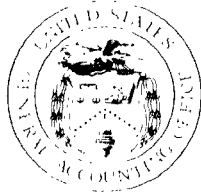


February 1991

NUCLEAR SAFETY

The Defense Nuclear Facilities Safety Board's First Year of Operation



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**Resources, Community, and
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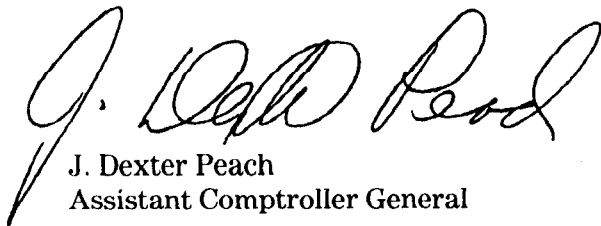
The Honorable John Glenn
Chairman, Committee on
Governmental Affairs
United States Senate

The Honorable Mike Synar
Chairman, Environment, Energy
and Natural Resources Subcommittee
Committee on Government Operations
House of Representatives

This report responds to your request that we review the accomplishments, operations, and problems faced by the Defense Nuclear Facilities Safety Board. Specifically, this report discusses the recommendations that the Safety Board made to improve safety and health conditions at the Department of Energy's defense nuclear facilities, problems the Safety Board has encountered in hiring technical staff, and management problems that could affect the Safety Board's independence and credibility.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time we will send copies of this report to appropriate congressional committees; the Chairman, Defense Nuclear Facilities Safety Board; the Secretary of Energy; and the Director, Office of Management and Budget. We will also make copies available to others upon request.

This work was performed under the direction of Victor S. Rezendes, Director of Energy Issues, who can be reached at (202) 275-1441. Major contributors to this report are listed in appendix I.



J. Dexter Peach
Assistant Comptroller General

Executive Summary

Purpose

The Department of Energy's (DOE) nuclear weapons facilities are among the potentially most dangerous industrial operations in the world. GAO has long advocated independent oversight of these facilities to ensure their safe operation. The Congress also recognized the need for such oversight and established the Defense Nuclear Facilities Safety Board. To ensure that the Board is operating effectively, the Chairmen of the Senate Committee on Governmental Affairs and of the Environmental, Energy and Natural Resources Subcommittee, House Committee on Government Operations, asked GAO to review the Board's operations. The Chairmen were interested in the Board's accomplishments, staffing problems encountered, and changes needed to improve its operations.

Background

Established by Public Law 100-456 in 1988, the Board began operations in October 1989. The legislation authorized up to 100 staff and required that the Board investigate situations at DOE defense nuclear facilities that could adversely affect public health and safety. The Board was also required to make recommendations to the Secretary of Energy on operations, standards, and research necessary to ensure protection of public health and safety. The recommendations and the Secretary's responses must, in most circumstances, be available to the public.

Results in Brief

In its first year of operation, the Board established its financial operations, acquired office space, hired staff, and issued seven sets of recommendations to improve the safety of DOE defense nuclear facilities. The recommendations involved four major DOE facilities—Hanford, Washington; Rocky Flats, Colorado; Savannah River, South Carolina; and the Waste Isolation Pilot Project in New Mexico—and addressed topics such as operator training, safety standards, radioactive waste storage, restarting plutonium operations, and the need for systematic evaluations of safety issues. The Board also investigated radioactive material trapped in ventilation ducts at the Rocky Flats facility.

A major problem limiting the Board's ability to carry out its functions was its inability to offer salaries sufficient to hire scientific and technical staff. Board members believe that additional authorities related to personnel classification and salaries, similar to the authorities granted to the Nuclear Regulatory Commission, will enable them to hire qualified staff. Legislation granting the Board similar authorities with respect to scientific and technical personnel became law in November 1990.

The Board's operations could be enhanced by its developing specific procedures (1) for clearly delineating when safety and health concerns should result in formal recommendations to the Secretary of Energy and (2) for making conflict of interest determinations. These improvements are needed so that the Board operates in a manner that is clearly perceived as independent from DOE. In addition, the Board needs to better document its activities to ensure accuracy in its reviews and to provide a record of its activities.

Finally, the Safety Board needs a strategic plan to set priorities for its heavy workload. Such a plan would help ensure that the Board's oversight is comprehensive in nature and would also make the Board's agenda visible to the public. Given the Board's problems in recruiting staff, the plan should include a staffing and organization strategy.

Principal Findings

Safety Board Has Accomplished Much During Its First Year

In addition to setting up the new organization, hiring staff, and acquiring office space, the Board reviewed DOE's facilities and issued seven sets of recommendations to improve safety. At DOE's Savannah River Plant, the Board found that training for reactor operators and supervisors was not adequate. The Board recommended that DOE review its qualifications for operators and supervisors and modify its training procedures to ensure that personnel are qualified.

At four DOE facilities, the Board found that some design, construction, operating, and decommissioning standards had not been established, were not uniform, or were less specific than corresponding Nuclear Regulatory Commission standards. The Board recommended that DOE clarify applicable standards and study the adequacy and implementation of the standards.

At DOE's Hanford facility, the Board found that DOE had not adequately characterized the known contents and physical conditions in radioactive waste storage tanks. The Board recommended actions to better characterize wastes in the tanks. Later, the Board reviewed DOE's plan to implement the recommendations and found them inadequate. The Board issued recommendations to correct the deficiencies.

At DOE's Rocky Flats facility, which is shut down because of safety problems, the Board found that restart activities normally conducted consecutively were being conducted concurrently. The Board also found that DOE needed a systematic safety evaluation program for plant modifications and that DOE had not properly studied approximately 62 pounds of plutonium trapped in ventilation ducts. The Board recommended actions to correct these problems.

DOE has agreed with, and is taking or planning action in response to, all Safety Board recommendations.

Difficulty in Hiring Technical Staff Has Limited Safety Board Activities

Staffing problems have limited the Safety Board's activities. As of December 10, 1990, the Safety Board had hired only 10 technical staff. Board members believe the lack of technical staff both has and will restrict the number of issues the Board can address and the depth of study and evaluation it can provide. Safety Board members cited salary constraints as the impediment to hiring the scientific and technical experts the Board believes it needs. In November 1990, Public Law 101-510 enacted additional personnel authorities that provide the Safety Board more flexibility in hiring and establishing competitive salary levels for its scientific and technical employees.

Safety Board Operations Could Be Improved

Safety Board actions that could erode the public's perception of the Board's independence include (1) communications with DOE or its operating contractors that could appear to be informal recommendations or suggestions to DOE and (2) the use of DOE contractor employees to conduct Safety Board studies. The Safety Board has no written criteria or procedures to govern its actions in these situations.

