 program, which includes stockpile evaluation and archiving information.

- Performed Buccaneer field exercise which demonstrated 11 of 14 test functional areas. Performance by some of the key positions were evaluated. This field exercise assisted in the maintenance of test readiness.

- Performed Rebound and Holog subcritical experiments which exercised several functional areas and key positions. These subcritical experiments assisted in the maintenance of test readiness.

- Conducted four Department-wide conferences to monitor the continued progress in archiving.

- Completed preservation of production knowledge on secondaries. A total of 264 interviews were completed, including 34 members of the Defense Programs Retiree Corps. Transcripts of a series of lectures on weapons design, materials, and processes that were recorded by a prominent scientist on secondaries design and manufacture prior to his death were also completed.

- Characterized of the full range of current weapons records locations and their condition were completed. Also, a review of contaminated records was completed which included technology identified for making duplicate copies, recommendation of a new location to store the copies, and cost estimate for implementing this effort. Additionally, a report was issued with recommendations on how to identify Vital Records and how to handle and protect these type records.

The Department actions described in this plan are complete.

Recommendation 93-5, Hanford Waste Tanks Characterization Studies

This recommendation noted that technical information on tank wastes was not sufficient to ensure that Hanford site wastes could be safely stored, that associated operations could be conducted safely, and that future data requirements to support waste disposal could be met. The

Board recommended that the Department upgrade and expedite the characterization efforts for the high-level waste tanks at the Hanford site. This recommendation also calls for revision of sampling protocols and expansion of the laboratory capacity. Lastly, this recommendation seeks integration of these characterization efforts with other systems engineering tasks.

The original implementation plan encompassed activities for developing a technical basis for characterization and for improving the sampling equipment. This was to be done in parallel with sampling and analyzing the "Watch List" tanks by October 1995. The Department encountered difficulty in developing an adequate understanding of the root cause of the tank safety issues and encountered significant difficulty in developing and implementing practices to obtain adequate tank waste samples and data. These difficulties resulted in delay to a number of implementation plan milestones resulting in a revised characterization and safety strategy. The Department realized that tank safety issues could not be resolved solely by accelerating sampling and analysis even though the Department's sampling and analysis program was improving during this time period. During 1996, this realization led to a major revision of the Department's implementation plan. The revision, completed in June 1996, is focused on obtaining a better understanding of the safety-related phenomenon that can lead to safety concerns with the high-level waste-tanks. Some of the principal accomplishments for 1997 on the revised implementation plan are as follows:

- The Basis for Interim Operations (BIO) was approved and implemented for Tank Farm Operations. Overall Tank Farm safety was improved with BIO implementation.

- Data was collected to resolve the organic complexant and organic solvent safety issues.

- Rotary Mode Core Sampling which provides sampling capability in tanks with hard wastes such as salt cake, was started.

- Schedule performance related to completion of implementation plan milestones has improved significantly with issuance of the new resolution approach. Through 1997, the Department completed 29 of the planned 31 milestones.

As previously reported, the implementation plan requires more than one year to implement due to the technical complexities of characterizing and analyzing the high-level waste tanks. Because of these complexities, if sampling and analysis of all the high-level waste tanks is required to resolve this safety issue, the revised implementation plan projects a 2002 completion. The strategy of the revised plan is based on the premise that characterization activities focused on the understanding and underlying phenomena is more effective because it allows issues to be resolved for groups of tanks rather than treating each tank separately. The revised approach is intended to increase the understanding of issues applying to all tanks, not just those sampled. Twenty-eight high priority tanks are identified as potentially providing sufficient information for resolving the high-level waste tank safety issues. The strategy of focusing on the high priority tanks achieves the intent of the recommendation to expedite characterization for resolving safety issues and could lead to earlier completion of the original implementation plan.

Recommendation 93-3, Improving Technical Capability in Defense Nuclear Programs

This recommendation raised concerns regarding the technical capability of the Department's personnel who are responsible for ensuring safety is maintained at defense nuclear facilities. In the recommendation, the Board described its concerns regarding the Department's difficulty in attracting, developing, and retaining personnel who are adequately qualified by technical education and experience to provide the level and quality of management, direction, and guidance that are essential to the Department's safe operation of its defense nuclear facilities.

In April of this year, the Department received a letter from the Board which requested an implementation plan revision to delete milestones that are no longer considered to be of value and establish an aggressive but achievable schedule for the new milestones. In response, the Secretary chartered a working group of senior line managers, representing each field and program office having safety responsibilities at defense nuclear facility, to recast the Department's 93-3 implementation plan. Following a series of working meetings, a draft implementation plan was developed and has been distributed for review and comment. Secretarial approval of the revised implementation plan is projected for early 1998.

The revised implementation plan identifies four areas considered key to achieving and maintaining the Department's federal technical capabilities:

- Executive Commitment and Line Management Ownership. The responsibility, accountability and commitment of management are essential to the successful implementation of a corporate program to recruit, develop, and retain technical expertise at defense nuclear facilities.

- Recruit. Whether filling a position from within the Department or hiring from outside, it is imperative that the Department recruit and deploy highly qualified individuals when filling technical positions responsible for safety at defense nuclear facilities.

- Development. The technical capability of the existing federal staff should be upgraded, where necessary, to ensure that they possess the necessary knowledge, skills, and abilities to competently carry out their safety management responsibilities.

- Retain. The Department must identify the critical technical capabilities that are essential to defense nuclear facilities safety functions and retain highly qualified personnel in those positions.

The revised implementation plan describes obstacles which impede the Department in its effort to recruit, retain, and develop a technically capable Federal workforce at its defense nuclear facilities. The revised plan employs a combination of current Department activities and new initiatives to address these areas in an integrated, systematic approach.

The senior technical safety management positions, which constitute the unbroken line of safety management authority and responsibility within the Department, were identified last year. Documentation of the qualifications of the incumbents filling those positions was completed and reviewed by an independent team of senior line managers. These senior managers have also been inducted into the Department’s Technical Qualification Program.

As previously reported, completion of this implementation plan requires more than one year. The actions itemized in the revised implementation plan will apply across all technical elements of the Department and involve significant programmatic and cultural changes. All actions are projected to be complete by March 2000.

Recommendation 93-1, Standards Utilization in Defense Nuclear Facilities

Recommendation 93-1 focuses on ensuring that the level of safety assurance at those facilities that assemble, disassemble, and test nuclear weapons is at least as rigorous as that required at other defense nuclear facilities and commercial nuclear material processing facilities. The Department's implementation plan calls for identification and modifications of the Department's orders and directives to strengthen the safety assurance for nuclear weapons operations and facilities. The implementation plan also incorporated the recommendations contained in the Nuclear Explosive Safety Study Corrective Action Plan which implemented actions associated with the Board's Nuclear Explosive Safety Study Independent Review.

In April 1996, the Department approved and issued new departmental orders, an implementation guide, and a technical standard that integrated nuclear explosive safety with nuclear facility safety. These directives were issued for simultaneous implementation and coordination. Following departmental review and coordination, these documents were revised to incorporate current nuclear explosive safety methods (e.g. hazard analysis, connections with the facility safety analysis report). Specific changes were made related to the integrated safety management program. The following directives were issued in final form for implementation on January 17, 1997:

- Order 452.1, "Nuclear Explosive and Weapon Surety Program"
- Order 452.2, "Safety of Nuclear Explosive Operations"
- Guide 452.2-1, "Implementation Guide for use with Department Order 452.2, Safety of Nuclear Explosive Operations"
- Standard DOE-DP-STD-3015-97, "Nuclear Explosive Safety Study Process"

The approved directives established a one-year period for implementation in current operations and contractual documents which should be completed in 1998.

In addition to these final directives, technical standard DOE-DP-STD-XXX-96, "Preparation Guide for the U.S. Department of Energy Hazard

Analysis Reports for Nuclear Explosive Operations" was issued in draft. It is now under final development by risk management experts in the nuclear weapons community; it has been used on a pilot program basis and refined based on the lessons learned. Specifically, it was used as a pilot program for the W69 warhead dismantlement. This pilot effort involving the national laboratories and the user community has provided useful information to restructure the standard into a more effective document. It is anticipated that the preparation guide will be promulgated in mid-1998.

Also, the Department has promulgated an Interim Federal Rule for the Personnel Assurance Program (PAP) which had previously been covered under the Department's internal directives. This was done in order to meet the requirements of the Administrative Procedure Act, which requires that private persons (e.g., employees of Department contractors) subject to the PAP be given formal opportunity to review and comment on the requirements before they become effective.

With the approval of an Interim Personnel Assurance Program Rule on October 9, 1996, the Department initiated formal rule making and published a Notice of Proposed Rulemaking on June 4, 1997, with public hearings held in Amarillo, Texas and Las Vegas, Nevada in July, 1997. All public comments have been addressed and publication of the final rule is anticipated early 1998.

As previously reported, this Implementation Plan has required more than one year to implement due to the multi-site nature of the planned actions. The Department anticipates completion of the planned actions and expects to propose closure to the Board in 1998.

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

The primary focus of Board recommendation 92-4 was the Tank Waste Remediation System (TWRS) Multi-Function Waste Tank Facility (MWTF) project at the Hanford Site. The recommendation identified three areas of concern: 1) project management structure, 2) design bases (systems engineering) for MWTF, and 3) technical and managerial competence. In developing an implementation plan to address the issues raised by this recommendation, the Department expanded the scope of its response to apply an integrated systems approach to define, control, and execute the overall Hanford mission. Implementing this approach, the

Department re-evaluated the need for the MWTF project, canceled the project, and altered other TWRS projects.

During calendar year 1997, the Department completed a revision to the implementation plan, and completed four implementation plan deliverables. Principal accomplishments for 1997 are as follows:

- Specific technical and managerial competence needs for Department personnel working on the TWRS project were determined through staff analyses. Comparisons of these needs with the knowledge, skills, and attitudes of current Department personnel in TWRS found most needs met. Plans for satisfying remaining needs were developed and implemented. They will be complete in 1999.

