October 30, 2000

The Honorable Jacob J. Lew
Director
Office of Management and Budget
Eisenhower Executive Office Building
17th Street and Pennsylvania Ave., N.W.
Washington, D.C. 20503

Dear Mr. Lew:

The enclosed Annual Performance Plan for Fiscal Year (FY) 2002 is submitted in accordance with the specific requirements of OMB Circular No. A-11. This planning effort is conducted in the context of the Defense Nuclear Facilities Safety Board's (Board) ongoing independent statutory oversight of the safety of the Department of Energy's (DOE) defense nuclear facilities.

The Board issued its first Strategic Plan in September 1997, after consultation with the Office of Management and Budget, Congressional staff members, and the public. During FY 1998, the Board and its staff further refined its annual performance planning efforts to produce measurable performance goals that would demonstrate progress toward achieving the Board's strategic goals. Based on the lessons learned from its experience with measuring and subsequently documenting performance against the plan, the Board updated its Strategic Plan in FY 1999, a year ahead of the suggested schedule for such updates. The resulting Strategic Plan and the associated Annual Performance Plans provide for a streamlined approach that allows the Board to use its resources effectively by tracking progress against specific plan objectives.

This year's performance plan identifies a specific number of reviews that will be conducted during FY 2002 in support of each strategic objective, and identifies candidate areas of focus for these reviews. The performance outcomes of these reviews are expected to result in safety upgrades with a significant health and safety impact. To that end, the FY 2002 plan provides examples of

accomplishments during fiscal years 1999 and 2000, and carries forward the specific goals for FY 2001. The Board's FY 2002 budget request will be structured to match the goals of this performance plan.

Sincerely,

John T. Conway
Chairman

c: Mr. Mark B. Whitaker, Jr.

Enclosure

FISCAL YEAR 2002 PERFORMANCE PLAN SUBMITTED UNDER THE PROVISIONS OF THE GOVERNMENT PERFORMANCE AND RESULTS ACT

Defense Nuclear Facilities Safety Board

OCTOBER 2000

TABLE OF CONTENTS

Section **Page**

1. INTRODUCTION 1-1

2. FISCAL YEAR 2002 ANNUAL PERFORMANCE PLAN 2-1

2.1 General 2-1

2.2 Strategic Goal 1: Complex-wide Health and Safety Issues 2-1

2.3 Strategic Goal 2: Safe Stewardship of Nuclear Weapons Stockpile and Components 2-8

2.4 Strategic Goal 3: Safe Disposition of Hazardous Remnants of Weapons Production 2-13

List of Tables

Table Number **Page**

Table 2-1(a), Accomplishments Regarding Strategic Objective 1-A 2-2

Table 2-1(b), Performance Goals Regarding Strategic Objective 1-A 2-3

Table 2-2(a), Accomplishments Regarding Strategic Objective 1-B 2-4

Table 2-2(b), Performance Goals Regarding Strategic Objective 1-B 2-5

Table 2-3(a), Accomplishments Regarding Strategic Objective 1-C 2-6

Table 2-3(b), Performance Goals Regarding Strategic Objective 1-C 2-7

Table 2-4(a), Accomplishments Regarding Strategic Objective 2-A 2-9

Table 2-4(b), Performance Goals Regarding Strategic Objective 2-A 2-10

Table 2-5(a), Accomplishments Regarding Strategic Objective 2-B 2-11

Table 2-5(b), Performance Goals Regarding Strategic Objective 2-B 2-12

Table 2-6(a), Accomplishments Regarding Strategic Objective 3-A 2-14

Table 2-6(b), Performance Goals Regarding Strategic Objective 3-A 2-15

Table 2-7(a), Accomplishments Regarding Strategic Objective 3-B 2-16

Table 2-7(b), Performance Goals Regarding Strategic Objective 3-B 2-17

1. INTRODUCTION

The Defense Nuclear Facilities Safety Board (Board) is an independent executive branch agency charged by statute with a broad mission of providing technical health and safety oversight of the Department of Energy's (DOE) defense nuclear facilities and activities.

As outlined in the Board's Strategic Plan, the Board's statutory mission is logically divided along the lines established by the three general goals:

1. **Complex-Wide Health and Safety Issues. Integrated safety management (including comprehensive health and safety requirements, technically competent personnel, and effective implementing mechanisms) continues to evolve through feedback and improvement, and is implemented in all life cycle phases—design and construction, startup, operation, and decommissioning.**

2. **Safe Stewardship of Nuclear Weapons Stockpile and Components. Nuclear weapons stockpile support and defense nuclear research activities continue to be planned and executed safely at DOE's defense nuclear facilities.**

3. **Safe Disposition of Hazardous Remnants of Weapons Production. Hazardous remnants of nuclear weapons production are appropriately characterized, stabilized, and stored; and legacy facilities are decommissioned in a manner that protects the worker, the public, and the environment.**

The Board's Strategic Plan establishes the framework for making management decisions, and describes what the Board plans to do each year to progress toward achievement of each of these three general goals. In planning its work, the Board and its staff have developed a set of seven strategic objectives that, in aggregate, implement the Board's general goals. The relationship between these goals and objectives is discussed in the Board's Strategic Plan.

To facilitate strategic management, the Board has organized its technical staff into three groups. The technical lead of each group is assigned responsibility for one of the three general goals in the Strategic Plan, and for executing the strategic objectives associated with that goal. As required by the Office of Management and Budget (OMB) guidance governing compliance with the Government Performance and Results Act of 1993, the Board and its technical leadership have produced measurable performance goals for fiscal year (FY) 2001 and FY 2002 that, when executed, will demonstrate continued progress toward the Board's strategic objectives, and consequently toward its general goals. These annual performance

goals and measures establish projected levels of performance and reflect the nature of the Board's independent oversight function.

All of the Board's general goals and objectives outlined in its Strategic Plan address multi-year efforts and encompass a broad spectrum of technical areas relevant to the safety of DOE's defense nuclear mission. The Board's Annual Performance Plan for FY 2002 identifies annual performance goals for each strategic objective that consist of reviews to be conducted in support of each objective, plus the identification of candidate areas for these reviews. An outcome measure for each objective is described as part of the discussion of each annual performance goal. Qualitative assessments of the outcome associated with each annual performance goal are provided in the Board's Annual Performance Reports.

The Board measures progress toward achieving the positive outcomes embedded in each annual performance goal in three stages, by evaluating:

- **DOE's acknowledgment that a safety enhancement is needed, after the Board communicates the results of its technical reviews.**

- **DOE's subsequent development of appropriate corrective actions to resolve the Board-identified safety issue.**

- **DOE's implementation of the necessary corrective actions, leading to the successful resolution of the safety issue, and resulting in improved protection of the public, the worker, or the environment.**

The basis of measurement for the qualitative assessment includes formal correspondence of DOE and its defense nuclear contractors, Board correspondence, staff reports, DOE and contractor public testimony, and other sources. Past reporting experience, developed during the last 10 years of reporting progress to Congress in the Board's Annual Reports, has shown that it is possible to conduct a retrospective assessment of Board-identified issues and associated DOE responses that demonstrates that the Board has had a clear and positive impact on the safety culture within DOE.

Because of the variability of DOE's plans and schedules, some candidate areas identified in the Board's Annual Performance Plans may not be addressed during a performance period. However, the Board's Annual Performance Report will document that an equivalent level of effort was expended in support of the strategic objective, and describe the alternative area that was selected for review.

2. FISCAL YEAR 2002 ANNUAL PERFORMANCE PLAN

2.1 GENERAL

To facilitate an integrated review, the foldout tables in this section are formatted to show the flow-through from the general goals set forth in the Board's Strategic Plan to strategic goals and objectives and specific annual performance goals for FY 2001 and FY 2002. To place this planning information in context, the tables also provide examples of the Board's related FY 1999 and FY 2000 accomplishments, as required by OMB's guidance on Performance Plans. These examples do not represent the entire scope of progress made on the FY 2000 performance goals. A comprehensive assessment of progress during calendar year (CY) 1999 appears in the Board's Tenth Annual Report. The Eleventh Annual Report, due for publication in early 2001, will cover accomplishments during CY 2000.

2.2 STRATEGIC GOAL 1: COMPLEX-WIDE HEALTH AND SAFETY ISSUES

Continuing evolution of Integrated Safety Management (ISM) (including comprehensive health and safety requirements, technically competent personnel, and effective implementing mechanisms) through feedback and improvement, and full implementation of ISM in all life cycle phases—design and construction, startup, operation, and decommissioning.

