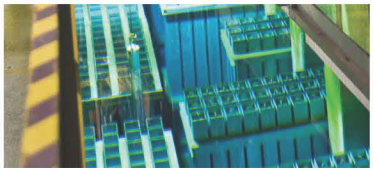
Strategic Plan

FY 2014 – 2018



The Defense Nuclear Facilities Safety Board

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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, D.C. 20004-2901

Message from the Board

We are pleased to present the Defense Nuclear Facilities Safety Board's (Board) Strategic Plan for Fiscal Years 2014–2018. This strategic plan sets forth a broad vision of how the Board will fulfill its statutory mission to "provide independent analysis, advice, and recommendations to the Secretary of Energy to inform the Secretary, in the role of the Secretary as operator and regulator of the defense nuclear facilities of the Department of Energy, in providing adequate protection of public health and safety at such defense nuclear facilities."

The Department of Energy's defense nuclear complex presents a dynamic environment for safety oversight. The initiatives described in this strategic plan will position the Board for the developments expected during the next five years while maintaining the agility to respond to unanticipated safety issues and events. The Board expects several key factors to influence our work during the next five years:

- The Department of Energy's defense nuclear complex includes production facilities and waste storage facilities that are well beyond their designed service life and are deteriorating. Programs to replace the production facilities and empty the radioactive waste facilities are behind schedule. The safety risks of continued operations and eventual facility deactivation typically increase over time as process equipment, support systems, and structures degrade. As the safety risks increase, so must our oversight of maintenance, refurbishment, and operational rigor employed at these facilities.
- Congress has authorized more than $20 billion in new design and construction projects for the Department of Energy to replace aged production facilities and to process wastes from legacy storage facilities. As these projects progress from design through construction to operations, the Board must develop or otherwise change the skills mix of our staff to align with the work overseen.
- The Department of Energy, especially the semi-autonomous National Nuclear Security Administration, continues to evolve and change, particularly in how it oversees safety of its defense nuclear facilities. The Board must be vigilant to ensure the evolution and changes do not compromise nuclear safety.
- A new Congressionally-mandated focus on probabilistic risk assessment of hazards at defense nuclear facilities is under development. This analytical tool would supplement the "bounding" or deterministic approach to hazard and accident analysis currently used at DOE's defense nuclear facilities. The Board must develop and employ the expertise to evaluate the application of probabilistic methods by the Department of Energy to safety determinations and decisions at defense nuclear facilities.

Our strategic plan describes how the Board will continue to improve our internal processes and controls to increase our ability to carry out our vital mission efficiently and effectively, with a high degree of accountability and transparency. The Board places a very high value on making the most of the resources we are granted, since every dollar effectively applied to oversight contributes to ensuring the safety of the American public and the enduring viability of our nation's nuclear deterrent.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

Jessie H. Roberson
Vice Chairman

John E. Mansfield
Member

Joseph F. Bader
Member

Sean Sullivan
Member

Mission

The mission of the Board shall be to provide independent analysis, advice, and recommendations to the Secretary of Energy to inform the Secretary, in the role of the Secretary as operator and regulator of the defense nuclear facilities of the Department of Energy, in providing adequate protection of public health and safety at such defense nuclear facilities[1].

Functions and Jurisdiction

The Board is composed of five respected experts in the field of nuclear safety with demonstrated competence and knowledge relevant to the Board's independent investigative and oversight functions. Congress established the Board in September 1988 in response to growing concerns about the level of health and safety protection that DOE was providing the public and workers at defense nuclear facilities. In so doing, Congress sought to provide the general public with added assurance that DOE's defense nuclear facilities are being safely designed, constructed, operated, and decommissioned.

The Board's enabling statute assigns specific functions to the Board for accomplishing its safety oversight mission:

- 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 (including all applicable Department of Energy 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.

- 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.

- 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.

- 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, 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, 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.