At DOE's Savannah River facility, DOE changed its seismic program in response to discussions with Board members about the Board's safety and health concerns. Although the Board issued no formal recommendations to the Secretary of Energy, DOE took corrective action. While discussions between Board members and DOE may improve safety at the facilities, the informal nature of these actions limits public awareness of the safety or health problems, the Board members' concerns, and DOE's actions, as well as eliminates the opportunity for public comments. In addition, formal recommendations require a DOE response and implementation plan that the Board can use to determine the adequacy of DOE's corrective action.

The Safety Board contracted with two employees of a DOE contractor to study the waste tanks at DOE's Hanford facility. Board members said they were aware that these consultants were employed by a DOE contractor but retained them because they were the most knowledgeable experts available. We are concerned, however, that without procedures for making conflict of interest determinations, the Board's use of DOE contractor employees to review DOE safety problems could detract from the Board's image as an independent oversight agency.

In addition, the Safety Board has not established procedures for documenting its findings. Our review of two of the Safety Board's seven reviews and its general operational methods showed that information obtained through discussions with DOE is not documented. Such documentation is essential to provide evidence of the Board's independence, to establish the accuracy of the Board's findings, and to provide a record of activities if litigation occurs.

Other than identifying priorities for current work, the Board has not planned for future work. Board members informed GAO that their future work has been established by legislation and congressional guidance, and they doubted that work already identified could be completed within 5 years. Creation of a strategic plan would allow the Board to prioritize and plan its work to ensure maximum capability, efficiency, and effectiveness in future years. A strategic plan would also make the Board's agenda visible to the public and would help in assessing the skills required to do the work and in organizing the technical staff to work most efficiently.

Recommendations

GAO is making several recommendations that are designed to (1) enhance the Safety Board's independence and credibility, (2) document the Board's operations and activities, and (3) increase the Board's planning activities to maximize future effectiveness.

Agency Comments

GAO discussed the facts in this report with Safety Board members and cognizant staff. They generally concurred with the facts presented but took exception to any characterization of their actions at Savannah River (see ch. 4) as constituting recommendations for safety and health improvements. Their comments have been included in the report where appropriate. However, as requested, GAO did not obtain official Safety Board comments on a draft of this report.

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Abbreviations

DOE	Department of Energy
GAO	General Accounting Office
NRC	Nuclear Regulatory Commission
OPM	Office of Personnel Management
WIPP	Waste Isolation Pilot Project

Introduction

The Defense Nuclear Facilities Safety Board, created in September 1988, was established to ensure adequate protection of public health and safety from activities conducted at the Department of Energy's (DOE) defense nuclear facilities. The Safety Board was authorized to, among other things, conduct investigations, gather information, hold hearings, and issue recommendations to the Secretary of Energy.

DOE's defense nuclear activities are carried out at many contractor-operated sites around the country. At these sites DOE contractors routinely use and generate large quantities of various hazardous and radioactive materials. Some of these materials are fissionable (that is, capable of creating and sustaining a nuclear chain reaction) and require special handling by workers to prevent exposure to themselves or releases into the environment. As a result, DOE's weapons complex, considered in its entirety, is among the potentially most dangerous industrial operations in the world.

Since 1980, we have issued over 60 reports and testimonies identifying serious, costly, and widespread environmental, safety, and health problems at numerous DOE facilities. We have also made recommendations aimed at strengthening environmental, safety, and health oversight; providing more detailed information and plans to the Congress concerning the magnitude and resolution of DOE's environmental, safety, and health problems; and improving DOE's management and accounting practices as they relate to these problems.

Since 1981, on numerous occasions, we have recommended outside, independent oversight of DOE's nuclear operations. In 1988, Public Law 100-456 amended the Atomic Energy Act of 1954 to establish the Defense Nuclear Facilities Safety Board. The Safety Board was created as an independent establishment in the executive branch, consisting of five members, "respected experts in the field of nuclear safety," appointed by the President and confirmed by the Senate.¹ This law authorized the Board to hire up to 100 employees to, among other tasks, carry out the Board's responsibilities to investigate any event or practice at a DOE defense nuclear facility that the Board determines has affected, or could adversely affect, public health and safety. The Secretary of Energy is required to cooperate fully with the Board and provide

¹The Safety Board members are John T. Conway (Chairman), Dr. A. J. Eggenberger (Vice Chairman), Edson G. Case, John W. Crawford, and Dr. Herbert J. C. Kouts. The President submitted their names to the Senate on August 4, 1989, and they were sworn in on October 25, 1989.

it with ready access to facilities, personnel, and information that the Board considers necessary.

Public Law 100-456 specifically assigned the Board five major functions.

1. Review and Evaluation of Standards. The Safety Board is required to review and evaluate the content and implementation of design, construction, operation, and decommissioning standards (including all applicable DOE orders, regulations, and requirements) of each DOE defense nuclear facility. The Safety Board is to recommend to the Secretary of Energy specific measures that should be adopted to ensure that public health and safety are adequately protected.

2. Investigations. The Safety Board is required to investigate any event or practice at a DOE defense nuclear facility that the Board determines has adversely affected, or may adversely affect, public health and safety.

3. Analysis of Design and Operational Data. The Safety Board has access to, and may systematically analyze, design and operational data, including safety analysis reports, from any DOE defense nuclear facility.

4. Review of Facility Design and Construction. The Board is required to review the design of new DOE defense nuclear facilities before construction begins and, within a reasonable time, recommend to the Secretary of Energy modifications of the design that the Safety Board considers necessary to ensure adequate protection of public health and safety. During the construction of any such facility, the Safety Board is to periodically review and monitor the construction and, within a reasonable time, submit to the Secretary of Energy recommendations relating to the construction of that facility that the Board considers necessary to ensure adequate protection of public health and safety. An action of the Safety 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.

5. Recommendations. The Safety Board is to make recommendations to the Secretary of Energy related to DOE's defense nuclear facilities, including operations of the facilities, standards, and research needs, that the Board determines necessary to ensure adequate protection of public health and safety. In making its recommendations, the Safety Board must consider the technical and economic feasibility of implementing the recommended measures. After submission to the Secretary of

Energy, Safety Board recommendations must promptly be made available to the public and published in the Federal Register (unless they involve classified information or relate to an imminent or severe threat to public health and safety), as must the Secretary of Energy's responses to the Safety Board.

