

# FY 2000 & FY 2001 BUDGET REQUEST TO THE CONGRESS

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Defense Nuclear Facilities Safety Board



February 1999

**Defense Nuclear Facilities  
Safety Board**  
FY 2000 & FY 2001 Congressional Budget Request

**APPROPRIATION & EXPENSE SUMMARY**

(Tabular dollars in thousands).

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**OPERATING EXPENSES**

	ACTUAL FOR <u>FY 1998</u>	PROJECTED FOR <u>FY 1999</u>	BUDGET REQUEST FOR <u>FY 2000</u>	BUDGET REQUEST FOR <u>FY 2001</u>
New Budget Authority	17,000	16,500	17,500	17,500
Obligations	16,582	17,565	18,540	18,353
Outlays	16,611	16,600	17,500	17,500

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Authorization: National Defense Authorization Act, Fiscal Year 1989 (amended the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) by adding new Chapter 21 -- Defense Nuclear Facilities Safety Board.

National Defense Authorization Act for Fiscal Year 1991 (P.L. 101-510-Nov. 5, 1990),  
National Defense Authorization Act for Fiscal Years 1992 and 1993 (P.L. 102-190-Dec. 5, 1991),  
Energy Policy Act of 1992 (P.L. 102-486-Oct. 24, 1992), and  
National Defense Authorization Act for Fiscal Year 1994. (P.L. 103-160-Nov. 30, 1993).

**Defense Nuclear Facilities  
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**PERSONNEL SUMMARY**

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	<u>FY 1998 ACTUAL</u>	<u>FY 1999 BUDGET PLAN</u>	<u>FY 2000 BUDGET REQUEST</u>	<u>FY 2001 BUDGET REQUEST</u>
Statutory Personnel Ceiling: (FTE's) <sup>1/</sup>	150	150	150	150
FTE Usage <sup>2/</sup>	99	106	106	106
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Board Members & Permanent Employees at End of Fiscal Year <sup>1/</sup>	100	106	106	106

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<sup>1/</sup> National Defense Authorization Act for FY 1992 and FY 1993, P.L. 102-190, raised the Board's statutory employee ceiling from 100 to 150 full-time staff to accommodate mandated additional nuclear weapons safety responsibilities. This statutory employment ceiling does not include Board Members, who by virtue of the Board's enabling legislation may hire up to the equivalent of 150 full-time employees. See 42 U.S.C. § 2286b(A).

<sup>2/</sup> Includes 5 full-time Board Members.

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**PROPOSED APPROPRIATION LANGUAGE**

**SALARIES AND EXPENSES**

For necessary expenses of the Defense Nuclear Facilities Safety Board in carrying out activities authorized by the Atomic Energy Act of 1954, as amended by Public Law 100-456, section 1441, [16,500,000] \$17,500,000, to remain available until expended. Further, for the foregoing purposes, \$17,500,000, to become available on October 1, 2000 and remain available until expended. (*Energy and Water Development Appropriations Act, 1999*)

**DEFENSE NUCLEAR FACILITIES  
SAFETY BOARD  
FY 2000 & FY 2001 CONGRESSIONAL BUDGET REQUEST**

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**Defense Nuclear Facilities  
Safety Board**  
FY 2000 & FY 2001 Congressional Budget Request

**1. EXECUTIVE SUMMARY**

The Defense Nuclear Facilities Safety Board's (DNFSB or Board) FY 2000 Budget Request is for \$17,500,000 and 106 Full-time Equivalent (FTE) staff years.

This request is equal to the amount of resources requested for the Board in the President's FY 1999 Budget to the Congress. Barring a change in current U.S. national security policy or other unforeseen incident affecting the Department of Energy's (DOE) defense nuclear programs, an FY 2000 appropriation of \$17,500,000 should be sufficient to offset recent cost-of-living pay adjustments raising staff salaries and benefits, and an increase of 28% in the GSA billing for leased office space. Cost-of-living pay adjustments are non-discretionary costs over which the Board has no control.

The Board currently is operating at 2/3 of its statutory employment ceiling. Therefore, this budget is the minimum needed for the Board to conduct adequately its statutorily mandated public and worker health and safety mission and maintain emergency funds to respond, if necessary, to a serious accident at a DOE defense nuclear facility.

**1.1 RESOURCE NEEDS VS. FISCAL CONSTRAINTS**

As clearly recognized by the Congress when establishing the Board, the ability to effectively carry out an independent, technical oversight program throughout the DOE weapons complex rests on the technical capability of the Board Members and staff.

*The conferees believe that the DNFSB is a unique Federal agency, in that its mission (is) to oversee the activities of another federal department whose work is highly technical and potentially dangerous, and that to properly carry out its mission, not only the DNFSB members but also its limited staff must be technically competent in all major phases of nuclear safety.<sup>1</sup>*

To establish a credible, external oversight organization, the Board's original legislation authorized a work force of 100 full-time employees, but that number was increased by the

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<sup>1</sup> National Defense Authorization Act for Fiscal Year 1991, Conference Report, Title XXXII, October 23, 1990.

Congress and the President to 150 when Public Law 102-190 significantly expanded the Board's safety oversight responsibilities over the assembly, disassembly, and testing of nuclear weapons.

Due to current funding constraints, the Board has been forced to prioritize its efforts on the higher risk activities of the Department and to reduce its staff through attrition to 90 employees as of December 31, 1998, well below the Board's statutory employment ceiling of 150 full-time staff.<sup>2</sup> In addition, the Board has reduced expenditures for outside technical experts, and instituted other cost saving measures. The funding for salaries and benefits represents 74 percent of the Board's FY 2000 Budget Request for \$17.5 million (see Figure 1 and Appendix B, Exhibit A for a presentation by object class accounts). As a small agency, it is very difficult for the Board to absorb budget reductions without directly impacting its technical staff oversight capability, and compromising its statutory mission.

The recruitment and retention of scientific and technical staff with outstanding qualifications have and will continue to be critical to the successful accomplishment of the Board's mission. Through the use of excepted service hiring authority and a carefully structured recruiting program, the Board has succeeded in building a technical staff capability that includes individuals with extensive experience in nuclear, mechanical, electrical, chemical, structural, and metallurgical engineering, and in physics. As an indication of the Board's technical talent, 25 percent of the technical staff hold degrees at the Ph.D. level and an additional 72 percent have masters degrees. Almost all technical staff members, except interns, possess practical nuclear experience gained from duty in the U.S. Navy's nuclear propulsion program, the nuclear weapons field, or the civilian reactor industry.

In providing guidance on priorities for the Board's oversight operations, the House Energy and Water Development Appropriations Committee Report accompanying the FY 1999 Appropriations Bill included the following instructions:

*The Committee urges the Board to focus on those defense nuclear production facilities that are operational and represent the highest radiological risk to workers and the public.*

In deference to the Committee's instructions, the Board plans to continue its efforts to conserve resources whenever possible without compromising its mandated public and worker health and safety oversight mission, as the DOE proceeds with its plans to spend billions of dollars on design, construction, operation, and decommissioning activities in FY 2000 and beyond. As presented in this budget request, the workload of the Board is prioritized to focus primary attention on the most hazardous DOE operations and complex-wide health and safety issues, consistent with the Board's enabling statute, safety oversight approach, and strategic plan.

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<sup>2</sup> Excludes 5 Board Members appointed by the President and confirmed by the Senate.

## **1.2 SAFETY OVERSIGHT STRATEGY**

Maintaining an effective safety oversight program that fulfills the broad mandates of the Board's enabling legislation (see Appendix A) with the constrained budgetary situation described earlier requires a constant reassessment of health and safety conditions throughout the DOE defense nuclear complex. Sources of information used by the Board in making its assessments, evaluations, or recommendations to the Secretary of Energy are varied. They include testimony from public hearings and meetings, site representative reports, staff issue papers, site visits, implementation plans for the Board's recommendations, responses to reporting requirements, and correspondence from workers and union representatives at the DOE sites. Based on the Board's assessment of the risks and the potential impact to public or worker health and safety, priorities will change resulting in revised staff technical review assignments.

Based on nine years of operating experience, the Board has developed a strategy for maximizing the effectiveness of its resources by executing its safety oversight responsibility according to the following principles:

- The primary responsibility for ensuring protection of the health and safety of the public and workers, and protection of the environment belongs with DOE line managers and extends in an unbroken chain from the Secretary of Energy to the workers on the floor.
- As an external "action-forcing" agency, the Board influences DOE line management actions to the extent needed to achieve safety objectives.
- Effective safety management demands that safety expectations be clearly defined and tailored to specific hazards at all levels—site, facility, or activity.
- Technical expertise is required to define controls commensurate with the identified hazards and to ensure compliance.
- Safety oversight activities will be prioritized by perceived risks to the public, the workers, and the environment. Key indicators are the types and quantities of nuclear material at risk and the processes and setting of the operations involved.
- Safety oversight responsibilities for defense nuclear facilities will be accomplished in full cooperation with other agencies, such as individual states and the EPA for final cleanup, demolition, and environmental restoration activities, in compliance with responsibilities mandated by the Atomic Energy Act of 1954, as amended, and the federal environmental laws, including CERCLA and RCRA.

Various Executive Orders, including E.O. 12862, *Setting Customer Service Standards*, have stressed the need for Executive Branch agencies to be sensitive to the need for public involvement. The Board has used open public meetings and hearings as a forum for public awareness and communication on Board activities. The Board has continued its practice of meeting with state and local officials, labor leaders, DOE facility workers, public interest groups, and area residents to exchange information and inform interested parties of the Board's work.

Public meetings and hearings to educate and assure the public of safety precautions and other Board oversight activities have been held by Board Members in the vicinity of DOE defense facilities at the Hanford Site, Savannah River Site, Oak Ridge Site, Rocky Flats Environmental Technology Site, Pantex Plant, Idaho National Engineering and Environmental Laboratory, Fernald Environmental Management Project/Mound Plant, Sandia/Los Alamos National Laboratories, and Lawrence Livermore National Laboratory. To date, a total of 31 have been held at or near DOE sites and 33 in Washington, D.C., the records of which have been made available to the public.

### 1.3 SAFETY OVERSIGHT IN PRACTICE

Examples of the Board's contributions to public and worker health and safety, resulting from the practical application of the above safety oversight principles, include the suspension of efforts to restart the In-Tank Precipitation Facility (ITP) at the Savannah River Site; the safe restart of Enriched Uranium Operations at Oak Ridge Y-12; the improvements in the design and construction of stockpile management facilities at the Los Alamos National Laboratory; and the resolution of safety-related Suspect/Counterfeit Parts Issue. A more detailed listing of FY 1998 accomplishments is included in the tables in Section 3 of this document. A summary of each example follows:

- **In-Tank Precipitation Facility.** Based on concerns with the safety of operations at the In-Tank Precipitation (ITP) Facility at the Savannah River Site (SRS), the Board issued Recommendation 96-1 in August 1996. The Board had questioned process safety at this facility, which separates cesium and other radioactive isotopes from high-level waste liquids. The Board recommended that the DOE thoroughly evaluate benzene generation, retention, and release phenomena in ITP and develop adequate controls before conducting further large-scale ITP operations. The results of the chemistry program confirmed the Board's safety concerns with this process. Based on these results, the DOE notified the Board in January 1998 that work on ITP would be suspended, and that a program to evaluate alternative processes would be undertaken.
- **Enriched Uranium Operations.** The Board and its staff conducted numerous safety reviews at the Y-12 Plant, including efforts to upgrade the safety of Enriched Uranium Operations (EUO) and assessments of readiness to resume EUO operations to support a high-priority national security task. These actions by the Board facilitated the safe restart of uranium metallurgical operations in June 1998, the restart of residue processing

operations in December 1998, and the planning for future EUO activity restarts. Specifically, in various letters to DOE the Board identified:

- A lack of appropriate identification and implementation of safety controls for EUO, such as those for the ventilation system, dry vacuum system, emergency lighting, and the casting furnace water detection system. In response, DOE identified several new safety controls and resolved implementation deficiencies.
- Numerous differences between National Fire Protection Association (NFPA) codes and the way in which the Holden Gas Furnace is installed, tested, operated, and maintained. In response, Lockheed Martin Energy Systems performed a rigorous review of adherence to the NFPA codes and addressed the identified noncompliances through several equipment and operational modifications. The furnace is used to dry the wet residues and to burn small amounts of solids to recover highly enriched uranium.
- An overall breakdown in quality assurance for pressure boundary welds on a new anhydrous hydrogen fluoride delivery system being constructed to support future uranium metal production operations. Subsequently, DOE decided that field radiographic inspections of completed system welds would be performed to assure proper weld quality.
- Lack of operations management awareness and control of the maintenance of safety systems at the Y-12 Plant as evidenced by several recent occurrences. In response, DOE addressed the root causes and is taking actions to improve control of maintenance of safety systems.
- **Design and Construction for Stockpile Management.** DOE and the Los Alamos National Laboratory (LANL) have initiated significant steps intended to improve their project management of design and construction of stockpile management facilities. In a letter dated December 5, 1997, the Board highlighted the need for more effective project management of the Capability Maintenance and Improvement Project (CMIP) by both DOE and LANL to ensure that risks are identified early and effective controls are developed during the design stage. At that time, CMIP had as its objectives developing the capability to manufacture 50 pits per year and upgrading related facilities. Subsequently, CMIP began undergoing a redefinition, and the upgrades now being called CMIP are to be designed at some future time. However, the project management issues identified by the Board were common to other projects. Therefore, DOE and LANL in their responses are addressing all stockpile management construction projects involving nuclear facilities at LANL.

DOE has structured its organization to better oversee stockpile management projects at LANL and has outlined improvements in project management controls for interfacing with the LANL design process. The Director and Deputy Director of LANL committed to

significant improvements in construction project management and formed a new organizational structure to better manage design and construction projects. In part as a result of similar Congressional interest, the director of LANL tasked a Project Management Advisory Panel of outside experts to identify systemic performance issues and recommend improvements and corrective actions. These recommendations are currently being implemented. The full effectiveness of the changes is to be evaluated by the Board and its staff in 1999.

- **Suspect/Counterfeit Parts Issue.** In 1995, the Board's staff discovered substantial deterioration of DOE's program to prevent the introduction of suspect/counterfeit parts into safety-related applications. Board staff initiated several actions to correct the programmatic and operational deficiencies: Board staff alerted DOE's internal auditing elements (the Inspector General and safety oversight office) and the several program offices (Defense Programs; Environmental Management; Environment, Safety, and Health). Staff then undertook several initiatives to independently determine health and safety implications for defense nuclear facilities. For example, Board staff reviewed the Savannah River Site Defense Waste Processing Facility (DWPF) for the presence of suspect/counterfeit parts prior to the planned startup. The Board staff identified numerous applications of suspect/counterfeit fasteners in DWPF, and subsequently assisted DOE's technical evaluation of the suspect/counterfeit parts. This effort led to the replacement of fasteners found to be unacceptable for their safety-related applications in time not to delay the startup of DWPF. The Under Secretary of Energy then formed a Quality Assurance Working Group (QAWG) to restore DOE's quality assurance program and its ability to defend its missions from suspect/counterfeit and non-conforming parts.

In August 1996, Department of Defense investigators notified the DOE that a vendor of semiconductor devices for high-reliability applications supplied the DOE with potentially nonconforming parts. DOE applications of the nonconforming parts included significant national security applications and radioisotopic thermoelectric generators for the Cassini space probe. Notwithstanding repeated assurances from the DOE QAWG that a formal notification to DOE elements was imminent, the DOE did not notify field elements until the Board brought the problem to the attention of the Under Secretary of Energy.

The DOE subsequently took effective action to evaluate and control the future introduction of suspect/counterfeit parts into applications which could adversely affect worker and public safety and the safe maintenance of significant national security applications. The DOE identified nonconforming parts in significant national security applications, and then technically evaluated the adequacy of these parts and determined that the nonconforming parts would not compromise safety.

Additionally, the Cassini probe was inspected for the presence of the nonconforming parts, thus averting last minute legal efforts to halt the launch of the space probe. The U.S. District Court for Hawaii rejected motions to delay the launch of the Cassini probe because, among other reasons, the government was able to show that the Cassini probe

had been thoroughly inspected for the suspect semiconductor devices. Hawaii County Green Party v. Clinton, 980 F.Supp. 1160 (D.C. HAWAII, 1997)

The Board's staff continues to provide oversight and technical assistance to identify and assess the effects of possible introduction of suspect/counterfeit semiconductor devices in stockpile, stockpile support, and subcritical device testing and other safety related applications. As a result, the DOE QAWG is formalizing lessons learned and will report specific recommendations to update and strengthen the DOE Quality Assurance Program.