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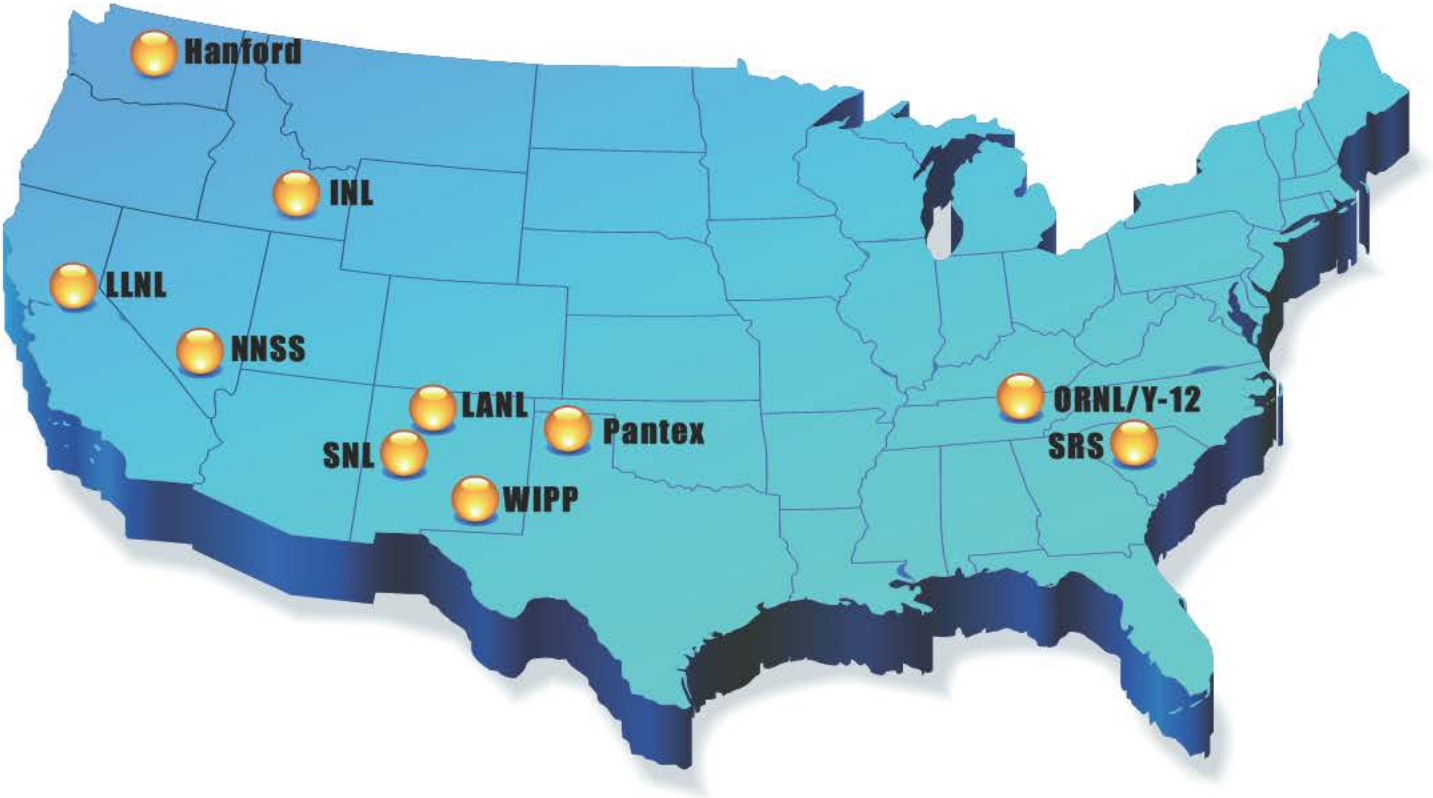
[1] The Board's first Annual Report to Congress, dated February 1991, states, "The various provisions of the statute and their attendant legislative history indicate that Congress generally intended the phrase 'public health and safety' to be construed broadly. For example, both Congress and the Board have interpreted the public to include workers at defense nuclear facilities."

- The Board shall make such recommendations to the Secretary of Energy with respect to Department of Energy defense nuclear facilities, including 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, and specifically assess risk (whenever sufficient data exists), the technical and economic feasibility of implementing the recommended measures.

As noted above, the Board's jurisdiction covers DOE's "defense nuclear facilities." This scope includes all facilities operated by DOE that fall under the Atomic Energy Act and have a function related to national defense. It excludes DOE's nuclear projects that are civilian in purpose and commercial nuclear facilities regulated by the Nuclear Regulatory Commission. The Board's oversight jurisdiction does not extend to the U.S. Navy's nuclear propulsion program or to environmental hazards regulated by other federal and state agencies. The table on the next page lists the major sites that the Board oversees.