The first goal addresses the agency's efforts to facilitate the complex-wide implementation of integrated safety management throughout the DOE defense nuclear complex. Achieving that goal requires a multi-year, multi-site, multi-focus effort. The three strategic objectives that support that general goal encompass a broad spectrum of technical areas relevant to the safety of DOE's defense nuclear mission.

Strategic Objective 1–A: Improvement and Integration of Health and Safety Directives. The Board and its staff will verify that new and revised DOE directives contain adequate requirements for the protection of the health and safety of the workers and the public.

Strategic Objective 1–B: Technical Competence. The Board and its staff will verify that roles, responsibilities, experience, and competencies required to protect the workers and the public are explicitly defined and implemented for both DOE and its contractor personnel.

Strategic Objective 1–C: Complex-Wide Implementation of Integrated Safety Management in Facility Design, Operation, and Post-Operation. The Board and its staff will verify the effective and expeditious development and implementation of DOE's ISM program.

Table 2-1(a) - Accomplishments Regarding Strategic Objective 1-A

Objective 1–A:	Improvement and Integration of Health and Safety Directives. The Board and its staff will verify that new and revised DOE directives contain adequate requirements for the protection of the health and safety of the workers and the public.

Examples of FY 1999 Accomplishments	Examples of FY 2000 Accomplishments
The Board and its staff provided substantive comments to DOE during the review process for three health and safety directives associated with deactivation and decommissioning. After successfully resolving the Board's comments, DOE updated one of these directives. At years end, both staffs were completing resolution of issues in the two remaining directives to improve content, clarity, and consistency of the guidance. The Board's staff provided comments on thirteen draft implementation guides associated with 10 CFR 835, *Occupational Radiation Protection*, DOE-STD-1098-99, *Radiological Control Standard*, and two handbooks associated with the DOE radiological protection program. The staff then worked with the DOE staff to resolve the identified areas of needed improvement. By year's end, DOE had issued all thirteen implementation guides and both handbooks, and had sent the standard to the DOE Technical Standards Program for publication. These actions resulted in clarifying and strengthening DOE's guidance for this important safety management function. The Board provided comments to DOE on a new guide on management of Quality Assurance, a new qualification standard for individuals engaged in criticality safety studies, and a new handbook addressing design considerations, all three of which are explicitly associated with integrated safety management. Through significant interaction between the Board's staff and their DOE counterparts, significant improvements in the content and clarity of the directives were achieved.	The Board and its staff provided substantive comments to DOE during the review process for 44 directives associated with, but not limited to, integrated safety management, chemical safety, nuclear explosive operations, and technical personnel training and qualification. At year's end, both staffs were completing resolution of issues on several remaining directives to improve the content, clarity, and consistency in safety guidance. The Board and its staff provided comments to DOE during the review process on the draft *Chemical Management Handbook*. The preliminary draft was unacceptable, lacking proper integration with integrated safety management concepts. As a result of suggestions from the Board's staff, the rewritten handbook incorporates integrated safety management, the applicable DOE standards, and other government agency regulations to allow ease of contractor use. Following the issuance of DOE-DP-STD-3016-99, *Limited Standard, Hazard Analysis Reports for Nuclear Explosive Operations*, the Board's staff interacted directly with the Pantex contractor in preparing an Authorization Basis Manual that described in more detail the format and content of the Hazard Analysis Report, as well as the analytical process, in preparation for nuclear explosive operations. This will significantly improve the quality of the authorization basis for nuclear explosive operations including clear identification of the necessary safety controls. Working closely with the Board and its staff, DOE has upgraded DOE Order 360.1A, *Federal Employee Training*, and DOE-STD-1063-2000, *Facility Representatives*, as elements of the revised Implementation Plan for Board Recommendation 93-3, *Improving DOE Technical Capability in Defense Nuclear Facilities Programs*. DOE has further institutionalized its technical personnel processes with the issuance of DOE M 426.1-1, *Federal Technical Capability Manual*. During 2000, DOE G 450.4-1, *Integrated Safety Management Guide* was revised to incorporate a major new section dealing with how to maintain a site's Integrated Safety Management system following initial implementation. Significant involvement of the Board and its staff was key to the development of the approach as well as the revision to DOE G 450.4-1. This new guidance will help to ensure the sites' ISM systems are maintained current and continue to improve.

Table 2-1(b) - Performance Goals Regarding Strategic Objective 1-A

Objective 1–A:	Improvement and Integration of Health and Safety Directives. The Board and its staff will verify that new and revised DOE directives contain adequate requirements for the protection of the health and safety of the workers and the public.

FY 2001 Performance Goals	FY 2002 Performance Goals
The Board and its staff will continue to review and assess the adequacy of health and safety requirements in new directives and rules, as well as in specific DOE directives that may be revised as a result of DOE's two-year review cycle. Results will be communicated to DOE by the Board or its staff for incorporation or resolution, as appropriate. Based on past experience and an anticipated modest decrease in the number of new directives, it is estimated that DOE will issue a minimum of 34 directives for review by the Board and its staff in FY 2001. Based on experience from FY 1999 and FY 2000, it is expected that approximately three of these reviews will be of major significance, and, as such, will require substantial Board and staff interaction with DOE to satisfactorily resolve identified issues prior to finalization. The Board will place particular emphasis on encouraging DOE to develop necessary new directives and to improve, consolidate, and integrate existing directives and rules related to health and safety in the following areas: C Effective conduct of hazardous facility, site and complex-wide projects and programs, including roles, responsibilities, competencies, mechanisms, and training; C Sound safety management and systems engineering throughout the complete facility life cycle; and C Adequate performance measures for determining effectiveness of site integrated safety management programs. As a result of these reviews, new or modified health and safety directives will be issued in an enhanced form, resulting in improved safety through standardized requirements and guidance that provide for adequate protection of the workers and the public.	The Board and its staff will continue to review and assess the adequacy of health and safety requirements in new directives and rules, as well as in specific DOE directives that may be revised as a result of DOE's two-year review cycle. Results will be communicated to DOE by the Board or its staff for incorporation or resolution, as appropriate. It is estimated that DOE will issue a minimum of 36 directives for review by the Board and its staff in FY 2002. Approximately 3 of these reviews are expected to be of major significance, requiring substantial Board and staff interaction with DOE to satisfactorily resolve identified issues prior to finalization. The Board will continue to encourage DOE to develop necessary new directives and to improve, consolidate, and integrate existing requirements and guidance related to health and safety, especially those directives and rules aimed at the integration of safety management throughout the entire life cycle of major projects. In this regard, the Board intends to pay particular attention to how DOE articulates its requirements and guidance applicable to new capital acquisitions and complex-wide programs involving multiple program offices, especially in the following areas: C Effective conduct of hazardous facility, site and complex-wide projects and programs, including roles, responsibilities, competencies, mechanisms, and training; and C Safety and hazard analyses. As a result of these reviews, new or modified health and safety directives will be issued in an enhanced form, resulting in improved safety through standardized requirements and guidance that provide for adequate protection of the workers and the public.

Table 2-2(a) - Accomplishments Regarding Strategic Objective 1-B

Objective 1–B:	Technical Competence. The Board and its staff will verify that roles, responsibilities, experience, and competencies required to protect the workers and the public are explicitly defined and implemented for both DOE and its contractor personnel.

