ANNUAL REPORT

TO CONGRESS

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

APRIL 1993

John T. Conway, Chairman
A.J. Eggenberger, Vice Chairman
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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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To the Congress of the United States:

The Defense Nuclear Facilities Safety Board is pleased to submit to the Congress its third annual report, covering activities of the Board during calendar year 1992.

An independent executive branch establishment, the Board provides advice and recommendations to the President and the Secretary of Energy regarding public health and safety issues at Department of Energy (DOE) defense nuclear facilities. The Board also reviews and evaluates the content and implementation of health and safety standards, as well as other requirements, relating to the design, construction, operation, and decommissioning of DOE defense nuclear facilities.

As required by statute, the Board's report to Congress summarizes activities during the past year, assesses improvements in the safety of DOE defense nuclear facilities, and identifies remaining safety problems at DOE defense nuclear facilities.

During this reporting period, the Board made progress in discharging its health and safety review responsibilities while addressing the many managerial issues associated with the operation of a relatively new agency.

Respectfully submitted,

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Chairman

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Vice-Chairman

John W. Crawford, Jr.
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I. INTRODUCTION

A. OVERVIEW OF BOARD FUNCTIONS

Congress created the Defense Nuclear Facilities Safety Board (Board) to provide advice and recommendations to the Secretary of Energy regarding public health and safety at Department of Energy (DOE) defense nuclear facilities. The President nominated the initial five members of the Board in 1989, and the Senate confirmed those nominations in October of that same year. In June 1992, Mr. Joseph J. DiNunno was nominated by the President to join the Board after the death of Board member Edson G. Case on September 14, 1991. Mr. DiNunno was confirmed by the Senate on August 12, 1992. This is the third Annual Report provided to Congress by the Board, and it covers activities during calendar year 1992.

Broadly, the Board reviews operations, practices, and occurrences at DOE defense nuclear facilities and makes recommendations to the Secretary of Energy that are necessary to protect public health and safety. The Board also assesses safety management and personnel effectiveness both within DOE and the various operation and management (O&M) contractor organizations. If, as a result of its reviews, the Board determines that an imminent or severe threat to public health or safety exists, the Board is required to transmit its recommendations directly to the President, as well as to the Secretary of Energy.

The Board's enabling statute, 42 U.S.C. § 2286, explicitly requires the Board to review and evaluate the content and implementation of health and safety standards, including DOE orders, rules, and other safety requirements, relating to the design, construction, operation, and decommissioning of DOE defense nuclear facilities. The Board must then recommend to the Secretary of Energy any specific measures, such as changes in the content and implementation of those standards, that the Board believes should be adopted to ensure that the public health and safety are adequately protected. The Board is also required to review the design of defense nuclear facilities before construction begins, as well as modifications to older facilities, and to recommend changes necessary to protect health and safety. Board review and advisory responsibilities continue throughout the construction, testing, and operation of new facilities.

The Board may conduct investigations, hold public hearings, gather information, conduct studies, establish reporting requirements for DOE, and take other actions in furtherance of its review of health and safety issues at defense nuclear facilities. These ancillary functions of the Board and its staff all relate to the accomplishment of the Board's primary function, which is to assist DOE in identifying and correcting health and safety problems at defense nuclear facilities. The Secretary of Energy and contractors at defense nuclear facilities are required to cooperate fully with the Board.

B. ANNUAL REPORTING REQUIREMENTS UNDER 42 U.S.C. SECTION 2286e

By statute, the Board must submit an Annual Report to the Committees on Armed Services and on Appropriations of the Senate and to the Speaker of the House of Representatives at the same time that the President submits the budget to Congress. The report must include a review of the activities of the Board during the preceding year, including all recommendations made by the Board. An assessment is required of the improvements in safety at DOE defense nuclear facilities during the previous year. The report must also assess safety problems remaining at DOE defense nuclear facilities. The Board is hereby submitting its third Annual Report to Congress in fulfillment of these requirements.

II. REPORT TO CONGRESS REGARDING SAFETY AND HEALTH AT DEFENSE NUCLEAR FACILITIES

A. BOARD ACTIVITIES DURING 1992

1. Recommendations Issued in 1992

The Board discharges its primary responsibility by issuing recommendations to the Secretary of Energy, and if necessary, the President, regarding public health and safety issues at defense nuclear facilities. Highlighting their importance, Congress specifically requires that a discussion of recommendations be included in the Board's Annual Report. 42 U.S.C. § 2286e. During 1992 the Board made seven sets of recommendations, consisting of 23 specific recommendations. Since its inception, the Board has issued a total of 20 sets of recommendations, consisting of 84 specific recommendations. The Secretary of Energy has accepted each of the Board's recommendations. The following summarizes Board activities relative to recommendations during calendar year 1992. Verbatim copies of the recommendations are included in Appendix A.

a. Recommendations 92-1 (Closed) and 92-3, Operational Readiness of the HB-Line at the Savannah River Site

On March 11, 1992, the Board's staff conducted a review of selected health and safety issues at DOE's Savannah River Site (SRS). A site worker interviewed on that date discussed potential problems with leak test data for heat exchangers at the K-Reactor, as well as other safety concerns. He informed the Board's staff of the name of a worker at the site who believed that there were potentially serious problems with the Westinghouse Savannah River Company (WSRC) and DOE Operational Readiness

Reviews (ORRs) performed at the HB-Line in 1991. The HB-Line is used in the processing of Pu-238.