- Further progress was made on the implementation of systems engineering within TWRS. The TWRS Technical Baseline was integrated with Hanford Site Technical Baseline and with some project baselines in 1997, improving the coherence of all the design bases. In December, a procedure for translating TWRS technical baseline data into specific project design specifications was completed. TWRS will use this procedure on at least one project in 1998. A second December deliverable to the Board demonstrated how TWRS integrated its technology development activities into all other TWRS work planned for fiscal year 1998. In September 1997, a new TWRS project schedule of key initial systems engineering documents to be developed was completed. In 1997, program logics highlighted links between key TWRS activities and TWRS mission goals. These logics helped assure that appropriate activities, action sequences and priorities are planned for TWRS projects.

- The Department's implementation plan for Board recommendation 92-4 Implementation Plan was revised to align planned deliverables with current TWRS project direction. The integrated systems approach implemented in the original plan helped develop potentially more effective ways to remediate tank waste. Fundamental changes (e.g., cancellation of MWTF, changes to contractual arrangements including the awarding of privatization contracts, and the Ten Year Plan) during the five years since recommendation 92-4 was issued outdated some elements in the 92-4 implementation plan. Therefore revised

deliverables to answer the remaining concerns raised in the recommendation were specified in the revised implementation plan.

All project management structure and technical and managerial competence actions in the implementation plan revisions have been completed. Of the 12 deliverables in the latest implementation plan revision, eight remain open. One permits measurement of the extent of systems engineering maturity on any TWRS project. Six provide examples of the integrated systems approach being applied on various TWRS projects. The last one reports progress on the implementation plan semiannually to the Board.

As previously reported, this implementation plan requires more than one year to complete due to the magnitude of applying systems engineering principles to projects at the Hanford Site. Based on the revised implementation plan revision, the Department anticipates completion of remaining plan deliverables in 1999.

D. Report on Implementation Plans Requiring More Than One Year

When the Congress established the Board, they 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 its implementation plan. To monitor the Department's performance in completing implementation plans, the Congress included a provision in the Board's enabling legislation which requires notification from the Department to Congress whenever the Department takes more than one year to complete an implementation plan in response to a Board recommendation. 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 a number of implementation plans for Board recommendations. 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 42 U.S.C. § 2286d (f)(1), the following

active implementation plans are expected to require a total of more than one year to complete.

92-4, Multi-Function Waste Tank Facility at Hanford*
93-1, Standards Utilization in Defense Nuclear Facilities*
93-3, Improving Technical Capability in Defense Nuclear Programs*
93-5, Hanford Waste Tanks Characterization Studies*
94-1, Improved Schedule for Remediation*
94-2, Safety Standards for Low Level Waste*
94-4, Deficiencies in Criticality Safety at Oak Ridge, Y-12*
95-2, Safety Management*
96-1, In-Tank Precipitation System
97-1, Safe Storage of Uranium-233
97-2, Criticality Safety

* - Previously reported to require more than one year to implement.

The associated reasons and expected completion schedules for each implementation plan were provided with the previous discussion of Department activities for each Board recommendation.

E. Categorization of Board Recommendations

There are a number of ways to group and categorize Board recommendations. These groupings provide insights into the types of safety issues the Department is addressing and the schedules for issue resolution. Three different methods of categorizing recommendations are discussed below.

Scope of Organizations Involved

Recommendations vary in the scope of organizations involved. Three categories can be defined: 1) Department-wide, 2) multiple-sites/multiple-organizations, and 3) single-site/single-organization. In general, the more organizations that are involved, the more complex and time-consuming is the resolution. Department-wide recommendations are most likely to involve complex management and coordination efforts, and complex are also more likely to involve culture changes which require more time and attention to assimilate. Single-site recommendations are often of a more technical nature, while complex-wide recommendations often involve management issues. The following

table shows the scope of organizations involved for open Board recommendations and also those closed over the past two years.

DEPARTMENT-WIDE RECOMMENDATIONS

Open Recommendations	Closed Recommendations (1995-1997)
95-2, Safety Management	92-6, Operational Readiness Reviews
94-5, Rules, Orders, and Other Requirements	92-5, Discipline of Operations
94-2, Safety Standards for Low Level Waste	92-2, Facility Representatives
94-1, Improved Schedule for Remediation	91-6, Radiation Protection
93-3, Improved Technical Capability	90-2, Codes and Standards

MULTIPLE-SITE/MULTIPLE-ORGANIZATION RECOMMENDATIONS

Open Recommendations	Closed Recommendations (1995-1997)
97-2, Criticality Safety	93-4, Environmental Restoration Management Contracts
97-1, Safe Storage of Uranium-233	93-2, Critical Experiments Capability
93-6, Nuclear Weapons Expertise	
93-1, Standards Utilization at Defense Nuclear Programs	

SINGLE-SITE/SINGLE-ORGANIZATION RECOMMENDATIONS

Open Recommendations	Closed Recommendations (1995-1997)
96-1, In-Tank Precipitation Facility (Savannah River)	90-7, Hanford Waste Tanks Ferrocyanide Safety
95-1, Improved Safety of Cylinders Containing Depleted Uranium (Oak Ridge)	90-6, Rocky Flats Plutonium in the Ventilation Ducts
94-4, Deficiencies in Criticality Safety at Oak Ridge Y-12	90-5, Systematic Evaluation Plans (Rocky Flats)
94-3, Rocky Flats Seismic and Systems Safety	90-4, Rocky Flats Operational Readiness Reviews
93-5, Hanford Waste Tanks Characterization	
92-4, Multi-Function Waste Tank Facility at Hanford	

Lead Implementing Organization

Most Department implementation plans are managed from Department headquarters organizations. Four recommendations, which each involve a single site, are managed from the associated field or operations office. The subjects of the four recommendations managed at the site level are all related to environmental management and clean-up.

LEAD ORGANIZATION: ENVIRONMENTAL MANAGEMENT

Open Recommendations
97-1, Safe Storage of Uranium-233
94-2, Safety Standards for Low Level Waste
94-1, Improved Schedule for Remediation

LEAD ORGANIZATION: DEFENSE PROGRAMS

Open Recommendations
97-2, Criticality Safety
94-4, Deficiencies in Criticality Safety at Oak Ridge Y-12
93-6, Nuclear Weapons Expertise
93-1, Standards Utilization at Defense Nuclear Programs

LEAD ORGANIZATION: OTHER HEADQUARTERS ORGANIZATIONS

Open Recommendations	
95-2,	Safety Management (Under Secretary)
95-1,	Improved Safety of Cylinders Containing Depleted Uranium (Nuclear Energy, Science and Technology)
94-5,	Rules, Orders, and Other Requirements (Environment, Safety, and Health)
93-3,	Improved Technical Capability (Human Resources and Administration)

LEAD ORGANIZATION: FIELD AND OPERATIONS OFFICES

Open Recommendations
96-1, In-Tank Precipitation Facility (Savannah River Operations Office)
94-3, Rocky Flats Seismic and Systems Safety (Rocky Flats Field Office)
93-5, Hanford Waste Tank Characterization (Richland Operations Office)
92-4, Multi-Function Waste Tank Facility at Hanford (Richland Operations Office)

Progress Toward Completion of Implementation Plans

Implementation plans with long-term completion dates involve more uncertainty than those with shorter completion schedules. The projected deliverables and schedules are less certain the further out are the projected plan due dates. The long-term plans often involve research, development and application of new techniques. Due to the nature of these activities, the schedules are less certain and the basic direction of the plan may even need to be substantially changed based on the outcome of intermediate activities. For plans to be effective and useful, it must be understood that plan deliverables and milestones can not be known with certainty several years in advance and should not be held rigid in light of new information and new priorities. Flexibility is required in adjusting plan deliverables and milestones as the plan is being executed, particularly for plans that extend more than the one year that the Congress envisioned for typical implementation plan completion.

IMPLEMENTATION PLANS COMPLETE

Open Recommendations
95-1, Improved Safety of Cylinders Containing Depleted Uranium
94-5, Rules, Orders, and Other Requirements
94-3, Rocky Flats Seismic and Systems Safety
93-6, Nuclear Weapons Expertise

IMPLEMENTATION PLANS PROJECTED TO BE COMPLETE IN 1998

Open Recommendations (Projected Completion)
96-1, In-Tank Precipitation Facility at Savannah River (March 1998)
95-2, Safety Management (October 1998)
93-1, Standards Utilization at Defense Nuclear Programs (May 1998)

IMPLEMENTATION PLANS PROJECTED TO BE COMPLETE AFTER 1998

Open Recommendations (Projected Completion)
97-2, Criticality Safety (1999)
97-1, Safe Storage of Uranium-233 (1999)
94-4, Deficiencies in Criticality Safety at Oak Ridge Y-12 (1999)
94-2, Safety Standards for Low Level Waste (2000)
94-1, Improved Schedule for Remediation (2002)
93-5, Hanford Waste Tank Characterization (2002)
93-3, Improved Technical Capability (2000)
92-4, Multi-Function Waste Tank Facility at Hanford (1999)

IV. BOARD INTERFACE INITIATIVES

The Department shares with the Board the common goal of ensuring adequate protection at its defense nuclear facilities of the health and safety of the public. To accomplish this goal, the Department's policy has been 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.

The Office of the Departmental Representative to the Defense Nuclear Facilities Safety Board manages the Department's overall interface with the Board and provides advice and direction for resolving identified safety issues.

The Board and its staff have made a positive impact on Department safety across a wide variety of issues during 1997, particularly the development and accelerated implementation of integrated safety management, and continued improvement in safety directives. The dialogue between the individual Board members and senior Department officials has been frank and open regarding improvements that were needed. As a result of interaction with the Board and its staff, the Department now has a more complete and effective set of safety requirements and expectations, and a more thorough understanding of how each of the previous safety requirements were addressed during the transition. The Board has also been instrumental in the development of Department guidance for incorporating new safety requirements into contracts and accomplishing contractor implementation.

Briefings, Site Visits, and other Board Interactions

The Department has continued to interact extensively with the Board and its staff, and feels it has become more effective and thorough in these interfaces. Department personnel supported over 150 site briefings and site visits by the Board or its staff in 1997. This has included provision of logistical and technical support and interface, as appropriate, to facilitate unrestricted access by the Board and its staff to the Department's facilities. Appendix A provides a summary of site visits supported by the Department during 1997. In addition, Department personnel conducted numerous teleconferences and video conferences to exchange information and resolve safety issues.