The Board's oversight and timely intervention in dealing with suspect/counterfeit parts, was pivotal in energizing the reestablishment of the DOE quality assurance program vital to ensuring public health and safety at DOE's defense nuclear facilities.

#### 1.4 CONCLUSION

In establishing the Board, Congress and the President intended that the Board assure and enhance the safety of operations of DOE's defense nuclear facilities by providing independent, expert advice to the Secretary of Energy, identify the nature and consequences of any significant potential threats to public health and safety, elevate such issues to the highest levels of authority, and inform the public and help restore public confidence.

The positive impact of the Board's independent oversight on the DOE defense nuclear complex has become increasingly evident. During FY 1998, a number of DOE risk reduction actions and safety management upgrades resulting from Board initiatives, some initiated in previous years, were completed or advanced significantly. Representative examples of these accomplishments are discussed later in this budget request.

The five Board Members, together with a small but extremely competent workforce, provide a cost-effective organizational arrangement for achieving the added safety assurance that the public seeks. Our budget request of \$17.5 million, to be used for staff salaries and required overhead expenses such as travel to the DOE weapons sites, provides the funding needed to support the Board's health and safety review actions planned for FY 2000.

Finally, and perhaps of greatest significance, a federal commitment of \$17.5 million to support the Board's oversight operations in FY 2000 is a wise investment in the safety and security of our Nation, and pales in comparison to the potential economic and health costs of a nuclear accident in a defense nuclear facility.

## **2. MISSION & STRATEGIC PLANNING GOALS SUMMARY**

### **2.1 THE DOE DEFENSE NUCLEAR COMPLEX TODAY**

The DOE defense nuclear complex includes 34 individual sites containing about 3,500 nuclear facilities and covering approximately 2.1 million acres, with more than 85 million square feet of building space in 13 states. Numerous radioactive and toxic materials exist throughout the complex, and there are various pathways by which these hazardous materials might be released, thereby creating risks to workers, the public, and the environment. The integrity of facilities or structures which confine hazardous materials can be threatened by earthquakes, extreme winds, floods, lightning, and other such natural phenomena. Other potential release mechanisms include operator errors, equipment malfunctions, chemical reactions, fire, ignition of explosives, and inadvertent nuclear criticality events.

If hazardous materials and their potential release mechanisms are not carefully addressed, the consequences of a resulting accident at one of these defense nuclear facilities could include exposure to unacceptable radiation levels, uptake of radioactive materials, other serious compromise of the health and safety of the public and onsite workers, and unacceptable environmental impact. For example, recent incidents involving bulging waste storage containers, ruptured drums, and contamination of workers and facilities could be precursors of potentially more serious situations. The relative extent of these risks may be appreciated by considering the following:

- Hundreds of tons of fissionable material, in various forms, housed in buildings and structures that are more than 50 years old;
- Thousands of nuclear weapons being dismantled, evaluated, or modified;
- Hundreds of tons of plutonium, including components from dismantled nuclear weapons;
- The nation's strategic inventory of tritium gas, including thousands of individual containers removed from nuclear weapons;
- Thousands of tons of deteriorating nuclear fuel in water-filled storage basins;
- Millions of gallons of high level radioactive waste awaiting treatment, including highly radioactive isotopes in heavily shielded above-ground tanks, in addition to wastes stored underground at several sites.

## 2.2 GENERAL GOALS

With its broad health and safety oversight mission as defined by statute, the Board has developed seven general outcome goals that describe the intended result, effect, or consequence that will occur as a direct result of its oversight activities. These goals fall into two categories. The first category of the Board's goals (Goals 1–5) includes continuing safety goals that will not be completed in any single year, but are achieved every year as a result of the Board's actions (e.g., Goal 1—continuing assurance of the safety of DOE nuclear weapons operations). The second category of the Board's goals (Goals 6–7) focuses on achieving a specified safety outcome for a defined activity type (e.g., Goal 6—new defense nuclear facilities are designed and constructed to meet current safety standards) for which the Board in any given year may complete milestones associated with various DOE projects.

Using its action–forcing powers, the Board seeks to effect the following general outcome goals:

1. The safety of nuclear weapons at DOE defense nuclear facilities will continue to be assured.
2. Events or practices at hazardous DOE defense nuclear facilities that have adversely affected or may adversely affect public health and safety will be identified and, as needed, recommendations will be made to the Secretary of Energy identifying technically and economically feasible measures to address these hazards.
3. A flexible and adaptable DOE standards–based safety management program will be established that incorporates recognized good nuclear safety practices and allows for integration of work and safety planning for work that the Department and contractors perform at its hazardous defense nuclear facilities.
4. DOE technical expertise will be improved to permit the DOE to better manage the hazardous work associated with defense nuclear facilities.
5. Integrated Safety Management programs will be implemented for operations at defense nuclear facilities, with processes and controls tailored to the hazards involved.<sup>3</sup>

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<sup>3</sup> Integrated Safety Management (ISM) is the means by which the Department of Energy is institutionalizing the process of incorporating into the planning and execution of every major defense nuclear activity involving hazardous materials those controls necessary to ensure that environment, safety and health objectives are achieved. It consists of the infrastructure of component safety management programs and processes that, as an integrated whole, implements or ensures implementation of all institutional, facility, and activity level requirements, controls, and authorization basis commitments. Examples of “component safety management programs” include radiological control, maintenance, emergency response, fire protection, training, etc. Examples of “component safety management processes” include work planning, configuration management, criticality safety review, process hazard analysis, and self–assessment.

6. New defense nuclear facilities under design or construction will meet current safety standards.
7. Facilities used in the past for defense nuclear purposes will be safely cleaned up and deactivated in such a manner as to permit safe eventual disposition.

These outcome goals serve as the primary drivers for all oversight activities planned for FY 1999, FY 2000, and beyond. The Board focuses its actions on those activities and facilities that have reached a development stage that is best suited to constructive safety oversight, and on those operations where safety improvements have the greatest potential for risk reduction. The Board's independent oversight activities often reveal safety concerns that have not received attention by the DOE that is commensurate with the threat posed to the workers, the public, or the environment.

### **2.3 NATURE OF THE BOARD'S WORK**

The Board's primary function is to assist the DOE in identifying health and safety problems at defense nuclear facilities so that they can be corrected, and then confirming that the resulting corrective actions are appropriately implemented. The Board stays closely attuned to the planning and execution of DOE's defense nuclear programs, gathering its information from a broad range of sources. These sources include, but are not limited to:

- On-site technical evaluations, reviews, and observations by the Board and its staff;
- Critical review of DOE safety analyses and proposed safety control schemes by competent technical experts;
- Public meetings at Board Headquarters and in the field; and
- Daily input from the Board's Site Representatives, as well as weekly summary reports that are placed on the public record.

The scheduling and conduct by the Board and its staff of its independent on-site technical evaluations, reviews, and observations frequently catalyze the DOE to begin identifying and correcting safety deficiencies. The Board has optimized its resources by assigning Site Representatives to high-priority defense nuclear sites, but extensive travel by Headquarters technical staff to defense nuclear facilities is still essential for the Board to accomplish its safety oversight mission.

So as to remain better informed on DOE's activities and initiatives, the Board also receives regular briefings by senior DOE officials. Information received by the Board in these briefings is used to understand how much progress is being made on safety matters and to gauge DOE's commitment to achieving real progress.

Based on the information gained, the Board chooses from the broad spectrum of action-forcing mechanisms granted to it by law to formally communicate identified concerns and promote appropriate DOE corrective action. These action-forcing mechanisms include Recommendations to the Secretary of Energy and to the President in the case of an imminent threat to public health and safety, requests for reports from the DOE, public meetings or hearings, technical exchanges and issuance of technical reports, investigations, and testimony to Congressional Committees. In addition, the Board often transmits issue reports prepared by the Board's staff to the DOE, thereby sharing the staff's observations and findings. The Board has found that calling DOE's attention to the important findings in these reports is often sufficient to lead to responsive corrective action by DOE's management. After a safety concern is identified, and formally communicated to the DOE, the Board and its staff confirm that appropriate corrective actions are developed and implemented by the DOE and its contractors in a timely manner.

Individual Board Members and the Board's staff may also engage in direct technical dialogue with the DOE and its contractors on specific safety concerns, and may participate in technical workshops and conferences where information relevant to safety improvement and risk reduction is exchanged. The Board has directed its senior staff members to meet frequently with their DOE counterparts to ensure that the staff is able to brief the Board on the status of safety issues and programs and on key safety questions, and that the DOE understands the Board's safety objectives and initiatives. This type of direct interaction conserves federal resources by ensuring that the DOE and the Board understand each other's positions in depth. This understanding, in turn, permits the Board to focus its Recommendations, letters, requests for information, and public meetings and hearings on the most important health and safety issues to be resolved. It averts the waste of resources of both the DOE and the Board on false starts and contention over easily resolved side-issues. In many cases, the simple exchange of ideas is sufficient to motivate the DOE to take appropriate actions without the Board's having to make formal Recommendations.

In addition to the wide scope of the Board's communications with DOE, the Board has exchanged information with other government agencies (e.g., Nuclear Regulatory Commission, the General Accounting Office, the Department of Defense, and the Environmental Protection Agency), as well as outside agencies (e.g., National Research Council and the National Academy for Public Administration). Such meetings serve to share knowledge, experiences, and factual information on matters of mutual interest with regards to the safety of the DOE defense nuclear facilities.

The Board remains committed to this policy of enhanced communication in the belief that in the end, safety is best served by spending federal dollars on real improvements at defense nuclear facilities, not on correspondence. Direct communication and discussions with the DOE in an open forum, such as public meetings, have proved to be powerful, cost-effective tools in advancing the Board's nuclear safety initiatives. The Board held eight public meetings with DOE in FY 1998, in both Headquarters and field locations, each of which involved substantive interchanges with senior DOE officials.

## 2.4 KEY EXTERNAL FACTORS AND PLANNING ASSUMPTIONS

The mission of the DOE defense nuclear complex has changed significantly from year to year since the Board's establishment, and will continue to evolve. The Board's safety oversight focuses on technical issues associated with mission-specific operations, which change with DOE's mission shifts. The Board also identifies and addresses fundamental and complex-wide safety management deficiencies, which are generally not impacted by DOE's changing mission.

During each annual performance reporting period, it is anticipated that DOE's mission and associated schedules for major actions will continue to change, and that the Board's independent evaluations will identify previously unknown safety concerns. As this occurs, the Board often will be required to redeploy resources within and among the primary areas of concentration addressed in the Board's Strategic Plan. The specified facility or activity on which a performance plan action focused may change; however, the same (or an increased) level of performance and output should be achieved, in support of the general outcome goals.

In addition to DOE mission/schedule changes and the emergence of new safety concerns, there are other external forces that have the potential to influence the Board's execution of its Strategic Plan and annual performance plans. In particular, if a major accident or other safety-significant event occurs at a DOE facility involving special nuclear material, the Board's oversight priorities will be changed significantly. This priority shift may require an expeditious reallocation of resources and a substantive revision to the Board's performance planning goals, and potentially may impact the Board's Strategic Plan objectives and action plans.

The Board's Strategic Plan was prepared with the acknowledgment of this potential for rapid change in the complex under its oversight purview. To focus the plan to the greatest extent possible, the Board highlighted certain planning assumptions that underlie its current prioritization of activities. These are as follows:

- U.S. national security policy continues to require nuclear weapons stockpile stewardship and management.
- The Administration maintains its moratorium on the underground testing of nuclear weapons. Resumption of underground testing would require a major shift in Board resources for oversight.
- The national priorities concerning the cleanup of contaminated DOE defense nuclear facilities, a key premise in the Board's Strategic Plan, remain unchanged.
- No major changes in the Board's current statutory authority or responsibilities in the DOE defense nuclear complex occur.

- The startup date for the Waste Isolation Pilot Program (WIPP) does not slip. A significant delay in WIPP's opening will require a revised storage strategy for residues at Rocky Flats, impacting the Board's oversight plans.

(The projected 1998 start-up date for WIPP was missed due to ongoing legal disputes. As of January 1999, a WIPP opening date remains uncertain pending resolution of the legal issues. The slippage caused Rocky Flats to implement a revised storage strategy for residues. The Board's oversight plans have been appropriately modified to accommodate the revised strategy.)

### 3. ANNUAL PERFORMANCE PLANS FOR FY 2000

The Board's statutory mission is logically divided into three strategic areas of concentration:

- Complex-Wide Health and Safety Issues;
- Management and Stewardship of the Nation's Stockpile and Nuclear Weapons Components; and
- Hazardous Remnants of Weapons Production.

In planning its work, the Board and its staff have applied a general set of strategic planning goals (see Section 2.2) to these focus areas. A set of seven strategic objectives and sixteen associated action plans that, in aggregate, implement the Board's general goals have been developed to address the three strategic areas of concentration. The relationship among these elements is discussed in the Board's Strategic Plan (available on the Board's Internet Home Page at [www.dnfsb.gov](http://www.dnfsb.gov)).

As required by the Government Performance and Results Act, the Board and its staff further refined their planning efforts for the FY 1999 Budget Request to produce measurable performance goals that, when executed, would demonstrate progress towards the Board's strategic objectives in each focus area, and consequently toward its general goals. As was anticipated, operational experience in using the objectives, actions, and projected goals and measures throughout FY 1998 revealed areas of potential improvement in performance planning and measurement for FY 1999 and FY 2000. The resulting necessary modifications to the FY 1999 performance plan are discussed in the introductory material for each of the three strategic areas of concentration; some terminology was changed in all sections of the performance plan to more accurately reflect the action-forcing nature of the Board's work. It should be noted that the FY 2000 performance goals have been prepared to clearly communicate how the Board's planned efforts will support DOE's FY 2000 strategic objective of full implementation of integrated safety management systems throughout the DOE complex; as a result, more explanatory material is included in some of the FY 2000 performance goals than was seen in the goals for FY 1999. It is anticipated that the Board's Strategic Plan objectives and action plans may also evolve slightly prior to submission of the Board's FY 2000 Budget Request to Congress.

The Board has created a set of performance goals and measures for FY 2000 that establish projected levels of performance and reflect the nature of the Board's independent oversight function. As discussed in Sections 2.3 and 2.4, the focus of the Board's efforts can vary significantly from year to year largely because of external factors. To address this uncertainty (that is beyond its span of control), the Board has created performance goals focused on activity-level areas of concern that support its strategic objectives (e.g., safe dismantlement of

nuclear weapons, stabilization of nuclear wastes, etc.), coupled with a combination of output and expected outcome measures. Often, the expected outcome measure will be evidenced by appropriate safety management action by the DOE, taken in response to a formal or direct Board or staff action. Past reporting experience, developed over the last eight years of reporting progress to Congress in the Board's Annual Reports, has shown that it should be possible to conduct a retrospective assessment of Board-identified issues and associated DOE responses to demonstrate that the Board has had a clear and positive impact on the safety culture within the DOE.

To facilitate an integrated review, the sections below are formatted to show the flow-through from strategic objectives to annual performance goals for FY 1999 and FY 2000, as well as the associated performance measures for FY 2000. To place this planning information in context, the tables also provide examples of the Board's related FY 1998 accomplishments.