Examples of FY 1999 Accomplishments	Examples of FY 2000 Accomplishments
The Board continued to focus DOE's attention on the technical competence of federal workers as an essential safety element for defense nuclear facilities. Through a revised Implementation Plan for Board Recommendation 93-3, *Improving DOE Technical Capability in Defense Nuclear Facilities Programs*, DOE formed a panel of senior line managers to ensure successful implementation of a corporate program to recruit, develop, deploy, and retain technical capability at defense nuclear facilities. The panel members self-assessed the Technical Qualification Programs at their respective sites, and took the necessary actions to upgrade their plans and procedures. The panel also identified 686 critical technical positions and took administrative actions to preserve nearly all of these positions against any future downsizing. Significant accomplishments were made by DOE as a result of implementing Board Recommendation 97-2, *Criticality Safety*. Training and qualification programs for both DOE and contractor criticality engineers were established including high quality qualification standards. The operation of the Los Alamos National Laboratory critical facility was revamped for training of criticality safety engineers and for the development of intermediate range neutron energy data for critical assemblies. These activities provide vital information for understanding and characterizing the unique hazards and for developing proper safety controls related to nuclear criticality. Additionally, a web-site was developed for dissemination of archived data on the past 40 years of criticality experiments which will provide great benefit to the nuclear safety community.	The Board continued to focus DOE's attention on the technical competence of federal workers as an essential safety element for defense nuclear facilities. Through a revised Implementation Plan for Board Recommendation 93-3, *Improving DOE Technical Capability in Defense Nuclear Facilities Programs*, DOE formed a panel of senior line managers to implement a corporate program to recruit, develop, deploy, and retain technical capability at defense nuclear facilities. Many changes in DOE's mission and infrastructure have occurred since the Board issued Recommendation 93-3. The Board believes that DOE's efforts in response to this recommendation have resulted in excellent programs and processes that will be invaluable in the training and qualification of the next generation of the DOE federal workforce. On November 9, 1999, the Board closed Recommendation 93-3. The Board and its staff have continued to engage DOE in regard to the development of formal training and qualification for federal and contractor criticality safety personnel resulting in the upgrade of DOE Order 420.1, *Facility Safety* emphasizing this important aspect of criticality safety. Also, in response to Board staff concerns about the floor presence of criticality engineers, DOE has directed that criticality engineers increase the number of hours spent observing work on the floor, and report these hours to headquarters and program offices responsible for the site. The Board and its staff have continued to interact directly with cognizant DOE representatives to ensure a satisfactory path to closure of Board Recommendation 97-2, *Continuation of Criticality Safety*, especially with regard to the development of an adequate curriculum and the criticality safety training of sufficient numbers of contractor and federal employees. The Board will continue to emphasize the vital importance that a technically-competent workforce plays in ensuring public and worker health and safety.

Table 2-2(b)- Performance Goals Regarding Strategic Objective 1-B

Objective 1–B:	Technical Competence. The Board and its staff will verify that roles, responsibilities, experience, and competencies required to protect the workers and the public are explicitly defined and implemented for both DOE and its contractor personnel.

FY 2001 Performance Goals	FY 2002 Performance Goals
The Board and its staff will conduct the following type of assessments: • Review the status of implementation and institutionalization of the Federal Technical Capability Program at the DOE site level. • Assess the implementation of the system engineers program in the Federal and contractor work force, in accordance with DOE's Implementation Plan for Board Recommendation 2000-2, *Configuration Management of Vital Safety Systems*. • Assess whether competence is commensurate with assigned responsibilities for key safety management personnel at defense nuclear contractor organizations as part of scheduled DOE and contractor readiness determinations. • Evaluate on the site level DOE's 5-year plan for maintaining a viable criticality safety infrastructure to ensure that they address the concerns identified in the FY 2000 complex-wide criticality safety reviews by the Board's staff and DOE-EH, that included increasing the field presence of federal criticality safety personnel and improving the formality and rigor of DOE oversight efforts. • Assess DOE's plan to develop and implement a project manager qualification program, including its level of technical rigor. Results of assessments will be communicated to DOE to enhance understanding of safety-related roles and responsibilities in support of DOE's execution of functions associated with protecting the worker and the public, and to be used by DOE to upgrade the quality of its technical workforce.	The Board and its staff will conduct the following type of assessments: • Review and evaluate the effectiveness of the system engineers program in the Federal and contractor work force, in accordance with DOE's Implementation Plan for Board Recommendation 2000-2, *Configuration Management of Vital Safety Systems*. • Assess whether competence is commensurate with assigned responsibilities for key safety management personnel at defense nuclear contractor organizations as part of scheduled DOE and contractor readiness determinations. • Assess the degree to which DOE and its contractors have implemented measures to ensure a viable criticality safety infrastructure, including progress toward qualification of contractor criticality safety engineers, through DOE site reviews. • Assess the effectiveness of DOE's project manager qualification program at DOE headquarters office and DOE sites, including its depth and level of technical rigor. Results of assessments will be communicated to DOE to enhance understanding of safety-related roles and responsibilities in support of DOE's execution of functions associated with protecting the worker and the public, and to be used by DOE to upgrade the quality of its technical workforce.

Table 2-3(a) - Accomplishments Regarding Strategic Objective 1-C

Objective 1–C:	Complex-Wide Implementation of Integrated Safety Management in Facility Design, Operation, and Post-Operation. The Board and its staff will verify the effective and expeditious development and implementation of DOE's integrated safety management (ISM) program.

Examples of FY 1999 Accomplishments	Examples of FY 2000 Accomplishments
Reviews by the Board and its staff identified shortcomings in the Hanford Spent Nuclear Fuel Project that included the continued lack of sound project management, despite several high level management changes; poor implementation of quality assurance requirements; and an inability to identify and resolve emerging technical issues in a timely manner. Continued Board and staff pressure through correspondence and face-to-face meetings has led to some progress on these concerns, but continuing attention is needed. Several key indicators for gauging progress in implementing ISM have been identified from the Board's reviews: Incorporation of ISM-related DEAR clauses into contracts, establishment of a mutually agreed-upon requirements base as the foundation for the ISM program, development of an ISM System description that describes how the contractor will integrate the system into work practices, performance of a DOE ISM verification review, and establishment of an authorization agreement. Each of these areas received Board attention in FY1999, not only at the 10 priority facilities called out in the Recommendation 95-2 DOE Implementation Plan but also in the 43 facilities designated in the Board's December 1997 letter as "follow-on" facilities. During the FY1999, DOE has worked to fully implement ISM at the Recommendation 95-2 priority facilities. The Board monitored and advised on the development of DEAR Clause-required ISM descriptions, which describe how the contractor will integrate ISM into work practices. To date, all sites with priority or follow-on facilities have had their ISM descriptions approved by DOE, except Los Alamos National Laboratory, Lawrence Livermore National Laboratory, and the Pantex Plant, which are scheduled for approval by the end of the year. The Board also urged DOE to continue its efforts to define and operate to explicit control measures at the priority facilities, and enlarge its efforts to include all high and moderate hazard defense nuclear facilities. In his March 1999, memorandum on Safety-Accountability and Performance, the Secretary of Energy committed to having ISM completely in place for all DOE facilities by September 2000. In response to the Board's March 20, 1998, reporting requirement on the DOE's Feedback and Improvement program, DOE committed to upgrading the DOE Lessons Learned process, including developing guidance on improving the complex-wide feedback and improvement programs. In addition, DOE recently published a revised DOE acquisition regulation that will hold a contractor's fee at risk in the event of poor safety performance. The Secretary of Energy's March 3, 1999, memorandum on Safety-Accountability and Performance tasked the newly established DOE Safety Council with developing performance standards that will be used to hold Federal personnel accountable for effective and timely ISM implementation. The Board is continuing to work closely with DOE in this effort. The Board issued Recommendation 98-1 to address the internal independent oversight element of the feedback and improvement program that the Board felt was not being adequately addressed in DOE's feedback and improvement initiatives. The Board determined that DOE's independent assessments of safety management in the field were treated largely as advisories and follow-up actions became discretionary to lower levels of DOE line management. DOE accepted this Recommendation and provided an acceptable Implementation Plan, which addresses DOE's need for a clearly defined, systematic, and comprehensive process to address and resolve safety issues identified by internal independent oversight.	Review of the preliminary design package for the Tritium Extraction Facility (TEF) project by the Board and its staff disclosed that the preliminary design did not appear to have fully implemented the hierarchy of safety controls consistent with the site's manuals of practice, and that additional consideration of this matter was merited in developing the final TEF design. For example, there appeared to be an over-reliance on administrative controls being used instead of engineered design features to provide safety functions. DOE accepted the Board's suggestions and agreed to incorporate them in the final design. Reviews of the Hanford Spent Nuclear Fuel Project by the Board's staff identified safety issues related to safety-related ventilation systems and electrical systems at the Cold Vacuum Drying Facility. DOE has addressed these issues, including addition of a diesel generator to supply safety significant power to the exhaust fans for the ventilation system, further enhancing the safety of the facility. The Board and its staff conducted a series of review meetings on the design of the Pit Disassembly and Conversion Facility (PDCF) that identified to DOE a need for additional boreholes in the geotechnical specification to improve safety; DOE added a requirement for these boreholes to the specification. In addition, the Board noted that sand filters provide better inherent resistance to severe accidents than do high efficiency particulate air (HEPA) filters. In response, DOE committed to conduct a comprehensive study to compare the safety and cost benefits of the sand filter option with the HEPA filtration option. The Board prepared and issued DNFSB/TECH-27 *Fire Protection at Defense Nuclear Facilities*, setting forth principles and good practices for enhancing the reliability of DOE's complex-wide fire protection program. The Board's staff review of DOE's Y2K Program identified issues related to the evaluation of the safety related systems for year 2000 compliance. Programmatic issues at Los Alamos and Lawrence Livermore National Laboratories remained until the fall of 1999 and required subsequent staff followup in late 1999. Following the improvement in DOE's Y2K program, there were no significant failures of safety-related systems at the calendar year turnover. In response to numerous letters from the Board associated with Integrated Safety Management, DOE upgraded its Lessons Learned process, including issuing new guidance documents and development of a centralized web-based Lesson Learned database. DOE also issued a set of ISM performance indicators to provide senior DOE managers with measures of the effectiveness of ISM at their sites. In response to Board Recommendation 98-1 *Resolution of DOE Internal Oversight Findings*, DOE implemented a formal process for dealing with safety issues identified by DOE's internal independent oversight organization. This has resulted in a clearly defined, systematic, and comprehensive process for addressing and resolving these safety issues. The Board's staff continued to critique all ISM verifications at defense nuclear facilities. These verification reviews are the processes DOE uses to evaluate the status of ISM implementation and are key to the DOE Field Managers' determinations that their sites have implemented ISM. Additional criteria for determining ISM implementation were issued by the Deputy Secretary in October 1999. The Board worked closely with DOE in defining these criteria and in evaluating DOE's efforts to implement ISM at all sites.