In 1997, the Department and the Board exchanged over 170 items of correspondence (not including transmittal of requested information and routine distribution of assessments and evaluations). A large portion of the written communications between the Board and the Department involves the Board's recommendations and the associated deliverables, schedules, and reporting requirements contained in the Department's implementation plans. In addition, the Department receives and responds to trip reports detailing visits by the Board or its staff to the Department's facilities, as well as specific requests from the Board or its staff for particular information or action by the Department. Appendix B provides a summary of key correspondence for 1997.

Transmittal of requested information and routine distribution of assessments and evaluations can also be quite considerable. For example, in 1997, Hanford alone transmitted over 1600 documents requested by the Board and its staff. This level of support is considered typical for Major Department Sites.

Secretary of Energy Quarterly Briefings with the Board Members

The Secretary initiated scheduled quarterly briefings between the Board members and senior Department management in 1994. These sessions continued during 1997. The Department typically is represented in these quarterly sessions by the Secretary, Deputy Secretary, Under Secretary, and the Departmental Representative. This forum facilitates senior level information exchange on key safety and management issues, and on relative priorities and directions.

Safety Issues Management System

The Department established a Department-wide commitment management tool, the Safety Issues Management System, in August 1995. Through use of this tool, the Department has reduced the number of outstanding commitments related to Board recommendations from 694 in August 1995 to 244 in December 1997. The total number of overdue commitments related to Board recommendations has also declined significantly, from 245 in August 1995 to 67 in December 1997. In addition to commitments and actions related to Board recommendations, the Safety Issues Management System also manages 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. Since these "letter commitments" were first tracked in mid 1996, 183 letter commitments have been identified of which 158 have been completed.

The Office of 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 Safety Issues Management System database. Distribution of monthly reports on the status of commitment implementation or completion includes responsible Department managers, points of contact, and Secretarial Officers. Monthly report information is sorted by recommendation, site, organization, and overdue and near-term status. In addition, remote users have the on-line capability to view and sort the database of Board recommendations, Department responses, and implementation plan commitments and actions.

Information Archive of Board-Related Documents

The Departmental Representative maintains an information archive of all Department/Board correspondence, reports, plans, assessments, and transmittals. In 1996, the Departmental Representative began the transferring the archived information onto a dedicated Internet web site, thus increasing accessibility within the Department complex and by the general public. During 1997, the web site was substantially expanded and made more user-friendly. The objectives of the web site upgrade effort were to improve communications and coordination among Department interface personnel, to save time and money by eliminating paper distribution where practical, and to provide an effective web-based tool for interface personnel to research safety and management issues. At present, over 1500 individual documents are provided on the web site. New documents are added promptly upon receipt. The Internet web site address (http://dr.tis.doe.gov) was also adjusted so that it is easier to remember and communicate. Additional web site improvements are in progress for 1998.

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

- Board recommendations,
- Department responses and implementation plans,
- Secretarial letters to the Board,
- Board letters to the Secretary,
- 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,
- Operations/Area Office questions and answers about the Board,
- Resumes of the Board members,
- Department Manual for Interface with the Board, and
- Board staff trip reports provided to the Department by the Board.

Appendix A
Site Visits Supported by the Department in 1997

Albuquerque

- Nuclear explosive operations safety, January 7-10, 1997.
- Integrated Safety Process Team meeting, January 30-31, 1997.
- Weapons quality assurance program and electrical testers issues, May 19, 1997.
- Exercise Digit Pace, May 19-22, 1997.
- Board member visit for briefings and exchange of information, June 11, 1997
- Weapons quality assurance program and electrical tester issues, July 9-10, 1997.

Fernald

- Waste Management and the Facility Representative Program, October 8-10, 1997.

Hanford

- Tank Waste Remediation System Final Safety Analysis Report review and systems engineering, February 3-6, 1997.
- Work planning and implementation, February 18-20, 1997.
- Review of Tank 106-C, Waste Encapsulation Storage Facility and B Plant exhaust filters, and cesium capsules, March 24-27, 1997.
- Tank safety issues and In-progress review of Hanford Site 200 Area Composite Analysis and approach, March 3-April 3, 1997.
- Project and construction management review, May 12-15, 1997.
- Plutonium stabilization at the Plutonium Finishing Plant, May 27-30, 1997.
- Board visit for briefings and exchange of information, June 4-5, 1997.

- Tank Waste Remediation System activities related to recommendations 92-4, 93-5, and 95-2, June 23-26, 1997.
- Quality Assurance Activities for Spent Nuclear Fuel Project, September 8-11, 1997.
- Tank Waste Remediation system and construction management review, September 16-18, 1997.
- Board visit for briefings and exchange of information, September 24, 1997.
- Review of the Spent Nuclear Fuel Project, September 29 - October 4, 1997.
- Review site access training at the Plutonium Finishing Plant, November 5-6, 1997.
- K-Basin activities and to attend Spent Nuclear Fuel Project year end review, November 17-20, 1997.
- Authorization basis documents and activities associated with decontamination and decommissioning the Hanford 233-S, Plutonium Concentration Facility, November 17-21, 1997.
- Plutonium Finishing Plant readiness, December 1-2, 1997.
- Spent nuclear fuel revised technical strategy, December 8-11, 1997.

Idaho National Engineering and Environmental Laboratory

- Operational Readiness Review of the Nuclear Waste Calcining Facility, January 14-16, 1997.
- Resumption of operations at the Nuclear Waste Calcining Facility, May 5-6, 1997.
- Seismic issues, July 16-17, 1997.
- Staff discussions on the draft implementation plan for recommendation 97-1, August 12-13, 1997.
- Recommendation 97-1 and the U-233 Technical Team Meeting, October 8-9, 1997.

- Operations at the Idaho Chemical Processing Plant, December 15-19, 1997.

Kansas City Plant

- Weapons quality assurance program and electrical testers issues, May 20, 1997.

Lawrence Livermore National Laboratory

- Heat transfer code TOPAZ, plutonium residue treatment research and development, enhanced surveillance program, and plutonium source term analysis, January 14-16, 1997.

- Review the Enhanced Surveillance Program, March 10-13, 1997.

- Linear accelerator experiments April 15, 1997

- Authorization Agreement Implementation and Integrated Safety Management System review, December 1-4, 1997.

Los Alamos National Laboratory

- Safety management systems, January 14, 1997.

- Radiation protection at the TA-55 facility and the Chemistry and Metallurgy facility, January 27-30, 1997.

- Enhanced surveillance program, and the recommendation 94-1 core research and development program Technical Advisory Panel review, February 5-6, 1997.

- Board visit for briefings and exchange of information, February 11, 1997.

- Criticality safety and reactor safety reviews of TA-18, March 3-April 4, 1997.

- Plutonium facility structures, seismic hazards, upgrades, and materials storage, April 21-24, 1997.

- Board visit for briefings and exchange of information, April 24, 1997.

- Accelerator production of tritium project review, recommendation 94-1 research and development program review, and a TA-55 facility tour, April 28-May 1, 1997.

- Nuclear criticality predictability review, April 29-May 1, 1997.
- Characterization and certification audit of preparations to ship transuranic wastes to the Waste Isolation Pilot Plant, May 12-15, 1997.
- Board visit for briefings and exchange of information, June 17, 1997.
- Dynamic experimentation, June 17, 1997.
- Development of CMIP Authorization Basis, June 18-19, 1997.
- Review of the thermal analyses and experimentation program supporting the Nuclear Materials Storage Facility design, July 23-24, 1997.
- Chemical and Metallurgical Facility upgrades and restart, September 29-October 3, 1997.

Mound Site

- Review of tritium operations, January 29-30, 1997.

Nevada Test Site

- Nuclear Explosive Safety Study meeting, January 7-10, 1997.
- Staff discussions on the Device Assembly Facility, February 10-14, 1997.
- Board visit for briefings and exchange of information, April 22, 1997.
- Recommendation 95-2 implementation workshop, May 12-15, 1997.
- Test readiness exercises, July 1-2, 1997.
- Observe the Device Assembly Facility Emergency Preparedness drill, July 21-22, 1997.
- Observe an emergency drill at the Device Assembly Facility (DAF), November 4-6, 1997.
- Observe the operational readiness review at the Device Assembly Facility (DAF), November 10-13, 1997.

- Attend CRP for operation "Boomerang," November 24-25, 1997. (rescheduled from November 11-12, 1997)

- Safety Evaluation Panel for "Casablanca," December 15-19, 1997.

Oak Ridge

- W87 Life Extension Program, January 13-15, 1997.

- Conduct of operations corrective action plan and the status of Enriched Uranium Operations restart, February 5-7, 1997.

- Board member visit for briefings and exchange of information, March 5, 1997.

- Maintenance review for Enriched Uranium Operations, March 3-6, 1997.

- Status update on Building 9206 and the Type A Investigation, March 6-7, 1997.

- Emergency preparedness Exercise Volunteer 97, March 17-20, 1997.

- Building 9212 electrical review, March 25-28, 1997.

- Staff discussions on receipt of Savannah River Site special isotopes, April 9-11, 1997.

- Recommendation 95-2 implementation, enriched uranium operations restart authorization basis, and SARUP program review, April 14-18, 1997.

- Ventilation systems at the Y-12 Plant, May 28-30, 1997.

- Enriched uranium operations restart, June 23-24, 1997.

- Enriched uranium operations restart activities, July 7-8, 1997.

- Enriched uranium operations restart activities, July 21-25, 1997.

- Enriched uranium operations restart plan of action, August 20, 1997.

- Enriched uranium operations restart meeting, August 22, 1997.

- Draft implementation plan for recommendation 97-1, September 3-4, 1997.

- Authorization Basis Implementation, September 16-19, 1997.
- W87 LEP Design and Enriched Uranium Operations restart preparations, September 23-25, 1997.
- Chemical Hazards Associated with EUO Restart and Lithium Operations and review remediation activities at MSRE, October 14-16, 1997.
- Meetings with the Nuclear Operations Effectiveness Working Group, October 20-22, 1997.
- A review of the conduct of operations and technical competence at the Y-12 facility, October 27-31, 1997.
- Safety Basis and Authorization Agreement associated with the EUO startup, November 12-14, 1997.
- Remediation activities at K-25 and MSRE, November 17-20, 1997
- Briefings on status and plans for building 9206, November 20, 1997.
- Biweekly meeting on Enriched Uranium Operations Restart, November 21, 1997.
- Recommendation 97-1 Technical Team meeting, December 9-10, 1997.
- Implementation of safety-related controls at the Y-12 Plant, December 15-18, 1997.
- EUO restart preparations, December 16-18, 1997.
- Metal processing operations at Y-12, December 17-19, 1997.