The use of consensus and DOE-specific standards is fundamental to the Board's approach to safety assessment and oversight. Board Recommendations, DOE's associated Implementation Plans and other commitments, and the Board's Technical Reports are also used to focus reviews. The standards and criteria used to support the Board and staff evaluations include:

10 CFR 835	<i>Occupational Radiation Protection</i>
29 CFR 1910	<i>Process Safety Management of Highly Hazardous Chemicals</i>
48 CFR 970.2303-2(a)	<i>Integration of Environment, Safety, and Health Into Work Planning and Execution</i>
DOE P 414.1	<i>Management Functions, Responsibilities, and Authorities Policy</i>
DOE P 450.1	<i>Environment, Safety, and Health Policy for the Department of Energy Complex</i>
DOE P 450.4	<i>Safety Management System Policy</i>
DOE P 450.5	<i>Line Environment, Safety and Health Oversight</i>
DOE O 210.1	<i>Performance Indicators and Analysis of Operations Information</i>
DOE O 231.1	<i>Environment, Safety and Health Reporting</i>
DOE O 232.1	<i>Occurrence Reporting and Processing of Operations Information</i>
DOE O 251.1A	<i>Directives System</i>
DOE O 252.1A	<i>Technical Standards Program (presently in draft)</i>
DOE O 360.1	<i>Training</i>
DOE O 420.1	<i>Facility Safety</i>
DOE O 425.1	<i>Startup and Restart of Nuclear Facilities and applicable Guides</i>

DOE O 430.1	<i>Life Cycle Asset Management (430.1A presently in draft), and applicable Good Practice Guides</i>
DOE O 452.1A	<i>Nuclear Explosive and Weapon Surety Program</i>
DOE O 452.2A	<i>Safety of Nuclear Explosive Operations, and applicable Guides</i>
DOE O 460.1A	<i>Packaging and Transportation Safety, and applicable Guides</i>
DOE O 5480.19	<i>Conduct of Operations Requirements for DOE Facilities</i>
DOE O 5480.20A	<i>Personnel Selection, Qualification and Training Requirements for DOE Nuclear Facilities</i>
DOE O 5480.21	<i>Unreviewed Safety Questions</i>
DOE O 5480.22	<i>Technical Safety Requirements</i>
DOE O 5480.23	<i>Nuclear Safety Analysis Reports, and applicable Guides</i>
DOE O 5480.24	<i>Nuclear Criticality Safety, and applicable Guides</i>
DOE O 5820.2A	<i>Radioactive Waste Management</i>
DOE O 6430.1A	<i>General Design Criteria</i>
DOE M 411.1-1	<i>Manual of Safety Management Functions, Responsibilities, and Authorities</i>
DOE M 450.3-1	<i>DOE Closure Process for Necessary and Sufficient Sets of Standards</i>
DOE G 421.1	<i>Criticality Safety Good Practices Guide for DOE Nonreactor Nuclear Facilities</i>
DOE G 450.4-1	<i>Integrated Safety Management System Guide</i>
DOE STD 1073-93	<i>Guide for Operational Configuration Management Programs</i>
DOE STD 3013-96	<i>Criteria for Preparing and Packaging Plutonium Metals and Oxides for Long-Term Storage</i>
DOE STD 1120-98	<i>Integration of Environmental, Safety and Health into Facility Disposition Activities</i>
DOE-AL Supplemental Directive 56XC	<i>Nuclear Weapons Stockpile Evaluation Program</i>
DOE-AL Engineering Procedure EP401080	<i>New Material and Stockpile Systems Evaluation</i>
Recommendation 93-1	<i>Standards Utilization in Defense Nuclear Facilities, and DOE's associated Implementation Plan</i>

Recommendation 93-3	<i>DOE Technical Capability in Defense Nuclear Facilities Programs, and DOE's associated Implementation Plan</i>
Recommendation 93-5	<i>Hanford Waste Tanks Characterization Studies, and DOE's associated Implementation Plan</i>
Recommendation 93-6	<i>Maintaining Access to Nuclear Weapons Expertise in the Defense Nuclear Facilities Complex, and DOE's associated Implementation Plan</i>
Recommendation 94-1	<i>Improved Schedule for Remediation in Defense Nuclear Facilities Complex, and DOE's associated Implementation Plan</i>
Recommendation 94-3	<i>Rocky Flats Plutonium Storage, and DOE's associated Implementation Plan</i>
Recommendation 94-4	<i>Y-12 Plant Conduct of Operations, and DOE's associated Implementation Plan</i>
Recommendation 95-1	<i>Uranium Enrichment, and DOE's associated Implementation Plan</i>
Recommendation 95-2	<i>Safety Management, and DOE's associated Implementation Plan</i>
Recommendation 96-1	<i>In-Tank Precipitation System at the Savannah River Site, and DOE's associated Implementation Plan</i>
Recommendation 97-1	<i>Uranium-233 Storage Safety at Department of Energy Facilities, and DOE's associated Implementation Plan</i>
Recommendation 97-2	<i>Criticality Safety, and DOE's associated Implementation Plan</i>
DNFSB/TECH-1	<i>Plutonium Storage Safety at Major Department of Energy Facilities</i>
DNFSB/TECH-3	<i>Overview of Ventilation Systems at Selected DOE Plutonium Processing and Handling Facilities</i>
DNFSB/TECH-5	<i>Fundamentals for Understanding Standards-Based Safety Management of DOE Defense Nuclear Facilities</i>
DNFSB/TECH-6	<i>Safety Management and Conduct of Operations at the Department of Energy's Defense Nuclear Facilities</i>
DNFSB/TECH-10	<i>An Assessment Concerning Safety at Defense Nuclear Facilities — the DOE Technical Personnel Problem</i>
DNFSB/TECH-12	<i>Regulation and Oversight of Decommissioning Activities at Department of Energy Defense Nuclear Facilities</i>
DNFSB/TECH-13	<i>U-233 Storage Safety at Department of Energy Facilities</i>
DNFSB/TECH-14	<i>Savannah River Site In-Tank Precipitation Facility Benzene Generation—Safety Implications</i>

DNFSB/TECH-15	<i>Operational Formality for Department of Energy Defense Nuclear Facilities and Activities — An Evaluation Guide</i>
DNFSB/TECH-16	<i>Integrated Safety Management</i>
DNFSB/TECH-17	<i>Review of the Hanford Spent Nuclear Fuel Project</i>
DNFSB/TECH-18	<i>Review of the Safety of Storing Plutonium Pits at the Pantex Plant</i>
DNFSB/TECH-19	<i>Authorization Agreements for Defense Nuclear Facilities and Activities</i>

### 3.1 COMPLEX-WIDE HEALTH AND SAFETY ISSUES

#### 3.1.1 Overview

In executing its various missions, the DOE faces a number of difficult complex-wide health and safety issues, including the continuing complex-wide reduction in its workforce; its ongoing program to revise or reduce contractor requirements specified in orders, rules, and standards; loss of contractor critical skills and facility knowledge; increasingly tight budgetary constraints; and the variety of activities and contracting approaches at the various sites. To resolve these issues will require a more disciplined approach for ensuring the safety of operations at DOE's defense nuclear facilities. Therefore, the Board has recommended that the DOE:

- identify the roles and responsibilities of DOE and its contractors' personnel related to health and safety;
- define the technical competencies and experience required to satisfy these responsibilities; and
- plan, execute, and control work activities in a disciplined, systematic manner that defines work scope, analyzes applicable hazards, develops and implements necessary controls, and provides feedback and improvement to work processes and products.

The Board's Strategic Plan identifies two specific objectives that it intends to pursue to ensure that DOE performs its defense nuclear mission safely. They are:

- I-A. Verify that Integrated Safety Management (ISM) programs at DOE facilities are tailored to existing hazards, developed to prescribed standards, and implemented by managers and workers.<sup>4</sup>

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<sup>4</sup> Integrated Safety Management (ISM) is the means by which the Department of Energy is institutionalizing the process of incorporating into the planning and execution of every major defense nuclear activity involving hazardous materials those controls necessary to ensure that environment, safety and health objectives are achieved. It consists of the infrastructure of component safety management programs and processes that, as an integrated whole, implements or

- I-B. Confirm that roles, responsibilities, experience, and competencies required to protect workers and the public are explicitly defined and implemented for both DOE and its contractors' personnel.

The Board believes that specific actions currently planned for FY 1999 and FY 2000 to advance each of these objectives are possible and desirable. These actions, which are specified in the following tables, build on the Board's activities and accomplishments of past years in technically rigorous oversight and constructive interaction with the DOE. Examples of related FY 1998 performance accomplishments that have supported the Board's objectives are also provided in the following tables. All such activities and accomplishments have been publicly identified in documents such as the Board's Annual Reports, letters, technical reports, and previous budget requests. The Board's action plans described in the following tables are also based on its assessment of progress expected in FY 1999 and on major DOE efforts planned during FY 2000, which in turn are predicated on many factors—most importantly, the DOE budget and its accomplishments during this period.

### **3.1.2 Adjustments to the FY 1999 Performance Goals**

The primary external factors that drive modifications to the performance goals of this strategic area of concentration are of three types:

- Changes in functional area focus for DOE's directives upgrade program;
- Delays in the schedules for design and construction projects; and
- Slower progress than committed to by the DOE in the implementation of integrated safety management systems.

For FY 1999, a performance goal that requires substantive modification is the one focused on design and construction projects (Objective/Action I-A.3). While the same level of performance is still anticipated in FY 1999 (two reviews), the candidate facilities have changed to some extent, based on the latest DOE schedule projections for facility design and construction projects. The FY 1999 performance goals associated with Objective/Action I-A.4 and I-B.1 have been expanded and made more specific, based on progress and accomplishments in these two areas during FY 1998. Minor editorial changes were made to clarify the intent or context of the performance goals associated with Objective/Actions I-A/1, I-A.2, and I-B.2.

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ensures implementation of all institutional, facility, and activity level requirements, controls, and authorization basis commitments. Examples of "component safety management programs" include radiological control, maintenance, emergency response, fire protection, training, etc. Examples of "component safety management processes" include work planning, configuration management, criticality safety review, process hazard analysis, and self-assessment.

3.1.3 COMPLEX-WIDE HEALTH AND SAFETY ISSUES

**Objective –** I–A. Verify that Integrated Safety Management (ISM) programs at DOE facilities are tailored to existing hazards, developed to prescribed standards, and implemented by managers and workers.

**Action Plan –** 1. Determine the technical adequacy of new or revised health and safety related orders, rules, and standards for use in developing ISM programs for defense nuclear facilities and, by technical interchange, public meetings, or other Board actions, lead DOE to issue new or revised standards, where necessary, that have adequate requirements for the protection of the health and safety of the workers and the public. (Goal 3)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>In direct response to Board and staff action, DOE revised DOE Order 251.1A, <i>Directives System</i>, and DOE Manual 251.1–1A, <i>Directives System Manual</i>. These documents incorporate key provisions that ensure:</p> <ul style="list-style-type: none"> <li>• The Board has the opportunity to review applicable health and safety directives before issuance,</li> <li>• DOE documents/tracks the preservation of health, and safety requirements when directives are revised, and</li> <li>• Health and safety directives do not automatically expire after a fixed duration.</li> </ul> <p>The Board’s reviews of the application of DOE Manual 450.3–1, <i>DOE Closure Process for Necessary and Sufficient Sets of Standards</i>, at selected DOE facilities identified that an incomplete set of proposed contractual requirements for health and safety resulted, due in part to a lack of adequate requirements and guidance in the directive. Board public meetings and formal correspondence caused DOE to commit to revise this directive to incorporate lessons learned in a coordinated manner with the scheduled revision of DOE Guide 450.4–1, <i>Integrated Safety Management System Guide</i>.</p> <p>Formal Board correspondence and direct attention by individual Board Members, as well as staff reviews of numerous draft DOE health and safety directives and direct interactions with DOE, caused DOE to integrate one set of health and safety directives, under a revision to DOE Order 430.1, <i>Life Cycle Asset Management</i>, which provides for an adequate level of protection of the worker, public, and the environment. This integrated directives set is expected to be issued shortly.</p>	<p>a. Board and staff efforts (including interaction with the DOE offices involved with developing, maintaining and implementing the directives system, and through formal Board action) lead DOE towards consolidating and integrating its set of health and safety directives.</p> <p>b. Through Board and staff reviews and actions, encourage DOE to appropriately update the health and safety directives explicitly associated with ISM, including:</p> <ul style="list-style-type: none"> <li>• G450.4–1, <i>Integrated Safety Management System Guide</i>, and</li> <li>• G414.1–1, <i>Implementation Guide for Use with Independent and Management Assessment</i>,</li> </ul> <p>based on experience and lessons learned in implementing ISM throughout the DOE complex in FY 1998.</p>	<p>a. The Board and its staff review and assess proposed new DOE health and safety directives and safety–significant modifications to existing directives.</p> <p>In FY 2000, the Board will place particular emphasis on encouraging DOE to improve the consolidation and integration of its health and safety directives in the following areas:</p> <ul style="list-style-type: none"> <li>• feedback and improvement, and</li> <li>• requirements selection,</li> </ul> <p>including those health and safety directives explicitly associated with ISM, for example:</p> <ul style="list-style-type: none"> <li>• P251.1, <i>Directives System</i>;</li> <li>• P450.4, <i>Safety Management System Policy</i>;</li> <li>• P450.5, <i>Line Environment, Safety, and Health Oversight Policy</i>;</li> <li>• P450.3, <i>Authorizing Use of the Necessary and Sufficient Process for Standards-Based Environment, Safety and Health Management</i>;</li> <li>• M450.3–1, <i>The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards</i>.</li> </ul>	<p>a. <u>Output</u>: New or significantly modified health and safety directives are reviewed and results are communicated to DOE by the Board or its staff for incorporation or resolution, as appropriate.</p> <p><u>Expected Outcome</u>: When DOE issues new or modified health and safety directives, they are in an enhanced form, resulting in improved safety through standardized requirements and guidance that provide for adequate protection of the workers, public, and the environment.</p>

3.1.3 COMPLEX-WIDE HEALTH AND SAFETY ISSUES

**Objective –** I–A. Verify that Integrated Safety Management (ISM) programs at DOE facilities are tailored to existing hazards, developed to prescribed standards, and implemented by managers and workers.

**Action Plan –** 2. Review ISM program development and evaluate technical progress at DOE sites. (Goal 5)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>The Board’s December 1997 reporting requirement caused DOE and its site contractors to evaluate the status of ISM at facilities beyond those that were designated as top priority in response to the Board’s Recommendation 95–2. In addition, many sites reported that this systematic evaluation revealed areas of needed improvement and integration in their ISM programs.</p> <hr/> <p>The Board and its staff closely tracked DOE’s development and implementation of an ISM verification approach. In March 1998, the Board issued a letter highlighting lessons learned from verification reviews and identifying areas of needed improvement, including team composition and expertise, contractor involvement, and follow–up and closure of findings.</p>	<p>a. The Board and DOE mutually agree that the essential elements of facility–level ISM are implemented for the twelve individual defense nuclear facilities that were identified as top priority in DOE’s Implementation Plan for Board Recommendation 95–2.</p> <p>b. Through Board and staff reviews and actions, encourage DOE to have institutional–level ISM System “descriptions,” as required by the DOE Acquisition Regulations, in place for all sites with operational defense nuclear facilities.</p> <p>c. The Board and DOE mutually agree to a schedule by which institutional–level ISM Systems will be implemented for all operational facilities at defense nuclear sites.</p>	<p>a. The Board and its staff observe and assess DOE’s verification reviews of institutional–level ISM System implementation for those sites with facilities that were identified as top priority in DOE’s Implementation Plan for Board Recommendation 95–2, as well as one of DOE’s verification reviews conducted for a defense nuclear site identified as the next level of priority (e.g., Sandia National Laboratories, the Nevada Test Site, or Idaho National Engineering and Environmental Laboratory).</p> <p>b. The Board and its staff review and assess Authorization Agreements for Pantex Plant nuclear weapons activities (an ongoing area of top priority under DOE’s Implementation Plan for Board Recommendation 95–2), as well as selected Authorization Agreements for other defense nuclear facilities and activities.</p> <p>c. DOE has a strategic objective to implement ISM complex–wide in FY 2000. To support this DOE safety management objective, the Board improves its communication effectiveness by consistently characterizing technical review results using the standard ISM terminology first developed in DOE’s Implementation Plan for Board Recommendation 95–2, and formally promulgated in G450.4–1, <i>Integrated Safety Management System Guide</i>.</p>	<p>a. <u>Output</u>: Institutional–level ISM System verification reviews for sites with top priority facilities are assessed, plus one additional verification review. Assessment results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output</u>: Proposed Authorization Agreements for Pantex Plant nuclear weapons operations and for selected defense nuclear facilities and activities are assessed. Assessment results are communicated to DOE by the Board or its staff.</p> <p>c. <u>Output</u>: Results that are communicated to DOE by the Board or its staff are appropriately tied to ISM concepts.</p> <p><u>Expected Outcome</u>: DOE verification reviews and authorization agreements are effective tools for inculcating ISM concepts, and technical advisories from the Board are easily related to applicable ISM core functions and principles.</p>

### 3.1.3 COMPLEX-WIDE HEALTH AND SAFETY ISSUES

**Objective –** I-A. Verify that Integrated Safety Management (ISM) programs at DOE facilities are tailored to existing hazards, developed to prescribed standards, and implemented by managers and workers.