Table 2-3(b) - Performance Goals Regarding Strategic Objective 1-C

Objective 1–C:	Complex-Wide Implementation of Integrated Safety Management in Facility Design, Operation, and Post-Operation. The Board and its staff will verify the effective and expeditious development and implementation of DOE's integrated safety management (ISM) program.

FY 2001 Performance Goals	FY 2002 Performance Goals
The Board and its staff will conduct reviews of DOE's efforts to implement ISM throughout all facility life cycle phases. Candidates for review include: C Tritium Extraction Facility at the Savannah River Site. Assess detailed process hazards studies, the quality assurance program for equipment procurement and facility construction, and a detailed structural review of the facility design prior to initiation of construction. C Pit Disassembly and Conversion Facility at Savannah River Site. Evaluate the adequacy of, and identify major safety issues associated with trade studies, Title I design, and preliminary hazards analysis. C Hanford Spent Nuclear Fuel project. Assess hazards studies and safety analysis reports, construction, equipment operational testing, procedures, and operator training. C Other DOE design/construction activities. Assess the safety management, criteria development, design development, and construction. Reviews will be based on relative hazards, and on DOE's schedule and progress on candidate facilities (e.g., Tritium Consolidation Project, Highly Enriched Uranium Material Facility, and Waste Treatment Plant). C The quality and effectiveness of at least one ISM review by the DOE Office of Oversight, and at least two annual DOE ISM reviews (one EM site and one NNSA site). C Activity-level ISM implementation at sites with higher than expected rates of occurrences related to worker protection. C Authorization Agreements for Pantex Plant weapons activities, as well as selected Authorization Agreements for other defense nuclear facilities and activities. C Authorization basis documents at two defense nuclear sites to ensure hazards are adequately identified and controls are in place to prevent unwanted events, as well as to ensure hazard assessments are integrated with emergency management activities. As a result of these reviews, DOE will provide adequate approaches and schedules for resolution of identified issues at new or modified defense nuclear facilities.	The Board and its staff will conduct reviews of DOE's efforts to implement ISM throughout all facility life cycle phases, as well as efforts to make ISM more effective. Candidates for review include: C Tritium Extraction Facility at the Savannah River Site. Assess the implementation of quality assurance requirements during facility construction and the procurement of safety significant facility equipment. C Pit Disassembly and Conversion Facility at the Savannah River Site. Evaluate the adequacy of DOE's review of Title I/II design, and resolution of significant design safety issues. C Hanford Spent Nuclear Fuel project. Assess DOE reviews of operations for fuel removal and storage from K-West Basin and review of safety analyses, construction, and operational testing in preparation for fuel removal from K-East Basins in December 2002. C Other DOE design/construction activities. Reviews will be based on relative hazards, and on DOE's schedule and progress on candidate facilities (e.g., Tritium Consolidation Project, Highly Enriched Uranium Material Facility, and Waste Treatment Plant). C The quality and effectiveness of at least one ISM review by the DOE Office of Oversight, and the implementation of line oversight of ISM per DOE P 450.5 at one EM site and one NNSA site. C Activity-level ISM implementation at sites with higher than expected rates of occurrences related to worker protection. C The quality of authorization basis documents at two defense nuclear sites to ensure hazards are adequately identified and controls are in place to prevent unwanted events, as well as to ensure hazard assessments are integrated with the emergency management activities for better mitigation of potential accidents. As a result of these reviews, DOE will provide an adequate approach and schedule for resolution of identified issues that supports safe start-up and operation of new or modified defense nuclear facilities.

2.3 STRATEGIC GOAL 2: SAFE STEWARDSHIP OF NUCLEAR WEAPONS STOCKPILE AND COMPONENTS

Continued safe execution of nuclear weapons stockpile support and defense nuclear research activities at DOE's defense nuclear facilities.

The objectives and annual performance goals in support of the Board's second goal address the Board's efforts to support DOE's safe execution of its national security mission. Achieving that goal requires the Board and its staff to evaluate DOE's work at multiple sites in direct support of the nuclear weapons stockpile, as well as associated research and development. The two strategic objectives that support that general goal address the safe execution of various activities within DOE's two primary nuclear weapon mission components: direct support of the stockpile, and nuclear weapon research and development activities.

Strategic Objective 2–A: Safe Conduct of Stockpile Management. The Board and its staff will verify the safety of DOE's defense nuclear facilities and activities relating to the maintenance, storage, and dismantlement of the nuclear weapon stockpile.

Strategic Goal 2–B: Safe Conduct of Stockpile Stewardship. The Board and its staff will verify the safety of DOE's defense nuclear activities undertaken to ensure the continuing effectiveness of the nuclear weapon stockpile in the absence of underground nuclear testing.

Table 2-4(a) - Accomplishments Regarding Strategic Objective 2-A

Objective 2–A:	Safe Conduct of Stockpile Management. The Board and its staff will verify the safety of DOE's defense nuclear facilities and activities relating to the maintenance, storage, and dismantlement of the nuclear weapon stockpile.