The Board's General Counsel was directed by the Chairman of the Board to conduct an inquiry and followup on the allegations. Staff periodically briefed the Board on the progress of the informal inquiry from March 16 through March 27. WSRC personnel involved in the HB-Line readiness reviews raised questions regarding the adequacy of the readiness reviews prepared by WSRC and DOE, as well as persistent health and safety issues at the HB-Line. During the week of March 22, 1992, the Board, based on those briefings, determined that an investigation should be made into the conduct of the HB-Line readiness reviews and associated safety issues. The Chairman of the Board directed the General Counsel to establish an investigative team of legal and technical staff. The investigation was conducted pursuant to 42 U.S.C.A. § 2286a(2), which states that 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," and 42 U.S.C.A. § 2286b(b). The Board scheduled a closed Board meeting for April 3, 1992, to review preliminary information on the investigations.

The investigative team periodically reported to the Board the results of its reviews of potential safety problems at the HB-Line due to alleged deficiencies in the readiness review process and possible failures by WSRC and DOE to correct safety issues adequately prior to the July 1991 restart of the facility, which had been shut down since 1987. Particularly troubling were the Pu-238 contaminations of personnel which occurred seven days after the July 1991 resumption of operation. Those contaminations resulted in operations being suspended until October of 1991. The HB-Line was again operated until shutdown on November 20, 1991, after a prohibited material (Zirconium) was discovered in the HB-Line. The HB-Line resumed operation again on December 13, 1991, and continued until March of 1992 when operations were again halted due to an unreviewed safety question pertaining to H-Canyon's ventilation system. The investigative team's review of an incident noted as Unusual Occurrence Report, SR-WSRC-SEPGEN-1992-0002, for Separations facilities, indicated that DOE intended to again resume operations at the HB-Line some time in May 1992. Therefore, the Board wrote to the Secretary of Energy on April 20, 1992, and requested that he inform the Board no later than 10 days prior to the intended resumption date. The Secretary agreed by letter of May 7, 1992.

To obtain an independent view of the status of DOE's and WSRC's efforts to correct and close safety issues at the HB-Line, the team also conducted an on-site visit and technical review of selected safety issues from May 5 to May 8, 1992. On May 21, 1992, after a briefing by the investigative team, the Board unanimously voted, by use of notational voting, to issue Recommendation 92-1 to the Secretary of Energy. 92-1 recommended that DOE defer resumption of processing at the HB-Line, pending

issuance of the report of the Board's investigation, resolution of the safety issues, and possible further Board action. The full text of Board Recommendation 92-1 is contained in Appendix A. Further action was taken on May 29, 1992, when the Board unanimously voted, by use of notational voting, to issue Recommendation 92-3 to the Secretary of Energy. Recommendation 92-3 recommended that, prior to resuming operations at the HB-Line, DOE direct WSRC to reopen its ORR, and that WSRC and DOE conduct adequate ORRs in accordance with previous Board recommendations and DOE implementation plans. Recommendation 92-3 also presented seven other elements that the Board believed should be incorporated into the recommended ORR process to ensure that it was adequate. The full text of Board Recommendation 92-3 is contained in Appendix A.

On July 14, 1992, the Secretary responded formally to Recommendation 92-1, requesting an extension of time for the Department to respond. The Secretary believed that the Department needed to review "the draft investigative report" which was scheduled to be issued on July 17, 1992, "to ensure we provide an adequate response" to the recommendations. The Board granted a 45-day extension on July 17, 1992, and transmitted the investigative team's Preliminary Report to the Secretary of Energy for his review and for classification clearance.

After incorporation of DOE factual comments on the Preliminary Report, the Board issued the investigative team's Final Report on September 8, 1992. The Secretary accepted Recommendation 92-3 and submitted the Implementation Plan on September 15, 1992. On October 27, 1992, the Board agreed with the Secretary's letter of October 19, 1992, that Recommendation 92-1 had been superseded by further action of the Board in issuing Recommendation 92-3.