**Action Plan –** 3. Perform design reviews of DOE's design/construction projects to determine appropriate application of proven principles of systems engineering, standard analytical methodology, and disciplined construction management that ensure safe start-up and operation of defense nuclear facilities. (Goal 6)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>Review of the Capability Maintenance and Improvement Project at the Los Alamos National Laboratory by the Board and its staff identified several issues with the technical management, design process and design documents for the project that did not fully consider health and safety requirements. These issues were identified in a December 1997 Board reporting requirement for DOE and were further clarified in several meetings between DOE and the Board and its staff. This caused DOE to initiate major improvements to its project organizations, design/construction process, and design criteria development.</p> <p>The Board's reviews identified that the original geotechnical field investigation for the Actinide Packaging and Storage Facility at the Savannah River Site had insufficient coverage for the final siting. In January 1998, the Board successfully encouraged the Savannah River Site to expand the scope of the geotechnical investigation, which is important for confirming design inputs and resolving other safety design concerns. Board and staff interaction with Savannah River Site personnel has also led to on-site contractor technical expertise being more involved in this design, and this has resulted in earlier identification and resolution of design issues.</p> <p>The Board's reviews identified shortcomings in the Hanford Spent Nuclear Fuel Project that included the lack of sound project management, a potential battery room hydrogen explosion hazard, and an inability to address emerging technical issues in a timely manner, thereby unduly delaying the safe, expeditious removal and stabilization of deteriorating fuel. In November 1997, and February and March 1998, the Board issued reports that identified these issues and the need for increased attention (both internal and external to DOE) on the Project's shortcomings. Continued Board and staff pressure through correspondence, meetings, including public meetings, has led DOE to streamline Project organization, to adequately address the potential explosion risk, and, closure on issues associated with the design and fabrication of the Multi-Canister Overpack (the container for storing spent nuclear fuel).</p>	<p>a. The Board and its staff complete two reviews of DOE design/construction activities, including:</p> <ul style="list-style-type: none"> <li>• technical project management,</li> <li>• criteria development,</li> <li>• design preparation, and</li> <li>• construction,</li> </ul> <p>and urge DOE to take appropriate actions in response to any significant findings from these reviews, with the intended result of embedding adequate safety measures within the designs.</p> <p>Candidate facilities for review include:</p> <ul style="list-style-type: none"> <li>• Hanford – new spent nuclear fuel facilities and the Tank Waste Remediation System,</li> <li>• Los Alamos National Laboratory – the TA-55 pit production project,</li> <li>• Savannah River Site – tritium facilities, plutonium storage, and plutonium disposition facilities.</li> </ul>	<p>a. The Board and its staff perform two appropriately tailored reviews of DOE design/construction activities, including</p> <ul style="list-style-type: none"> <li>• technical project management,</li> <li>• criteria development,</li> <li>• design preparation, and</li> <li>• construction,</li> </ul> <p>and communicate any identified issues that will require resolution to provide for adequate protection of the worker, the public, and the environment.</p> <p>Selection for review is based on relative hazards, and on DOE's schedule and progress on the candidate facilities.</p> <p>b. The Board and its staff encourage DOE to evaluate and incorporate lessons learned during major design, construction, and deactivation efforts into the directives concerning project management and systems engineering throughout the full life cycle, including:</p> <ul style="list-style-type: none"> <li>• O430.1, <i>Life Cycle Asset Management</i>, and</li> <li>• applicable Good Practices Guides,</li> </ul> <p>with the intent of greater emphasis being placed on improving and standardizing DOE's approach to systems engineering and project management.</p>	<p>a. <u>Output</u>: Two tailored design/construction reviews are conducted and results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output</u>: New or modified directives for project management and systems engineering are reviewed and results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome</u>: An adequate approach and schedule for resolution of identified issues is developed to support safe start-up and operation of new or modified defense nuclear facilities.</p>

**3.1.3 COMPLEX-WIDE HEALTH AND SAFETY ISSUES**

**Objective –** I-A. Verify that Integrated Safety Management (ISM) programs at DOE facilities are tailored to existing hazards, developed to prescribed standards, and implemented by managers and workers.

**Action Plan –** 4. Evaluate the effectiveness of individual components, as well as the integration of all components, that make up DOE's feedback and improvement safety management function for defense nuclear activities. (Goal 2 and Goal 5)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>In March 1998, the Board issued a reporting requirement concerning DOE and contractor line management and independent responsibilities and programs for feedback and improvement. DOE's response committed to a plan of action and, in addition, during a June public meeting on DOE's status implementing Recommendation 95-2, the Department committed to evaluate the need to consolidate and improve the DOE requirements for environment, safety, and health reporting.</p>	<p>a. Through Board and staff reviews and actions, encourage DOE to improve integration of DOE's environment, safety, and health reporting requirements. Areas of specific focus will include:</p> <ul style="list-style-type: none"> <li>• the adequacy of the contractually-required performance measures for one national laboratory (as compared to similar requirements at other defense nuclear facilities), and</li> <li>• the utility and integration of various Order-mandated environment, safety, and health performance reports.</li> </ul> <p>b. Through Board and staff reviews and actions, drive DOE to develop an adequate plan to consolidate and make necessary changes to the DOE/Contractor system for disseminating results of internal DOE assessments, oversight activities, and lessons learned.</p> <p>c. Through Board and staff reviews and actions, encourage DOE to more clearly define the current assignments of responsibilities for the feedback and improvement function.</p>	<p>a. The Board and its staff assess DOE's development and issuance of guidance for establishing effective ISM performance measures.</p> <p>b. The Board and its staff assess DOE's development and issuance of guidance to adequately consolidate and make necessary changes to the DOE/Contractor system for disseminating results of internal DOE assessments, oversight activities, and lessons learned, and for the implementation of value-added corrective actions resulting from these activities.</p>	<p>a. <u>Output:</u> New or modified DOE directives governing effective ISM performance measurement are reviewed and results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output:</u> New, modified, or consolidated directives governing assessments, oversight, lessons learned, and effective corrective action programs are reviewed and results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome:</u> DOE-issued directives on feedback and improvement appropriately address Board and staff review results, yielding improved guidance for this core ISM functional area.</p>

### 3.1.3 COMPLEX-WIDE HEALTH AND SAFETY ISSUES

**Objective –** I-B. Confirm that roles, responsibilities, experience, and competencies required to protect workers and the public are explicitly defined and implemented for both DOE and its contractor personnel.

**Action Plan –** 1. Conduct specific reviews of DOE organizational documents (e.g., Manual of Functions, Responsibilities and Authorities) and operations at DOE Headquarters and in the field, and communicate results to DOE via technical exchanges, public meetings, or formal Board action. (Goals 4 & 5)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>The structure of DOE's program for responding to the Board's Recommendation 94-1 was not being managed adequately, in part because there was no organization in DOE with the required cross-cutting authority and resources to provide adequate direction for the integration of complex-wide nuclear material stabilization activities. In December 1997, the Board issued a letter encouraging DOE to restructure the leadership of this very important risk-reduction program. In its response, DOE assigned the Deputy Secretary as the responsible manager for resolving complex-wide integration issues.</p> <p>The Board's reviews revealed that the roles, responsibilities, and interfaces between DOE and its contractor in implementing the Capability Maintenance and Improvement Project at the Los Alamos National Laboratory were not clearly defined; there was no assurance that requirements important to health and safety were identified and appropriately developed through every phase of a design/construction project. In December 1997, the Board requested a report from DOE to address these issues. In responding to this reporting requirement, DOE and Los Alamos management have initiated key organizational changes and have committed to resolving the issues identified by the Board.</p>	<p>a. Conduct Board and staff reviews to examine DOE's implementation of the safety functions and responsibilities contained in the DOE corporate level, program office, and Field element Functions, Responsibilities, and Authorities Manuals (FRAMs). The intent of these reviews is to steer DOE towards more effective implementation of this fundamental ISM principle.</p> <p>A priority candidate for specific Board and staff review is the safety management of nuclear explosive operations.</p>	<p>a. The Board and its staff review and assess the roles and responsibilities assignments for safety management for:</p> <ul style="list-style-type: none"> <li>• one DOE Headquarters organization, and</li> <li>• two DOE Field organizations (one under the DOE Office of Defense Programs and one under the Office of Environmental Management),</li> </ul> <p>including appropriate consideration of the associated FRAMs. The intent of these reviews is to determine whether DOE's system of FRAMs accurately reflects the assignment of safety management responsibilities in Headquarters and the Field, and to identify any areas that require additional DOE action.</p>	<p>a. <u>Output</u>: Three reviews are conducted and the results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome</u>: There is enhanced understanding of safety-related roles and responsibilities in support of DOE's execution of functions associated with protecting the worker, public, and environment.</p>

3.1.3 COMPLEX-WIDE HEALTH AND SAFETY ISSUES

**Objective –** I-B. Confirm that roles, responsibilities, experience, and competencies required to protect workers and the public are explicitly defined and implemented for both DOE and its contractor personnel.

**Action Plan –** 2. Monitor closely DOE efforts to recruit and retain a safety management staff of exceptional quality, education, and experience. Review the results of DOE's reduction-in-force actions arising from DOE budget reductions to-date, including ongoing evaluation of the DOE implementation of related Board Recommendations. (Goals 2, 4 & 5)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>Stabilization and clean-up of hazardous materials at Hanford continues to demand personnel with critical technical expertise. As part of the continuing efforts on Board Recommendation 93-3, the DOE-Richland Operations Office has been encouraged by the Board to acquire additional technical expertise in critical areas (e.g., project management and nuclear safety). DOE-Richland requested authority from DOE-Headquarters to hire 25 additional technical staff, including excepted service billets. With the Board's support, this authorization was granted and the hiring is now in progress.</p> <p>Concerns with maintaining an adequate level of assurance of the health and safety of workers and the public led the Board to issue Recommendation 97-2, <i>Criticality Safety</i>, which, in part, called for institutionalizing various initiatives to provide for the continued technical competence of criticality safety professionals in the DOE nuclear weapons complex. Through continued interaction between the Board, its staff, and DOE, significant progress has been made in examining and prioritizing DOE's criticality experimental research program and in capturing historical criticality experimental data through archiving interviews of retired criticality safety experts.</p>	<p>a. Through Board staff reviews and Board actions at three sites with new or newly resumed operations (e.g., Oak Ridge Y-12, Savannah River Site tritium facilities, Nevada Test Site, or the Pantex) Plant, encourage DOE to complete rigorous self-assessments of implementation of the Technical Qualification Program for DOE employees, and to determine whether the skills and competencies necessary to conduct nuclear and nuclear explosive activities safely are adequate and continue to improve.</p> <p>b. Confirm, through Board and staff reviews and action, that progress is being made to implement the commitments contained in the associated DOE Implementation Plans for:</p> <ul style="list-style-type: none"> <li>• Board Recommendation 97-2, <i>Criticality Safety</i>, and</li> <li>• Board Recommendation 93-3, <i>Improving DOE Technical Capability in Defense Nuclear Facilities Programs</i>.</li> </ul>	<p>a. The Board and its staff collaborate with DOE in its efforts to address the remaining commitments under the Recommendation 93-3 Implementation Plan, which include DOE's commitment to complete its periodic assessments of the effectiveness of the Federal Technical Capabilities Program for DOE employees.</p> <p>b. As part of scheduled DOE and contractor operational readiness determinations involving the following organizations:</p> <ul style="list-style-type: none"> <li>• DOE-Livermore Site Office,</li> <li>• DOE-Richland Operations Office,</li> <li>• DOE-Albuquerque Operations Office,</li> <li>• Los Alamos National Laboratory,</li> <li>• Lawrence Livermore National Laboratory, and</li> <li>• Oak Ridge Y-12,</li> </ul> <p>the Board and its staff assess whether competence is commensurate with assigned responsibilities for key safety management personnel. Two DOE Field Offices and two defense nuclear contractor organizations will be assessed.</p> <p>c. The Board collaborate with DOE in its efforts to address the remaining commitment under the Recommendation 97-2 Implementation Plan, which supports the assurance that Federal staff directly performing criticality safety oversight are qualified.</p>	<p>a. <u>Output</u>: An assessment of the Federal Technical Capabilities Program is completed and results communicated to DOE by the Board or its staff.</p> <p>b. <u>Output</u>: Four reviews are conducted (2 DOE and 2 contractor) and results communicated to DOE by the Board or its staff.</p> <p>c. <u>Output</u>: A technically adequate DOE program is in place for the qualification of DOE's employees on contractor criticality safety practices.</p> <p><u>Expected Outcome</u>: Rigorous assessments of the technical capabilities of its personnel provide DOE with information vital to assuring the safety of defense nuclear facilities; this information is be used by DOE to continuously upgrade the quality of its technical workforce.</p>

## **3.2 MANAGEMENT AND STEWARDSHIP OF THE NATION'S STOCKPILE AND NUCLEAR WEAPONS COMPONENTS**

### **3.2.1 Overview**

Nuclear weapons continue to play an integral role in U.S. national security policy. By their nature, the operations to maintain a nuclear weapons stockpile involve hazards that, if not adequately controlled, could pose unacceptable consequences to the public and the workers. Therefore, the DOE must ensure that the unique hazards associated with nuclear weapons and components are adequately controlled in a tailored, integrated safety management system. The Board maintains safety oversight of the DOE as it conducts its nuclear weapons operations in fulfillment of national security objectives and continues to protect the health and safety of the workers and the public.

The Board's Strategic Plan identifies three specific objectives to improve the safety of operations involving DOE's nuclear weapons and nuclear weapon components:

- II-A. Cause the DOE to improve the collection, analysis, and dissemination of information related to safety as part of its weapons stockpile stewardship and management program.
- II-B. Confirm that the maintenance and modification of the nuclear weapons stockpile and associated research and development are performed safely using an integrated safety management approach that adequately controls the hazards associated with these activities.
- II-C. Verify that the permanent dismantlement of retired nuclear weapons and the disposition of components are completed safely in a manner appropriate to the hazards of these operations.

The Board believes that specific actions currently planned for FY 1999 and FY 2000 to advance each of these objectives are achievable and desirable. These actions, which are specified in the following tables, build on the Board's activities and accomplishments of past years in technically rigorous oversight and constructive interaction with the DOE. Examples of the related FY 1998 performance accomplishments that have supported these objectives are also provided in the following tables. All such activities and accomplishments have been publicly identified in documents such as the Board's Annual Reports, letters, technical reports, and previous budget requests. The Board's action plans described in the following tables are also based on its assessment of progress expected in FY 1999 and major DOE efforts planned during FY 2000, which in turn are predicated on many factors—most importantly, DOE's budget and its accomplishments during this period.

### 3.2.2 Adjustments to the FY 1999 Performance Goals

The changes in this strategic area of concentration in the FY 1999 Performance Plan generally represent efforts to improve the focus of the performance goals, as well as to account for the Board's and DOE's achievements in 1998. The substantive changes in this section are:

**Objective/Action II-A.1:** Two performance goals were combined to create a single comprehensive effort to assess several programs underway to gain additional information from several sources (e.g., Core Surveillance Program, the Enhanced Surveillance Program, and the knowledge preservation program) to improve the quality of safety-related weapon system information in Weapon Safety Specifications and Hazard Analysis Reports.

**Objective/Action II-B.1:** One performance goal previously in this section was combined into the performance goals under Complex-Wide Health and Safety Issues so as to provide a single area of strategic focus related to the development of Integrated Safety Management Systems.

**Objective/Action II-C.1:** The focus of two performance goals was modified slightly to a review of the entire system of standards, directives, implementing instructions, and controls refined over the last year to ensure the safe dismantlement of retired nuclear explosives. The goals had previously focused only on the principal DOE Orders and standards in that system.

The focus of a third performance goal was changed to address the safety of dismantling nuclear weapon secondaries at Oak Ridge Y-12 to be more consistent with the strategic plan objective. The safety of other activities at Oak Ridge Y-12 is already adequately addressed under Objectives II-A and II-B.

**3.2.3 MANAGEMENT AND STEWARDSHIP OF THE NATION'S STOCKPILE AND NUCLEAR WEAPONS COMPONENTS**

**Objective –** II–A. Cause DOE to improve the collection, analysis, and availability of information related to safety, as part of its weapons stockpile stewardship and management program.