Examples of FY 1999 Accomplishments	Examples of FY 2000 Accomplishments
DOE Standard on Hazards Analysis Reports: In early 1999, in response to a Board Recommendation, DOE developed and published a standard on conducting and documenting hazards analyses for nuclear explosive operations. This important directive sets DOE's fundamental expectations and provides guidance on how to establish and document the safety basis that ensures hazardous activities involving nuclear explosives can be completed safely. Lightning Protection at Pantex: The Board and its staff continued efforts during the last year to help DOE address the potential hazards from lightning to nuclear explosive operations at Pantex. This year, the DOE lightning protection project team (which was established in response to a Board reporting requirement) completed a comprehensive investigation and report detailing the threat of lighting to nuclear explosives, analyzing potential controls and mitigators, and summarizing the actions DOE considers necessary to protect nuclear explosive operations at Pantex from lightning threats. During this same time, DOE has identified and installed many additional lightning protective measures at the plant. Chemical Safety: Based on evaluations from its staff, the Board concluded that efforts to improve chemical safety at the Oak Ridge Y-12 Plant were not keeping pace with other defense nuclear sites or the Secretary of Energy's published expectations. After the Board communicated its concern, DOE has stepped up efforts to complete a chemical management program at Oak Ridge Y-12, including a renewed commitment to characterize chemical inventories for emergency planning purposes and to dispose of excess chemicals. Safety Controls for Specific Nuclear Explosive Operations: The Board and its staff conducted numerous assessments of the safety of specific nuclear explosive activities at the Pantex Plant in the last year. These reviews, which included the W56 dismantlement, the W87 Life Extension Program, and the W62 surveillance program, identified safety-related issues such as the adequacy of safety analyses and controls, the flowdown of controls into operating-level procedures, and the readiness of activities to operate safely. As a result of the Board's involvement, DOE has taken positive action to improve the safety of all of these operations. Integrated Safety Management at Pantex: In early FY1999, the Board issued Recommendation 98-2, *Integrated Safety Management at the Pantex Plant* urging DOE to take fundamental actions to improve the safety of all weapons-related work at the Pantex Plant. Principle among the Board's specific recommendations was that DOE simplify and expedite its process for re-engineering processes at Pantex such that the attendant safety improvements could be put in place sooner. DOE accepted Recommendation 98-2 and made specific commitments to improve safety management at Pantex including accelerating efforts to establish weapon-specific safety basis for all on-going activities at Pantex. Enriched Uranium Restart at Y-12: The Board and its staff have been evaluating DOE efforts to resume enriched uranium operations at the Oak Ridge Y-12 Plant for several years. In the last year, the Board has identified and passed on to DOE several safety issues with the Phase A2 resumption project including design problems, safety analysis problems, and problems with implementation of safety controls. The Board and DOE worked cooperatively to resolve these issues such that Phase A2 operations could resume safely to support high priority national defense related missions.	Pit Storage and Repackaging: Currently, the vast majority of plutonium pits at the Pantex Plant are in inadequate storage configurations. In response to the Board's Recommendation 99-1, *Safe Storage of Fissionable Material called "Pits,"* DOE has started a major effort to repackage all pits into improved storage containers and execute a surveillance plan to ensure that pits in storage remain in a safe environment. Y–12 Plant Safety Basis: As a result of staff reviews and several letters from the Board, personnel at the Y–12 Plant have revised the implementation plan for upgrades to the safety bases for their nuclear facilities. This upgrade program will lead to better identification of hazards and necessary controls for prevention and mitigation of potential accidents. This effort will also lead to implementation of the intent of an Integrated Safety Management program at the related facilities in a more effective manner. W62 Disassembly & Inspection Restart: As a result of the Board's and its staff's focused involvement in the reauthorization of Disassembly and Inspection (D&I) operations for the W62 nuclear warhead, DOE improved safety of the operation by upgrading the tooling and procedures used for the job. This effort, which was prompted by the Board's Recommendation 98-2, *Integrated Safety Management at the Pantex Plant*, also resulted in a substantial improvement in the technical rigor and thoroughness of the Nuclear Explosive Safety Study Revalidation process. In addition, the experience that DOE and its contractors gained during this effort has resulted in an improved process for hazards analysis at Pantex for other nuclear explosive operations, and the execution of that process has improved noticeably as a result of the progress made during the W62 D&I restart activities. Pantex Fire Protection: The Board and its staff highlighted to DOE senior management that the fire detection system at Pantex was failing because the commercial vendor had stopped producing spare parts. The review also identified that the fire suppression capability of the cells in Building 12-44 lagged that in other nuclear explosive operating facilities because they did not have ultra-violet detectors to initiate suppression. As a result of the Board's actions, a major part of the supplemental appropriation from DOE to Pantex will be used to install a UV detection system to activate the deluge system in the cells, greatly improving the fire safety of explosive operations in the area. Additionally, DOE has started plans (in response to Recommendation 98-2) to accelerate replacement of the fire detection system with a non-proprietary system supported by many different commercial vendors. Canned Subassemblies: Comparing safety analyses from the Pantex Plant and Y-12 Plant, the Board's staff noted that the analyses at Pantex did not consider the potential damage resulting from exposure of canned subassemblies (CSAs – the fusion portion of a nuclear weapon) to fires. Further research by the staff on the properties of the materials making up the Los Alamos-designed CSAs indicated a significant hazard at Pantex that was not considered by the site or the Design Agency. Working with safety basis and other engineering personnel from all three sites, the staff assisted in the development of a predictive model of behavior for these components. The response of CSAs to fires were then compared to the response of high explosives (HE) and controls were enhanced to ensure that they were adequate to protect the CSAs.

Table 2-4(b) - Performance Goals Regarding Strategic Objective 2-A

Objective 2–A:	Safe Conduct of Stockpile Management. The Board and its staff will verify the safety of DOE's defense nuclear facilities and activities relating to the maintenance, storage, and dismantlement of the nuclear weapon stockpile.

FY 2001 Performance Goals	FY 2002 Performance Goals
The Board and staff will conduct assessments of DOE's efforts to develop and implement safety management systems for stockpile management activities. The Board will review safety system development (e.g., system and process designs, safety bases, control schemes, and administrative programs) and safety management system implementation. These reviews will focus on activities at the Pantex Plant, Y-12 Plant, and SRS tritium activities. Candidate areas for Board and staff review include: C Weapon Safety Specifications and/or Hazard Analysis Reports for nuclear weapon activities (e.g., W88). C Safety basis analysis for nuclear weapons activities or facilities (e.g., fire protection facility safety analysis upgrade). C Cross-cutting functional areas at the Pantex Plant, Y-12 Plant, or SRS tritium facilities (e.g., radiation control, chemical safety). C DOE/contractor operational readiness reviews or other readiness determinations (e.g., W88). C Special studies of unique or significant hazards at a DOE weapons facilities (e.g., hazards of special materials in weapons). In addition, the Board and staff will assess the adequacy of development and implementation of the ISM System and the safety controls identified for any new weapon system dismantlement projects (such as the W56) at the Pantex Plant or Y-12 Plant that start in FY 2001.	The Board and staff will conduct assessments of DOE's efforts to develop and implement safety management systems for stockpile management activities. The Board's evaluations will be split between DOE efforts to develop safety systems (e.g., system and process designs, safety bases, control schemes, and administrative programs) and DOE efforts to implement aspects of safety management systems. These reviews will focus on activities at the Pantex Plant, Y–12 Plant, and SRS tritium activities. Candidate areas for Board and staff review include: C Site-wide and facility-specific safety analyses and controls identification and implementation for nuclear weapon activities (e.g., safety analysis reports). C Weapon-specific safety analyses and controls identification and implementation for nuclear weapon activities (e.g., B83). C Nuclear explosive safety studies (e.g., W80). C Cross-cutting functional areas at the Pantex Plant, Y-12 Plant, or SRS tritium facilities (nuclear criticality safety, fire protection, nuclear explosive safety). C Special studies of unique or significant hazards at a DOE weapons facilities (e.g., process technology alternatives). While performing its reviews, the staff will assess the effectiveness of ISM implementation and the safety controls identified for ongoing operations as well as any new weapon system dismantlement projects at the Pantex or Y-12 Plants that start in FY 2002.

Table 2-5(a) - Accomplishments Regarding Strategic Objective 2-B

Objective 2–B:	Safe Conduct of Stockpile Stewardship. The Board and its staff will verify the safety of DOE's defense nuclear activities undertaken to ensure the continuing effectiveness of the nuclear weapon stockpile in the absence of underground nuclear testing.