Priority Issues at DOE Facilities

The Safety Board members have established several DOE activities as their top priorities for oversight. The priorities are based on what the Safety Board members perceive to be of most concern from a safety perspective and on discussions with Congressional committees and DOE officials. The first of these—and considered one of the highest priorities—is the restart of three Savannah River, South Carolina, nuclear production reactors. The Savannah River reactors are DOE's only production source of tritium, an element used in nuclear weapons. The reactors, shut down since the spring of 1988, were scheduled for restart in late 1990 and 1991. The Safety Board's activities related to Savannah River reactor restart focus on, among other things, DOE's orders and standards, organizational and management procedures and concepts, safety evaluation reports, quality assurance, operator training, prestart-up testing, probabilistic risk assessment, radiological protection, seismic design criteria and earthquake engineering, thermal-hydraulics, integrity of piping and vessels, nondestructive examination and testing, configuration control, fire protection, loss of power, and conduct of operations.

Another high priority area is DOE's Rocky Flats, Colorado, plant. The Rocky Flats plant's primary mission is to produce component parts for nuclear weapons. Accordingly, the plant's production activities involve the fabrication of parts for nuclear weapons from plutonium, uranium, and other materials. Components from obsolete nuclear weapons are also processed at Rocky Flats to recover plutonium and other reusable material. Over the years concerns have been raised about the plant's safe operation, environmental contamination, and the effects of age on the plant's buildings and equipment. Plutonium operations at Rocky Flats have been shut down since November 1989 to allow for an inventory of plutonium materials and to develop new safety and management procedures.

On the basis of a January 1990 visit to Rocky Flats, the Safety Board identified several areas for further study. These areas included training and qualifications, compliance with DOE orders and standards, discipline in operations (including use of procedures, availability of up-to-date drawings, and identification of systems and components), adequacy and

completeness of work being done before resuming operations, scope and influence of engineering in activities leading to resumption of operations, seismic protection, and probabilistic risk assessments.

The Safety Board is also reviewing activities at DOE's Hanford, Washington, site. The Hanford site at one time produced and processed plutonium for nuclear weapons. Currently, a major site cleanup of hazardous and radioactive materials is underway. The Safety Board's activities at Hanford are currently focused on the possibility that storage tanks containing radioactive waste may explode.

The Waste Isolation Pilot Project (WIPP) in New Mexico is the fourth area the Safety Board is reviewing. WIPP is designed to provide permanent storage for transuranic wastes,² but it is not yet in operation. The Board also is conducting a review of DOE orders, standards, and regulations and plans to review other DOE facilities.

Objectives, Scope, and Methodology

On March 28, 1990, the Chairmen of the Senate Committee on Governmental Affairs and of the Environmental, Energy and Natural Resources Subcommittee, House Committee on Government Operations, asked us to examine the Safety Board's operations: specifically, the Board's accomplishments, staffing problems encountered, and changes needed to improve its operations.

Our review was conducted primarily at the Safety Board's office in Washington, D.C., and included an examination of the legislative requirements and the operations of the Defense Nuclear Facilities Safety Board from its inception through October 1990. We interviewed Board members and obtained documents related to the establishment of the Board and its activities. We also discussed the operations of the Board and obtained documents on its activities from DOE officials at the Savannah River Restart Special Projects Office. In addition, we reviewed DOE's responses to the Safety Board's recommendations and interviewed representatives from a contractor employed by the Board.

In reviewing the Board's staffing problems, we interviewed and obtained documents from the Safety Board and the Nuclear Regulatory

²Transuranic wastes are any wastes contaminated with radioactive elements heavier than uranium at levels greater than 100 nanocuries per gram. (A nanocurie is one-billionth of a curie.) Typical waste forms are glassware, equipment, tools, gloves, clothing, and soil.

Commission (NRC). We also discussed with Office of Personnel Management officials the overall implications of granting exemptions from personnel regulations to individual federal agencies. Information on the Board's management problems was obtained from DOE and Safety Board documents and from discussions with DOE officials and Safety Board members.

To determine the extent to which the Safety Board was documenting its activities, we selected two of the Safety Board's seven sets of recommendations to the Secretary of Energy: the March 27, 1990, recommendations on the Hanford waste storage tanks and the June 4, 1990, recommendations on the accumulation of radioactive materials in ventilation pipes at DOE's Rocky Flats facility. We chose these recommendations because we believe that they represent the basic elements of the Safety Board's work. Also, because they are not as complex in scope or concept as some of the other recommendations, these two sets of recommendations were more susceptible to a review of documentation. In addition, Safety Board members characterized the work that supports these two recommendations as typifying the methods used by the Safety Board when reviewing a DOE safety issue. We reviewed the degree that the recommendations were supported by reference material and notes or narrative describing information communicated orally that was pertinent to developing the recommendations. We also discussed with Safety Board members the extent to which meetings between Board members are documented.

We did not evaluate the scope of the Board's jurisdiction over the defense nuclear facilities. Our review was conducted between April and October 1990 and was performed in accordance with generally accepted government auditing standards.

Accomplishments of the Defense Nuclear Facilities Safety Board

Although the Safety Board has necessarily spent a portion of its effort to date on activities related to setting up a new government organization, it has visited and begun oversight of DOE's Savannah River, Rocky Flats, Hanford, WIPP, and other facilities. The Board has also issued recommendations to DOE related to a wide variety of health and safety issues.

Safety Board Established as a New Federal Organization

During the first few months of the Board's existence, the Board members addressed three administrative matters essential to the Board's operations: setting up the Board's financial operations, obtaining staff, and finding office space.

According to Safety Board members, setting up the Board's financial operations did not present a major problem. Staffing and finding office space were, however, "especially vexing."

Obtaining staff has been a problem since the Board's inception. Administrative staff were acquired relatively easily and some staff were loaned to the Board from other federal agencies. However, acquiring qualified scientific and technical staff has been a major problem, and Board members have generally had to conduct safety and health reviews themselves or use contractors and consultants. The Board's staffing problems are discussed in more detail in chapter 3 of this report.

The acquisition of office space was also a problem during the Board's early months. The Board members and DOE officials agreed that the Safety Board, as an independent organization, should not be quartered in DOE facilities. However, adequate government office space was not initially available, and the Board had to operate out of two rooms in the basement of DOE during its organizational period. After the direct intervention of the Administrator of the General Services Administration and his deputy, temporary office space became available in February 1990. The General Services Administration attempted to negotiate a lease for permanent office space in the Comptroller of the Currency Building, close to DOE headquarters. The United States Postal Service, however, exercised an option for the space, eliminating that possibility for the Safety Board. The Board finally moved into permanent office space in September 1990, almost a year after its operations had begun.

Safety Board Issues Recommendations to Correct Safety and Health Problems

Seven sets of Safety Board recommendations, totaling 35 specific recommendations, have been issued to the Secretary of Energy. These recommendations addressed training at Savannah River, the adequacy of DOE orders and standards, the waste storage tanks at Hanford, the need for a readiness review before Rocky Flats restart, the need for a long-term safety improvement plan at Rocky Flats, the need to address the accumulation of radioactive material in ventilation ducts at the Rocky Flats plant, and the need to modify the implementation plan for the Board's recommendations concerning the Hanford waste tanks. The Secretary of Energy has agreed to implement the seven sets of recommendations.