Paducah Plant

- Recommendation 95-1 systems engineering deliverables, May 22, 1997.

Pantex Plant

- W87 Nuclear Explosive Safety Study Revalidation, January 7-10, 1997.

- Long term pit integrity and the Special Nuclear Material Component Staging Facility quarterly meeting, January 13-15, 1997.
- Lightning protection systems, January 23-24, 1997.
- Board visit for briefings and exchange of information, January 29, 1997.
- W-69 Nuclear Explosive Safety Study, February 4-7, 1997.
- W-69 Nuclear Explosive Safety Study, February 11-12, 1997.
- Review of linear accelerator activities, March 10-13, 1997.
- Review of the SS-21 process, March 12-14, 1997.
- Building 12-116 upgrades, potential Building 12-66 upgrades, and AT-400A repackaging startup, May 12-17, 1997.
- AT-400A review, May 28-30, 1997.
- W-69 Nuclear Explosive Safety Study, June 4-6, 1997.
- B61-7 Nuclear Explosive Safety Study Reevaluation and W79 dismantlement program, June 10-12, 1997.
- W79 dismantlement internal readiness assessment, June 17-19, 1997.
- Beryllium corrosion meeting, June 18-19, 1997.
- Integrated Safety Process Managers Meeting, July 8-9, 1997.
- AT-400A Operational Readiness Review, July 15-16, 1997.
- AT-400A Operational Readiness Review and the Combined Hazard Assessment Task Team meeting, July 22-24, 1997.
- Annual site emergency exercise, August 12-14, 1997.
- W79 Dismantlement Readiness Review, September 29-October 2, 1997.
- Pit storage facilities and containers, October 2-3, 1997.

- Attend Department meeting on Surplus Pit Disposition and observe the NESD Appraisal, November 17-19, 1997.

- Observe the NESD Appraisal, November 20, 1997.

- BIO upgrade meeting, December 15-18, 1997.

Rocky Flats

- Deactivation and decommissioning activities and observe a criticality safety review, January 13-16, 1997.

- Observe a criticality safety review, January 21-23, 1997.

- Review of Building 371 Basis for Interim Operations and the recommendation 94-3 integrated program plan, January 28-30, 1997.

- Staff discussions on deactivation and decommissioning, February 12-13, 1997.

- Board visit for briefings and exchange of information, February 19, 1997.

- Staff discussions on long term storage of metal and oxide, March 25-26, 1997.

- Recommendation 94-3 implementation, April 16-17, 1997.

- Plutonium trade study, May 27-29, 1997.

- Recommendation 94-1 residues, salt processing preparations and schedules, and radiological controls review, June 24-26, 1997.

- Review of the radiological control program for the salt stabilization activity in Building 707, June 30- July 2, 1997.

- Building 371 upgrades in the recommendation 94-3 Integrated Program Plan, July 7-9, 1997.

- Briefings on formality of operations for salt stabilization, July 28-August 1, 1997.

- Buildings 707 and 371 fire protection review, July 29, 1997.

- Ventilation review, August 5-7, 1997.

- Research and development support from Los Alamos National Laboratory, August 19, 1997.
- Criticality review of salt stabilization, August 20-21, 1997.
- Status review of the Building 371 Basis for Interim Operations document, September 2-3, 1997.
- Briefings on recommendation 94-3 priority upgrades, October 27-30, 1997.
- To prepare for the readiness assessment for plutonium salt stabilization operations, November 19-21, 1997.
- To conduct oversight of the Department's readiness assessment for plutonium salt stabilization operations, December 1-2, 1997.
- Building 707 seismic issues, Building 371 progress, deactivation, and site-wide risk reduction strategy December 1-2, 1997.
- Assess the status of the Rocky Flats Fire Department, December 4, 1997.
- Integrated Safety Management System Verification Phase I presentation week, December 8-12, 1997.

Sandia National Laboratory

- Weapons quality assurance program and electrical testers issues, May 19, 1997.
- Weapons quality assurance program and electrical tester issues, July 8, 1997.
- Site Safety Management Evaluation, July 22-24, 1997.
- Site Safety Management Evaluation, August 27, 1997.
- To observe the conduct of Building 707 Salt Processing Readiness Assessment, October 21-23, 1997.

Savannah River Site

- Deactivation and decommissioning activities and hazard reduction activities in Enhanced Work Planning, January 13-15, 1997.

- High-level waste and In-Tank Precipitation safety bases, January 21-24, 1997.
- Canyon utilization evaluation, January 22-24, 1997.
- Enhanced Work Planning workshop, February 11-13, 1997.
- Defense Waste Processing Facility precipitate operations and Am/Cm/Np stabilization, March 5-7, 1997.
- Canyon vessel-coil, the Tritium Facility, and the Defense Waste Processing Facility, March 18-19, 1997.
- H-Canyon restart, March 24-28, 1997.
- Staff discussions on recommendation 96-1, and High Level Waste tank safety and authorization basis, March 31- April 4, 1997.
- Board visit for briefings and exchange of information, April 3, 1997.
- H-Canyon Phase I Restart review, May 13-15, 1997.
- H-Canyon electrical systems for phase I restart, May 27-30, 1997.
- Chem panel meeting, June 4-5, 1997.
- Briefings on high-level waste facilities and consolidated incinerator facility, June 9-10, 1997.
- H canyon phase I restart operational readiness, June 18-20, 1997.
- In-Tank Precipitation and Actinide Packaging and Storage Facility review, July 9-10, 1997.
- Integrated Safety Management System Phase 1 Review pilot and Actinide Packaging and Storage Facility Design Review, July 14-18, 1997.
- Integrated Safety Management System Phase 1 Review pilot, July 29-August 1, 1997.
- Integrated Safety Management System Phase 1 Review Pilot, August 4-8, 1997.
- High-level waste issues, August 21-22, 1997.

- Nuclear material stabilization assessment, September 3-5, 1997.
- Recommendation 95-2 implementation at FB-Line, October 14-17, 1997.
- Recommendation 96-1 issues and DWPF Tour, and attend complex-wide pit corrosion meeting, October 14-17, 1997.
- Integrated Safety Management Phase II Verification of FB-Line, October 20-22, 1997.
- Sitewide Seismic Issues, October 22 - 24, 1997.
- Observations of the Tritium Facilities, October 29-31, 1997.
- Tritium Facility, November 12-13, 1997.
- HB-line phase I startup, December 3-7, 1997.

Waste Isolation Pilot Plant

- Safety analysis report review, June 11-12, 1997.
- Operations observational visit**,** September 16-18, 1997.
- Briefings on issues related to ventilation and fire protection, November 3-6, 1997.

Appendix B
Key Department/Board Correspondence in 1997

From the Board to the Department:

- On January 6, 1997, the Board forwarded a letter to the Secretary reporting the Board's acceptance of the recommendation 96-1 implementation plan which had been delivered to the Board on November 12, 1996.

- On January 24, 1997 the Board's Technical Director sent a letter to the President of Westinghouse Savannah River Company acknowledging the outstanding performance of the radiation training instructors who conducted training for the Board's technical staff on January 8-9, 1997.

- On February 19, 1997, the Board sent a letter to the Secretary enclosing a Board technical report, DNFSB/TECH-13, "Uranium-233 Storage Safety at Department of Energy Facilities."

- On March 3, 1997, the Board forwarded a letter to the Acting Secretary enclosing recommendation 97-1 addressing the safe storage of the Department's inventory of uranium-233.

- On March 5, 1997, the Board forwarded a letter to the Under Secretary enclosing a February 3, 1997 Board technical report, DNFSB/TECH-14, "Savannah River Site In-Tank Precipitation Facility Benzene Generation: Safety Implications."

- On March 12, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs noting that all commitments and deliverables for the recommendation 93-6 implementation plan have been provided, but that the recommendation should not be closed at this time since its intent has not been fully accomplished with archiving interviews still ongoing.

- On March 14, 1997, the Board forwarded a letter to the Secretary congratulating him on his appointment and wishing him well in his assignment.

- On March 14, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs requesting a briefing on the safety-related issues associated with the restart of radiography operations at Pantex.

- On March 14, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs providing comments on three issues with the Seamless Safety

21 process as described in the Interagency Engineering Procedure, "Integrated Safety Process for Assembly and Disassembly of Nuclear Weapons."

- On April 2, 1997, the Board forwarded a letter to the Under Secretary providing comments on the functional area qualification standard for federal radiation protection personnel developed under the implementation plans for recommendations 91-6 and 93-3.

- On April 2, 1997, the Board forwarded a letter to the Secretary noting the considerable progress made by the Department under recommendation 93-3 and requesting a revised implementation plan that better reflects current initiatives and provides more realistic milestones for commitments that remain open under the current plan.

- On April 14, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management concerning configuration management at the Hanford site. The letter included a staff report for the Department's review and use.

- On April 14, 1997, the Board forwarded a letter to the Secretary expressing its support for the Assistant Secretary for Environmental Management in light of the recent resignations of the Under Secretary and the Deputy Secretary.

- On April 24, 1997, the Board sent a letter to the Assistant Secretary for Defense Programs concerning radiography operations at Pantex. The Board noted that, based on assurances provided during the Department's briefing on this subject on April 17, 1997, there is an adequate level of safety assurance for radiography operations to proceed.

- On May 5, 1997, the Board sent a letter to the Principal Deputy Assistant Secretary for Safety and Quality for Defense Programs providing notification that a member of the Board's staff will require special access to information pertaining to atomic weapons in order to conduct a review of the weapons quality assurance program.

- On May 19, 1997, the Board sent a letter to the Secretary enclosing recommendation 97-2 addressing the continuation of criticality safety at defense nuclear facilities.

- On May 20, 1997, the Board sent a letter to the Secretary enclosing suggested comments on proposed amendments to the Occupational Radiation Protection Rule 835.

- On June 5, 1997, the Board sent a letter to the Director for the Office of Nuclear Energy, Science and Technology concerning a Safety Analysis Report accident scenario involving a possible fire from a depleted uranium hexafluoride cylinder handler vehicle.