Examples of FY1999 Accomplishments	Examples of FY 2000 Accomplishments
B332 Restart: After a Board letter in December 1997 identifying weaknesses in work planning, authorization and control in Building 332, Plutonium Facility, the Board interacted with Lawrence Livermore National Laboratory and the Department of Energy throughout Building 332's Resumption of Operations in 1998 and 1999 to encourage and assist with the improvements. As a result, Building 332 has implemented a process to plan, authorize and control work with special nuclear material safely. With the Board's encouragement the process has been applied to the other facilities in the Superblock, i.e., Tritium Facility and Hardened Engineering Test Building. The Laboratory is revising site implementing guidance on planning, authorizing and control work to address a laboratory-wide systemic problem. Integrated Safety Management at LLNL: As a result of the Board's effort to improve safety management at DOE defense nuclear facilities (Recommendation 95-2), LLNL has developed a set of Work Smart Standards (a set of requirements and standards for hazards specifically applicable to LLNL), is making significant progress with developing a description of its integrated safety management system, and is developing site-wide standards/guidance to implement an integrated safety management system. Through direct Board interaction, Board letters, and Board staff visits and reviews, the Board has provided assistance with and feedback to the Work Smart Standards set and to the Laboratory's efforts to develop policy and guidance to implement integrated safety management. Y2K: Based on staff reviews at Lawrence Livermore National Laboratory and other sites, the Board determined the DOE had provided inadequate direction to the operators of its defense nuclear facilities with regard to evaluating safety-related systems for year 2000 compliance. The Board communicated its concern to DOE in a letter requesting that DOE report on the status of safety-related equipment evaluations at all defense nuclear facilities. In April 1999, DOE issued detailed guidance on the evaluation of safety-related systems, requiring those systems be treated in a manner similar to mission-essential systems. Los Alamos National Laboratory Pajarito Laboratory: The Board and its staff identified deficiencies with the safety basis for activities conducted at the Pajarito Laboratory (also known as TA-18 which includes the Los Alamos Critical Experiments Facility). The Board assisted DOE and the lab in defining a path to improve the safety basis including urging that DOE focus on Basis for Interim Operations to upgrade the safety controls at Pajarito Laboratory as soon as possible. Damaged Nuclear Weapons: The Board has recently focused attention on the issue that DOE's capability to safely perform the work necessary to dispose of damaged nuclear devices (DNDs) at defense nuclear facilities is rapidly disappearing. In the past, maintenance of the facilities and personnel necessary to support this mission depended on nuclear test operations. However, the personnel and facility infrastructure that were required to support testing operations are rapidly disappearing. Planning DND operations so that they can be executed safely represents challenges that DOE is not addressing. DOE has agreed with the Board's conclusions and is starting to increase its efforts to address this issue.	LLNL Electrical and I&C: Based on reviews by the Board's staff of LLNL's electrical, instrumentation, and control systems, the Board concluded that the safety-class emergency power system at LLNL's plutonium facility (Building 332) is neither designed nor maintained to safety-class standards. The staff report also noted potential areas for improvement, particularly LLNL's Work Smart Standards for safety- related instrumentation and control systems and lightning protection for Building 332. In response, LLNL has taken prompt actions to address the Board's issues such as correcting improper seismic mounts for safety-critical electrical components and switchgear. LANL Authorization Basis (AB) Documents: The Board noted significant deficiencies in the quality of some AB documents at LANL and urged DOE and the laboratory to take decisive corrective actions. As a result of highlighting these issues, LANL, under strong guidance from LAAO, performed a thorough self-assessment of the quality of AB documentation. LANL found that the documentation for most of the facilities reviewed had significant deficiencies. LANL, under guidance from LAAO, agreed contractually to upgrade the quality of the documentation involved. LANL has also reorganized to improve its ability to assure the quality of ABs. The LANL self-assessment, which was consistent with requirements for ISM self-assessments, is a model for the complex as a whole. LANL Response to Cerro Grande Fire and Potential for Flooding: After firefighters began to control the Cerro Grande fire, the Board conducted on-site reviews of the status of defense nuclear facilities and LANL's facility recovery plans. The defense nuclear facilities incurred little or no significant damage, and facility recovery plans were found to be thorough. The Board also reviewed the potential for flooding as a result of the loss of the ability of soil to absorb water. LANL responded swiftly to the threat of flooding with flood control and mitigation measures. The Board, however, identified important areas where DOE needed to be more thoroughly engaged in reviewing the adequacy and appropriateness of measures being taken immediately and in the future to address flooding concerns. LLNL Safety Basis Improvement: Extensive Board and staff reviews of LLNL's authorization basis for defense nuclear facilities have focused the Oakland Operations Office's attention towards nuclear safety and enhanced technical competence and the degree of involvement in the safety basis at LLNL. In response to the Board's reviews, there has been a substantial and continuing improvement of the LLNL Safety Basis program, including improvements in technical competence, training, and quality of safety basis documents. Readiness to Dispose of a Damaged Nuclear Weapon at the Nevada Test Site: The Board highlighted to DOE that there are safety-related program and infrastructure problems that may complicate DOE's mission to safely dispose of a damaged nuclear weapon or improvised nuclear devise. In response, DOE has developed a project to upgrade its capabilities to conduct these activities safely. DOE has conducted a number of exercises that clearly identified issues needing to be addressed. The drills and exercises have already improved DOE's proficiency in this important mission area. With the Board's continued oversight DOE is now prioritizing its infrastructure upgrade needs. LANL Classified Experiment: Board interactions with LANL have led to the formation of a group of experts to thoroughly review a classified experiment with potentially significant safety consequences and are significantly improving the quality of safety controls. The expert panel has been conscientiously evaluating the complicated activity and has identified numerous improvements that LANL has implemented (or is working on) that substantially improve the safety of this experiment and the design and safety basis for similar experiments potentially conducted in the future.

Table 2-5(b) - Performance Goals Regarding Strategic Objective 2-B

Objective 2–B:	Safe Conduct of Stockpile Stewardship. The Board and its staff will verify the safety of DOE's defense nuclear activities undertaken to ensure the continuing effectiveness of the nuclear weapon stockpile in the absence of underground nuclear testing.

FY 2001 Performance Goals	FY 2002 Performance Goals
The Board and its staff will conduct assessments of DOE's efforts to develop and implement safety management systems for stockpile stewardship activities. The Board will review safety system development (e.g., system and process designs, safety bases, control schemes, and administrative programs) and safety management system implementation. The Board will also cover DOE's efforts to address safety issues of aging-related changes in nuclear weapons components, including research and modeling. These reviews will focus on activities at LLNL, LANL, Nevada Test Site (NTS), and Sandia National Laboratory (SNL). Candidate areas for Board and staff review include: C The safety basis analysis and change control for nuclear weapons activities or facilities, e.g., pit production. C Safety controls selected for hazardous weapons complex activities. C Cross-cutting functional areas at LANL, LLNL, NTS, and SNL. C ISM work-planning process (i.e., activity-specific hazard analysis, controls identification, and implementation of safety controls), e.g., work-planning at TA-55. C DOE/contractor operational readiness reviews or other readiness determinations, e.g., implementation of new safety controls. C Aging-related changes in nuclear weapons components for weapon systems in the enduring stockpile.	The Board and its staff will conduct assessments of DOE's efforts to develop and implement safety management systems for stockpile stewardship activities. The Board will also cover DOE's efforts to address safety issues of aging-related changes in nuclear weapons components, including research and modeling, for weapon systems and components in the enduring stockpile. These reviews will focus on activities at LLNL, LANL, NTS, and SNL. Candidate areas for Board and staff review include: C The safety basis analysis for defense nuclear activities or facilities. C Work-planning process (i.e., activity-specific hazard analysis, controls identification, and implementation of safety controls). C DOE/contractor operational readiness reviews or other readiness determinations. C Design and construction phases of the life-cycle of defense nuclear facilities, e.g., replacement for the Los Alamos Critical Experiments Facility. C Aging-related changes in nuclear weapons components for weapon systems in the enduring stockpile. C Safety controls selected for hazardous weapons complex activities. C Cross-cutting functional areas at LANL, LLNL, NTS, and SNL. While performing the above reviews, the Board and its staff will assess the effectiveness of ISM implementation for proposed and on-going operations.

2.4 STRATEGIC GOAL 3: SAFE DISPOSITION OF HAZARDOUS REMNANTS OF WEAPONS PRODUCTION

Safe and effective characterization, stabilization, and storage of hazardous remnants of nuclear weapons production and decommissioning of legacy facilities in a manner that protects the worker, the public, and the environment.

The objectives and annual performance goals in support of the Board's third goal address the Board's efforts to confirm the safe disposition of hazardous nuclear weapons legacy materials and facilities. Achieving that goal requires a multi-year, multi-focus, multi-site effort during each annual performance period. The two strategic objectives that support that general goal address DOE's efforts to reduce the risks of legacy materials by appropriate processing and disposition, as well as efforts to decommission production facilities and sites no longer essential to the national security mission.

Strategic Objective 3–A: Material Stabilization: The Board and its staff will verify that DOE properly characterizes, stabilizes, processes, and safely stores surplus plutonium, uranium, and other actinides, residues, spent fuel, and wastes from the nuclear weapons program, and that DOE provides for expeditious disposal, as needed.

Strategic Objective 3–B: Facility Decommissioning: The Board and its staff will verify that DOE aggressively pursues the safe decommissioning of excess defense nuclear facilities that pose a significant risk to the workers or the public.

Table 2-6(a) - Accomplishments Regarding Strategic Objective 3-A

Objective 3–A:	Material Stabilization: The Board and its staff will verify that DOE properly characterizes, stabilizes, processes, and safely stores surplus plutonium, uranium, and other actinides, residues, spent fuel, and wastes from the nuclear weapons program, and that DOE provides for expeditious disposal, as needed.