Operator Training at Savannah River

On February 22, 1990, the Safety Board issued a set of six recommendations to the Secretary of Energy concerning training of operators for the three Savannah River reactors. According to the Safety Board, DOE standards for training Savannah River reactor plant operators and supervisors have not been adequately determined and specified. The Safety Board recommended that

- DOE determine and specify the qualifications that reactor plant operators and supervisors will be required to demonstrate before restart of the three reactors;
- DOE identify any differences between its approved qualifications and those that the NRC prescribed for analogous positions in the civilian nuclear power field; where differences exist, DOE should identify any supplemental measures that have been adopted;
- DOE make a comprehensive review of the current level of qualifications of each reactor operator and supervisor—using both written and oral examinations—to establish that the scope and content of the training program will achieve the knowledge prerequisite for restart;
- the training programs for reactor plant operators and supervisors be modified to consider the required qualifications and the current state-of-knowledge and experience of the operators and supervisors;
- DOE accelerate implementation of a program to help ensure that as-built drawings of safety-related systems are available for training of operators and supervisors; and
- the operators and supervisors be qualified in using the revised procedures that will be in place for normal operations and for emergency situations.

The Secretary of Energy accepted the Board's recommendations on April 10, 1990, and forwarded an implementation plan to the Board on

July 13, 1990. The Board held a public hearing on June 28, 1990, to provide additional explanation of, and allow comments on, the recommendations and the Secretary's response. DOE is currently drafting a supplemental implementation plan.

DOE Orders and Standards

Section 312(1) of Public Law 100-456 requires that the Safety Board review and evaluate the content and implementation of DOE standards relating to the design, construction, operation, and decommissioning of DOE's defense nuclear facilities. The Board's initial work in this area involved identifying and evaluating the adequacy of orders and standards as they apply to health and safety activities. As this is accomplished, the Board will assess order and standard implementation.

The Safety Board sent a letter to the Secretary of Energy on March 8, 1990, stating that it found a large degree of variability in the level of detail in DOE's orders and, in general, a degree of specificity much lower than in corresponding NRC requirements. The Safety Board also found a lack of uniformity among DOE orders as to whether they are mandatory, nonmandatory, or referenced for information. Finally, the letter stated that the Safety Board found several safety-related DOE orders that are in draft with substantial uncertainty as to when or in what form they will be issued.

In the letter the Safety Board recommended that the Secretary of Energy identify the specific standards (including all applicable DOE orders, regulations, and requirements) that are applicable to the design, construction, operation, and decommissioning of the three Savannah River production reactors; of the nine buildings at DOE's Rocky Flats site; of the Plutonium Finishing Plant, Purex Facility, waste processing, storage facilities, and the N-Reactor at DOE's Hanford site; and of WIPP. The Board also recommended that the Secretary provide his views on the adequacy of standards for protecting public health and safety at these defense nuclear facilities and determine the extent to which the standards have been implemented at these facilities.

In response to these recommendations, on April 18, 1990, the Secretary of Energy sent a letter to the Safety Board stating that DOE was unable to provide a comprehensive response at that time. He acknowledged that DOE standards require a thorough review and requested 45 days beyond the due date to gather information needed to prepare a response. The Safety Board approved the extension. On June 8, 1990, the Secretary stated that he agreed with the thrust of the recommendations and

described the steps DOE would take to address the issue and develop an implementation plan. The Safety Board received DOE's implementation plan on September 14, 1990, and on December 6, 1990, received the first two of five reports that DOE had committed to provide.

Hanford Storage Tanks

Since 1944, DOE has used storage tanks at its Hanford site to store highly radioactive and nonradioactive hazardous liquid and solid wastes generated by nuclear materials production. For several years, these tanks have been the subject of controversy related to leaks and the possibility of chemical explosions.

In March 1990, the Safety Board obtained information from DOE on the known chemical contents of the tanks and an analysis of the possibility of a spontaneous explosion. On the basis of this information, on March 27, 1990, the Safety Board sent a letter to the Secretary of Energy reporting its conclusion that the probability of an explosion in older single-shell tanks is low. However, the letter also expressed concern over (1) the uncertainty of information on the contents of the tanks, (2) the physical conditions within the tanks, and (3) information concerning high levels of hydrogen in newer double-walled tanks at Hanford.

The Board specifically recommended that

- DOE study chemical reactions in the single-shell tanks that could be a source of heat (which could elevate the temperature in the tanks to a level where explosions could occur),
- DOE develop a program for continuous monitoring of conditions in the single-shell tanks,
- the instruments used in monitoring the tanks be provided with alarms, and
- an action plan be developed to neutralize the conditions that may be signaled by alarms.

The Secretary of Energy accepted the Safety Board's recommendations on May 10, 1990, and developed an implementation plan that was forwarded to the Safety Board on August 10, 1990. The Safety Board reviewed DOE's implementation plan, found it inadequate, and issued additional recommendations (discussed later in this chapter) to the Secretary of Energy.

Need for Readiness Review at Rocky Flats

The Safety Board has made several visits to DOE's Rocky Flats facility. In a May 4, 1990, letter to the Secretary of Energy, the Board indicated that many restart-related activities, which would ordinarily be conducted in sequential order, are being conducted concurrently. As a result, the Safety Board was not able to predict the adequacy of these activities and recommended that the Secretary of Energy conduct a readiness review before restarting operations at Rocky Flats. The Safety Board recommended that the review include an independent assessment of the adequacy and correctness of procedures for operating process and utility systems and an assessment of the level of knowledge achieved during operator requalification.

On June 5, 1990, the Secretary of Energy agreed with the Safety Board's recommendations and stated that DOE's Office of Defense Programs was developing a detailed response. On November 30, 1990, the Board received DOE's implementation plan and is currently reviewing it.

Long-Term Systematic Evaluation Program Needed

In addition to studying DOE's short-term actions in preparing for restarting Rocky Flats' plutonium operations, the Safety Board also looked at actions planned for the long term—after restart. On May 17, 1990, the Board recommended that within the next 4 years the Secretary of Energy develop and implement a Systematic Evaluation Program designed to evaluate, coordinate, and prioritize potential facility changes. The Safety Board recommended that this program address all outstanding safety issues, specifically including

- effects of severe external events, with particular emphasis on seismic events and high winds;
- effects of severe internal events, with particular emphasis on fire;
- ventilation system performance under severe external and internal events, including redundancy considerations;
- interaction of equipment and structures resulting from severe internal and external events; and
- the basis and procedures for deciding which facilities will be backfitted and, where appropriate, the schedule for completing these improvements.