- On June 10, 1997, the Board sent a letter to the Secretary concerning Board recommendation 97-1 and suggesting an option for the organizational structure for managing the corrective actions needed to ensure that uranium-233 is safely stored.

- On June 25, 1997, the Board forwarded a letter to the Secretary in response to a Department letter of April 25, 1997 concerning plans to revise the implementation plan for recommendation 93-3. The Board letter noted that a Department handbook, "Recruiting, Hiring and Retaining High Quality Technical Staff -- A Manager's Guide to Administrative Flexibilities," has not been included in the Directives System and has been given limited visibility and usage in the field.

- On July 25, 1997, the Board sent a letter to the Assistant Secretary for Defense Programs stating its determination that W69 dismantlement operations can be started safely at the Pantex Plant.

- On August 26, 1997, the Board sent a letter to the Secretary concerning recommendation 97-2 and suggesting an option for the organizational structure for managing the funds allocated for accomplishment of criticality safety activities.

- On September 2, 1997, the Board forwarded a letter to the Secretary regarding the proposed changes to the Implementation Plan for Recommendation 94-1 for plutonium stabilization and packaging at Lawrence Livermore National Laboratories. The Board agrees that the changes are technically justified and will give the Department flexibility in meeting future plutonium stabilization and packaging needs.

- On September 12, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs regarding the adequacy of protection against lightning at Pantex. The Board noted that there has been no comprehensive technical analysis of the abilities of the existing systems to meet this specific threat.

- On September 15, 1997, the Board forwarded a letter to the Secretary highlighting the importance of Item 4 of Recommendation 95-2, “The requirement for conformance [with Safety Management Programs] should be

made a contract term."

- On September 17, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management regarding plutonium stabilization efforts at the Richland Plutonium Finishing Plant, indicating that the focus of DOE-Richland and contractor-line management in resolving corrective actions has been ineffective and often impermanent.

- On September 17, 1997, the Board forwarded a letter to the Secretary emphasizing the success of the Facility Representative Program at Defense Nuclear Facilities under the closed Recommendation 92-2.

- On October 7, 1997, the Board forwarded a letter to the Secretary discussing their review of the Department's finalized versions of the level 2 Functions, Responsibilities, and Authorities Manuals (FRAMs) and draft version of the level 1. The Board noted a number of redundancies between the level 1 and level 2 FRAMs and attached a set of comments.

- On October 9, 1997, the Board forwarded a letter to the Secretary concerning its review of two draft guidance documents developed as commitments under the recommendation 95-2 implementation plan.

- On October 9, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs commending the Nevada Operations Office's handling of the subcritical experiment HOLOG on September 18, 1997.

- On October 15, 1997, the Board forwarded a letter to the Secretary discussing the need for proper foresight to protect recent competent technical hires from any future reduction-in-force due to budget restrictions. The Board suggests that the Department explore new strategies to retain their technical expertise gained as part of recommendation 93-3 and 95-2.

- On October 15, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs describing recent efforts to resolve safety issues related to dynamic balancing operations involving nuclear warheads at Pantex.

- On October 21, 1997, the Board forwarded a letter to the Secretary accepting the Department's implementation plan for recommendation 97-1. The Board is concerned that the plan will not be followed successfully if a single line manager is not responsible for completion of all of the plan.

- On October 22, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management commenting on a report describing the preparations to resume fissile material handing at the Hanford Plutonium Finishing Plant. In general the Board was concerned that the report lacked significant detail of possible risks involved with the restart preparations.

- On October 30, 1997, the Board forwarded a letter to the Assistant Secretary for Military Application and Stockpile Management granting an extension for submitting a technical report on lightning protection, due no later than February 20, 1998.

- On November 12, 1997, the Board forwarded a letter to the Secretary regarding the Department's Standards and Orders system. The Board believes that the directives system needs review and possible crosswalk revisions.

- On November 12, 1997, the Board forwarded a letter to the Secretary accepting the revised implementation plan for recommendation 92-4 improving the systems engineering of the Tank Waste Remediation System (TWRS) at Hanford. The Board requests updates on the TWRS Program Logic be included in the semi-annual brief.

- On November 18, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management enclosing DNFSB/TECH-17, "Review of the Hanford Spent Nuclear Fuel Project."

- On December 5, 1997, the Board forwarded a letter to the Secretary concerning the status of recommendation 93-1 and the Department's implementation of a standards-based safety management program for nuclear explosive operations. The Board requests a report within 60 days addressing the Department's path forward and schedule for completing the remaining objectives of the 93-1 implementation plan.

- On December 5, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs discussing recent observation of the Capability Maintenance and Improvement Project (CMIP) at the Los Alamos National Laboratory (LANL). The Board believes there is a need for improved project management on behalf of the Department and LANL and requests a report be submitted evaluating the capability of the current CMIP program management.

- On December 5, 1997, the Board forwarded a letter to the Secretary evaluating the Department's draft Order 430.1A, *Life Cycle Asset Management*. The Board believes a significant redrafting effort needs to be implemented and requests a

report within 45 days proposing a path forward with identification of the Office of Principal Interest and an assigned manager.

- On December 8, 1997, the Board forwarded a letter to the Secretary concerning the rate of progress in responding to the actions outlined in the Department's 94-1 implementation plan. The Board suggests a revision of the implementation plan that would restructure the leadership of the effort.

- On December 23, 1997, the Board forwarded a letter to the Secretary establishing reporting requirements on the status of the implementation of the Department's integrated safety management program. The Board requested a report within 60 days.

- On December 30, 1997, the Board forwarded a letter to the Secretary accepting the implementation plan for recommendation 97-2 and the closing of recommendation 93-2.

- On December 31, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs regarding observations made at a recent Nuclear Explosive Safety Evaluation at the Pantex Plant. The Board requests a briefing on the nuclear explosive safety program and its subsequent approval cycle and the status of nuclear explosive operations directives.

- On December 31, 1997, the Board forwarded a letter and enclosure to the Secretary describing the current status of integrated safety management initiatives under the 95-2 implementation plan at the Lawrence Livermore National Laboratory (LLNL). The Board looks forward to the completion of the corrective action plans soon to be finalized by Defense Programs to address the inadequacies with the implementation of LLNL integrated safety management initiatives.

- On December 31, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs enclosing a November 25, 1997 Board technical report, DNFSB/TECH-18, "Review of the Safety of Storing Plutonium Pits at the Pantex Plant."

Trip Reports From the Board to the Department:

o On February 19, 1997, the Board forwarded a letter to the Departmental Representative to the Defense Nuclear Facilities Safety Board. The letter included the following trip reports:

Date of Report	Site	Subject (Date of Visit)
1/6/97	Pantex	Review of Electrical Testers Used in Nuclear Explosive Operations (12/5-6/96)
12/31/96	Hanford	Review of Hanford High-Level Waste Tank Safety Issues (12/2-6/96)
12/18/96	SRS	Defense Waste Processing Facility Instrumentation, Control, and Fire Protection Systems (12/10-12/96)
12/5/96	Hanford	Status of Spent Nuclear Fuel Project (11/20-21/96)
12/3/96	Pantex	Review of Safety Analysis Reports (10/24-25/96 and 11/12-15/96)
12/2/96	Pantex	Status of New Special Nuclear Material Component Staging Facility (10/30/96)
11/27/96	SRS	Status of Americium/Curium Stabilization (11/12-14/96)
11/26/96	Rocky Flats	Observations of Building 771 Readiness Assessment (9/16-19/96)
10/22/96	Rocky Flats	Review of Residue Processing Title I and II Design (10/7-9/96)

o On February 25, 1997, the Board forwarded a letter to the Acting Secretary concerning the contractor self-assessment pilot program at some of the laboratories. The letter included the following trip reports:

Date of Report	Site	Subject (Date of Visit)
11/26/96	LLNL	Staff Observation of the Oakland Appraisal of LLNL ES&H Activities
1/7/97	Sandia	Staff Review of "Feedback and Improvement" Activities

o On April 9, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs concerning the start up of the Device Assembly Facility at the

Nevada Test Site. The letter included the following staff report which identified a number of areas for potential improvement:

Date of Report	Site	Subject (Date of Visit)
3/11/97	NTS	Status of Device Assembly Facility

o On April 11, 1997, the Board's Information Officer forwarded a letter to the Departmental Representative to the Defense Nuclear Facilities Safety Board. The letter included the following trip reports:

Date of Report	Site	Subject (Date of Visit)
9/16/96	Hanford	Tank Farms Draft Basis for Interim Operations
7/24/96	Hanford	Plutonium Residue Stabilization (7/16-17/96)
7/12/96	Hanford	Board Recommendation 92-4 (6/25-26/96)
7/11/96	Hanford	Flammable Gas and Lightning Mitigation Issues (6/25-26/96)
6/10/96	Hanford	Spent Nuclear Fuel Project - ORR Planning and Vulnerability (5/29-30/96)
6/7/96	Hanford	Safety of Cesium and Strontium Capsules (5/21-23/96)
4/29/96	Hanford	Spent Nuclear Fuel Project (4/15-17/96)
6/28/96	INEEL	Advanced Test Reactor Design Review (6/18/96)
8/19/96	NTS	Subcritical Experiments REBOUND-1 and HOLOG (8/13-14/96)
6/3/96	Pantex	Diesel Generators and Uninterruptable Power Supply Systems (5/16/96)
5/23/96	Pantex	Suspect/Counterfeit Parts in Electrical Systems (5/13-15/96)
9/4/96	Rocky Flats	Electrical Systems (6/10-27/96)
8/28/96	Rocky Flats	Fire Protection (7/31-8/1/96)
8/16/96	Rocky Flats	Liquid Stabilization of Plutonium Solutions (8/5-9/96)
7/29/96	Rocky Flats	Occupational Radiation Protection Program - Caustic Waste Treatment System (7/8-11/96)
5/17/96	Rocky Flats	Liquid Stabilization of Plutonium Solutions (4/29-5/1/96)
3/27/96	Rocky Flats	Hydrogen Generation Issue
3/26/97	Rocky Flats	Caustic Waste Treatment System (7/15-17/96)
3/21/96	Rocky Flats	Fire Protection (3/15/96)