**Action Plan –** 1. Monitor DOE/Contractor actions and advise DOE to ensure that the weapons complex develops and maintains an adequate understanding of, and resolves health and safety issues associated with operations involving production, assembly, testing, storage, and disassembly of weapons and components. (Goals 1, 2, & 4)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>After conducting several on-site reviews, the Board realized that DOE did not have an adequate understanding of the potential hazards that lightning might pose to nuclear explosive operations at the Pantex Plant. In September 1997, the Board requested that DOE re-analyze the nuclear explosive hazards posed by lightning, identify the additional controls necessary to prevent and mitigate those hazards, and develop a path forward for maintaining the needed controls. As a result, DOE identified and installed many additional protective measures, such as: electrically bonding metallic penetrations, surge protectors, and isolation requirements to prevent electrical energy from being inadvertently applied to explosive circuits. These added measures should render nuclear explosive operations at Pantex less vulnerable to threats from lightning.</p> <hr/> <p>The Board's staff identified several design and equipment deficiencies in Enriched Uranium Operations (EUO) at Oak Ridge Y-12 related to electrical and fire protection systems, such as: emergency lights, electrical distribution systems, lightning protection systems, and combustible loading. As a result of a Board letter on these issues, DOE is in the process of developing and implementing corrective actions. The completion of these corrective actions will significantly improve the safety posture of the EUO effort, which successfully restarted uranium metallurgical operations in support of a high-priority national security task in June 1998.</p> <hr/> <p>Throughout 1997, DOE continued work on a plan to move all pits out of Zone 4 magazines and into Zone 12 facilities to reduce the overall Pantex Plant footprint. Building 12-66 had been selected as the target facility for consolidating all of the surplus pits. However, Board staff reviews of this facility identified issues with its safety basis. As a result of interactions with the Board and staff, DOE re-evaluated the safety basis for its plan to use Building 12-66 for storage of surplus pits, and subsequently withdrew the plan in December 1997.</p>	<p>a. The Board and its staff conduct reviews of stockpile management operations at the Pantex Plant involving two weapons in the enduring stockpile. The intent of these reviews is to determine whether DOE is continuously improving the safety of stockpile surveillance operations, by:</p> <ul style="list-style-type: none"> <li>• capturing and utilizing relevant safety-related information from the Core Surveillance Program, production plant and laboratory experience, and the Enhanced Surveillance research and development program, and</li> <li>• improving and updating system-specific Weapons Safety Specifications (WSS) and/or Hazard Analysis Reports (HAR).</li> </ul> <p>The weapons selected for Board and staff review will include, if possible, one bomb and one warhead, and one weapon designed by Lawrence Livermore National Laboratory (LLNL) and one by Los Alamos National Laboratory (LANL).</p> <p>b. The Board and its staff conduct one special study of unique or significant hazards at a DOE stockpile management facility. The intent of this review is to confirm the adequacy of hazard or accident analysis relating to unique or significant hazards of the DOE weapons complex (e.g., airplane crash or on-site transportation).</p> <p>c. The Board and its staff review the adequacy of safety basis analyses for three weapons activities or facilities at sites such as:</p> <ul style="list-style-type: none"> <li>• the Pantex Plant,</li> <li>• Oak Ridge Y-12,</li> <li>• the Savannah River Site (SRS) tritium facilities,</li> <li>• LLNL, or</li> <li>• LANL.</li> </ul>	<p>The Board and its staff conduct the following reviews. Selection of the specific focus of each review is based on relative hazards, and on DOE's schedule and progress on the candidate weapon activities:</p> <p>a. <u>WSSs and/or HARs for two nuclear weapon activities.</u> Ideally, one bomb and one warhead, and one LLNL and one LANL weapon will be selected. One intent of these reviews is to determine whether DOE's update of each WSS and HAR captures relevant safety-related information from the Core Surveillance Program, production plant and laboratory experience, and the Enhanced Surveillance Program.</p> <p>b. <u>One special study of unique or significant hazards at a DOE weapons facility.</u> One intent of this review is to confirm the continuing adequacy of hazard or accident analysis.</p> <p>c. <u>The safety basis analysis and change control for three nuclear weapons activities or facilities.</u> The intent of these reviews is to determine whether safety information is adequately derived and captured in authorization basis documents, and to promote continuous improvement. Priority candidates for review include:</p> <ul style="list-style-type: none"> <li>• the Pantex Plant,</li> <li>• Oak Ridge Y-12,</li> <li>• SRS tritium facilities, and</li> <li>• weapons program activities at LLNL or LANL.</li> </ul> <p><u>For all of the above reviews</u>, and on a schedule that supports DOE's operational plans, the Board or its staff communicate results with an emphasis on those issues that will require DOE's attention to provide for adequate protection of the worker, public, and the environment.</p>	<p>a. <u>Output:</u> Two reviews are completed of WSS and/or HAR documents and results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output:</u> One special hazards review is completed and results are communicated to DOE by the Board or its staff.</p> <p>c. <u>Output:</u> Three reviews of safety basis analysis/change control are completed and results communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome:</u> DOE appropriately addresses Board and staff observations, resulting in improved understanding and availability of safety information concerning nuclear explosive operations and other defense nuclear activities. This will enhance DOE's control of the hazards associated with the production, assembly and disassembly, testing, and storage of nuclear weapons and/or weapons components.</p>

**3.2.3 MANAGEMENT AND STEWARDSHIP OF THE NATION'S STOCKPILE AND NUCLEAR WEAPONS COMPONENTS**

**Objective –** II–A. Cause DOE to improve the collection, analysis, and availability of information related to safety, as part of its weapons stockpile stewardship and management program.

**Action Plan –** 2. Evaluate DOE's monitoring of the effects of stockpile aging and offer timely guidance on health and safety issues affecting these operations. Verify that any identified safety impacts of stockpile aging are communicated to responsible officials and are addressed in a timely manner. (Goals 1 & 2)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>In December 1997, the Board issued a technical report, <i>Review of the Safety of Storing Plutonium Pits at the Pantex Plant</i>, which identified shortcomings in DOE's efforts to develop upgraded containers and facilities for storing plutonium pits. This report discussed the need for DOE to apply a systems approach to develop a pit storage system that would comprehensively consider the interrelationships among the barriers that protect against release of radioactive material, as well as the programs and controls needed to maintain these barriers. As a result, DOE is working to identify more rigorously the requirements for new pit containers and to develop an integrated plan for improving pit storage and surveillance at Pantex.</p> <p>The Board issued a classified technical report, <i>Surveillance of Nuclear Weapon High-Explosive Operations at Pantex</i>, which documented a staff review of DOE's surveillance program that focused on the main charge high explosives in those nuclear weapons in the enduring stockpile. The Board's focus in this review was whether the aging of explosive materials, as detected during surveillance activities, could have safety implications for nuclear explosive operations (both dismantlements and operations in support of the enduring stockpile). The Board indicated that DOE should consider improving some elements of the surveillance program, such as increasing the high explosive sampling frequency for older weapons awaiting dismantlement. Since the Board's report was issued, there have been noticeable improvements observed in the surveillance program in some of the areas highlighted in the report.</p>	<p>a. Determine whether potential safety implications of age-related changes in components in the W76, W78, or B83 are addressed through research and evaluations. An intent of this review is to confirm that DOE uses relevant aging-related information from manufacturing plant surveillance and laboratory research/testing to improve and update system-specific WSSs and/or preliminary HARs for these enduring stockpile weapons, as necessary.</p> <p>b. Determine whether DOE's nuclear explosive operations for weapons dismantlement and for support of the enduring stockpile reflect due consideration of any safety implications associated with the aging or other degradation of explosive materials.</p>	<p>The Board and its staff assess the following technical areas:</p> <p>a. DOE's efforts to address safety issues of aging-related changes in nuclear weapons components for one weapon in the enduring stockpile. The primary intent of this review is to confirm that these issues are addressed through research and evaluation of data derived from Enhanced Surveillance Program models and relevant information from production plant and laboratory/testing facility experience, and that the appropriate WSS and HAR is updated.</p> <p>b. Research and modeling efforts to evaluate the aging effects of insensitive high explosives, with a special focus on composite systems containing both conventional and insensitive high explosives.</p>	<p>a. <u>Output</u>: One assessment of aging-related phenomena is conducted and review results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output</u>: One assessment of research and modeling of aging effects on explosives is conducted and review results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome</u>: DOE improves the safety of nuclear explosive operations for support of the enduring stockpile (and, by extension, for weapons dismantlement) as a result of proper incorporation of materials aging-related considerations into hazard analysis, controls development, and work execution.</p>

**3.2.3 MANAGEMENT AND STEWARDSHIP OF THE NATION'S STOCKPILE AND NUCLEAR WEAPONS COMPONENTS**

**Objective –** **II–B.** Confirm that the maintenance and modification of the nuclear weapons stockpile and associated research and development are performed safely using an integrated safety management (ISM) approach that adequately controls the hazards associated with these activities.

**Action Plan –** **1.** Through design reviews, special studies, operational analysis, and use of the guidance in Recommendation 95–2, *Safety Management*, confirm DOE has established integrated authorization bases, including controls that are derived from safety analyses and are tailored adequately to the hazards of activities relating to stockpile management and stewardship. (Goals 1, 2, & 3)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>As a result, in part, of Board and staff reviews of major facilities upgrades in support of stockpile management operations at LANL (and an associated Board reporting requirement), LANL and DOE have both reorganized and committed to improving project management of new construction projects and facility upgrades. In addition, DOE and LANL have committed to developing systematic life-cycle analysis, safety design criteria, and appropriate project management controls for Stockpile Management projects. This effort will help ensure that DOE and LANL establish a comprehensive ISM System that covers all life-cycle phases of facilities at the laboratory.</p> <p>The Board closely followed DOE's and its contractor's efforts to restart initial operations for EUO at Oak Ridge Y-12. In several letters to DOE, the Board noted lack of appropriate identification of safety controls for the ventilation system, dry vacuum system, casting furnace water detection system, and some fire patrols. In response, DOE created several new safety controls and resolved deficiencies such that uranium casting operations were successfully restarted in June 1998.</p> <p>Throughout 1997, the Board closely followed DOE's efforts to restart the Pantex Plant dynamic balancer, where warheads undergo dynamic balancing and product-of-inertia testing. The Board issued three letters and interacted frequently with DOE to improve these conditions. In addition, the Board's staff helped DOE, the weapons design agencies, and the Pantex Plant contractor identify the hazards of concern and the appropriate controls. The dynamic balancer is now back in normal operation with significantly improved safety controls.</p> <p>The Board has closely monitored preparations for initial operations in the Device Assembly Facility at the Nevada Test Site (NTS). In April 1997, the Board noted that the facility had many elements of a satisfactory ISM System, but some improvements (specifically in the identification of safety controls) were needed. The letter also noted issues requiring DOE's attention associated with the fire protection system, the acceptance testing program, and the emergency response program. In November 1997, the staff observed DOE's operational readiness review and noted that the facility has made significant safety improvements. The facility has now begun initial operations to support experiments at the NTS.</p>	<p>a. Determine whether the authorization basis controls that are established for weapons complex activities adequately address the associated hazards, by evaluating the safety controls selected for three activities, such as:</p> <ul style="list-style-type: none"> <li>• weapons programs at the Pantex Plant,</li> <li>• activities at Oak Ridge Y-12,</li> <li>• activities at an SRS tritium facility, or</li> <li>• new stockpile management or stewardship activities at LANL or LLNL.</li> </ul>	<p>a. The Board and its staff evaluate the safety controls selected for three hazardous weapons complex activities and communicate results with emphasis on any findings that will require DOE attention to provide for adequate protection of the worker, public, or the environment. The intent of these reviews is to determine whether the control sets derived adequately address the associated hazards.</p> <p>Priority candidate activities or facilities for review include those at:</p> <ul style="list-style-type: none"> <li>• the Pantex Plant;</li> <li>• Oak Ridge Y-12;</li> <li>• SRS tritium facilities;</li> <li>• LLNL, LANL, or the Sandia National Laboratories (SNL).</li> </ul> <p>Selection for review is based on relative hazards, and on DOE's schedule and progress on the candidate activities.</p>	<p>a. <u>Output:</u> Evaluations are conducted of the control sets selected for three hazardous weapons complex activities and evaluation results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome:</u> DOE appropriately addresses Board and staff observations, resulting in enhanced safety management programs for hazardous weapons complex activities.</p>

3.2.3 MANAGEMENT AND STEWARDSHIP OF THE NATION'S STOCKPILE AND NUCLEAR WEAPONS COMPONENTS

<b>Objective –</b>	<b>II-B.</b> Confirm that the maintenance and modification of the nuclear weapons stockpile and associated research and development are performed safely using an integrated safety management (ISM) approach that adequately controls the hazards associated with these activities.
<b>Action Plan –</b>	<b>2.</b> Through reviews at weapons complex sites, confirm that DOE and its contractors are following agreed-upon controls, procedures, policies, and practices for activities relating to the safe management of the nuclear weapons stockpile. (Goals 1, 2, 4 & 5)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>The Board issued two letters to DOE forwarding observations on DOE's process to assess the nuclear explosive safety (NES) implications of changes to operations at Pantex. This resulted in DOE acknowledging that the evaluation of changes could benefit from a different change control review process. DOE has committed to revise its NES change control process to be consistent with DOE's policy for similar processes at other defense nuclear facilities.</p> <p>The Board and its staff have conducted several reviews of restart efforts for EUO at Oak Ridge Y-12 to support a high-priority national security task. The Board's actions facilitated the safe restart of uranium casting operations in June 1998 and the planning for future EUO activity restarts.</p> <p>During the last year, the Board placed considerable emphasis on the safety management program at LANL's Chemistry and Metallurgy Research Facility (CMR). As a result, LANL reorganized its line management structure and revised the facility safety management system. After considerable effort by both DOE and the laboratory, and with extensive Board oversight and constructive engagement, CMR is operating with a greater assurance that appropriate safety requirements are being followed.</p> <p>For several years, the Board has worked with DOE to improve the directives affecting the safety of nuclear explosive operations. However, implementation of the new directives (which are pivotal to the standards-based safety management program for nuclear explosive operations) has not proceeded as rapidly as anticipated. Of particular note is the lack of definitive guidance for preparing HARs for nuclear explosive operations. Through Board letters to DOE on various weapons programs (e.g., W69 operations) and Recommendation 93-1 implementation issues, the Board has continued to encourage DOE to develop a comprehensive standard for HARs that can be effectively implemented by DOE and its contractors.</p>	<p>a. Evaluate the adequacy of approved activity-specific hazard analysis, control identification, and control implementation processes for <u>ongoing</u> activities at three of the four stockpile management sites [i.e., the Pantex Plant, Oak Ridge Y-12, LANL, or SRS]. The focus of these evaluations will include whether effective feedback and improvement programs are being executed.</p> <p>b. Confirm that ISM is in place and effective before new weapons activities are started by evaluating the implementation of authorization basis controls during three DOE/contractor operational readiness determinations, such as: Operational Readiness Reviews (ORR) or Safety Evaluations at the Pantex Plant; ORR for Phase-B EUO restart at Oak Ridge Y-12; or readiness reviews for stockpile management work at LANL.</p> <p>c. By performing three reviews of specific safety management functional areas (e.g., training, work planning, or conduct of operations, configuration management, unreviewed safety question determination, or criticality safety) at selected weapons complex sites, determine whether safety-related requirements in authorization bases are implemented by the use of appropriate contractor procedures and work packages, are followed consistently, and that DOE and contractor feedback and improvement efforts are effective.</p>	<p>a. The Board and its staff evaluate the execution of three ISM work-planning processes (i.e., activity-specific hazard analysis, identification, and implementation of safety controls) for new stockpile management activities at the following sites: the Pantex Plant, Oak Ridge Y-12, LANL, and SRS tritium facilities.</p> <p>b. The Board and its staff observe and assess three DOE/contractor ORRs or other readiness determinations for new stockpile management activities. Priority candidates for review include: Integrated Readiness Reviews at the Pantex Plant, the ORR for uranium conversion and reduction processes in EUO at Oak Ridge Y-12, or readiness reviews for stockpile management work scheduled at LANL and SRS tritium facilities.</p> <p>c. The Board and its staff conduct reviews of the implementation of two cross-cutting functional areas, at either the Pantex Plant, Oak Ridge Y-12, LANL, or SRS tritium facilities. Results are provided to DOE with emphasis on any safety-related issues meriting additional attention. Priority candidate functional areas for review include:</p> <ul style="list-style-type: none"> <li>• training,</li> <li>• radiological protection,</li> <li>• criticality safety conduct of operations,</li> <li>• configuration management,</li> <li>• unreviewed safety question determination, or</li> <li>• line management self-assessment.</li> </ul> <p><u>For all of the above efforts</u>, selection for review is based on relative hazards, and on DOE's schedule and progress on the candidate activities.</p>	<p>a. <u>Output</u>: Three evaluations of ISM work-planning processes are conducted and review results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output</u>: Three observations of DOE/contractor readiness determinations are conducted and review results are communicated to DOE by the Board or its staff.</p> <p>c. <u>Output</u>: Two reviews of cross-cutting functional areas are conducted and review results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome</u>: DOE implements value-added safety improvements, or an adequate approach and schedule for implementation is developed; DOE is using the information gained to improve the safe performance of activities associated with the maintenance and modification of the enduring nuclear weapons stockpile.</p>

**3.2.3 MANAGEMENT AND STEWARDSHIP OF THE NATION'S STOCKPILE AND NUCLEAR WEAPONS COMPONENTS**

**Objective –** **II-B.** Confirm that the maintenance and modification of the nuclear weapons stockpile and associated research and development are performed safely using an integrated safety management (ISM) approach that adequately controls the hazards associated with these activities.