On June 13, 1990, the Secretary of Energy agreed with the Board's recommendations and instructed his staff to prepare an implementation plan. Public hearings were held on these recommendations on August 30, 1990. The Secretary of Energy submitted his implementation plan to

the Safety Board on October 17, 1990. The Safety Board has approved DOE's implementation plan.

Need to Address the Accumulation of Radioactive Material in Ventilation Ducts at Rocky Flats

In April 1990 DOE announced that about 62 pounds of plutonium had accumulated in ventilation ducts at DOE's Rocky Flats facility. The Safety Board found that although DOE and two contractors had examined the problem, full characterization of the situation had not been completed and all specific remediation measures had not been determined. The Safety Board recognized that DOE is continuing to measure the quantity, concentration, form, and physical consistency of the plutonium and other debris in the ducts.

On June 4, 1990, the Safety Board recommended to the Secretary of Energy that, before resuming plutonium operations at the Rocky Flats plant, DOE prepare a written program that addresses the accumulation of fissile and other materials in ventilation ducts and related systems. The program's short-term objective should be to ensure that a criticality accident would not take place and that the presence of fissile and other materials in the ducts would not pose an undue risk to the health and safety of the public, including on-site personnel.¹ The program's long-term objective, to be achieved as soon as reasonably possible, should be to ensure that the accumulated fissile material and other debris in the ventilation and associated systems are properly removed or substantially reduced in amount and concentration. The program should address priorities for specific actions and assess criticality safety for affected individual lines, systems, or components. The basis for the actions and any time-phased programs should be included.

On July 24, 1990, the Secretary of Energy agreed with the Board's recommendation and stated that a contractor had been instructed to prepare an implementation plan. On November 29, 1990, the implementation plan was submitted to the Board. The Board approved the plan on December 3, 1990.

¹A criticality accident is an accident that involves enough radioactive material to create a self-sustaining nuclear fission chain reaction.

Need to Modify Implementation Plan for Hanford Waste Tanks Recommendations

On August 10, 1990, the Secretary of Energy responded to the Safety Board's recommendations related to the waste storage tanks at DOE's Hanford facility. On October 12, 1990, the Safety Board issued additional recommendations to the Secretary of Energy on the adequacy of the implementation plan. The Board concluded that DOE's plan does not adequately reflect the urgency that the waste tank situation merits. In addition, the Board found that DOE has not required its contractor to marshal necessary technical and managerial resources and has not focused the contractor's attention on the problem "in a measure commensurate with its gravity."

The Board recommended that the Secretary of Energy modify the implementation plan to

- add continuously recorded readout instrumentation to the waste tanks to determine if "hot spots" exist or will develop,
- add instrumentation to the tanks to monitor gases in the tanks,
- accelerate the tank content sampling program,
- expand the study of the chemical properties and explosive behavior of the tank contents, and
- formulate an action plan to counter any perceived growth in the hazard and an emergency plan covering measures that would be taken in the event of an explosion or other event leading to an airborne release of radioactive material from the tanks.

On December 3, 1990, the Secretary of Energy accepted the Board's recommendations.

Safety Board Has Problems Hiring Technical Staff

Public Law 100-456 authorizes the Safety Board to hire up to 100 full-time staff, including both administrative and technical employees. However, the Board's recruitment efforts have had only limited success in attracting qualified technical staff. The Safety Board considers its need for competent full-time technical staff to be its most severe problem. Without adequate scientific and technical staff, Board members believe the Board will have difficulty performing its mission. Board members believe that recent legislation will provide the flexibilities needed to hire the scientific and technical staff required to perform the Safety Board's assigned mission.

Safety Board Has Had Limited Success in Hiring Technical Staff

In addition to the five Safety Board members, Public Law 100-456 authorized up to 100 full-time staff. As of December 10, 1990, the Safety Board had hired only 30 employees. Ten of these employees are technical staff while the remaining 20 are legal, secretarial, or administrative staff. To make up for the staff shortage in-house, the Board has made some use of employees on loan from other federal agencies and expert consultants.

Outside expert consultants with specific scientific and technical expertise have substantially assisted the Board in its studies. For example, consultants are helping the Board review the seismic engineering program at the Savannah River reactors. Consultants also assisted the Safety Board in reviewing issues related to the waste storage tanks at DOE's Hanford site.

The assistance provided by other federal agencies' employees and consultants has been essential to the Safety Board's accomplishments to date. For example, three Federal Energy Regulatory Commission employees with specialized legal or administrative experience were instrumental in setting up the Safety Board's financial and personnel operations and obtaining office space. However, the Safety Board considers its need for competent full-time scientific and technical staff acute, especially considering the scope of its statutory functions and the large number of facilities under its purview.

According to Safety Board officials, the Safety Board needs qualified technical staff, including health physicists, seismic specialists, quality assurance specialists, waste engineers, and experts on standards (such as operating procedures and construction codes). According to Safety Board members, technical employees with the required expertise are available from only a few sources. NRC, DOE, and the commercial nuclear

industry are the most likely sources of qualified personnel. In hiring scientific and technical staff, however, the Board has sought to avoid recruiting NRC's or DOE's technical staff because a net loss may result to the overall national interest if DOE's or NRC's talent is depleted.

The Board has advertised for "experienced senior nuclear professionals" in trade journals and in newspapers in areas of the country with concentrations of people with nuclear-related backgrounds (such as Washington, D.C.; Schenectady, New York; and Knoxville, Tennessee). As of December 1990, the Board had received 1,449 applications. Board officials rejected 1,195 of these applications as unqualified, leaving 254 applications in review. Fifty applicants have been interviewed and 29 offers were made. As of December 10, 1990, only nine technical staff had been hired, with one more scheduled to report. Seven offers are pending while 12 offers have been rejected—8 because the applicant wanted a higher salary, 2 because the applicant's current salary was increased, 1 because of a preference for other work, and 1 for unknown reasons. The Board is continuing to interview applicants and anticipates making more offers. Hiring technical staff is one of the Safety Board's highest priorities.

Legislation Gives Safety Board Additional Authority in Personnel Matters

Although the Office of Personnel Management (OPM) gave the Safety Board additional personnel authorities, the Board has had limited success in hiring scientific and technical experts. In December 1989, OPM granted the Safety Board civil service Schedule A hiring authority for a 2-year period. This authority eliminates the requirement for a position to be formally advertised for a lengthy period and shortens the length of time required to hire staff. The Safety Board also uses superior qualification appointment authority to hire GS-14 and GS-15 scientific and technical staff at salaries within certain limits delegated by OPM.