Major Sites Subject to Board Jurisdiction

Site	Location	Operations	DOE Website
Hanford Site	Richland, Washington	Cleanup and decommissioning	http://www.hanford.gov
Idaho National Laboratory	45 miles west of Idaho Falls, Idaho	Storage and processing of radioactive waste	http://www.inl.gov
Lawrence Livermore National Laboratory	Livermore, California	Research to support the nuclear weapons arsenal	https://www.llnl.gov
Los Alamos National Laboratory	Los Alamos, New Mexico	Research to support the nuclear weapons arsenal; manufacturing of nuclear weapon components	http://www.lanl.gov
Nevada National Security Site	Northwest of Las Vegas, Nevada	Disposition of damaged nuclear weapons; nuclear fission and subcritical experiments; waste management	http://www.nv.doe.gov
Oak Ridge National Laboratory	Oak Ridge, Tennessee	Energy research; treatment and disposal of radioactive wastes	http://www.ornl.gov
Pantex Plant	Near Amarillo, Texas	Maintenance of the U.S. nuclear weapons stockpile	http://nnsa.energy.gov/npo
Sandia National Laboratories	Albuquerque, New Mexico	Nuclear research; support for weapons stockpile maintenance program	http://www.sandia.gov
Savannah River Site	Aiken, South Carolina	Tritium extraction, recycling and storage; management and treatment of radioactive wastes; nuclear materials storage and disposition; research and development	http://www.srs.gov
Waste Isolation Pilot Plant	26 miles east of Carlsbad, New Mexico	Safe disposal of transuranic waste in underground repository	http://www.wipp.energy.gov
Y-12 National Security Complex	Oak Ridge, Tennessee	Manufacturing and surveillance of nuclear weapon components; processing of weapons-grade uranium	http://nnsa.energy.gov/npo

Risks to Public and Worker Health and Safety

DOE's nuclear weapons program is technically challenging and hazardous. Complex, high-hazard operations critical to national defense include assembly and disassembly of nuclear weapons, fabrication of plutonium pits and weapon secondary assemblies, production and recycling of tritium, nuclear criticality experiments, experiments to characterize special nuclear materials under extreme conditions, and a host of activities to address the radioactive legacy of nearly 70 years of these operations. DOE's major defense nuclear facilities are each one-of-a-kind. Evaluating their safety requires specific analyses of many unique processes and hazards. Examples include the following:

- Unlike commercial nuclear facilities or DOE's non-defense nuclear facilities, DOE's defense nuclear operations involve the potential for explosive dispersal of radioactive materials or inadvertent nuclear detonation. Such hazards are found at the Pantex Plant, where DOE conducts surveillance and life extension programs for nuclear weapons and dismantles weapons retired from the nation's stockpile, and at the Nevada National Security Site, where DOE performs experiments to characterize the behavior of special nuclear materials under extreme conditions.

- DOE stores a vast inventory of radioactive waste under deteriorating conditions. Tens of millions of gallons of high-level waste are in more than 200 tanks at the Savannah River and Hanford Sites. At Hanford, where the oldest tanks date back to World War II, a large number of the tanks are known to have leaked in the past and some are believed to be leaking now. Additionally, the new facilities being designed to treat and immobilize the waste for disposal are behind schedule with substantial unresolved safety issues. Throughout its complex, DOE also has a very large inventory of transuranic waste stored in deteriorating containers that present a challenge for safe retrieval, repackaging, and disposal.

- DOE continues to perform programmatic work in defense nuclear facilities that are beyond their design life and were not designed for the mission activities conducted today.

- Congress has authorized design and construction projects for new DOE defense nuclear facilities with an estimated combined final price tag topping $20 billion. Immature technologies in these facilities are introducing unexpected safety risks that must be addressed.