9/23/96	SRS	Review of F- and H-Area High-Level Waste Tank Closure
8/9/96	SRS	DWPF and ITP Vessel Erosion/Corrosion (7/31-8/2/96)
8/9/96	SRS	Tritium Facility (7/29-30/96)
7/8/96	SRS	Consolidated Incineration Facility (6/10-12/96)
5/28/96	SRS	Spent Nuclear Fuel Activities (5/15-16/96)
1/29/96	SRS	Combined Lower Flammability Limit Issue - Tank 48 - ITP (1/22-23/96)

o On April 18, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management concerning the high-level waste tank farms at the Savannah River Site. The letter included the following staff report which identified a number of issues which could complicate implementation of Technical Safety Requirements:

Date of Report	**Site**	**Subject (Date of Visit)**
2/3/97	SRS	Review of Technical Safety Requirements for High-Level Waste Tank Farms (1/21-22/97)

o On May 2, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management concerning the Tank Waste Remediation System at the Hanford Site. The letter included the following staff trip report for use during the revision of the implementation plan for recommendation 92-4:

Date of Report	**Site**	**Subject (Date of Visit)**
4/10/97	Hanford	Review of the Tank Waste Remediation System (3/31-4/3/97)

o On May 16, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management concerning the progress on commitments made in the Integrated Program Plan for recommendation 94-3. The letter included the following staff report which identified observations that both the Rocky Flats Field Office and the contractor have given insufficient attention to implementation and follow-through on commitments in the plan:

Date of Report	**Site**	**Subject (Date of Visit)**
4/23/97	Rocky Flats	Recommendation 94-3 Implementation Review (4/16-17/97)

o On June 2, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management concerning the Department's continued failure to identify inadequacies in the contractor's readiness to begin operations at the Idaho Site. The Board requested an evaluation report with corrective actions from the Department in 90 days. The letter followed up on Board letters of May 10 and July 5, 1996 on the same topic and included the following staff report:

Date of Report	Site	Subject (Date of Visit)
3/26/97	INEEL	Review of Actions Taken to Verify Readiness to Operate the High Level Liquid Waste Evaporator and the Nuclear Waste Calcining Facility

o On June 3, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs concerning the electrical and fire protection systems of the Building 9212 complex at the Oak Ridge Y-12 Plant. The Board requested an assessment and a brief on any corrective actions prior to resumption of Enriched Uranium Operations. The letter included the following staff report:

Date of Report	Site	Subject (Date of Visit)
4/7/97	Oak Ridge	Review of the Y-12 Plant, Building 9212 Complex, Electrical and Fire Protection Systems (3/25-27/97)

o On June 18, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management concerning work planning and implementation at Bechtel Hanford, Incorporated activities. The letter followed up on a briefing made to the Board on May 6, 1997, and included a staff trip report and a Site Representative report:

Date of Report	Site	Subject (Date of Visit)
4/18/97	Hanford	Review of Work Planning and Implementation at Bechtel Hanford Incorporated (BHI) Activities (2/19-20/97)

4/21/97	Hanford	Site Representative Report on Work Planning and Conduct of Operations at the Hanford N Basin (3/27-4/2/97)

o On July 10, 1997, the Board sent a letter to the Assistant Secretary for Environmental Management concerning the electrical and fire protection systems of the H-Canyon at the Savannah River Site and advising that the H-Canyon restart can proceed. The letter included the following trip report:

Date of Report	**Site**	**Subject (Date of Visit)**
6/10/97	SRS	Review of H-Canyon Electrical and Fire Protection Systems (5/28-30/97)

o On August 8, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs concerning the recently completed Hazard Analysis Report for W69 nuclear weapon dismantlement. The Board requested an evaluation report from the Department in 30 days on whether the relative hazards of operations and relative capabilities of facilities are factored into decisions on facility use. The letter followed up on a Board letter of July 25, 1997 and included the following staff trip report:

Date of Report	**Site**	**Subject (Date of Visit)**
4/18/97	Pantex	W69 Dismantlement Hazard Analysis Report (2/3-12/97)

o On August 15, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs concerning the recently completed Preliminary Hazard Analysis for the initial design stages for the Capability Maintenance and Improvement Project at Los Alamos National Laboratory. The Board requested that it be kept informed about the findings of an ongoing safety management assessment and corrective actions to be taken. The letter included the following staff trip report:

Date of Report	**Site**	**Subject (Date of Visit)**
6/24/97	LANL	Review of Draft Preliminary Hazard Analysis for the Capability Maintenance and Improvement Project (6/18-19/97)

o On August 25, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs concerning the recently executed subcritical experiment, REBOUND, at the Nevada Test Site. The Board commended Nevada and the Joint Test Organization for the success of the experiment. The letter included the following staff trip reports:

Date of Report	Site	Subject (Date of Visit)
7/9/97	NTS	Observation of REBOUND Experiment and Associated Test Readiness Exercises (7/2/97)
7/25/97	NTS	Review of Containment Construction Documentation for LLNL-Sponsored Subcritical Experiment HOLOG and Other Issues (7/21-23/97)

o On September 5, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs concerning the Single Internal Readiness Review (SIRR), conducted June 18-26, 1997. The Board commended the SIRR team for its thorough effort but believes the W79 Dismantlement Program at Pantex should not have proceeded prior to the completion of the SIRR. The letter included the following staff trip report:

Date of Report	Site	Subject (Date of Visit)
7/30/97	Pantex	Review of W79 Dismantlement Program Single Internal Readiness Review, (7/17-20/97)

o On September 16, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs regarding the Enriched Uranium Operations (EUO) restart efforts in the Building 9212 Complex at the Oak Ridge Y-12 Plant. The Board supports the safe restart of EUO at Y-12 but the contractor appears to have failed to develop an adequate safety basis. The letter included the following staff trip reports:

Date of Report	Site	Subject (Date of Visit)
8/12/97	Oak Ridge	Review of Enriched Uranium Operations Restart Status at Y-12 Plant, (7/22-24/97).
4/29/97	Oak Ridge	Review of Enriched Uranium Operations Restart Status at Y-12 Plant, (4/14-18/97).

4/01/97	Oak Ridge	Review of the maintenance program at the Oak Ridge Y-12 Plant,(3/3-6/97).

o On September 16, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs with observations on the W78 Seamless Safety-21 Project at Pantex. The Board commended the project and the involvement of senior level managers and expressed a desire to have lessons learned from the SS-21 project included in the next revision of EP 401110. The letter included the following staff trip report:

Date of Report	**Site**	**Subject (Date of Visit)**
8/29/97	Pantex	Observations on the W78 SS-21 Milestone I Review, (8/13-27/97).

o On October 9, 1997, the Board forwarded a letter to the Assistant Secretary for Defense Programs regarding the recently completed Operational Readiness Review for the W48 pit repackaging in the new AT-400A containers at the Pantex Plant. The letter included the following staff trip report:

Date of Report	**Site**	**Subject (Date of Visit)**
8/12/97	Pantex	AT-400A Pit Repackaging Startup, (7/21-25/97).

o On October 9, 1997, the Board forwarded a letter to the Assistant Secretary for Environmental Management regarding the results of Board Staff visits to the In-Tank Precipitation facility at the Savannah River site and an evaluation of the implementation of Board recommendation 96-1. The letter included the following staff trip reports :

Date of Report	**Site**	**Subject (Date of Visit)**
2/5/97	SRS	Review of Adequacy and Reliability of In-Tank Precipitation Facility Safety Systems, (1/23-24/97).
4/15/97	SRS	Review of Technical Safety Requirements for High-Level Waste Tank Farms, Savannah River Site, (3/31-4/1/97).

4/15/97	SRS	Review of Savannah River Site In-Tank Precipitation Facility, (4/2-3/97).
5/7/97	SRS	In-Tank Precipitation Facility and Tank Farm Instrumentation and Control Systems (4/29-5/1/97).
6/16/97	SRS	Review of Savannah River Site Waste Management Facilities, (6/9-11/97).

o On October 15, 1997, the Board forwarded a letter to the Secretary regarding the status of Building 371 at Rocky Flats (RF) in light of recommendation 94-3. The Board is concerned that recent planning at RF is inconsistent with the Integrated Program Plan (IPP) developed as a part of the implementation plan to meet recommendation 94-3. The letter included the following staff trip report:

Date of Report	**Site**	**Subject (Date of Visit)**
9/9/97	Rocky Flats	Review of the Authorization Basis for Building 371 at Rocky Flats Environmental Technology Site, (9/2-3/97).

o On October 30, 1997, the Board forwarded a letter to the Secretary regarding the ventilation systems at Rocky Flats Environmental Technology Site (RFETS). The Board highlighted possible problems associated with high-efficiency particulate air filters and the need for a review of strategies used during fire fighting. The letter requested a response to the issues in the following staff trip report:

Date of Report	**Site**	**Subject (Date of Visit)**
8/11/97	Rocky Flats	Review of Ventilation Systems at Rocky Flats Environmental Technology Site

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From the Department to the Board:

- On January 9, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board enclosing a recommendation 94-2 implementation plan deliverable, the "Guidance for Complying with Department Order 5820.2A, Radioactive Waste Management, for Onsite Management and Disposal of Low-Level Waste Resulting from Environmental Restoration Activities."

- On January 21, 1997, the Principal Deputy Assistant Secretary for Safety and Quality for Defense Programs forwarded a letter to the Board transmitting the recommendation 93-2 implementation plan annual status report for 1996.

- On January 22, 1997, the Deputy Assistant Secretary for Military Application and Stockpile Management for Defense Programs forwarded a letter to the Board responding to the December 17, 1996 Board letter on nuclear explosive directives documents. The Department's letter stated that, after resolution of all issues, the final versions of Orders 452.1, 452.2 and Guide 452.2-1 were published on January 17, 1997.

- On January 28, 1997, the Assistant Manager for High Level Waste, Savannah River Operations Office, sent a letter to the Board enclosing a recommendation 96-1 implementation plan deliverable, the "Safety Strategy for Tanks 48, 49, and 50 Deflagrations."

- On January 28, 1997, the Assistant Manager for High Level Waste, Savannah River Operations Office, sent a letter to the Board enclosing a recommendation 96-1 implementation plan test program document which included three January 1997 test plan deliverables.

- On January 30, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of a recommendation 93-5 implementation plan milestone, the proposed content and format for a tank-by-tank safety status evaluation.

- On January 30, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of ventilation system upgrades for the seven AN Farm tanks, a recommendation 93-5 implementation plan milestone.

- On January 30, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of a recommendation 93-5 implementation plan milestone, the "Flammable Gas Project Topical Report."