ORRs were conducted by both WSRC and DOE during September, October, and November of 1992. The Board held an open meeting and hearing on December 15, 1992, in Aiken, South Carolina, to address both the contractor's and the Department of Energy's Operational Readiness Reviews and other safety matters related to the proposed restart of the HB-Line. This was followed by a closed meeting held by the Board on December 17, 1992, to deliberate upon safety issues related to the HB-Line, including, but not limited to, consideration of testimony and documents received at the public meeting on December 15 and other matters related to the proposed restart of the HB-Line. At the close of the calendar year, the Board scheduled further deliberations on the HB-Line for January 5, 1993.

b. Recommendation 92-2, DOE's Facility Representative Program at Defense Nuclear Facilities

At contractor-operated defense nuclear facilities, the DOE Facility Representative is responsible for monitoring the performance of the facility, and serves as the primary

DOE contact with the contractor. Recognizing the importance of DOE Facility Representatives with regard to ensuring adequate protection of public health and safety at DOE defense nuclear facilities, the Board reviewed existing department-wide guidance on the selection, training, and responsibilities of DOE's Facility Representatives. The Board found that DOE Order 5000.3A and DOE Order 5480.19 provide only limited details concerning duties and responsibilities of DOE's Facility Representatives; moreover, there are no orders that prescribe any guidance for selection and training of DOE's Facility Representatives, nor any effective guidance for establishing the duties and responsibilities associated with these positions.

The Board noted that DOE's managers for several facilities in the defense nuclear complex had begun to establish formal Facility Representative programs. However, these programs were operating without centralized direction. Generally, this resulted in widely differing qualifications, duties, and responsibilities for DOE Facility Representatives from facility to facility, even at the same site.

Based on these factors, the Board issued Recommendation 92-2 on May 28, 1992. This recommendation addressed the need for a comprehensive analysis of existing DOE facility representative programs and the establishment of a formal program for the selection, training, and assignment of DOE representatives at defense nuclear facilities. The Secretary accepted the Board's recommendation on July 20, 1992, and submitted the Implementation Plan on November 5, 1992. The full text of Board Recommendation 92-2 is contained in Appendix A.

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

The Board performed reviews of the Multi-Function Waste Tank Facility (MWTF) project to be located at the Hanford Site in the State of Washington. The MWTF is an element of the Hanford Tank Waste Remedial System (TWRS) Program, which is intended to provide for the ultimate treatment and preparation for disposal of the nuclear waste stored in tanks at the Hanford Site. The Board reviewed information received in the form of briefings and presentations by DOE Headquarters personnel, DOE Richland personnel, Westinghouse Hanford Company personnel, and Kaiser Engineers Hanford personnel, as well as analysis of relevant documents. The Board determined that the process for design and construction of the Hanford MWTF did not clearly present and delineate those aspects that ensure that the public health and safety could be adequately protected.

As conceptual design of the MWTF project neared completion, the Board believed that it was appropriate to assure that the designs of the MWTF and other new defense nuclear facilities incorporate engineering principles and approaches, detailed

engineering criteria, and practices that are essential to ensure adequate protection of public health and safety. These include:

- The design needs to be appropriately conservative with respect to safety;

- The design bases (criteria) need to be clearly defined, coherent, and compatible with the facilities' perceived lifetime functions (i.e., Functional Design Criteria) and documented;

- The design bases and the resulting facility design need to reflect and incorporate the requirements of appropriate standards as that term is used in the Board's enabling statute, and thus to include DOE Orders and directives and commercial nuclear practices, as well as any other national and international standards that may be required for the safe and reliable operation of the facility throughout its entire life;

- The design, construction, and start-up activities need to be performed by those who will ensure that the completed project is of the quality necessary to provide adequate protection of public health and safety;

- The design effort needs to be organized such that there is continuity through all phases (conceptual design, preliminary design, final design, construction, testing) so that all aspects of the process that affect safety are clearly delineated and consistent, and that line responsibility is clear;

- The DOE organization responsible for the project needs to have personnel in numbers and technical competence sufficient to provide direction and guidance to contractors performing all phases of the effort and to assess the effectiveness of contractor efforts;

- The project organization and operations need to reflect a clear and effective chain of command with responsibility, authority, and accountability clearly defined and assigned to individuals within the respective project organizations; and

- The functions and responsibilities of all DOE and contractor organizations involved in the project need to be delineated in writing in a single document.

The Secretary accepted the Board's recommendation on August 28, 1992, and included the Department's comments on the recommendation. Pursuant to the Board's

approval of DOE's request for an extension of time, the Implementation Plan was due on February 5, 1993.[1]

d. Recommendation 92-5, Discipline of Operation in a Changing Defense Nuclear Facilities Complex

In 1992 the Secretary announced that, in light of international developments, plutonium production operations would not be resumed at the Rocky Flats Plant. Future activities at Rocky Flats will be confined to cleanup and decontamination of the site, decommissioning of some facilities and parts of others, and placing of some facilities and parts of others in a state of readiness for resumption of operations in the future, if necessary. Thus, for most facilities at Rocky Flats there is now a major change from the mission and activities previously planned. Moreover, Board recommendations and DOE implementation plans specific to the Rocky Flats Plant had been predicated upon resumption of plutonium production.