Examples of FY 1999 Accomplishments	Examples of FY 2000 Accomplishments
Improved Remediation Schedules for Legacy Materials: In December 1998, after numerous formal and direct interactions with the Board and its staff, DOE issued an up-to-date plan and schedule for addressing the numerous health and safety risks posed by the highest priority legacy materials stored throughout the DOE nuclear weapons complex, originally identified by the Board in Recommendation 94-1. However, the Board identified several deficiencies in the new plan, and soon thereafter discovered that site-level planning did not support several significant commitments. The Board has engaged DOE on these issues, and will see that they are resolved expeditiously. **Operational Problems at Savannah River Site:** In the spring of 1999, the Board's continuing review of operational data for DOE defense nuclear facilities revealed a negative trend in control of work and operations at the Savannah River Site. The Board issued a letter to DOE in May 1999 identifying this problem to DOE, stating that a broader look at the underlying causes and a systematic understanding of those causes would be required to correct weaknesses in performance. In response, DOE has undertaken corrective actions to reverse this trend and ensure a sustained, highly satisfactory level of performance. **Completion of Recommendation 94-3 at Rocky Flats:** The Board issued Recommendation 94-3, *Rocky Flats Plutonium Storage*, to ensure that the large quantity of plutonium at the Rocky Flats Environmental Technology Site would be safely stored. The Board recommended that DOE take a systematic approach to evaluating the suitability of Building 371 for the proposed new mission of storing the site's entire plutonium inventory, and prepare a program plan for building upgrades and improvements consistent with the building's mission. As a result of the Board's recommendation, upgrades to the building's structure, systems, and components, as well as the safety basis, were completed during Fiscal Year 1999. The Board closed this recommendation and now considers the building adequate for its current storage mission. **Characterization and Safety of Hanford High-Level Waste Tanks:** The Board and its staff have continued to press DOE to resolve the health and safety issues presented by the 177 high-level waste tanks at Hanford. In 1999, the Board worked closely with DOE to develop a strategy for resolving the remaining safety-related uncertainties in the characterization of the wastes, and to ensure that DOE developed a sound strategy for mitigating flammable gas retention problems in Tank 241-SY-101. Because of these efforts, Board Recommendation 93-5, dealing with Hanford high-level waste characterization, is expected to be closed shortly, and the Board expects that DOE will be able to resolve the Tank 241-SY-101 problem in FY 2000.	**Improved Remediation Schedules for Legacy Materials:** On January 4, 2000, the Board issued Recommendation 2000-1 to ensure that the stabilization of legacy materials continues in a manner that reflects the risks posed by the materials. Additionally, the Board recommended that funding shortfalls preventing timely stabilization of materials be identified and reported as required by law. On June 8, 2000, DOE submitted a revised implementation plan intended to satisfy both Recommendation 94-1 and 2000-1. According to the plan the vast majority of remaining material will be stabilized within the next several years. Outstanding issues relating to material stabilization were communicated to DOE in a letter dated July 14, 2000. In accordance with the Implementation Plan for Board Recommendation 94-1 and the US District Court of Idaho Court Order, all spent nuclear fuel was removed from the unlined basins at the Idaho National Engineering and Environmental Laboratory CPP-603 Fuel Receiving and Storage Building to a newer fuel storage facility (CPP-666) by April 28, 2000. Transfer of the fuel reduces the risk of leakage of radioactive materials from deteriorating spent fuel in unlined basins and is the first step towards drying and encapsulation of the spent fuel in dry storage facilities for the longer-term. **Standards for Safe Storage of Fissile Materials:** In July 2000, DOE issued a standard for stabilization and packaging of uranium-233 metals and oxides for safe long-term storage. This standard was developed in response to Board Recommendation 97-1, with the Board working closely with DOE during its development to ensure that it contained appropriate requirements for safely storing this highly radioactive isotope. The Board also continued to assist DOE in refining a similar standard for safe packaging and storage of plutonium, which had been finalized and issued in response to Board Recommendation 94-1. In early 2000, after extensive review and discussions with DOE, the Board agreed to modifications to the plutonium standard that would make it easier to implement without compromising safety. **Engineered Safety Controls:** In several reviews of new operations at the Savannah River Site, the Board identified inadequacies in the use of engineered controls to prevent potential accidents. As a result, improved controls were implemented for high-level waste retrieval activities. The Board is pursuing similar improvements in the design of the equipment for pretreatment and vitrification of highly radioactive americium/curium solutions at Savannah River. The Board is continuing to press DOE to address the root cause of these problems, and to reaffirm the importance of avoiding an undue reliance on administrative controls and non-safety-grade equipment. **Implementation of Radioactive Waste Management Order:** In response to Board Recommendation 94-2, DOE has revised and reissued its radioactive waste management order, Order 435.1, to provide more comprehensive and effective requirements. The Board discovered this year that DOE had informed the operating contractor at Rocky Flats that several key provisions of the order did not apply to Rocky Flats on the grounds that it was not considered an operating facility. The Board acted immediately to correct this problem, ultimately issuing formal correspondence that led DOE to reverse this inappropriate interpretation before it spread to other sites. **Safe Storage of High-Level Waste:** In June 2000, the Board's staff completed a review of high-level waste tank systems at the Hanford Site. Several significant issues were identified related to preserving the integrity of the storage tanks, notably the need to promptly correct the chemistry in tanks that had become depleted of corrosion inhibitors, the need to ensure the operability of ventilation systems required to prevent moisture from forming between the walls of double-shell tanks (a scenario suspected to have resulted in corrosion of the tank walls), and the need for increased rigor in the inspection program for the secondary wall of double-shell tanks. DOE was formally notified of these observations in a letter dated August 29, 2000, and is working to correct the problems.

Table 2-6(b) - Performance Goals Regarding Strategic Objective 3-A

Objective 3–A:	Material Stabilization: The Board and its staff will verify that DOE properly characterizes, stabilizes, processes, and safely stores surplus plutonium, uranium, and other actinides, residues, spent fuel, and wastes from the nuclear weapons program, and that DOE provides for expeditious disposal, as needed.

FY 2001 Performance Goals	FY 2002 Performance Goals
The Board and its staff will conduct assessments of DOE's efforts to characterize, stabilize, process, and safely store plutonium, uranium, and other actinides, residues, spent fuel, and wastes from the nuclear weapons program, to ensure that these efforts are performed safely and that the risks posed by these materials are addressed in a timely manner. These reviews will be conducted using the principles of Integrated Safety Management and will include assessments of the adequacy of current storage conditions, evaluations of proposed treatment and disposal technologies, evaluations of the design of new facilities and process lines, assessments of facility readiness to safely begin new operations, the safety of ongoing operations, and the suitability of long-term storage and disposal facilities. Representative areas for review include: C Stabilization and packaging of plutonium metal and oxide at Hanford and Rocky Flats (Recommendation 94-1). C Stabilization and disposal of plutonium-bearing solutions and residues at Hanford and Rocky Flats (Recommendation 94-1). C Preparations for characterizing, stabilizing, and repackaging uranium-233 materials at Oak Ridge (Recommendation 97-1). C Designs and technologies of the proposed Plutonium Immobilization Project and Pit Disassembly and Conversion Facility, and their interfaces with the proposed mixed oxide fuel fabrication facility. C Design of high-level waste treatment facilities at the Hanford Site; selection of a treatment process for high-level waste liquids and salts at the Savannah River Site (Recommendation 96-1). C Design, construction, and testing of high-level waste retrieval/transfer systems at Hanford. C Safety of operations at Waste Isolation Pilot Plant (WIPP) as activities ramp up from initial startup, and preparations to receive remote-handled transuranic wastes at WIPP, including preparations at the sites that will be the first to ship such wastes to WIPP. C Implementation of newly issued DOE Order 435.1, *Radioactive Waste Management*, governing all phases of the life cycle of high-level, low-level, transuranic, and mixed wastes. C Operation of new plutonium storage facilities, such as the Savannah River Site's K-Area Materials Storage Facility, and modifications to storage vaults at the Hanford Plutonium Finishing Plant.	The Board and its staff will conduct assessments of DOE's efforts to characterize, stabilize, process, and safely store plutonium, uranium, and other actinides, residues, spent fuel, and wastes from the nuclear weapons program, to ensure that these efforts are performed safely and that the risks posed by these materials are addressed in a timely manner. These reviews will be conducted using the principles of Integrated Safety Management and will include assessments of the adequacy of current storage conditions, evaluations of proposed treatment and disposal technologies, evaluations of the design of new facilities and process lines, assessments of facility readiness to safely begin new operations, the safety of ongoing operations, and the suitability of long-term storage and disposal facilities. Representative areas for review include: C Stabilization and packaging of plutonium metal and oxide at Hanford and LANL (Recommendation 94-1). C Design of facilities for stabilization and packaging of plutonium metal and oxide at Savannah River (Recommendation 94-1). C Stabilization and disposal of plutonium-bearing solutions and residues at Savannah River and LANL (Recommendation 94-1). C Characterization, stabilization, and packaging of neptunium solutions at Savannah River (Recommendation 94-1). C Preparations for pretreatment and vitrification of americium/curium solutions at Savannah River (Recommendation 94-1). C Characterization, stabilization, and packaging of uranium-233 materials at Oak Ridge (Recommendation 97-1). C Stabilization and disposition of highly-enriched uranium solutions at Savannah River (Recommendation 94-1). C Designs of the proposed Plutonium Immobilization Facility and Pit Disassembly and Conversion Facility, and their interfaces with the proposed mixed oxide fuel fabrication facility. C Design of the chosen treatment process for high-level waste liquids and salts at the Savannah River Site (Recommendation 96-1). C Design of facilities for treatment of high-level waste, and testing and operation of high-level waste retrieval and transfer systems at Hanford. C Safety of operations at WIPP and at sites preparing wastes for shipment to WIPP.