- On January 31, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board transmitting the recommendation 94-1 implementation plan second annual report covering the period from March 1, 1996 through December 31, 1996.

- On February 2, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board reporting that the recommendation 94-2 implementation plan commitment for performance assessment critical assumptions would be deferred one month until February 28, 1997.

- On February 3, 1997, the Principal Deputy Assistant Secretary for Safety and Quality for Defense Programs sent a letter to the Board responding to the Board's letter of October 25, 1996 concerning the criticality safety program at Lawrence Livermore National Laboratory.

- On February 3, 1997, the Manager, Richland Operations Office, sent a letter to the Board transmitting the recommendation 92-4 implementation plan quarterly status report for the period covering October 1, 1996 through December 31, 1996.

- On February 5, 1997, the Assistant Secretary for Defense Programs sent a letter to the Board following-up on the Department's April 9, 1996 letter concerning highly enriched uranium materials at the Oak Ridge Y-12 Plant and providing a copy of the recently completed highly enriched uranium vulnerability assessment report.

- On February 7, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board transmitting the recommendation 94-2 implementation plan quarterly progress report.

- On February 10, 1997, the Manager, Richland Operations Office, sent a letter to the Board transmitting the recommendation 93-5 implementation plan quarterly report.

- On February 13, 1997, the Deputy Assistant Secretary for Military Application and Stockpile Management for Defense Programs sent a letter to the Board providing the January 1997 recommendation 94-4 implementation plan deliverables. The deliverables included a quarterly progress report, the corrective action plan for the criticality safety program assessment, and Quality Evaluation mission area resumption documentation.

- On February 19, 1997, the Acting Secretary sent a letter to the Board providing a copy of the annual report to Congress for calendar year 1996 concerning the Department's activities in response to recommendations and other interactions with the Board.

- On February 27, 1997, the Under Secretary sent a letter to the Board responding to the November 26, 1996 Board letter regarding comments on the set of systems engineering deliverables provided under the recommendation 95-1 implementation plan.

- On February 27, 1997, the Under Secretary forwarded a letter to the Board providing an outline of the topics to be included in the Design Considerations Reference for nonreactor nuclear applications. The outline satisfied a commitment made at the December 12, 1996 public meeting.

- On February 28, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board enclosing three recommendation 92-4 implementation plan deliverables. The letter provided drafts of the revised Radioactive Waste Management Order, the Radioactive Waste Management Manual, associated guidance, and technical basis documentation.

- On March 7, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board providing a recommendation 94-2 implementation plan deliverable, the critical assumptions to be used in the Department's preparation of low-level waste disposal facility performance assessments.

- On March 7, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board responding to the November 6, 1996, Board letter and the August 15, 1996, Board staff trip report regarding storing and handling of spent nuclear fuel at the Idaho National Engineering Laboratory.

- On March 10, 1997, the Assistant Manager for High Level Waste, Savannah River Operations Office, sent a letter to the Board enclosing a page change to the recommendation 96-1 implementation plan test program document which was provided to the Board January 28, 1997.

- On March 10, 1997, the Assistant Manager for High Level Waste, Savannah River Operations Office, sent a letter to the Board enclosing the "Test Summary Report for the Process Verification Test (PVT-1)" which is a deliverable for the recommendation 96-1 implementation plan.

- On March 13, 1997, the Under Secretary forwarded a letter to the Board providing the Action Plan on Rules and Orders Transition, following up on actions discussed at the November 7 and December 12, 1996 public meetings.

- On March 18, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board transmitting a recommendation 92-4 implementation plan deliverable, the "Headquarters, Office of Hanford Operations, Tank Waste Remediation System Final Staffing Analysis Report."

- On March 28, 1997, the Deputy Director for the Office of Nuclear Energy, Science and Technology, sent a letter to the Board transmitting the final recommendation 95-1 implementation plan deliverables, the final Safety Analysis Reports and Safety Evaluation Reports for the three depleted uranium hexafluoride cylinder storage yards.

- On March 28, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of a recommendation 93-5 implementation plan milestone, the "Composition and Quantities of Retained Gas Measured in Hanford Waste Tanks 241-AW-101, A-101, AN-105, AN-104, and AN-103."

- On March 31, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board transmitting the "Low-Level Waste Program Management Plan," a recommendation 94-2 implementation plan deliverable.

- On March 31, 1997, the Under Secretary sent a letter to the Board transmitting the quarterly status report under the recommendation 94-3 integrated program plan. This report covered the first quarter of fiscal year 1997 and also addressed changes to the scheduled completion of two deliverables related to authorization basis documentation.

- On April 2, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board notifying them that Mr. Frank R. McCoy has been designated as the responsible manager for implementation of recommendation 96-1.

- On April 2, 1997, the Under Secretary sent a letter to the Board notifying them that Mr. Richard Crowe has been designated as the responsible manager for implementation of recommendation 95-2 effective April 30, 1997.

- On April 3, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board reporting the submittal to Headquarters of the "Performance Assessment and Composite Analysis for LANL Material Disposal Area G," a recommendation 94-2 implementation plan commitment.

- On April 4, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting continuing delays towards the completion of a recommendation 93-5 implementation plan milestone, the letter reporting qualification of rotary mode core sampling system for use in flammable gas tanks.

- On April 8, 1997, the Deputy Assistant Secretary for Military Application and Stockpile Management sent a letter to the Board responding to the Board's letter of March 14, 1997 concerning issues with the Seamless Safety 21 process. The Department has chartered an Integrated Safety Process Task Team to resolve these issues regarding safety management at the Pantex Plant and the team's report will be provided to the Board when completed.

- On April 17, 1997, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board providing an initial response to the Board's April 2, 1997 letter concerning comments on the functional area qualification standard for federal radiation protection personnel.

- On April 18, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board transmitting two recommendation 94-2 implementation plan deliverables, the "Department of Energy Research and Development Activities Assessment" and the "Department of Energy Research and Development Needs Assessment."

- On April 18, 1997, the Assistant Secretary for Defense Programs sent a letter to the Board responding to the Board's letter accepting the recommendation 93-6 implementation plan. The Department provided the requested clarification of the intent to ensure the long-term maintenance of safe nuclear testing capability since the program of hydronuclear experiments is no longer viable.

- On April 25, 1997, the Secretary sent a letter to the Board responding to the Board's letter of April 2, 1997 regarding the implementation plan for recommendation 93-3 on improving the technical capability in defense nuclear facilities programs. The Secretary outlined plans for a revision to the current implementation plan and noted that Department and the Board representatives should meet as a follow-up to the June 1996 Joint Off-Site Conference to discuss these key issues further.

- On April 25, 1997, the Secretary sent a letter to the Board accepting recommendation 97-1 concerning safe storage of uranium-233. The response noted that spent nuclear fuel containing uranium-233 is not within the scope of recommendation 97-1 and that safety concerns related to the Molten Salt Reactor Experiment are being addressed in the implementation plan for

recommendation 94-1.

- On April 28, 1997, the Manager, Richland Operations Office, sent a letter to the Board transmitting the recommendation 92-4 implementation plan quarterly status report for the period covering January 1, 1997 through March 31, 1997.

- On April 28, 1997, the Assistant Manager for High Level Waste, Savannah River Operations Office, sent a letter to the Board enclosing a recommendation 96-1 implementation plan deliverable, the "Test Plan for Actual Waste Confirming Studies."

- On April 30, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board transmitting the recommendation 94-1 implementation plan quarterly report covering the period from January 1, 1997 through March 31, 1997.

- On April 30, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board reporting the completed actions regarding diversification of the Peer Review Panel as committed to the Board in a Department letter dated October 7, 1996. The Department also notified the Board of a one month delay in completion of a recommendation 94-2 implementation plan commitment to complete the Headquarters review of the Hanford 200 East Area Burial Ground Performance Assessment.

- On April 30, 1997, the Manager, Richland Operations Office, sent a letter to the Board transmitting the recommendation 93-5 implementation plan quarterly status report for the period covering January through March 1997.

- On May 1, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board transmitting the recommendation 94-2 implementation plan quarterly progress report covering the period from January 1, 1997 through March 31, 1997.

- On May 7, 1997, the Assistant Secretary for Environment, Safety and Health sent a letter to the Board providing a final response to the comments on the functional area qualification standard for federal radiation protection personnel that were provided to the Department in an April 2, 1997 Board letter.

- On May 12, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board informing them that a trade study related to the implementation plan for recommendation 94-1 would be undertaken and completed by August 1, 1997. The trade study analyzes possible paths forward

to integrate the new disposition decisions from the recent Record Of Decision and the plutonium storage commitments in 94-1.

- On May 16, 1997, the Deputy Assistant Secretary for Military Application and Stockpile Management for Defense Programs sent a letter to the Board providing the April 1997 recommendation 94-4 implementation plan deliverables. The deliverables included the ninth quarterly progress report and the Quality Evaluation mission area closure validation report.

- On May 27, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of a recommendation 93-5 implementation plan milestone, a revision to the "Gas Retention and Release Behavior in Hanford Double-Shell Waste Tanks" report.

- On May 30, 1997, the Director of the Safety Management Implementation Team sent a letter to the Board forwarding the draft level 1 and level 2 Functions, Responsibilities, and Authorities Manuals, deliverables under the recommendation 95-2 implementation plan.

- On June 2, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board transmitting the quarterly status report under the recommendation 94-3 integrated program plan. This report covered the second quarter of fiscal year 1997.

- On June 6, 1997, the Manager, Nevada Operations Office, sent a letter to the Board responding to the Board's letter of April 9, 1997 concerning the status of Device Assembly Facility readiness. The Department's letter noted the beneficial contribution of the Board staff's comments in the startup preparations for the Device Assembly Facility.

- On June 6, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of updated historical tank content estimates, a recommendation 93-5 implementation plan milestone.

- On June 13, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting a delay in the completion of the approved Tank Waste Remediation System Final Safety Analysis Report under the recommendation 93-5 implementation plan.

- On June 17, 1997, the Deputy Director for the Office of Nuclear Energy, Science and Technology, sent a letter to the Board proposing closure of recommendation 95-1.

- On June 27, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of a recommendation 93-5 implementation plan milestone, the "Organic Complexant Topical Report."