The Board's Vision

The Board will efficiently and effectively accomplish the safety oversight needed to provide timely advice to the Secretary of Energy in assuring public health and safety at DOE's defense nuclear facilities, exhibiting the highest standards of public service in accordance with the following principles:

- Conduct the Board's operations in a manner that is accountable and transparent, and that directs the Board's resources toward oversight of the most significant potential safety risks in DOE's defense nuclear complex.
- Engender through leadership and operational processes an organizational culture that strives for the highest standards of integrity, efficiency, effectiveness, transparency, fiscal responsibility, and management proficiency.
- Develop and sustain a staff that earns the respect and confidence of the public and DOE through its expertise in the field of nuclear safety and performance of its oversight functions.
- Maintain open and effective two-way communications with DOE that enable problem solving through mutual understanding of safety issues that require action as well as factors that may constrain action to address safety issues.
- Foster confidence in the safety of activities at DOE's defense nuclear facilities essential to national security through effective independent safety oversight and broad outreach.

Strategic Goals and Objectives

The Board has identified three interdependent strategic goals in support of the Board's mission of safety oversight. These strategic goals establish objectives for the Board's safety oversight of DOE's defense nuclear facilities. The Board also has identified a strategic goal that establishes objectives enabling the Board to accomplish its mission efficiently, effectively, and with a high degree of accountability and transparency.

1. ***Improve Safety of Operations*** - Perform independent oversight of operational safety of DOE's defense nuclear facilities to develop analysis, advice, and recommendations that will inform the Secretary of Energy in providing adequate protection of public health and safety at such defense nuclear facilities.

2. ***Strengthen Safety Standards*** - Recommend and promote effective safety standards for the Secretary of Energy to apply in providing adequate protection of public health and safety at defense nuclear facilities.

3. ***Strengthen Safety in Design*** - Recommend and promote safety in design for new and modified defense nuclear facilities.

4. ***Achieve Excellence in Management and Communication with Stakeholders*** - Operate in a manner that is accountable to the public and achieves the mission efficiently and effectively.

The Board will develop and execute an annual work plan that integrates and prioritizes safety oversight within and among the three strategic goals for safety oversight. A prioritized approach to oversight is needed because the scope of work in DOE's defense nuclear complex is extremely large compared to the size of the Board. (The Board's budget request for fiscal year 2013 was slightly more than two-tenths of one percent of the combined budgets for DOE's weapon activities and DOE's Office of Environmental Management.)

The Board has identified nine strategic objectives, developed directly from the four strategic goals, to embody the initiatives needed to fulfill the Board's mission. The goals and objectives are depicted in Figure 1 on the next page and described in the text following the figure. Each objective is subject to performance measures that will be used to assess the Board's progress toward meeting its goals. Annual performance plans published with the Board's budget requests will describe specific performance measures for each fiscal year, and annual performance reports will evaluate the Board's accomplishment of those measures in accordance with the Government Performance and Results Modernization Act of 2010. Employee performance standards will be derived from tasks required to meet one or more of the 9 strategic objectives.

Mission

Provide independent analysis, advice, and recommendations to the Secretary of Energy to inform the Secretary, in the role of the Secretary as operator and regulator of the defense nuclear facilities of the Department of Energy, in providing adequate protection of public health and safety at such defense nuclear facilities

- **Safety of Operations**
  - Weapon Programs
  - Legacy Cleanup
- **Safety Standards**
  - Safety Directives
  - Safety Programs
- **Safety in Design**
  - Facility Design
  - Safety Systems
- **Management and Communication**
  - Management Controls
  - Human Capital
  - Communication with Stakeholders

Figure 1. Defense Nuclear Facilities Safety Board Mission, Strategic Goals, and Strategic Objectives.

Strategic Goals

Strategic Goal 1, Improve Safety of Operations

Goal: Perform independent oversight of operational safety of DOE's defense nuclear facilities to develop analysis, advice, and recommendations that will inform the Secretary of Energy in providing adequate protection of public health and safety at such defense nuclear facilities.

Objectives: The Board has identified two strategic objectives for accomplishing its strategic goal for safety of operations:

- **Strategic Objective 1.1** - Accomplish independent and timely oversight to strengthen safety of operations involved in the maintenance of the nuclear weapons stockpile and in weapons-related research, development, and testing
- **Strategic Objective 1.2** - Accomplish independent and timely oversight to strengthen safety of operations in cleanup of legacy defense nuclear wastes and facilities

Strategic Goal 2, Strengthen Safety Standards

Goal: Recommend and promote effective safety standards for the Secretary of Energy to apply in providing adequate protection of public health and safety at such defense nuclear facilities.