At a number of other defense nuclear facilities, similar changes are taking effect. Many facilities are now scheduled for cleanout, shutdown, and decommissioning. Some are to be devoted to aspects of cleanup and decommissioning of sites and of facilities located within sites. Some are slated to be placed in a standby mode, available for restart at a later date if needed. Some are to continue to operate, either to reduce the stockpile of nuclear weapons or to maintain a reduced stockpile while improving safety.

Therefore, the Board requested that the Secretary decide the future status of individual defense nuclear facilities and inform the Board, designating which facilities are to continue in operation and their mission, which are to be shut down for decommissioning within a short time period, which are to be used for an extended time period and then shut down for decommissioning, and which are to be moved to a standby mode. The Board also requested DOE's schedule for accomplishing these actions.

Regardless of the category, the Board believes that operation and maintenance of defense nuclear facilities in all modes should be in accordance with the Nuclear Safety Policy statement that the Secretary issued on September 9, 1991, as SEN-35-91, and the safety goals stated therein.

The Board also believes that, to the extent practicable, facilities that are to be shut down and decommissioned should be cleaned up, and hazards and radiological exposures sufficiently reduced, so that access can be made freely without need for

[1]DOE submitted its Implementation Plan for 92-4 on February 5, 1993.

unusual precautions. Facilities meant for standby status should be placed in such a condition that sudden need to reactivate them would not subject a new operating group to unacceptable radiation or other hazards.

Based on these considerations, the Board issued Recommendation 92-5 on August 17, 1992. Recommendation 92-5 deals with discipline of operations in a changing nuclear facilities complex. The full text of Board Recommendation 92-5 is contained in Appendix A. The Secretary simultaneously accepted the recommendation and issued DOE's Implementation Plan to the Board on December 16, 1992.

e. Recommendation 92-6, Operational Readiness Reviews (ORRs)

Several of the Board's recommendations to the Secretary have referred to Operational Readiness Reviews (ORRs), and some have been specifically directed to such activities. In this way, the Board has shown that it holds these reviews, whether by the contractor or by DOE, in high regard as important measures in verifying readiness of new activities to be started safely or of previously conducted activities to be safely resumed after an appreciable shutdown.

The Board recognized the advances in defining ORR requirements made by DOE in SEN-16B-91, "Approval for Restart of Facilities Shut Down for Safety Reasons and for Startup of Major New Facilities", dated November 12, 1991, and the attached "Process for Secretary Approval of Nuclear Facility Restart or Startup". However, the Board believes that guidance could be improved by specifying the required features of a satisfactory ORR, and by stating specifically on what occasions an ORR will be required. Also, ORRs should not serve as a substitute for the line management's responsibility to assure the readiness of facilities for safe and reliable operation.

Therefore, on August 27, 1992, the Board issued Recommendation 92-6, in which the Board specified features that it believed were essential to an acceptable ORR and recommended that DOE develop uniform orders, guidance, and directives to govern the ORR process. The full text of Board Recommendation 92-6 is contained in Appendix A. The Secretary accepted the Board's recommendation on October 19, 1992. DOE's Implementation Plan was due on February 4, 1993.[2]

f. Recommendation 92-7, Training and Qualification

Since its inception, the Defense Nuclear Facilities Safety Board has emphasized that a well-constructed and documented program for training and qualifying personnel and supervisors for operations, maintenance, and technical support is an essential

[2]DOE's Implementation Plan was received on January 19, 1993.

foundation of operations and maintenance and, hence, the safety and health of the public, including the facility workers. A substantial portion of the Board's efforts has been devoted to on-site observation and review of personnel and supervisor selection, training, qualification, certification and facility operation.

Despite the long-standing requirements of DOE Orders, neither DOE nor the contractors have provided sufficient management attention and resources for training and qualification commensurate with the health and safety implications of their defense nuclear programs. Each of the sites evaluated by the Board has demonstrated weaknesses in contractor training programs that have potential negative safety consequences.

Recommendation 90-1, issued in February, 1990, called for the development of an effective training program at Savannah River Site K-Reactor. Despite the successful application of Recommendation 90-1 to K-Reactor, and application of its principles to the Replacement Tritium Facility, DOE has not followed up with improved training of corresponding technical personnel at some other Savannah River Site defense nuclear facilities. Also, the Department has been slow to extend the underlying principles of Board Recommendation 90-1 to other defense nuclear sites.