- On June 30, 1997, the Manager, Richland Operations Office, sent a letter to the Board inviting the Board members to attend the "Salt Lake Workout" meeting on July 29-30, 1997.

- On June 30, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board reporting completion of the Headquarters review of the Hanford 200 East Area Burial Grounds Performance Assessment under the recommendation 94-2 implementation plan.

- On July 3, 1997, the Manager, Richland Operations Office, sent a letter to the Board providing the Environment, Safety and Health policies which represent the Richland Operations Office philosophy and approach to conducting work at Hanford.

- On July 14, 1997, the Secretary sent a letter to the Board accepting recommendation 97-2 concerning the continuation of criticality safety at defense nuclear facilities.

- On July 18, 1997, the Manager, Oak Ridge Operations Office, sent a letter to the Board providing a copy of a lessons learned video tape concerning a recent welding and cutting fatality at the East Tennessee Technology Park.

- On July 21, 1997, the Secretary sent a letter to the Board with proposed modifications to the implementation plan for recommendation 94-1. The modifications reflect changes in technical plans and schedules for plutonium stabilization and packaging at Lawrence Livermore National Laboratory.

- On July 30, 1997, the Assistant Manager for High Level Waste, Savannah River Operations Office, sent a letter to the Board enclosing a recommendation 96-1 implementation plan deliverable, the "Bounding Mass Transfer Coefficients for the In Tank Precipitation Facility" report.

- On July 31, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board transmitting the recommendation 94-2 implementation plan quarterly progress report covering the period from April 1, 1997 through June 30, 1997.

- On July 31, 1997, the Departmental Representative to the Defense Nuclear Facilities Safety Board sent a letter to the Board forwarding the Department's Functions, Responsibilities and Authorities Manual.

- On August 11, 1997, the Secretary sent a letter to the Board notifying them of the need for a 45-day extension to transmit the implementation plan for recommendation 97-1.

- On August 13, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board transmitting the quarterly status report under the recommendation 94-3 integrated program plan. This report covered the third quarter of fiscal year 1997.

- On September 3, 1997, the Secretary sent a letter to the Board informing them of the impacts of the President's fiscal year 1998 budget on nuclear safety at the Department's Defense Nuclear Facilities. The Secretary pointed out concerns about the potential termination of recent hires in response to Board recommendations due to a Reduction in Force.

- On September 8, 1997, the Deputy Assistant Secretary for Military Application and Stockpile Management for Defense Programs sent a letter to the Board in response to their letter of August 8, 1997, regarding the W69 dismantlement program at Pantex. The Department's letter committed to provide the Board with a report on the results of a review of proper facility selection criteria for nuclear weapons operations.

- On September 8, 1997, the Deputy Assistant Secretary for Military Application and Stockpile Management for Defense Programs sent a letter to the Board in response to their request dated August 4, 1997, for the latest Significant Finding Investigation summary report.

- On September 11, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of a recommendation 92-4 implementation plan commitment, the "DOE-RL TWRS Final Staffing Analysis Report."

- On September 18, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board, concerning Recommendation 94-1 commitments. The commitment to begin the stabilization of high risk salts by pyrochemcial oxidation at Rocky Flats, originally, due August 31, 1997, was missed, and has been re-scheduled for October 31, 1997.

- On September 22, 1997, the Assistant Secretary for Environmental Management forwarded the ninth quarterly report of recommendation 94-1 to the Board.

- On September 23, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board, responding to the Board's letter of June 2, 1997, concerning the verification of readiness to operate the High Level Liquid Waste Evaporator and the New Waste Calcining Facilities.

- On September 29, 1997, the Principal Deputy Assistant Secretary for Military Application and Stockpile Management forwarded the third periodic review of status of actions for recommendation 93-6, for the period of April 1 through August 31, 1997.

- On September 29, 1997, the Secretary forwarded a letter and recommendation 97-1 (Safe Storage of HEU-233) implementation plan to the Board, advising that Mr. John Tseng, Director of the Nuclear Materials Stabilization Task Group, Office of Environmental Management is the responsible manager for this plan.

- On September 30, 1997, the Secretary forwarded a letter proposing modifications to the implementation plan for recommendation 94-1. These modifications affect two areas at Rocky Flats, the plutonium bearing solid residues and high level plutonium solutions.

- On October 2, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board, concerning the Board's letter of September 17, 1997 requesting a report from the Department in 14 days regarding safety concerns at the DOE-RL PFP facility.

- On October 3, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of a recommendation 93-5 implementation plan milestone 5.4.3.6.B, the "Letter reporting Completion of Tank C-106 Retrieval Safety Assessment."

- On October 6, 1997, the Principal Deputy Assistant Secretary for Military Application and Stockpile Management forwarded a letter to the Board describing the actions taken in response to the Board Staff's trip report dated April 18, 1997.

- On October 8, 1997, the Secretary forwarded revision 2N of recommendation 92-4 implementation plan to the Board.

- On October 9, 1997, the Acting Deputy Assistant Secretary for Nuclear Material and Facility Stabilization forwarded the following report to the Board for its evaluation of activities related to the operations of the canyon facilities at SRS, "Savannah River Site Chemical Separation Facilities Multi-Year Plan."

- On October 16, 1997, the Deputy Assistant Secretary for Military Application forwarded a letter to the Board in response to a report by the Board Staff on the W79 Single Internal Readiness Review conducted at the Pantex site.

- On October 16, 1997, the Assistant Secretary for Environmental Management forwarded a letter on the status of recommendation 94-2's implementation plan to the Board. The Department is in the process of revising the implementation plan.

- On October 16, 1997, the Deputy Secretary forwarded a letter to the Board in response to questions on contractor safety requirements at field sites requested in the Board letter of September 15, 1997. These replies will be discussed at the Board public meeting of October 23, 1997.

- On October 21, 1997, the Deputy Assistant Secretary for Military Application and Stockpile Management forwarded a letter to the Board responding to a Board Staff report of September 12, 1997, concerning lightning protection for collocated high explosives and nuclear materials at the Pantex Plant. The Department has formed a Lightning Protection Project Team (LPT) that has developed a draft project plan.

- On October 28, 1997, the Assistant Secretary for Military Application and Stockpile Management forwarded a report on the W69 Dismantlement Hazard Analysis Report to the Board. This report was developed in response to Board concerns conveyed in their letter of August 8, 1997.

- On October 28, 1997, the Secretary forwarded a letter to the Board requesting a 45-day extension to transmit the implementation plan for recommendation 97-2.

- On October 29, 1997, the Assistant Secretary for Human Resources and Administration forwarded a quarterly report for recommendation 93-3 to the Board, for activities occurring during July 1 through September 30, 1997.

- On October 29, 1997, the Secretary forwarded a letter proposing changes to the implementation plan of recommendation 94-1. These changes will effect the safe storage of potentially critical materials at the East Tennessee Technology Park and the Molten Salt Reactor Experiment located at the Oak Ridge Site.

- On October 30, 1997, the Director of the Safety Management Implementation Team forwarded a letter to the Board discussing the imminent release of the draft Integrated Safety Management Systems Guide, G 450.4-1. Issuance of this draft report is being held in abeyance until the results of the Authorization Agreement meeting at Albuquerque on October 16, 1997, can be added.

- On October 30, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of a recommendation 93-5 implementation plan milestone 5.6.3.1.e, the "Letter reporting verification of head space homogeneity and evaluation of variations in head space vapor concentrations in passively ventilated tanks with changing atmospheric temperatures."

- On October 31, 1997, the Manager, Richland Operations Office, sent a letter to the Board reporting completion of a recommendation 93-5 milestone 5.6.3.1.f, "Standard Inventory Estimates for all Tanks."

- On October 21, 1997, the Manager, Richland Operations Office, sent a letter to the Board forwarding the Quarterly Report for July through September 1997 for recommendation 93-5.

- On November 7, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board acknowledging the Board's letter of October 9, 1997, concerning the In-Tank Precipitation Facility and the tank farm authorization basis and safety programs.

- On November 10, 1997, the Assistant Secretary for Environmental Management sent a letter to the Board responding to the Board's letter of October 15, 1997, regarding seismic safety for Rocky Flats Building 371 under recommendation 94-3. The Department has committed to revising the Integrated Program Plan.

- On November 14, 1997, the Manager, Richland Operations Office, sent a letter to the Board discussing the delay of High Heat Safety Issue milestones for the completion of the 93-5 implementation plan.

- On November 25, 1997, the Assistant Secretary for Environmental Management forwarded the fourth quarterly report for the recommendation 94-3 implementation plan to the Board. The Authorization Agreement for Building 371 and the Interim Storage Vault Conceptual Design Report were also enclosed with the letter.

- On December 12, 1997, the Secretary forwarded the 97-2 implementation plan to the Board. This plan builds upon the successes of the 93-2 implementation plan and the Secretary proposes closure of Board recommendation 93-2.

- On December 15, 1997, the Deputy Director of the Office of Nuclear Energy, Science and Technology, forwarded a letter to the Board regarding the closure of recommendation 95-1.

- On December 19, 1997, the Manager of Richland Operations Office sent a letter to the Board reporting completion of a 92-4 implementation plan commitment, "Provide Applicable sections of the TWRS Multi-year Work Plan that Reflect Technology Development Activities for TWRS."

- On December 23, 1997, the Savannah River Site Acting Assistant Manager for High Level Waste forwarded a letter informing the Board that the November and December 1997 delivery of commitments for the 96-1 implementation plan will be delayed. Currently the Department is re-evaluating the strategy for the 96-1 implementation plan.

- On December 29, 1997, the Manager of Richland Operations Office sent a letter to the Board reporting completion of a 92-4 implementation plan commitment, "Provide a Procedure for Translating TWRS Technical Baseline Data into Project Design Specifications."

- On December 29, 1997, the Manger of Albuquerque Operations Office forwarded to the Board the initial Site Assessment Report for Los Alamos National Laboratory fulfilling a commitment of the 97-1 implementation plan.

- On December 30, 1997, the Deputy Assistant Secretary for Military Application and Stockpile Management forwarded a letter to the Board on the delay of the completion of a commitment regarding facility use decisions at Pantex.

- On December 31, 1997, the Assistant Secretary for Environmental Management forwarded a letter to the Board acknowledging receipt of Board Technical report 17, and committing to provide a change to the 94-1 implementation plan for the Hanford spent nuclear fuel project.