Other personnel authorities that provide assistance in hiring hard-to-fill positions are available. These authorities include OPM's special salary rate program and OPM's waiver of the delegated salary limits for superior qualification appointments. Safety Board members did not request these personnel authorities because they believe the additional authorities would not suffice to attract the type of scientific and technical experts the Board needs to do its work. Board members informed us that the main problem was noncompetitive pay. As stated previously, Safety Board officials informed us that eight qualified applicants have not accepted positions with the Board because they are demanding salaries higher than the Board offered.

Public Law 101-510, signed on November 5, 1990, provided the Safety Board the authority to appoint and fix the pay rates of scientific and technical personnel under the Atomic Energy Act of 1954, section 161(d). Safety Board members believe that Public Law 101-510 will facilitate hiring the technically qualified employees that the Board needs to perform its mission. NRC has similar authority. NRC officials informed us that NRC's authority allows them to operate an independent personnel system that is similar to that used by the rest of the federal government, but has been modified in the areas of hiring and pay to conform with the type of work NRC performs.

NRC has its own independent classification system for positions. NRC may not pay more for a position than could be paid under the governmentwide system, and the difficulty and responsibility levels of an NRC position must correspond to the normal civil service pay grades. NRC can, however, design position descriptions and classifications to meet its specific needs, enabling it to hire scientific and technical experts at higher grade and salary levels than would otherwise be permitted.

The conference report related to Public Law 101-510 directs GAO to review the Safety Board's use of the new authority in 2 years. GAO is required to prepare a report that assesses (1) the Board's use of the personnel authority; (2) the Board's ability to attract and retain necessary scientific and technical personnel using this authority; and (3) whether, after 2 years, the authority still seems necessary to carry out the Board's oversight mission in the future.

Management Problems Could Affect Safety Board Credibility

The Defense Nuclear Facilities Safety Board has accomplished much during its first year of operations. It has set up a new organization, acquired permanent office space, hired administrative staff and several technical staff, studied safety issues at several DOE defense nuclear facilities, and issued seven sets of recommendations designed to ensure the protection of public health and safety.

However, some aspects of the Board's management and operations could be improved. These areas include ensuring the independence of the Safety Board's relationship with DOE, documenting Safety Board activities in a manner conducive to congressional oversight and public access to information, and planning for future work priorities. Improvements in these areas could increase the public's confidence in the Board's independence and enhance the Board's credibility.

Safety Board Needs to Ensure Independence From DOE

Over the years that DOE has operated its defense nuclear facilities, it has established various forms of safety and health oversight. We considered the oversight inadequate because it was internal and not independent. Ultimately, the same DOE official was responsible for both overseeing safety and health and producing nuclear weapons. The goals of safety and health protection and weapons production often conflicted.

One of the most important features of the legislation creating the Safety Board is the provision establishing the Board as an organization separate from DOE, providing the opportunity for independent, objective oversight of safety and health issues at DOE's defense nuclear facilities. Provisions in the legislation also require disclosure of Safety Board recommendations to the public and allow public comment on the recommendations and DOE's response. The Safety Board's independence and public knowledge of its recommendations and DOE's response to the recommendations are essential to establishing and maintaining public confidence in the Board and ultimately in the safety of DOE's defense nuclear facilities.

Since the Safety Board began operations in 1989, however, several of its activities could convey the impression that the Board is not operating "at arm's length" from DOE. These activities include an instance in which the Board effected significant safety and health improvements without issuing a formal recommendation to the Secretary of Energy, thereby preventing public scrutiny and comments. The Board also contracted for the services of two employees of a DOE contractor to perform Safety Board reviews of a DOE facility.

**“Informal”
Recommendations
Decrease Public
Involvement**

Public Law 100-456 authorizes the Safety Board to investigate matters relating to DOE's defense nuclear facilities that may adversely affect public health and safety. The legislation also authorizes the Board to make recommendations to the Secretary of Energy, including recommendations on facility operations, standards, and research needs. The Safety Board must promptly make its recommendations available to the public in DOE's public reading rooms and in the Federal Register (unless a recommendation involves classified information or is related to an imminent or severe threat to public health and safety). The Secretary of Energy's responses to the Safety Board's recommendations must also be published in the Federal Register.

During the spring of 1990, the Safety Board conducted work on the ability of DOE's Savannah River reactors to contain radioactive materials during and after an earthquake. According to a June 15, 1990, DOE memo, meetings between DOE Savannah River officials and two Safety Board members and their staff on April 18 and May 16, 1990, resulted in "considerable re-examination of the restart and long-term philosophy regarding the seismic capability" of the reactors. The memo separated the concerns and issues raised by the Board members during the meetings into three categories.

First, the Safety Board members raised several concerns that did not challenge restart philosophies and objectives regarding seismic capability but did question the methodologies chosen to achieve the objectives. The second category included issues that the Safety Board members raised concerning the adequacy of critical assumptions used in earlier studies that were used as a basis for scoping additional activities. The third category involved the appropriateness of not requiring enhanced seismic capability for certain accident mitigation systems before restart.

As a result of these meetings, DOE decided to direct its operating contractor to review ten specific items raised by the concerns expressed by the Safety Board members and by other DOE reviews. DOE also accelerated an analysis of seismic capability for accident confinement filters as a result of the Board members' inquiries. Safety Board members informed us that they approved DOE's changes.

In this case, the Safety Board did not issue a recommendation to the Secretary of Energy pursuant to its authority in Section 312(5) of its enabling legislation (42 U.S.C. 2286a(5)), or publish any recommendation in the Federal Register. The Board has told us that this was not

necessary since the Board members or their staff present at the meetings did not recommend any design changes to DOE. However, DOE documents indicate that DOE officials considered the concerns raised by the Board members as recommendations and began implementing corrective actions.

According to Safety Board members primarily responsible for the seismic review at Savannah River, formal recommendations were not issued because DOE took action during the Safety Board's review. Because the actions were satisfactory, the Safety Board members believe that formal recommendations were not necessary, although they were prepared to issue recommendations had DOE not taken action. In this case, the Safety Board members believe this method of operation was more efficient than issuing a recommendation because the Board could effect changes quickly without waiting up to 45 days for DOE's response to a recommendation and 90 days for the implementation plan. This method also eliminates the time-consuming aspects of formally evaluating DOE's response and implementation plan and allows Board members to cover additional safety issues.

We recognize that communication between Safety Board members and/or staff and DOE and/or contractor employees during the course of the Board's fact- and information-gathering activities will not necessarily constitute, or result in the issuance of, recommendations by the Board, even though such communication may result in commitments by DOE to take certain corrective actions. However, the actions in this case were similar to those in other Safety Board reviews that did result in recommendations to the Secretary of Energy for additional studies or analyses of potentially hazardous situations.