On the basis of assessments conducted by the Board's staff at the Hanford Site, the Pantex Plant, the Savannah River Site non-reactor facilities, the Oak Ridge Y-12 Plant, and the Rocky Flats Plant, and, to a lesser extent, reviews conducted elsewhere in the defense nuclear facilities complex, the Board believes DOE needs to take action to further strengthen training of technical personnel at defense nuclear facilities. Therefore, in keeping with the Board's statutory requirements and recognizing the priority DOE has placed on the facilities listed above, the Board, on September 22, 1992, recommended that several strong actions be taken to improve qualification and training at these specific sites. The full text of Board Recommendation 92-7 is contained in Appendix A. On November 19, 1992, the Secretary requested a 45-day extension to respond to the recommendation. The Board granted the extension, making the Secretary's response due on January 21, 1993.[3]

[3]The Secretary responded and accepted the Recommendation on January 21, 1993. The Implementation Plan is due by April 28, 1993.

2. DOE Efforts to Implement Board Recommendations Issued in 1991 and Follow-up Board Action

a. Recommendation 91-1, Strengthening the Nuclear Safety Standards Program for DOE's Defense Nuclear Facilities (Closed)

The Board's Recommendation 91-1, entitled "Strengthening the Nuclear Safety Standards Program for DOE's Defense Nuclear Facilities," was reproduced verbatim in the Board's second Annual Report to Congress. DOE's actions during 1991 to implement the recommendation are summarized in the Board's second Annual Report to Congress at pages 2 to 4.

The Department's Implementation Plan for Recommendation 91-1, which was received by the Board on August 16, 1991, provided for preparation of an Action Plan based on an internal DOE study of the standards program scheduled for completion in 1992. DOE briefed the Board and its staff on progress and initial conclusions during March and June 1992.

The Action Plan was received by the Board in mid-August 1992. After DOE agreed to revise the Plan to clarify statements in several places and to provide quarterly reports on progress in implementing the Action Plan, the Board formally closed Recommendation 91-1 by its letter dated October 27, 1992.

During 1992, DOE's program for the development and promulgation of standards improved. Several new or significantly revised DOE Orders bearing on safety were issued. The Department is actively reviewing the qualifications of personnel involved in development and implementation of standards, in accordance with provisions of its Action Plan. The effective use of technical standards at DOE facilities was expanded, and an improved program for Order compliance and self-assessment has been instituted. However, the task is substantial, and much remains to be accomplished. The Board intends to continue to monitor closely DOE's progress in the standards arena as the Department proceeds with its Action Plan for implementing Board Recommendation 91-1.

b. Recommendation 91-2, Closure of Safety Issues Prior to Restart of K-Reactor at the Savannah River Site (Closed)

The Board's Recommendation 91-2, entitled "Closure of Safety Issues Prior to Restart of K-Reactor at the Savannah River Site," was reproduced verbatim in the Board second Annual Report to Congress. DOE's actions during 1991 to implement the recommendation are summarized in the Board's second Annual Report to Congress at pages 4 and 5.

At its public meeting of December 21, 1991, the Board concluded that the Department's actions in resolving issues identified in the Reactor Operations Management Plan (ROMP) issued by the Savannah River Site operator were completed satisfactorily, and that no further Board actions were required at that time. Except for continued monitoring of DOE and contractor actions as restart proceeded, the Board considered Recommendation 91-2 as completed. Accordingly, the Board formally closed 91-2 in its letter to the Secretary of Energy dated October 27, 1992.

c. Recommendation 91-3, DOE's Comprehensive Readiness Review Prior to Initiation of the Test Phase at the Waste Isolation Pilot Plant (WIPP) (Closed)

The Board's Recommendation 91-3, entitled "DOE's Comprehensive Readiness Review Prior to Initiation of the Test Phase at the Waste Isolation Pilot Plan (WIPP)," was reproduced verbatim in the Board's second Annual Report to Congress. DOE's actions during 1991 to implement the recommendation are summarized in the Board's second Annual Report to Congress at pages 5 and 6.

In the Spring of 1991, the Board issued Recommendation 91-3, calling for the conduct of a complete Operational Readiness Review before commencement of the test phase for the Waste Isolation Pilot Plant (WIPP). As noted in the Board's second Annual Report, the Department moved rapidly and effectively to respond to the Board's concern. The Board documented its conclusion that no further Board action was called for in its letter dated November 24, 1991. The Board formally closed Recommendation 91-3 in its letter to the Secretary of Energy dated October 27, 1992.

d. Recommendation 91-4, DOE's Operational Readiness Review Prior to Resumption of Plutonium Operations at the Rocky Flats Plant (Closed)

In September 1991, the Board issued Recommendation 91-4, which made recommendations for improving ORR activities concerning Building 559 at Rocky Flats Plant prior to the resumption of plutonium processing operations. This recommendation was issued as a result of the Board's determination that DOE's initial ORR for Building 559 was premature and inadequate. The Board's Recommendation 91-4, entitled "DOE's Operational Readiness Review Prior to Resumption of Plutonium Operations at the Rocky Flats Plant," was reproduced verbatim in the Board's second Annual Report to Congress. DOE's actions during 1991 in accepting and implementing the recommendation are summarized in the Board's second Annual Report to Congress at pages 6 through 10.