Table 2-7(a) - Accomplishments Regarding Strategic Objective 3-B

Objective 3–B:	Facility Decommissioning: The Board and its staff will verify that DOE aggressively pursues the safe decommissioning of excess defense nuclear facilities that pose a significant risk to the workers or the public.

Examples of FY 1999 Accomplishments	Examples of FY 2000 Accomplishments
Upgraded Safety Controls for Decommissioning at Rocky Flats: Decommissioning activities are being conducted in several buildings at the Rocky Flats Environmental Technology Site. The Board identified that safety controls for protection of workers did not provide the desired level of protection because of an inappropriate reliance on personal protective equipment (e.g., respirators) rather than engineered controls to eliminate or mitigate hazards. Furthermore, when engineered controls were used (e.g., air movers), they were not adequately analyzed to ensure that they produced the desired result. In response to these concerns, a multi-disciplinary team was chartered at RFETS to develop more rigorous engineered controls and analyze performance of the controls. Enhanced worker protection controls are now being applied to demolition of contaminated equipment at the site. RFETS is also investigating the use of remote equipment for size reduction of contaminated equipment. **Activity Level ISM of Hanford Decommissioning Work: The Board's staff reviewed planning and implementation of decommissioning work being done by the Hanford Environmental Restoration Contractor. The staff found that the work control procedures and practices need improvement to meet the intent of Integrated Safety Management. The approach to hazard analysis does not use techniques such as those described by the American Institute of Chemical Engineers *Guidelines for Hazard Evaluation Procedures*, or the U.S. Department of Labor, Occupational Safety and Health (OSHA) publication, OSHA 3071, *Job Hazard Analysis*. These deficiencies are such that it is not clear that the controls are adequate to protect personnel performing decommissioning work at Hanford. Some areas of needed improvement have been communicated directly to DOE.** **Radiation Protection Measures for Metal Tritides during Decommissioning: During FY 1999, the Board's staff evaluated radiation protection program measures for decommissioning work in areas at the Miamisburg Environmental Management Project (MEMP) that are suspected of being contaminated with tritium compounds such as metal tritides. As a result of staff visits and subsequent information exchanges, the MEMP contractor prepared a corrective action plan to address deficiencies in the radiation protection program, and work is proceeding to resolve these issues before major decommissioning work begins in mid-September 1999. These technical issues also apply to other defense nuclear facilities, so the Board has requested that DOE articulate a technical position on this matter to ensure that appropriate measures are implemented across the defense nuclear facilities complex. As a result of this action, DOE-EM informed DOE Field Offices of the issue, drafted a technical position regarding control levels for airborne radioactivity, and has committed to developing an updated technical approach.**	**Efforts to Improve Decommissioning Work at the Hanford 233-S Facility: The Board's staff has monitored the planning and accomplishment of decommissioning work at the Hanford 233-S Plutonium Concentration Facility. Board correspondence and staff comments to DOE and its contractor regarding this facility have focused on work planning and implementation deficiencies. Safety deficiencies involving the work site and Process Hood glove bags noted by the staff have been discussed with project personnel, and corrective actions were taken to resolve some concerns. The staff has noted that efforts are being made to improve work planning and implementation. For example, the contractor held a workshop to review the radiological work planning process and provide recommendations for improvement, and a contractor project manager requested that a team of contractor and DOE health physicists inspect glove bags used in Process Hood decommissioning work.** **Upgraded Work Controls for Decommissioning at Rocky Flats: The Board has followed dismantlement work activities for gloveboxes and other equipment in Building 771 (the former Plutonium Recovery Facility) at the Rocky Flat Environmental Technology Site (RFETS) and has issued correspondence noting problems with work planning and control. The staff reviewed the implementation of the RFETS Integrated Work Control Program (IWCP) and provided comments to RFETS personnel. The contractor revised the IWCP manual and has taken steps to improve the implementation of the program. This action has contributed to addressing the staff's observations of deficient implementation of the hazard analysis process for deactivation and decommissioning activities in facilities such as Building 771.** **Upgraded Safety Controls for Decommissioning Work at Rocky Flats: The Board's staff has followed RFETS' efforts to apply engineered controls for size reduction of gloveboxes and other equipment in response to comments provided by the Board. These controls will help remove or greatly reduce the radioactive airborne environment. The staff has continued to communicate the need to mitigate or eliminate hazards by the use of engineered controls, and RFETS personnel are actively pursuing a phased approach of design, testing, and implementation of engineered controls in support of their site closure work.** **New and Revised Procedures for Decommissioning Work at the Miamisburg Environmental Management Project: The Board's staff reviewed and provided comments regarding a draft technical basis document, new and revised implementing procedures, and plans for determining readiness for decommissioning work involving special tritiated compounds at the Miamisburg Environmental Management Project (MEMP). These comments contributed to improving the documents. Various work control documents have been reviewed, and staff comments have been provided to DOE-MEMP and the contractor. Staff-to-staff discussion is expected to help better identify and resolve deficiencies.**

Table 2-7(b) - Performance Goals Regarding Strategic Objective 3-B

Objective 3–B:	Facility Decommissioning: The Board and its staff will verify that DOE aggressively pursues the safe decommissioning of excess defense nuclear facilities that pose a significant risk to the workers or the public.
FY 2001 Performance Goals	**FY 2002 Performance Goals**
The Board and its staff will conduct assessments of the adequacy of plans, standards, procedures, and execution for activities associated with decommissioning of DOE defense nuclear facilities. These assessments will be conducted using the principles of integrated safety management to ensure that decommissioning efforts are performed safely. Additionally, the Board and its staff will continue efforts to confirm that high-risk facilities are decommissioned in a timely manner. These assessments are conducted in collaboration with State and other regulatory authorities, as needed, and on a schedule that supports DOE's operational plans. Representative areas for Board and staff review include: C Canyon Disposition Initiative at Hanford. C Building 707, 771, or 776 at Rocky Flats. C Building 9206 at Oak Ridge. C Decommissioning activity at the Miamisburg Environmental Management Project. C High-level waste tank closure plans at INEEL.	The Board and its staff will conduct assessments of the adequacy of plans, standards, procedures, and execution for activities associated with decommissioning of DOE defense nuclear facilities. These assessments will be conducted using the principles of integrated safety management to ensure that decommissioning efforts are performed safely. Additionally, the Board and its staff will continue efforts to confirm that high-risk facilities are decommissioned in a timely manner. These assessments are conducted in collaboration with State and other regulatory authorities, as needed, and on a schedule that supports DOE's operational plans. Representative areas for Board and staff review include: C Plutonium Finishing Plant deactivation planning at Hanford. C Building 371, 707, or 776 at Rocky Flats. C Excess facility risk reduction activity at the Savannah River Site. C Decommissioning activity at the Los Alamos National Laboratory. C 602 Reprocessing Plant decommissioning plans at INEEL.