Identifying significant safety and health problems and effecting changes without issuing formal recommendations to the Secretary of Energy fails to trigger the legislative provision allowing for the public's awareness of, and comment on, the Board's recommendations and the Secretary's responses. Without such public knowledge of significant safety and health issues and problems at DOE facilities and with no opportunity to comment on the Board's recommendations and DOE's responses, the public would have little more basis for confidence in the safety of DOE's defense nuclear facilities than it did when overseeing safety and health was an internal DOE function.

In addition, in view of the Safety Board's failure to document oral discussions with DOE (discussed later in this chapter), making specific recommendations to the Secretary of Energy becomes more important because recommendations are the only clear public record of the Board's concerns and of DOE's position on correcting safety and health problems.

Board members believe that they have provided adequate opportunity for the public to be aware of the seismic safety issues at Savannah River. They cite a June 1, 1990, letter from a DOE official to one Board member, which was placed in the Safety Board's public reading room. This letter documents the "commitments and agreements" related to the seismic design of the Savannah River reactors. The problem with this sort of "public notification" is that the public must be aware of the seismic issue and the Board's concerns before it can know what to look for in the Board's reading room. Placing the information in the Federal Register makes it more readily accessible to the public and reaches a wider audience than posting a letter.

The Safety Board has not formulated written procedures for developing and issuing recommendations or formulated criteria for determining when safety and health concerns addressed by Safety Board members and staff will result in formal recommendations. Safety Board officials told us that they are beginning to formulate procedures concerning recommendations. As a first step, the Board has advised DOE of what is "entailed in accepting" a Safety Board recommendation and has published in the Federal Register its criteria for judging the adequacy of DOE's responses to, and implementation plans for, Board recommendations. However, the Board has not yet formulated criteria that delineate the circumstances when safety and health concerns related to DOE's defense nuclear facilities will result in its issuing formal recommendations to the Secretary of Energy.

Safety Board Uses DOE Contractors to Conduct Studies

To maintain independence and objectivity in reviewing DOE facilities, the Safety Board should avoid potential conflict of interest situations. Safety Board officials informed us that, to avoid potential conflict of interest situations, they have not employed contractors or consultants who are performing work for DOE, except in unusual situations.

Safety Board officials cited a case in which they retained three consultants to study safety issues related to the waste storage tanks at DOE's Hanford facility. One of the consultants subsequently was employed by a DOE contractor to do similar work at the Hanford facility. The Safety

Board informed the consultant that he could no longer work as a consultant to the Safety Board and cancelled his contract with the Board.

On this same study, however, the other two consultants were employed by the operating contractor of DOE's Chemical Technology Division, Oak Ridge National Laboratory. A briefing provided by these consultants contributed significantly to the Safety Board's recommendation to the Secretary of Energy on the Hanford waste storage tanks issue. A Safety Board official told us that the Oak Ridge consultants were retained by the Board, even though they were employed by a DOE contractor, because they were the most knowledgeable experts available in this technical area. Board members told us that they reviewed the potential for conflict of interest in this case and also reviewed the terms and conditions of the consultants' employment by DOE's operating contractor. The Safety Board also pointed out that the consultants' work for DOE at Oak Ridge was not related to their responsibilities to the Board on this particular safety issue at Hanford. In addition, the Safety Board discussed this situation during congressional hearings.

We recognize that the nuclear industry is to some extent a closed community; few available nuclear experts are not in some way connected to DOE or its operating contractors. We are concerned, however, that the use of DOE consultants could provide the potential for, or the appearance of, a conflict of interest. As stated previously, we believe that the public's perception of the Safety Board as an independent, objective oversight organization is critical to the Board's ultimate success, and great care should be taken to preserve and enhance the image of the Board as an independent oversight organization.

DOE's situation is similar to the Safety Board's. Hiring consultants or contractors in various nuclear disciplines can involve the potential for conflicts of interest. DOE has established policies and procedures to identify and avoid or mitigate conflicts of interest before contracts and subcontracts are awarded. When DOE officials determine that a potential conflict of interest cannot be avoided and the Secretary of Energy (or the Secretary's designee) determines that the award of the contract is in the best interests of the United States, the contract may be awarded. However, clauses designed to mitigate the conflict must be put in the contract, and the Secretary's determination must be published in the Federal Register. The Safety Board does not have similar written procedures for evaluating the potential for conflict of interest, mitigating the effects of a conflict, or notifying the public of a contractor or consultant who has been hired despite a possible conflict of interest. However,

Safety Board officials informed us that they are beginning to prepare procedures for handling potential conflict of interest situations.

Inadequate Documentation of Safety Board Activities

Documentation of the Safety Board's activities is important to provide a complete, accurate, and lasting record of the Safety Board's actions. Such documentation provides a means of ensuring that the Board is conducting independent oversight of DOE's defense nuclear facilities and also serves as a record of activities and proceedings if litigation occurs.

We reviewed two sets of the Board's recommendations to determine the adequacy of its documentation when formulating recommendations—the March 27, 1990, recommendations on the Hanford waste storage tanks and the June 4, 1990, recommendations on accumulation of radioactive materials in ventilation pipes at DOE's Rocky Flats facility. We found that the Safety Board retained copies of published reference documents and printed information provided by DOE. The Safety Board did not, however, make records of conversations with DOE, keep records of information provided orally by DOE, or document all meetings between Safety Board members.

The safety issues relating to Hanford's waste storage tanks were brought to the attention of the Safety Board members during their confirmation hearings. In developing the Hanford waste storage tank recommendations, Board members visited Hanford in December 1989 and were briefed on the waste storage tanks as well as other issues. The Board retained the printed information provided by DOE at the briefing but did not document the oral discussions with DOE or any information presented orally by DOE.

As discussed previously, the Safety Board hired three expert consultants to investigate and evaluate the situation. The consultants visited Hanford on March 20 and 21, 1990, and briefed the Safety Board on their findings on March 22, 1990. On the basis of the consultants' briefing, the Safety Board members decided to issue recommendations to the Secretary of Energy. At the time the Safety Board issued its recommendations, the Board had not received a written report from the consultants. (The consultants documented their findings in a draft report that was presented to the Board on April 23, 1990, several weeks after the recommendations were issued on March 27, 1990.)

The issue concerning the accumulation of radioactive material in ventilation ducts was identified by the Board during a visit to DOE's Rocky

Flats facility in mid-January 1990. Board members returned to Rocky Flats to further explore this issue from February 26 through March 2, 1990, and on April 11 and 12, 1990. Safety Board staff and consultants visited Rocky Flats on April 25, and May 9 and 10, 1990, respectively. The Safety Board has more than 20 published documents or letters from various sources that provide information on the accumulation of radioactive material. However, oral discussions held during these visits were not documented by the Board members or their staff. Safety Board deliberations in formulating and drafting the recommendations were also not documented.