**Action Plan –** **3.** Review research and experimentation related to the safety of nuclear weapons to verify execution of an ISM System. (Goals 1, 2, 3, 4 & 5)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>Throughout the last year, the Board and its staff engaged DOE and LANL on the development of hazards analyses and an associated set of safety controls for dynamic experiments at Los Alamos. As a result of the Board's actions, changes were made to more fully ensure that the overall safety management strategy for these experiments, which are essential to DOE's Stockpile Stewardship program, will provide adequate protection.</p> <p>The Board and staff conducted several reviews of weapons-related activities at the LLNL Plutonium Facility (in Standby mode since July 1997). The Board and its staff monitored the on-going efforts of LLNL to develop and implement an ISM System at the Plutonium Facility and the remainder of the Superblock on a top priority basis. The Board's efforts have spurred improved work management processes and an upgraded Plutonium Facility Resumption Plan. Specific operations have resumed after implementing improvements such as upgraded procedures, clarified responsibilities for safety functions and systems, and upgraded training of Fissile Material Handlers.</p> <p>The Board and its staff have closely monitored the development and evolutionary implementation of the ISM System for subcritical experiments at the Nevada Test Site (NTS). In June 1998, the Board issued a letter noting the progress that DOE and the weapons laboratories have made with this program, to date, and highlighting improvements that are still needed in the identification and implementation of specific safety controls.</p> <p>Through a Board letter in April 1998, and Board and staff interaction with LLNL and the DOE-Oakland Operations Office, the Board has positively influenced LLNL to develop lists of standards and requirements for safe operations of nuclear facilities (i.e., the LLNL Work Smart Standards set). LLNL had concentrated on technical standards (e.g., fire protection and radiation protection) and deferred consideration of ISM System requirements (e.g., worker protection, safety analysis, and occurrence reporting). As a result of the Board's actions, LLNL is continuing to apply all DOE health and safety directives and standards currently listed in its contract and has renewed development of its Work Smart Standards set to include both technical and ISM standards and programs.</p>	<p>a. Evaluate the adequacy of the execution of approved ISM processes for activity-specific hazards analysis, controls identification, and controls implementation for one <u>ongoing</u> research and development activity related to the safety of the weapons work at SNL, Oak Ridge Y-12, or the Pantex Plant. The focus of these evaluations will include whether effective feedback and improvement programs are being executed.</p> <p>b. Confirm that ISM is in place and effective before new activities are started by evaluating the adequacy of the execution of approved ISM processes for activity-specific hazards analysis, controls identification, and controls implementation for two <u>newly-initiated</u> weapons research and development activities at sites with facilities listed as top priority for ISM implementation in DOE's Implementation Plan for Board Recommendation 95-2 (i.e., LANL or LLNL), or at the NTS for subcritical experiments. The focus of these evaluations will include work planning for newly-initiated weapons research and development activities, and whether effective feedback and improvement programs are being executed.</p>	<p>a. The Board and its staff assess the execution of one ISM work-planning process (i.e., activity-specific hazard analysis, controls identification, and implementation of safety controls) for a Stockpile Stewardship research and development activity at one of the following candidate sites: LANL, LLNL, SNL, or NTS.</p> <p>b. The Board and its staff assess two DOE/contractor operational readiness reviews or other readiness determinations for new Stockpile Stewardship activities. Priority candidates for review include: dynamic experiments at LANL and subcritical experiments at NTS.</p> <p>c. The Board and its staff conduct reviews of the implementation of two cross-cutting functional areas, at either LANL, LLNL, SNL, or NTS. Review results are provided to DOE on any identified issues. Priority candidate functional areas for review include:</p> <ul style="list-style-type: none"> <li>• training,</li> <li>• radiological protection,</li> <li>• criticality safety conduct of operations,</li> <li>• configuration management,</li> <li>• unreviewed safety question determination, and</li> <li>• line management self-assessment.</li> </ul> <p><u>For all of the above efforts</u>, selection for review is based on relative hazards, and on DOE's schedule and progress on the candidate activities.</p>	<p>a. <u>Output:</u> One review is conducted of ISM work-planning processes and review results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output:</u> Observations are conducted of two startups or restarts and review results are communicated to DOE by the Board or its staff.</p> <p>c. <u>Output:</u> Two reviews of cross-cutting functional areas are conducted and review results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome:</u> DOE implements value-added safety improvements, or an adequate approach and schedule for implementation is developed; DOE is using the information gained to improve the safe performance of research and development activities associated with the Stockpile Stewardship mission.</p>

**3.2.3 MANAGEMENT AND STEWARDSHIP OF THE NATION'S STOCKPILE AND NUCLEAR WEAPONS COMPONENTS**

<b>Objective –</b>	<b>II–C.</b> Verify that the permanent dismantlement of retired nuclear weapons and the disposition of components are completed safely in an integrated manner appropriate to the hazards of these operations.
<b>Action Plan –</b>	<b>1.</b> Through reviews conducted by the Board's site representatives and site visits by subject matter experts, confirm that dismantlement of nuclear weapons is performed safely through the use of an ISM approach that adequately controls the related hazards. (Goals 1, 2, 3, 4 & 5)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>The Board has been actively involved in reviewing the W69 Dismantlement Program. Several constructive safety measures were identified by the Board and transmitted to DOE in three letters covering lightning hazards, deficiencies in structural integrity of the building in which the dismantlement operations are to be conducted, and the need for safety considerations to factor into selecting facilities for hazardous operations. The operational safety of this activity was significantly improved by administrative controls and physical modifications that were implemented in response to the Board's letters.</p> <p>The Board and its staff positively influenced the safety management plans for the W79 Dismantlement Program. In September 1997, the Board highlighted shortcomings in the W79 Project Team's preparations for a readiness review of dismantlement operations. The Board also noted several safety issues concerning the flammability of the solution used to dissolve high explosives, controls for the hot water heating system, ignition sources (particularly electrostatic discharge), combustible loading and fire protection, documentation of controls, and change control. Through Board interactions and continued staff reviews, DOE and the W79 Project Team were able to identify the appropriate hazards and implement an effective set of controls to support successful review and startup of dismantlement operations in June 1998.</p>	<p>a. Verify the initial implementation of DOE's new Integrated Safety Process for the W56 weapon dismantlement campaign, and for any other new weapon dismantlement campaigns. The intent of these Board and staff reviews is to confirm that the dismantlement procedures resulting from the Integrated Safety Process incorporate the principles of ISM, resulting in adequate control of the hazards.</p> <p>b. Verify the continuing safety of the ongoing W79 weapon dismantlement operation and confirm that the safety controls are being effectively implemented and maintained.</p> <p>c. Determine the adequacy of the ISM System at Oak Ridge Y-12, particularly the application of the approved processes for hazards analysis and safety controls identification for the dismantlement of secondary systems.</p>	<p>a. The Board and its staff assess continuing implementation of DOE's Integrated Safety Process for new dismantlement campaigns at the Pantex Plant. The intent of these assessments is to determine whether this management process incorporates the principles of ISM in a manner that adequately controls the associated hazards.</p> <p>b. The Board and its staff assess the ISM System for one ongoing dismantlement campaign at the Pantex Plant. The intent of this assessment is to confirm that the associated safety controls are being effectively implemented and maintained.</p> <p>c. The Board and its staff assess the adequacy of the ISM System and the safety controls identified for new secondary component dismantlement activities at Oak Ridge Y-12.</p>	<p>a. <u>Output:</u> Assessments are conducted of the Integrated Safety Process for new dismantlement campaigns, and review results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output:</u> One assessment is conducted of the implementation of the ISM System for an ongoing dismantlement campaign and review results are communicated to DOE by the Board or its staff.</p> <p>c. <u>Output:</u> Assessments are conducted of the ISM System for all secondary dismantlement activities, and review results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome:</u> DOE implements value-added safety improvements, or an adequate approach and schedule for implementation is developed; DOE is using the information gained to ensure that the dismantlement of each retired nuclear weapon and secondary component can be completed safely.</p>

### **3.3 HAZARDOUS REMNANTS OF WEAPONS PRODUCTION**

#### **3.3.1 Overview**

More than fifty years of nuclear weapons production have yielded a hazardous collection of surplus, legacy materials consisting of radioactive and chemically reactive metals, residues, spent fuel, and wastes throughout the DOE complex. These include, among others: nearly 60 million gallons of highly radioactive wastes; unprocessed plutonium solutions; thousands of drums of plutonium- and uranium-bearing residues awaiting processing; and more than 2000 tons of degraded irradiated uranium fuel awaiting stabilization. Left unremediated, these materials represent a significant threat to the workers' and the public's health and safety.

It is the Board's intention to ensure that the DOE places a high priority on reducing the risks that these high hazard materials pose and to monitor the operations and activities involved in cleanup of defense nuclear facilities. Through its oversight of DOE defense nuclear facilities, the Board seeks to ensure that DOE's stabilization and storage programs are performed safely and consistently, and will encourage the DOE to complete these activities without undue delay.

The Board's Strategic Plan identifies two specific objectives that the Board believes should be pursued to ensure and improve the safe cleanup of DOE defense nuclear facilities:

- III-A. Verify that the DOE properly characterizes, stabilizes, processes, and safely stores plutonium, uranium, and other actinides, residues, spent fuel, and wastes from the nuclear weapons program and that the DOE provides for their expeditious disposal, as needed.
- III-B. Confirm that the DOE aggressively pursues the safe deactivation of excess defense nuclear facilities which pose a high risk to workers or the public.

Objective III-A requires that material to be stabilized is adequately characterized to allow development of appropriate methods for stabilization and processing or identification of safety problems associated with extended storage. Since some materials were not well characterized, this requirement is emphasized as well as the development of new methods for early assessment of safety issues.

Objectives III-A and III-B utilize the tenets of integrated safety management (as described in the Board's Recommendation 95-2) to assess the adequacy of DOE's preparation for stabilization, processing of storage activities as well as for all deactivation activities.

Many of the activities the DOE must accomplish to reduce risk presented by the legacy materials and to deactivate its excess facilities are unique, one-of-a-kind operations. The goal of the Board's efforts is to ensure that these activities can be accomplished safely, thereby providing adequate protection to the public, workers, and the environment. To accomplish this goal, the

Board and its staff attempt to bring a structured approach to the activity. This structured approach has been recommended in Recommendation 95-2 to achieve integrated safety management. A graded approach based on the hazards is used to select activities and functional safety areas to review. The very conduct of the staff's reviews brings a certain structure to the activities.

Using the tenets of integrated safety management, the reviews in this strategic area of concentration are focused on identifying the hazards, determining the controls that are needed to prevent or mitigate the hazard, implementing safety controls associated with the various activities, and providing feedback for the next activity to be performed. A measure of the Board's success is DOE's ability to safely accomplish, in a prioritized manner, the activities needed for ongoing reduction of the risks associated with nuclear weapons production legacy materials.

The Board believes that specific actions currently planned for FY 1999 and FY 2000 to advance each of these objectives are possible and desirable. These actions, which are specified in the following tables, build on the Board's activities and achievements of past years in technically rigorous oversight and constructive interaction with the DOE. Examples of the related FY 1998 performance accomplishments that have supported these objectives are also provided in the following tables. All such activities and accomplishments have been publicly identified in documents such as the Board's Annual Reports, letters, technical reports, and previous budget requests. The Board's action plans described in the following tables are also based on its assessment of progress expected in FY 1999 and major DOE efforts planned during FY 2000, which in turn are predicated on many factors, most importantly—DOE's budget and its accomplishments during this period.

### **3.3.2 Adjustments to the FY 1999 Performance Goals**

FY 1999 performance goals have been modified slightly to reflect the changing schedules of DOE activities driven by revised priorities:

**Objective/Action III-A.1:** In the case of processing high-level waste at the Savannah River Site, In-Tank Precipitation has been terminated due to excessive benzene generation and associated explosion concerns; alternative methods are being considered. The new goal is for the Board to ensure that the process selected by the DOE is safe, technically acceptable, and adequately demonstrated in pilot operations. An appropriate measure is evaluating the adequacy of the alternatives and issuing a report on the results.

**Objective/Action III-A.2:** Specific activities at Savannah River, Hanford, and RFETS have been substituted for more general ones previously identified or for activities no longer being considered by the DOE.

3.3.3 HAZARDOUS REMNANTS OF WEAPONS PRODUCTION

<b>Objective –</b>	<b>III–A.</b> 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.
<b>Action Plan –</b>	1. Through technical exchanges with DOE, and formal recommendations where appropriate, ensure that high risk activities during deactivation are addressed early, using demonstration projects to develop competence. (Goals 2, 3, 4, 5 & 7)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>High-level wastes at Hanford were not well characterized. In response to aggressive pursuit by the Board of Recommendation 93-5, DOE has conducted characterization and is expected to close the organic solvent and organic complexant safety issues for the Hanford tank farms by the end of FY 1998. This action adds to the earlier closure of the ferrocyanide/nitrate and nuclear criticality safety issues for the tank farms, leaving the flammable gas safety issue as the sole known unresolved safety concern to be pursued.</p> <p>There are potential radiation exposures and industrial accidents associated with processing low-risk residues. The Board, in a January 1998 letter, noted that many of the concerns with the low-risk residues would be alleviated by entombment without further processing. To achieve this risk reductive objective, the Board staff reviewed the Rocky Flats Environmental Technology Site's (RFETS) residue characterization plan and noted that the sampling and characterization were not sufficiently conservative to ensure residues did not require stabilization before disposal. Better characterization is now being accomplished which will allow classifying residues as low risk. This will allow the acceleration of risk reduction at RFETS and the earlier disposal of residues without compromising safety.</p> <p>Concerns with storage of Uranium-233 (U-233) were not being adequately addressed by DOE. During FY1998, in response to Board Recommendation 97-1, DOE completed initial site assessments for the Oak Ridge National Laboratory (ORNL), the Idaho National Engineering and Environmental Laboratory (INEEL), and the Los Alamos National Laboratory (LANL) which provides an initial characterization of the U-233 material and storage conditions.</p> <p>There were uncertainties with process safety at the Savannah River Site's (SRS) In-Tank Precipitation (ITP) Facility. In Recommendation 96-1, the Board recommended that DOE thoroughly evaluate the process and develop adequate controls before conducting further large-scale ITP operations. Recent results of the chemistry program confirmed the Board's concerns with this process. DOE notified the Board in January 1998 that work on ITP would be suspended, and that a program to evaluate alternative processes would be undertaken.</p>	<p>a. Assess the adequacy of DOE's progress on characterization activities to identify potentially hazardous conditions at:</p> <ul style="list-style-type: none"> <li>• Hanford – satisfactory closure of safety issues for storage, retrieval and processing of high level tank wastes,</li> <li>• RFETS – safe processing and storage of residues,</li> <li>• ORNL, INEEL, and LANL – safe storage.</li> </ul> <p>b. Conduct an annual assessment of research and development efforts associated with key efforts for safe treatment and storage of high risk residues, spent fuel and waste. The intent of this review is to confirm that these research and development efforts adequately address identified technology gaps.</p> <p>c. Review the technical adequacy of the DOE standard being prepared for storage of uranium-bearing materials, and identify any areas that require improvement.</p> <p>d. Determine whether the process selected for processing high-level, cesium-bearing waste in the ITP facility at SRS is safe, technically acceptable, and has been adequately demonstrated in pilot operations.</p>	<p>a. The Board and its staff review three DOE efforts to characterize material before processing and storage and, on a schedule that supports DOE's operational plans, communicate any identified issues that will require resolution to provide for adequate protection of the worker, the public, and the environment.</p> <p>Primary candidate activities for review include:</p> <ul style="list-style-type: none"> <li>• Hanford – Continued characterization of radioactive tank wastes and justification for closure of the flammable gas safety issue associated with its storage (<i>Recommendation 93-5</i>),</li> <li>• RFETS – Safety issues associated with the interim storage, disposal, and processing of residues (<i>Recommendation 94-1</i>), and</li> <li>• ORNL – Safe repackaging and storage of U-233 (<i>Recommendation 97-1</i>).</li> </ul> <p>Selection for review is based on relative hazards, and on DOE's schedule and progress on the candidate activities.</p> <p>b. The Board and its staff conduct an annual assessment of DOE's research and development efforts. Research and development efforts should adequately address technology gaps for key stabilization, processing, and storage activities for high risk residues, spent fuel, plutonium, uranium, and wastes (<i>Recommendation 94-1</i>).</p>	<p>a. <u>Output:</u> Three reviews of characterization activities are completed and results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output:</u> An annual review of research and development efforts is completed and results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome:</u> Identified issues are resolved, or an adequate approach and schedule for resolution is developed for these high-risk activities; DOE has incorporated the operational lessons learned and research and development results into ongoing stabilization programs, as applicable.</p>