Objectives: The Board has identified two strategic objectives for accomplishing its strategic goal for effective safety standards for defense nuclear facilities:

- **Strategic Objective 2.1** - Accomplish independent oversight to strengthen the development, implementation, and maintenance of DOE regulations, requirements, and guidance for providing adequate protection of public health and safety at defense nuclear facilities
- **Strategic Objective 2.2** - Accomplish independent oversight to improve the establishment and implementation of safety programs at defense nuclear facilities

Strategic Goal 3, Strengthen Safety in Design

Goal: Recommend and promote safety in design for new and modified defense nuclear facilities.

Objectives: The Board has identified two strategic objectives for accomplishing its strategic goal for safety in design of defense nuclear facilities:

- **Strategic Objective 3.1** - Accomplish independent oversight to strengthen the use of approved nuclear standards in the design and construction of defense nuclear facilities and major modifications to existing facilities

- **Strategic Objective 3.2** - Accomplish independent safety oversight to enhance the clear and deliberate implementation of the principles and core functions of integrated safety management in the design, construction, and upkeep of safety systems in defense nuclear facilities

Strategic Goal 4, Achieve Excellence in Management and Communication with Stakeholders

Goal: Operate in a manner that is accountable to the public and achieves the mission efficiently and effectively.

Objectives: The Board has identified three strategic objectives for accomplishing its strategic goal for excellence in management and communication with stakeholders:

- **Strategic Objective 4.1** - Improve management controls to achieve the Board's mission efficiently and effectively

- **Strategic Objective 4.2** - Improve the alignment of human capital strategies with agency mission, goals, and objectives through analysis, planning, investment, measurement, and management of human capital programs

- **Strategic Objective 4.3** - Improve and sustain effective, transparent two-way communications between the Board and its stakeholders on safety issues in DOE's defense nuclear complex and on the Board's operations

External Risk Factors

DOE's defense nuclear complex continues to evolve. As changes occur or as unexpected safety issues are encountered, the Board redeploys its resources and modifies its annual performance planning targets accordingly.

The following key external factors may affect the Board's strategic plan:

- **U.S. national security policy concerning the size or composition of the nuclear weapon stockpile and defense nuclear activities.** A decision to increase the nation's nuclear weapon stockpile or nuclear weapon production capabilities could increase the Board's safety oversight workload. A decision to reduce the stockpile could increase nuclear weapon dismantlement programs and materials disposition programs, requiring additional safety oversight of those activities.

- **A major accident or safety-related event.** Such an event or accident, particularly one involving nuclear material at one of DOE's defense nuclear facilities, could dictate significant changes in priority and focus of the Board's oversight program.

- **The Administration's moratorium on the underground testing of nuclear weapons.** Resumption of underground testing of nuclear explosives, or a major initiative to achieve and maintain an accelerated test readiness program, would require a significant shift in the Board's resources for safety oversight.

- **DOE's approach toward the stabilization of nuclear materials and cleanup of contaminated defense nuclear facilities.** Fundamental changes in DOE's plans would require a significant shift in the Board's resources for safety oversight.

- **The Board's statutory authority and responsibilities.** If changes are made to the Board's enabling legislation, subsequent changes may be required in the strategies and means employed to accomplish the Board's oversight mission.

- **The Board's budget.** The Board can accommodate modest perturbations in its budget authority through judicious management of its expenditures. Significant changes (either decreases or increases) would require the Board to reassess its safety oversight activities. A significant budget reduction would require the Board to defer or eliminate oversight of lower risk activities. Increased budget authority would allow the Board to perform oversight of activities that had been deferred in favor of higher risk activities. The Board would need to make corresponding changes in the size of its technical staff (reduce, enlarge, or, for a temporary increase, supplement it with contractors).

- **The Department of Energy's budget.** Substantial changes in DOE's budget authority likely would result in changes in design and construction projects and operations at DOE's defense nuclear facilities. Such changes could dictate significant changes in the priority and focus of the Board's oversight program and annual performance plan.

- **Science, technology, engineering, and mathematics workforce.** Competition for the limited nuclear science and engineering workforce from other federal agencies and the private sector could affect the Board's ability to hire and retain technical personnel needed to provide safety oversight of DOE's defense nuclear facilities. If the Board's human capital strategy does not succeed in managing this competition, the Board would need to supplement its core technical staff with contractors. Such a situation would be inconsistent with the Board's strategy of maintaining a stable technical staff with multidisciplinary expertise.