The Safety Board informed us that they did not document oral discussions, briefings, Board meetings, agreements with DOE (such as the informal recommendations with DOE concerning seismic issues at Savannah River discussed previously), or procedures involved in formulating recommendations. Board members informed us that they believe their time is better spent covering additional safety issues. The Safety Board does not have operating procedures for documenting Board activities or information supporting its recommendations.

Safety Board Needs to Formulate Strategic and Organization Plans

The Safety Board's first year involved considerable work related to issues that existed before the Safety Board was created. In the cases of the Savannah River reactor, Rocky Flats restart, and the Hanford waste tanks, Safety Board involvement was required on a priority basis because many safety issues had to be reviewed before restarting the facilities or because possible imminent safety hazards existed. DOE has also designated the Savannah River and Rocky Flats areas as priorities.

Other than identifying priorities for current work and issues the Board would currently address if additional staff were available, the Safety Board has not formulated a strategic plan to identify priorities for future work. Board members informed us that the Board's future work has been established by legislation and congressional guidance, and they doubted that all work identified can be completed within 5 years.

Now that the Safety Board has been operating for about a year, the direction of future work and the organization and composition of the Board's staff should be addressed. If the Safety Board does have more work than it is capable of doing, the work must be prioritized and planned to ensure maximum capability, efficiency, and effectiveness in future years. Such a plan would also make the Board's agenda visible to the public.

As stated in chapter 3, the Safety Board has hired only 30 of its authorized 100 full-time staff. Safety Board members have determined that they need technical personnel, such as health physicists, seismic specialists, quality assurance specialists, waste engineers, and experts on standards. They have not determined how many personnel in each of these disciplines would be needed or what other personnel may be needed to complete the 100 staff. The Board has determined that the technical staff will be organized into a "matrix organization of technical disciplines and project managers, all under a staff technical director." Board members are assigned specific areas to provide guidance and direction to staff.

A strategic plan delineating future work areas could also help the Safety Board determine if the organization they have planned is best suited to its mission. The Board should determine how best to manage the anticipated work and the number and types of scientific and technical personnel needed to perform the work. The specific issues that should be addressed include a determination of how the staff should be organized to carry out assigned functions, the types or mix of disciplines needed, the specific responsibilities to be assigned to individual positions, the number and pay levels to be assigned to these positions, and what specific pay or other personnel policies are needed to achieve efficient and effective accomplishment of the Board's mission.

Early development of a strategic plan will help the Board target its recruitment efforts to meet its staffing needs in anticipated work areas. Safety Board officials informed us that they have recently begun planning for the next fiscal year and plan to "elaborate upon its longer-term plans in its annual report to the Congress."

Conclusions

The Safety Board has made considerable progress in reviewing safety issues at DOE's defense nuclear facilities during its first year of operation. In performing its reviews, however, the Safety Board has conducted some operations in a manner that could be perceived as not being independent from DOE.

The Safety Board's discussions with DOE officials about safety problems prompted safety-related changes at DOE facilities without the Board's having issued recommendations to the Secretary of Energy. Effecting changes without issuing formal recommendations bypasses the opportunity for public awareness of safety problems and public involvement in their resolution, as provided for in the legislation creating the Safety

Board. In addition, the Safety Board has used consultants who are also contractors for DOE to review a critical DOE safety issue, thereby creating the potential for a real or apparent conflict of interest.

One of the reasons we favored creating an independent oversight group such as the Safety Board was the public's lack of confidence in DOE's internal safety and health oversight organizations. For the Safety Board to achieve maximum effectiveness, the public must have confidence in the Board's credibility. Such credibility can be built and preserved only by maintaining strict independence from DOE. Just the appearance of a less-than-arm's-length relationship with DOE could erode the Board's credibility and diminish its effectiveness.

We also found that the Safety Board documents few of its activities. Information obtained orally from DOE, discussions and agreements with DOE, and meetings of Safety Board members are not documented. Such documentation is necessary to ensure the accuracy of the Board's work, substantiate the independence and objectivity of the Board's activities, and provide a complete and lasting record of the Board's proceedings if litigation occurs.

In addition, the Board has not formulated a strategic plan to identify areas for future reviews. The Safety Board is a relatively new organization and, by necessity, has had to react to existing conditions. However, as the Safety Board's staff grows and the reviews dictated by external deadlines or incidents are completed, a strategic plan for future operations and direction should be prepared. Such a plan would be helpful in planning the type and focus of future reviews and would allow the Board to tailor the organization and composition of the Safety Board staff to fit work planned for the future.

Recommendations

To ensure that the Safety Board conducts its reviews independently from DOE and to ensure that all significant Safety Board concerns about health and safety at DOE's defense nuclear facilities are made known to the public, we recommend that the Chairman of the Defense Nuclear Facilities Safety Board direct that operating procedures be expeditiously established to ensure that all Safety Board activities are conducted in a manner that is clearly independent from DOE. These procedures should include criteria for determining when safety and health concerns related to DOE's defense nuclear facilities will result in the Safety Board's issuing formal recommendations to the Secretary of Energy. In developing such criteria, the Safety Board should recognize the importance of

allowing the public to be aware of the Board's activities and of significant safety and health issues at DOE's defense nuclear facilities.

Procedures should also be established to require that the Safety Board

- review all hiring and contractual arrangements to determine the potential for conflicts of interest and, where potential conflicts are possible, disqualify the contractor/consultant or make a determination that the award of the contract is in the best interests of the United States and include mitigating provisions in the contract,
- notify the public of all situations where potential conflict of interest situations are unavoidable and the hiring of a contractor or consultant with a potential conflict of interest is in the best interest of the government, and
- document all reviews of safety and health issues at DOE defense nuclear facilities, including Board meetings, discussions and agreements with DOE, and analyses leading to recommendations to the Secretary of Energy.

In addition, to ensure that the Board efficiently focuses its resources on the most critical safety issues, we recommend that the Chairman direct the preparation of a strategic plan for identifying future work areas. The plan should also delineate organizational structure and work force staffing strategies that identify the kind, number, and pay levels for all scientific and technical positions required for future work.

Agency Comments

We discussed the facts in this report with Safety Board members and cognizant staff. They generally concurred with the facts presented but took exception to any characterization of their actions at Savannah River as constituting recommendations for safety and health improvements. Their comments have been included in the report where appropriate. However, as requested, we did not obtain official Safety Board comments on a draft of this report.

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