3.3.3 HAZARDOUS REMNANTS OF WEAPONS PRODUCTION

<b>Objective –</b>	<b>III–A.</b> 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.
<b>Action Plan –</b>	<b>2.</b> Utilizing a combination of dedicated technical staff assets and full–time site representatives, perform specialized technical reviews to ensure that stabilization, processing, and storage are conducted safely using proven technologies. Provide prompt identification of emerging problems with stabilization that require immediate resolution by DOE. (Goals 2, 3, 4, 5 & 7)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>As stated in Recommendation 94-1, materials throughout the DOE weapons complex that are hazardous remnants of weapons production required stabilization for safe storage. The Board's staff conducted reviews to determine whether hazards were analyzed, safety controls were implemented, and work was being safely performed in accordance with the precepts of Integrated Safety Management (ISM). As a result, DOE safely achieved the following during FY 1998:</p> <ul style="list-style-type: none"> <li>– RFETS – the remaining solutions in tanks were drained and processed, and draining of holdup solutions began;</li> <li>– RFETS – stabilization of plutonium-bearing salt residues began and approximately 1100 kg have been processed;</li> <li>– RFETS – repacking of other residues began;</li> <li>– SRS – restarted HB-Line for dissolution of Pu-239 scrap;</li> <li>– SRS – restarted operations in H-Canyon for stabilization of the defense-related spent nuclear fuel;</li> <li>– SRS – completed dissolution of foreign reactor spent fuel, and sand, slag, and crucible in F-Canyon;</li> <li>– SRS – started repackaging plutonium metal for long-term storage;</li> <li>– SRS – demonstrated direct conversion of classified shapes into plutonium metal buttons.</li> </ul> <p>U-233 is stored in potentially unstable conditions at several sites in the DOE weapons complex. In partial response to Recommendation 97-1, DOE identified requirements for a long-term U-233 safe storage system. In July 1998, the Board noted that stronger DOE direction was required. The Board has stressed that a systems engineering approach must be used to define requirements for the long-term storage system and any associated modifications. ORNL has already identified the need for modifications to upgrade the ventilation system of B3019.</p> <p>Disposal of transuranic waste (TRU) at the Waste Isolation Pilot Plant (WIPP) is key to the closure of RFETS and the removal of large quantities of TRU from all other DOE sites. The Board's staff completed reviews to evaluate WIPP readiness to operate safely. The reviews supported the Board's letter to DOE that endorsed the approval for WIPP to operate.</p>	<p>a. Determine the adequacy of DOE's preparations for the following activities:</p> <ul style="list-style-type: none"> <li>• SRS – Review one operational activity at the High-Level Waste Evaporator and Phase III processing of spent nuclear fuel in H-Canyon,</li> <li>• Hanford – Review development of the C-106 sluicing of high-heat waste to Tank AY-102,</li> <li>• RFETS – Assess the adequacy of storage of residues not being shipped to WIPP,</li> <li>• ORNL – Review the removal of uranium deposits in charcoal bed filters at the Molten Salt Reactor Experiment.</li> </ul> <p>b. Determine whether DOE has adequately identified needed upgrades to facilities at ORNL, INEEL and LANL for safe storage of U-233.</p>	<p>a. The Board and its staff assess DOE's preparations for three risk-reduction activities, including DOE's operational readiness determinations. Using the tenets of ISM, these reviews identify the hazards and safety controls needed to prevent or mitigate each hazard, evaluate implementation of the safety controls, and assess the feedback of lessons learned to the next activity. Accordingly, to determine the adequacy of DOE's preparations for the selected activities, the Board and its staff evaluate:</p> <ul style="list-style-type: none"> <li>• safety documentation, including hazards analysis and identification of safety controls;</li> <li>• availability of needed engineered safety controls, such as ventilation, fire protection, and processing equipment;</li> <li>• operational readiness for the activity, including provisions for radiation protection, training and qualification of operators, operating procedures, and conduct of operations; and,</li> <li>• conduct of DOE's and/or its contractor's readiness determination.</li> </ul> <p>Primary candidate activities for these reviews include:</p> <ul style="list-style-type: none"> <li>• SRS – Preparation to pretreat and vitrify americium-curium solutions in F-Canyon (<i>Recommendation 94-1</i>),</li> <li>• Hanford – Movement of spent nuclear fuel from the K-Basins and stabilization of plutonium-bearing solutions in the Plutonium Finishing Plant (<i>Recommendation 94-1</i>),</li> <li>• RFETS – Thermal stabilization and packaging of plutonium metal and oxide (<i>Recommendation 94-1</i>),</li> <li>• ORNL – Stabilization and repackaging of U-233 in B3019 (<i>Recommendation 97-1</i>).</li> </ul> <p>Selection of activities for review is based on relative hazards, and on DOE's schedule and progress on the candidate activities.</p>	<p>a. <u>Output:</u> Three reviews of stabilization processing and storage activities are completed and results communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome:</u> Identified issues are resolved by DOE prior to startup, or an acceptable post-start resolution plan and schedule is developed so that activities are conducted safely; DOE is utilizing the lessons learned to improve activities associated with the stabilization, processing, and storage of nuclear materials.</p>

3.3.3 HAZARDOUS REMNANTS OF WEAPONS PRODUCTION

**Objective –** III–A. 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.

**Action Plan –** 3. Ensure that new systems for conducting stabilization and storage of plutonium, uranium, and spent fuel are designed/constructed to appropriate standards. (Goals 3 & 6)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>Facilities at Rocky Flats were not considered adequate for long-term storage of the large quantities of plutonium at the site. In Recommendation 94–3, the Board recommended that DOE take a systems engineering approach to determining if B371 at RFETS could be made adequate for a storage mission. As a result, DOE determined that upgrades were needed to ensure that plutonium could be safely stored in the building. Significant safety improvements were made in FY 1998 to the structure, systems, and components; and operations in B371; this building is now safe for interim storage.</p> <p>The Board staff reviewed RFETS preparations for processing plutonium-bearing residue using the tenets of Recommendation 95–2. The new systems for processing salt and solution residues were evaluated to ensure they were adequate. Safety improvements were made as a result of these reviews. The systems for processing these residues have performed as desired and are continuing to stabilize residues.</p> <p>Plutonium-bearing residues at RFETS present a considerable risk to the workers and the public. The Board staff reviewed the design and testing of a new pipe overpack container to ensure it would provide adequate storage of these plutonium-bearing residues. The Board encouraged DOE to utilize the pipe overpack container for storage of residues at RFETS and ultimate disposition.</p> <p>The Board was concerned with the safety of the proposed container for extended dry storage of spent fuel at Hanford. As a result of technical exchanges between the Board and its staff, and the Spent Nuclear Fuel Project at Hanford, the design requirements for the Multicanister Overpack were reassessed. The Project concluded that the robustness of the Multicanister Overpack could be achieved by meeting the complete set of requirements of the ASME code for nuclear components.</p>	<p>a. Review the adequacy of two designs planned for stabilization of high risk materials. DOE presently plans installation of systems to:</p> <ul style="list-style-type: none"> <li>• RFETS – stabilize and package plutonium metal and oxide in B371,</li> <li>• SRS – convert americium/curium solution into a stable glass form, and</li> <li>• Hanford – stabilize plutonium.</li> </ul>	<p>a. The Board and its staff review two designs planned for stabilization of high risk materials and communicate any identified issues that will require resolution to provide for adequate protection of the worker, the public, or the environment.</p> <p>Primary candidates for review include:</p> <ul style="list-style-type: none"> <li>• SRS – design of the high-level salt solution processing system (<i>Recommendation 96–1</i>), and</li> <li>• Hanford – equipment for stabilization and packaging of plutonium metal and oxide and/or equipment for stabilization of plutonium-bearing solutions (<i>Recommendation 94–1</i>).</li> </ul> <p>Selection for review is based on relative hazards, and on DOE’s schedule and progress on the candidate facilities.</p>	<p>a. <u>Output</u>: Two tailored design reviews of stabilization and/or storage projects are conducted and results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome</u>: Identified issues are resolved, or an adequate approach and schedule for resolution is developed; these results have been translated by DOE into appropriate design changes for the associated systems.</p>

### 3.3.3 HAZARDOUS REMNANTS OF WEAPONS PRODUCTION

**Objective –**

**III–B.** Confirm that DOE aggressively pursues the safe deactivation of excess defense nuclear facilities which pose a high risk to the workers or the public.

**Action Plan –**

**1.** Assess the adequacy of DOE’s risk–based approach for deactivation of excess defense nuclear facilities through technical exchanges, issuing technical reports as necessary to provide engineering evaluations, and holding public meetings as appropriate. (Goals 2, 3, 4 & 7)

Examples of FY 1998 Accomplishments	FY 1999 Performance Goals	FY 2000 Performance Goals	FY 2000 Performance Measures
<p>An appropriate set of standards, Orders, and guides for the conduct of deactivation and decommissioning facilities were not in existence at DOE. Based on discussion with the Board, DOE agreed to revise its Order 430.1A, <i>Life Cycle Asset Management</i>, along with associated standards, manuals, and guides. Progress in issuing these revisions has been slow, and the Board met with the Acting Secretary of Energy to expedite resolution of this problem. However, DOE has issued an acceptable standard for the Facility Disposition Process, which provides the technical basis for a revision to the Order.</p> <p>During FY 1998, the Board and its staff have pursued deactivation activities using the tenets of Integrated Safety Management to determine their adequacy. Activities assessed include:</p> <ul style="list-style-type: none"> <li>• Oak Ridge Y–12 – Vulnerabilities were identified in the safety posture of Building 9206. However, progress toward correction has been slow. The Board brought key concerns to the attention of senior DOE management. Attention to these safety matters subsequently resulted in corrective actions being assessed and implemented.</li> <li>• RFETS – the Board’s staff has reviewed the safety controls for equipment removal in B779 and B886, plutonium contamination control in B371, and removal of holdup plutonium in B771, so that work is performed safely.</li> <li>• Hanford – the Board’s staff noted problems in readiness to perform hazardous work in Building 233-S, the pilot facility for future deactivation work at Hanford. Improvements have been observed over the past year; however, more progress was needed. This led to the Board taking action to alert DOE to the problem.</li> </ul>	<p>a. Confirm the adequacy of plans, standards, procedures, and operational activities at one DOE defense nuclear facility scheduled for early deactivation at RFETS and Hanford, to reduce the risk posed by radioactive materials. Priority candidates for review including B779 at RFETS, and Building 233–S at Hanford.*</p> <p>* Based on the current DOE schedule for deliverables.</p> <p>b. Evaluate ISM work-planning processes for tapping and draining plutonium–bearing process lines in B771 at RFETS.</p>	<p>a. The Board and staff assess the adequacy of plans, standards, and procedures for two DOE defense nuclear facilities scheduled for early deactivation to reduce the risk posed by radioactive materials. These assessments are conducted in collaboration with State and other regulatory authorities, as needed, and on a schedule that supports DOE’s operational plans. The Board or staff communicate any identified issues that will require resolution to provide for the adequate protection of the public, worker, and environment.</p> <p>Primary candidates for these assessments include:</p> <ul style="list-style-type: none"> <li>• Hanford – Buildings 324 and/or 327, and</li> <li>• RFETS – B771.</li> </ul> <p>b. The Board and its staff evaluate the execution of two ISM work–planning processes (i.e., activity–specific hazards analysis, identification and implementation of safety controls) for first-time deactivation activities.</p> <p>Priority candidate activities for these evaluations include:</p> <ul style="list-style-type: none"> <li>• RFETS – Review glove box removal and size reduction, tank size reduction, and/or ventilation system removal in B771, and</li> <li>• Hanford – Review one activity.</li> </ul> <p><u>For both of the above goals:</u> Selection for review is based on relative hazards, and on DOE’s schedule and progress on the candidate activities.</p>	<p>a. <u>Output:</u> Two tailored assessments of facility deactivation plans are conducted and results are communicated to DOE by the Board or its staff.</p> <p>b. <u>Output:</u> Two tailored evaluations of first–time deactivation activities are conducted and results are communicated to DOE by the Board or its staff.</p> <p><u>Expected Outcome:</u> Identified issues are resolved by DOE for high–risk, first–time deactivation efforts, or an adequate approach and schedule for resolution is developed; DOE planning for facility deactivation is continuously improving, based on the Board’s communicated review results and lessons learned.</p>

## STATUTORY MISSION OF THE BOARD

Congress established the Defense Nuclear Facilities Safety Board (Board) in Public Law 100-456 on September 29, 1988. The statutory mission of the Board includes the following major functions:

- **Review and Evaluation of Standards.** The Board shall review and evaluate the content and implementation of the standards relating to the design, construction, operation, and decommissioning of defense nuclear facilities of the Department of Energy (DOE) including all applicable DOE Orders, regulations, and requirements at each Department of Energy defense nuclear facility. The Board shall recommend to the Secretary of Energy those specific measures that should be adopted to ensure that public health and safety are adequately protected. The Board shall include in its recommendations necessary changes in the content and implementation of such standards, as well as matters on which additional data or additional research is needed.
- **Investigations.** The Board shall investigate any event or practice at a Department of Energy defense nuclear facility which the Board determines has adversely affected, or may adversely affect, public health and safety.
- **Analysis of Design and Operational Data.** The Board shall have access to and may systematically analyze design and operational data, including safety analysis reports, from any Department of Energy defense nuclear facility.
- **Review of Facility Design and Construction.** The Board shall review the design of a new Department of Energy defense nuclear facility before construction of such facility begins and shall recommend to the Secretary of Energy, within a reasonable time, such modifications of the design as the Board considers necessary to ensure adequate protection of public health and safety. During the construction of any such facility, the Board shall periodically review and monitor the construction and shall submit to the Secretary of Energy, within a reasonable time, such recommendations relating to the construction of that facility as the Board considers necessary to ensure adequate protection of public health and safety. An action of the Board, or a failure to act, under this paragraph may not delay or prevent the Secretary of Energy from carrying out the construction of such a facility.

- **Recommendations.** The Board shall make such recommendations to the Secretary of Energy with respect to Department of Energy defense nuclear facilities, including the operations of such facilities, standards, and research needs, as the Board determines are necessary to ensure adequate protection of public health and safety. In making its recommendations, the Board shall consider the technical and economic feasibility of implementing the recommended measures.