During a public meeting held on January 16, 1992, the Board considered the adequacy of the second set of ORRs conducted by the Department and its contractor, EG&G, in preparation for restart of Building 559. The Board determined that DOE

had adequately implemented relevant Board recommendations prior to restart, and that no further Board action was required at the time. Recommendation 91-4 was formally closed by the Chairman's letter to the Secretary of Energy, dated May 1, 1992. Recommendation 90-4 regarding ORRs in general at Rocky Flats, and DOE's corresponding implementation plan, remain in effect for ORRs conducted for other plutonium processing facilities at Rocky Flats.

e. Recommendation 91-5, Power Limits for K-Reactor Operation at the Savannah River Site

The Board's Recommendation 91-5, entitled "Power Limits for K-Reactor Operation at the Savannah River Site," was reproduced verbatim in the Board's second Annual Report to Congress. DOE's actions during 1991 to implement the recommendation are summarized in the Board's second Annual Report to Congress at pages 10 and 11.

Recommendation 91-5 was issued on December 19, 1991. It expressed the Board's view that the K-Reactor at the Savannah River Site should not be operated above 30% of the nominal historical power unless and until certain specified thermal-hydraulic studies and accident analyses were completed satisfactorily.

The Secretary accepted the recommendation in his letter dated February 7, 1992. During a series of briefings on this matter held during the spring and summer of 1992, the Department stated that it had no plans to operate K-Reactor above the 30% power level. While the Board agreed with this position, it indicated to DOE that Recommendation 91-5 would be carried in an open status, pending any future DOE decision to increase power above that level.

f. Recommendation 91-6, Radiation Protection for Workers and the General Public at DOE Defense Nuclear Facilities

On December 19, 1991, the Board issued Recommendation 91-6 calling for a major reexamination of DOE's radiation protection program. The Board's Recommendation 91-6, entitled "Radiation Protection for Workers and the General Public at DOE Defense Nuclear Facilities," was reproduced verbatim in the Board's second Annual Report to Congress. The Secretary of Energy accepted the recommendation on January 31, 1992. On June 17, 1992, DOE submitted its Implementation Plan for Recommendation 91-6 to the Board. The Board, citing deficiencies in the Implementation Plan, returned it to DOE for major revisions on August 5, 1992. As of the end of 1992, an acceptable Implementation Plan had not been submitted to the Board.

3. DOE Actions to Implement Board Recommendations Issued in 1990 and Follow-up Board Action

a. Recommendation 90-1, Operator Training at Savannah River Site Prior to Restart of K, L, and P Reactors (Closed)

The Board's Recommendation 90-1, entitled "Operator Training at Savannah River Site Prior to Restart of K, L, and P Reactors," was reproduced verbatim in the Board's first Annual Report to Congress. DOE's actions during 1990 and 1991 to implement the recommendation are summarized in the Board's second Annual Report to Congress at page 16.

During 1992, the Board and its staff continued to monitor the progress made by the Department in implementing Board Recommendation 90-1 regarding reactor operator training. Most of the substantive actions called for by the 90-1 Implementation Plan had been implemented satisfactorily by DOE prior to the Board's public meeting held in Washington, DC on December 20, 1991, regarding the restart of K-Reactor at Savannah River. Based on that progress, the Board concluded at that public meeting that no further Board action was required at that time.

On October 24, 1992, in response to correspondence from the Department during the late summer and fall, the Board formally closed Recommendation 90-1, noting that it would continue to monitor the training and qualifications of operators.

b. Recommendation 90-2, Design, Construction, Operation and Decommissioning Standards at Certain Priority DOE Facilities

The Board's Recommendation 90-2, entitled "Design, Construction, Operation and Decommissioning Standards at Certain Priority DOE Facilities," was reproduced verbatim in the Board's first Annual Report to Congress. DOE's actions during 1990 and 1991 to implement the recommendation are summarized in the Board's second Annual Report to Congress at pages 16-18.

On January 24, 1992, the Board informed the Department that the DOE Implementation Plan for Recommendation 90-2, on Standards Content and Implementation at selected defense nuclear facilities, did not meet the criteria for an acceptable implementation plan contained in Board Policy Statement 1. The Board then established a staff task group, headed by the Technical Director and the General Counsel, to work with representatives of DOE's Defense Programs and Environmental Restoration and Waste Management in developing an adequate implementation plan.

The Department provided Revision 2 of its 90-2 Implementation Plan with the Secretary's letter dated June 15, 1992. Following review of the newly revised plan, the

Board determined that the plan remained inadequate in several important respects. The Board's task group met again with DOE representatives and identified areas needing revision. After its consideration of the Board's and the task group's comments, DOE elected to completely revise Revision 2 of its Implementation Plan.