Program Evaluations

The Board commissioned two major external evaluations of its programs during 2012. These evaluations greatly assisted the Board in identifying strategic issues and were key inputs in the development of this strategic plan. The evaluations and other inputs that were considered are summarized below:

Risk Assessment of Defense Nuclear Facilities Safety Board Operations, November 8, 2012—The Board contracted with Mosley and Associates to perform a risk assessment of the agency's operations. The assessment used the Government Accountability Office's (GAO) Standards for Internal Control in the Federal Government, GAO/AIMD-00-21.3.1, and GAO's Internal Control Management and Evaluation Tool, GAO-01-1008G. The review team interviewed the Board Members and Senior Executive Service leadership and analyzed the Board's enabling legislation, the Board's Operating Practices and Procedures, agency directives, and policy and guidance documents. The assessment categorized various aspects of the agency's operations as high, medium, or low risk, and recommended that the Board address issues judged to present the greatest mission-related risk.

Workforce Assessment and Analysis, November 19, 2012—The Board contracted with Booz Allen Hamilton, Inc., to perform a workforce assessment and analysis. The assessment provided a comprehensive assessment of the current workforce using existing documents, reports, personnel data, and employee survey results dating back to 2006, along with interviews with the Board's Chairman, Vice Chairman, Senior Executive Service leadership, and other key internal stakeholders. The final report recommended that the Board conduct strategic workforce and succession planning, perform competency modeling and analysis, prioritize knowledge management, create talent acquisition and retention strategies, and target investments in leadership and employee development.

Other Inputs Considered—The Board considered several additional sources of information and guidance in developing this strategic plan:

- **Congressional Committee Reports.** The Board reviewed recent applicable committee reports to determine direction from the Congress. The primary source of information was the Joint Explanatory Statement of the Committee of Conference on the National Defense Authorization Act for Fiscal Year 2013, which explained changes made in the Board's enabling legislation by the Act.

- **Financial Audits.** The Board's financial statements, internal controls, and information technology management systems are audited by an independent auditing firm annually as required by the Accountability of Tax Dollars Act of 2002. The Board has received unqualified opinions with no instances of noncompliance with laws or regulations or material financial internal control weaknesses since 2007. The audits validate the Board's management practices and provide both formal and informal feedback for improvements.

- **Employee Survey.** The Board participated in the Office of Personnel Management's 2012 Federal Employee Viewpoint Survey. The survey results were considered in developing the suite of strategic objectives supporting Strategic Goal 2, Operations, and Strategic Goal 3, Human Capital, which define actions to improve employee performance management systems, internal controls, work processes, and staff development.

Planned Future Evaluations—During the period covered by this strategic plan, the Board will focus on improving its system of internal controls. This effort will include internal assessments of the effectiveness of new or revised controls for all the Board's programs. The Board will continue to be responsive to inputs such as congressional committee reports, audit findings, Federal Employee Viewpoint Surveys, and Inspector General findings, once such oversight of the Board's operations begins.

Relationship between Annual Performance Goals and the Strategic Plan

The goals outlined in this strategic plan encompass a broad and balanced spectrum of areas relevant to the Board's oversight activities and management of the Board's operations. These goals require a sustained effort. The Board develops an Annual Performance Plan based on the annual work plans for each of the Board's offices to define the work to be accomplished each year. The figure below shows how the annual performance plan relates to the strategic plan, work plans, performance assessments, the budget request, and required annual reports.

In planning work to achieve its strategic goals and objectives related to safety oversight of DOE, the Board establishes priorities based on risk to the public and workers, types and quantities of nuclear and hazardous material at hand, and hazards of the operations involved. The Board also takes into account DOE's schedules for design, construction, startup, operation, and decommissioning of defense nuclear facilities and for revisions to its underlying safety framework (safety standards, governance models, etc.). The Board's approach to annual performance planning must be responsive to changes in DOE's plans, to ensure that the Board can reassign resources to provide safety oversight where it is most needed. Any significant changes in the Board's budget authority also must be factored into the annual work plans. As a result, the Board's accomplishments in safety oversight can vary significantly from specific reviews described in annual performance goals. In such cases, the Board reports what it actually accomplished and explains why that work was given priority.