Created as an independent establishment within the Executive Branch, the Board is made up of five Members appointed from civilian life by the President, by and with the advice and consent of the Senate. The Board's enabling statute requires that the Board Members be respected experts in the field of nuclear safety with demonstrated competence and knowledge relevant to the independent investigation and oversight functions of the Board. The Senate confirmed the first five Board Members on October 19, 1989.

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**OBJECT CLASS SUMMARY**

Actual obligations for FY 1998, projected obligations for FY 1999, and the Board's Budget Request for FY 2000 and FY 2001, are presented by object class accounts in Exhibit A on the following page. The Board proposes to utilize the budget resources requested in the following manner:

**Salaries and Benefits.** The FY 2000 expenditure request includes funding of \$12,956,000 to support the projected salary and benefit costs for the five DNFSB Board Members and 101 full-time staff. As stated earlier, the funding for salaries and benefits represents 74 percent of the Board's FY 2000 Budget Request. In calculating the projected salary needs of the Board, the following federal pay adjustment factors for the Executive Branch employees are used:

- Pay increase of 3.6 percent which was effective in January 1999,
- Pay increase of 4.4 percent beginning in January 2000,
- Pay increase of 3.9 percent beginning in January 2001.

Agency contributions for employees covered by the Civil Service Retirement System increased by 1.51 percent beginning in October 1997. Consequently, employee benefits are estimated at 24 percent of base salaries or \$24,425 per FTE in FY 2000.

In establishing the Board, Congress sought to bring the very best talent available to focus on health and safety oversight questions associated with the design, construction, operation, and decommissioning of DOE defense nuclear facilities. The recruitment and retention of scientific and technical staff with outstanding qualifications has and will continue to be critical to the successful accomplishment of the Board's mission. The Board has assembled a technical staff with extensive backgrounds in science and engineering disciplines such as nuclear-chemical processing, conduct of operations, general nuclear safety analysis, conventional and nuclear explosive technology and safety, nuclear weapons safety, storage of nuclear materials and nuclear criticality safety, and waste management. Therefore, it is of paramount importance that the Board receive sufficient funds to meet the salary and benefit requirements of the staff.

The Board maintains its on-site safety oversight of defense nuclear facilities by assigning experienced technical staff members to full-time duty at priority DOE sites. Two full-time site representatives are stationed at the Pantex site to oversee nuclear weapons activities including the weapons stockpile stewardship and weapons disassembly programs, and two site

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

BUDGET ACCOUNT	FY 2000 AND FY 2001 CONGRESSIONAL BUDGET REQUEST (Data as of 1/31/99)		FY 1999 PROJECTED OBLIGATIONS	FY 2000 BUDGET REQUEST	FY 2001 BUDGET REQUEST
	FY 1998 ACTUAL OBLIGATIONS	FY 1999 PROJECTED OBLIGATIONS			
PERSONNEL SALARIES -- (11)	\$8,840,600	\$9,405,000	\$10,367,000	\$10,560,000	\$10,560,000
PERSONNEL BENEFITS -- (12)	\$2,001,138	\$2,193,604	\$2,589,000	\$2,650,000	\$2,650,000
TRAVEL -- (21)	\$608,012	\$622,000	\$622,000	\$622,000	\$622,000
TRANSPORTATION OF THINGS -- (22)	\$40,365	\$130,000	\$85,000	\$85,000	\$85,000
RENTAL PAYMENTS TO GSA -- (23.1)	\$1,870,264	\$2,240,000	\$2,400,000	\$2,575,000	\$2,575,000
COMMUNICATIONS & UTILITIES -- (23.3)	\$108,979	\$139,000	\$110,000	\$110,000	\$110,000
PRINTING & REPRODUCTION -- (24)	\$26,866	\$32,000	\$32,000	\$32,000	\$32,000
CONSULTING SERVICES -- (25.1)	\$1,652,526	\$1,500,000	\$1,000,000	\$450,000	\$450,000
OTHER SERVICES -- (25.2)	\$605,300	\$661,000	\$685,000	\$684,000	\$684,000
GOVERNMENT SERVICES -- (25.3)	\$151,499	\$160,000	\$150,000	\$150,000	\$150,000
SUPPLIES & MATERIALS -- (26)	\$226,502	\$255,000	\$275,000	\$275,000	\$275,000
EQUIPMENT -- (31)	\$450,183	\$227,000	\$225,000	\$160,000	\$160,000
*** TOTAL OBLIGATIONS ***	\$16,582,234	\$17,564,604	\$18,540,000	\$18,353,000	\$18,353,000
NEW BUDGET AUTHORITY	\$17,000,000	\$16,500,000	\$17,500,000	\$17,500,000	\$17,500,000
UNOBLIGATED BALANCE - PREV. FY	\$1,703,721	\$2,842,828	\$1,898,108	\$858,108	\$858,108
RECOVERY OF PRIOR YR OBLIGATIONS	\$721,341	\$119,884	\$0	\$0	\$0
TOTAL BUDGETARY RESOURCES	\$19,425,062	\$19,462,712	\$19,398,108	\$18,358,108	\$18,358,108
EST. UNOBLIGATED BAL. - CUR. FY	\$2,842,828	\$1,898,108	\$858,108	\$5,108	\$5,108
APPROPRIATION	\$17,000,000	\$16,500,000	\$17,500,000	\$17,500,000	\$17,500,000
OUTLAYS	\$16,610,907	\$16,600,000	\$17,500,000	\$17,500,000	\$17,500,000
STAFF & BOARD MEMBERS (FTE's)	99	106	106	106	106

representatives are stationed at the Hanford site to monitor waste characterization and stabilization and facility deactivation. The Board has assigned one full-time site representative at Rocky Flats to monitor the DOE effort to deactivate facilities and stabilize and store the large plutonium inventory at the site, and two site representatives at Savannah River to monitor the DOE's efforts to deactivate facilities, stabilize waste materials, and store and process tritium. In June 1998, the Board stationed a full-time site representative to monitor safety and health conditions at Oak Ridge Y-12, ORNL, ETP, Portsmouth, and Paducah defense nuclear facilities.

The site representatives program provides a cost-effective means for the Board to closely monitor DOE activities, and to identify health and safety concerns promptly by having on-site staff conducting first-hand assessments of nuclear safety management at the priority sites to which they have been assigned. Site representatives regularly interact with the public, union members, congressional staff members, and public officials from federal, state, and local agencies.

During FY 2000, the Board plans to allocate 2 FTEs and associated support costs to continue its Technical Intern Program which was established in 1991 to supply an entry level source of exceptional engineering undergraduates to be developed into highly qualified, well trained employees for technical positions within the agency. This program has been very effective in recruiting engineering graduates with outstanding academic accomplishments by providing a three-year program of tailored assignments within the Board, graduate school training in nuclear engineering and related engineering areas, and practical field experience.

**Travel.** The Board requests \$622,000 to support the official travel of the Board Members and staff. Extensive travel is necessary to the various DOE defense nuclear facilities located throughout the United States in order for the Board Members and staff to fulfill the Board's statutory mission. The Board is required to react to incidents at the DOE defense nuclear facilities that may affect public health and safety, requiring unplanned travel expenditures to support its work at these sites. During 1998, Board Members, technical staff and the Board's outside technical experts made 196 team visits to major defense nuclear sites in support of its high priority public health and safety mission.

The Board is also authorized to station staff members at DOE sites or facilities during critical construction and testing periods. The Board has assigned technical staff teams to round-the-clock monitoring of major start-up, testing, or restart activities at various DOE sites. The presence of its technical staff has proved to be invaluable in providing the Board with first hand information on the demonstrated readiness, capabilities, and performance of the DOE and its contractors for ensuring safety in the conduct of such activities.

Travel funds are also used to pay for Board expenses associated with public hearings and meetings, where any interested persons or groups may present comments, technical information, or data concerning health and safety issues under Board inquiry.

**Transportation of Things.** The Board has included \$85,000 in its FY 2000 Budget Request for the shipment of household goods for employees relocating to the Washington, DC area or to DOE sites.

**Rental Payments to GSA.** The Board requests funds totaling \$2,400,000 to reimburse the General Services Administration (GSA) for projected office rental costs. This overhead expense represents approximately 14 percent of the Board's FY 2000 Budget Request. GSA has established a "New Pricing" policy to be phased in starting in FY 1999 for all new assignments in Government-owned space and by FY 2000 for all existing assignments in Government-owned and leased space. The Board was phased into this "New Pricing" in FY 1999 for the existing lease which began in FY 1995 and expires in FY 2005. The "New Pricing" policy is designed to enable GSA to more fully recover actual costs by applying a pass-through of the direct costs GSA incurs (shell rent, operating expenses, and real estate taxes), plus a management fee. The requested amount also includes \$55,000 for enhanced security measures which were deemed necessary government-wide after the bombing of the Federal building in Oklahoma City. GSA has determined the overall cost for these additional security measures and is dividing the costs among the building tenants based on space occupied. While the Board has had no increase in space since October 1995, nor do we anticipate any expansions, GSA has told us to estimate a 7% increase each year hereafter.

**Communications and Utilities.** The FY 2000 Budget Request includes \$110,000 for projected communications support costs. Funds in this account will be used for telephone services, Internet access charges, postage costs, special messenger services, and equipment rentals.

**Printing and Reproduction.** The budget request includes \$32,000 for reimbursing the U.S. Government Printing Office for publication of the required legal notices in the *Federal Register*. Routine printing and copying charges, including the Board's Annual Report to the Congress and technical reports, are also included in this account.

**Consulting Services.** Although authorized by Congress and the President to have up to 150 FTEs, due to budgetary constraints, the Board currently has only 90 full-time staff onboard. While the Board employs a highly capable staff, it is not practical or desirable to have permanent staff skilled in every specialty for which needs occur. For example, the safety evaluation of the In-Tank Precipitation Facility at Savannah River examined the potential buildup of explosive concentrations of benzene vapor in process tanks. Since benzene is not commonly encountered in the DOE weapons complex, outside technical expertise was needed and obtained to review the process safety envelope.

The Board plans to continue to obtain outside technical experts in highly specialized areas. Expertise on the assembly and disassembly of certain specific nuclear weapon components may be needed. Such expertise may be required for short periods with little advance notice should an imminent or severe threat to public health and safety be identified at a DOE defense nuclear facility. Therefore, it is extremely important to have the funds necessary to immediately contract

for this expertise when needed. Each outside technical expert that the Board employs will continue to be carefully screened for possible conflict of interest.

A list of major technical support contracts, with a brief description of each contractor's areas of expertise, is included in Appendix C. The FY 2000 Budget Request includes \$1 million in this account for technical support contracts to assist the Board in its health and safety reviews.

**Other Services.** The budget request includes \$685,000 to fund the recurring administrative support needs of the Board in FY 2000 such as security services, court reporting expenses, employee training, records storage and retrieval services, and computer network maintenance.

**Government Services.** The Board's budget request includes \$150,000 to pay the cost of reimbursable support agreements with other federal agencies for administrative services such as accounting, payroll, health unit, and drug-free workplace testing and support.

**Supplies and Materials.** The Board requests \$275,000 to maintain the technical reference information for its in-house library, as well as for continued access to various technical computer databases, and for general office supplies and materials.

**Equipment.** The FY 2000 Budget Request includes \$225,000 to maintain the Board's information technology (IT). The Board plans to purchase a new communication server which includes updated ISDN lines for direct access to the network for off-site users. In addition, replacement of computer work stations, software applications and database systems to accommodate Y2K issues and the fast growing technology demands is also planned.

**TECHNICAL SUPPORT CONTRACTS SUMMARY**

A list of major technical support contracts, with a brief description of each contractor's areas of expertise, is included in this Appendix. The FY 2000 Budget Request includes \$1 million in this account for technical support contracts to assist the Board in its health and safety reviews.

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The Board plans to continue to obtain outside technical experts in highly specialized areas, such as the assembly and disassembly of certain specific nuclear weapon components. Each outside technical expert that the Board employs will continue to be carefully screened for possible conflict of interest.

**DEFENSE NUCLEAR FACILITIES  
SAFETY BOARD**

TECHNICAL SUPPORT CONTRACTS  
(Status as of 01/31/99)

<u>CONTRACTOR</u>	<u>CONTRACT EXPIRATION DATE</u>	<u>DESCRIPTION OF WORK</u>
Dr. Harold M. Agnew	02/19/99	Provide expertise related to strategic safety issues associated with those facilities involved in the assembly, disassembly, and testing of nuclear weapons, specifically advising the Board in production, dismantlement/disposition, safe handling, testing, and storage of nuclear weapons, nuclear explosive devices, and nuclear weapon components, and the nuclear and hazardous materials used in these items; as well as assisting the Board in understanding the existing involvement of the design laboratories in these activities, and evaluating the sufficiency of current and proposed efforts.
Briere Associates, Inc.	09/30/99	Provide technical editing services of Board documents that include, but are not limited to technical reports, trip reports, its Annual Report to Congress, and Board Recommendations to the DOE. These services include analyzing manuscripts in terms of its objective, style, and manner of presentation and recommend revisions as appropriate.

DESCRIPTION OF  
WORK

CONTRACT EXPIRATION  
DATE

CONTRACTOR

Provide technical support to the Board, specifically in the review and evaluation of systems and seismic engineering of structures, systems and components with particular emphasis on analytical techniques utilized in structural analysis with special emphasis on seismic issues; adequacy of various types of analyses performed by DOE contractors; development and relevancy of standards and criteria used in the design and qualification of DOE facilities; and integration of programmatic structural issues from the overall historical perspective.

Provide assistance in the areas of probabilistic risk assessment and human reliability analysis of defense nuclear operations, specifically involving matters associated with the identification of high risk accidents, prioritization of safety related issues, and development of risk based design criteria for facilities handling special nuclear materials.

Provide technical support to the Board, specifically involving review of operations and nuclear technology at facilities involved in processing and handling of nuclear materials. Examples of recent work include: evaluation of technologies to stabilize plutonium residues, plutonium storage safety issues, and Rocky Flats plutonium stabilization activities.

09/30/99

06/17/99

12/31/99

H&H Consultants, Inc.

Dr. William E. Kastenber

Dr. J.A. Leary

DESCRIPTION OF  
WORK

CONTRACT EXPIRATION  
DATE

CONTRACTOR

Provide technical support to the Board in the general subject area of radiation protection, specifically involving review and evaluation of DOE's Implementation Plan for Board Recommendation 91-6, amendments to 10 CFR 835 Rule, radiological protection standards, and other radiological and environmental health and safety issues.

Provide technical support to the Board, specifically involving evaluation of policies, standards, and procedures governing operations and maintenance as the operations and maintenance activities themselves and the training and qualification programs for operations, technical, support, and maintenance personnel. Recent work includes assisting the staff in evaluating the Department of Energy's development and implementation of Integrated Safety Management and guidance in response to Board Recommendation 95-2. In addition, assistance has been provided in assessing operations and maintenance at the Savannah River Site, Idaho National Engineering and Environmental Laboratory, and the Rocky Flats Environmental Technology Site as they prepare to restart defense nuclear facilities and activities.

Provide expertise related to the strategic safety issues associated with those facilities involved in the assembly, disassembly, and testing of nuclear weapons systems. Specifically, advise the Board from direct experience in conventional and

Dr. James L. Liverman

04/30/99

Management Support Technology,  
Incorporated

01/31/01

Lary M. McGrew

01/31/00

DESCRIPTION OF WORK

CONTRACT EXPIRATION DATE

CONTRACTOR

nuclear explosive technology and safety, nuclear materials handling and storage, criticality safety, and nuclear weapons assembly, storage and testing. Recent work has included, for example, review of the W79 dismantlement process at the Pantex plant.

01/31/00

Lary M. McGrew  
(Continued)

Provide technical support to the Board specifically related to criticality safety reviews and other related fields including nuclear and reactor physics, and accelerator production of tritium. This effort includes participation in the review of safety analysis reports, DOE facility visits, presentation of lectures on criticality and related technical subjects to the staff, the development of specialized nuclear information or databases for Board applications, and assisting the staff in monitoring DOE performance on specific issues or Board Recommendations.

09/30/99

Dr. Sol Pearlstein

Provide technical support to the Board, specifically in the review and evaluation of systems and seismic engineering of structures, systems and components with particular emphasis on: geotechnical investigation and soil mechanics; systems engineering; adequacy of various types of analyses performed by DOE contractors; seismological hazards; safety analysis; hydrology; and environmental related issues.

09/30/99

Paul C. Rizzo Associates, Inc.