Revision 3 of the 90-2 Implementation Plan was received by the Board on December 30, 1992, and at year-end that revision was under evaluation by the Board and its staff.

During 1992, the Board, its staff, and support contractors have also reviewed DOE's use of standards at certain defense nuclear facilities, including the K-Reactor and the Replacement Tritium Facility at Savannah River, Buildings 559 and 707 at Rocky Flats, and selected facilities at the Pantex Plant and Y-12. The selected subject areas of these reviews were: quality assurance, training, general design criteria, maintenance, radiation protection, nuclear criticality safety, fire protection, emergency preparedness, and safety analysis.

These reviews of how standards are utilized have disclosed an increased emphasis by DOE and O&M contractor managers on employing key aspects of safety standards in both written operating procedures and in direct application of the standards at the facilities visited. Review and analysis of standards activities at the facilities by the Board's staff have been resource intensive. The Board continues to strongly encourage DOE to utilize the lessons learned from review of these facilities and to apply them to other facilities.

c. Recommendation 90-3 (Closed) and Recommendation 90-7, Safety at Single-Shell Hanford Waste Tanks

The Board's Recommendations 90-3 and 90-7, entitled "Safety at Single-Shell Hanford Waste Tanks," were reproduced verbatim in the Board's first Annual Report to Congress. DOE's actions during 1990 and 1991 to implement the recommendations are summarized in the Board's second Annual Report to Congress at pages 18 and 19.

Recommendation 90-3, issued in late March and Recommendation 90-7, issued in mid-October, 1990, were both aimed at expediting DOE's actions to better characterize and control the waste stored in certain single-shell tanks in the Hanford Tank Farm. The Department's Implementation Plans for these recommendations were accepted by the Board on August 10, 1990, and March 7, 1991, respectively.

The Board formally closed Recommendation 90-3 in its letter to the Secretary dated May 1, 1992, recognizing that Recommendation 90-7 had superseded the previous Recommendation and Implementation Plan. The Board remains concerned by the slow

pace of progress in implementing 90-7, and has scheduled a public hearing near the Hanford Site for early 1993.[4]

d. Recommendation 90-4, Operational Readiness Reviews at the Rocky Flats Plant

Recommendations 90-4 and 91-4 both deal with deficiencies identified in the Operational Readiness Review Program originally planned for restart for Plutonium operations in Building 559 at the Rocky Flats site. In May, 1990, the Board issued Recommendation 90-4, which recommended that DOE conduct operational readiness reviews (ORRs) at the Rocky Flats Plant prior to the resumption of operations in plutonium processing buildings. Recommendation 90-4 is presented in its entirety in the Board's first Annual Report to Congress.

In June, 1990, the Secretary accepted this recommendation. The Board reviewed a draft Implementation Plan and provided comments for the Plan's improvement prior to DOE's issuance of the final plan on November 30, 1990. Initial DOE ORR activities for Building 559 were conducted in mid-1991. In September, 1991, the Board issued Recommendations 91-4 related to the ORR for that building. See Section II.A.2.d. above.

Board and staff activities related to ORRs at Rocky Flats in 1992 are summarized in Section II.B.4 of this report.

e. Recommendation 90-5, Systematic Evaluation Program at the Rocky Flats Plant

In May, 1990, the Board issued Recommendation 90-5, which recommended that DOE establish a Systematic Evaluation Program (SEP) at the Rocky Flats Plant to assure the proper evaluation and coordination of proposed long-term safety improvements. Recommendation 90-5 is presented in its entirety in the Board's first Annual Report to Congress.

In June, 1990, DOE accepted this recommendation and provided the Board with an Implementation Plan which the Board accepted on October 24, 1990. Following its acceptance of the recommendation, DOE initiated an SEP for the K-Reactor at the Savannah River Site, in addition to the Rocky Flats SEP.

During 1992, the identification of topics to be evaluated in the Rocky Flats SEP was completed, as were the individual topic evaluation plans. General acceptance

[4]That public hearing was held on February 11, 1993.

criteria were developed for evaluating structures, systems, and components. DOE concentrated its efforts on supporting the evaluations for Buildings 559 and 707, the two buildings to be used for plutonium operations to support the cleanup. Topic evaluation was initiated for Building 559, including the identification of "as built" information, such as drawings, design calculations, applicable specifications and performance of walkdowns of certain structures, systems, and components. DOE has initiated similar activities for Building 707.

In 1992, progress on the SEP for the Savannah River K-Reactor included the assembly of a full-time technical staff and the identification of topics for evaluation after review of relevant DOE and commercial nuclear information. Individual topic evaluation plans were begun. They should be completed during 1993.

The Board and its staff met on a number of occasions with DOE and its contractors in 1992 to review progress on the SEP programs for facilities at the Rocky Flats Plant and the Savannah River Site. As a result of the change in mission at both the Rocky Flats Plant and the Savannah River K-Reactor, the Board anticipates that DOE will propose changes to its implementation of the SEP in 1993.

f. Recommendation 90-6, Criticality Safety at the Rocky Flats Plant

The Board's Recommendation 90-6, entitled "Criticality Safety at the Rocky Flats Plant," was reproduced verbatim in the Board's first Annual Report to Congress. DOE's actions during 1990 and 1991 to implement the recommendation are summarized in the Board's second Annual Report to Congress at pages 21 and 22.

In June, 1990, the Board issued Recommendation 90-6, which proposed that DOE establish a program to address the accumulation of fissile and other materials in ventilation ducts and related systems prior to the resumption of plutonium operations at Rocky Flats. The short-term objectives of the recommendation were to ensure the prevention of criticality accidents and to make an initial reduction in the amount of fissile material in the ducts in the interest of protecting public health and safety. The long-term objectives of the recommendation were to reduce substantially the remaining fissile material in the ducts and to prevent significant additional accumulation of fissile material upon resumption of plutonium operations. DOE accepted Recommendation 90-6 on July 26, 1990, and submitted an Implementation Plan on November 30, 1990.

In 1992, progress was made on the major tasks in the DOE program for addressing accumulation of fissile material in the ducts at Rocky Flats. These major tasks include determination of the extent of fissile material accumulation, evaluation of criticality safety and potential worker radiation exposure, removal of fissile and other materials from the ducts, and prevention of significant additional fissile material accumulation.

DOE's contractor assessed the potential for a criticality accident due to fissile material accumulation measured in the ducts and related systems. The contractor concluded that the planned removal of fissile material from the ducts would prevent criticality even in the event of catastrophic flooding accompanied by other highly unlikely events that could cause material to accumulate in a small volume.

Due to the change in mission at Rocky Flats from predominantly production to predominantly cleanup, DOE focused efforts under Recommendation 90-6 on Building 707, where limited plutonium processing operations are planned in support of cleanup. Remediation of Building 707 has been accomplished, including removal of the material or replacement of ducts. This work eliminated the potential for criticality from fissile material accumulation in ducting and reduced worker radiation exposure levels resulting from the ducting in the building. To prevent significant additional fissile material accumulation, the contractor inspected, repaired, or refurbished gloveboxes, exhaust filters, and alarm systems as necessary. Operating procedures were reviewed and upgraded. After resumption of plutonium operations in Building 707, the ducts are to be closely monitored for accumulation of additional fissile material.

DOE proposed a revision to the 90-6 Implementation Plan to change the numerical factor applied to fissile material measurements to account for uncertainties. The Board reviewed the proposal and concluded that the revised factor would adequately compensate for measurement uncertainties.

Members of the Board and its staff reviewed monthly DOE status reports from DOE and met several times in 1992 with DOE and its contractor to discuss the progress in meeting the objectives of this recommendation. The Board and its staff will continue to monitor progress in the implementation of this recommendation.

4. Public Hearings, Public Comment, and Interaction with Board

During 1992, Board Members traveled to defense nuclear sites on 24 occasions, where they met with contractors, DOE representatives, members of the public, labor unions, and public interest groups. The Board conducted five public meetings, hearings, and briefings at various sites throughout the country. The 1992 highlights from the Board's efforts to include and inform the public of Board activities follows:

- Notices of Public Meetings and Recommendations to the Press and the Public 1,246
- Responses to Inquiries from the Public and News Media 280

5. Official Site Visits by Board Members and by Staff

From the establishment of the Board in October, 1989, through December 31, 1992, Board Members, its staff, or its contractor experts made 298 site visits to DOE defense nuclear facilities. In 1992 alone, 155 site visits were made to DOE defense nuclear facilities by Board Members, its staff, or its contractor experts. These visits focused primarily on selected facilities that both the Board and DOE consider to be urgent in light of DOE's mission, primarily the Savannah River Site, the Pantex Plant, the Hanford Site, the Rocky Flats Plant, and the Waste Isolation Pilot Plant.

The Board reviewed firsthand the health and safety issues at each of these sites. In 1992, the Board Members spent a combined total of 76 work days at DOE defense nuclear facilities conducting these reviews. During these visits, the Board gathered the bases for its recommendations to the Secretary of Energy and monitored the implementation of recommendations that have already been made, while seeking to avoid unduly interfering with DOE's program to manage the site or facility.

B. SAFETY AND HEALTH STATUS OF DEFENSE NUCLEAR FACILITIES

1. Board Perspective on Outstanding Issues of Health and Safety

a. Overview

The Board, assisted by its staff, expanded the scope of detailed technical reviews, formal investigations, and in-plant audits to include nearly all of the more important DOE defense nuclear sites.

In late 1991, Congress amended the Board's enabling Act, broadening the Board's jurisdiction over defense nuclear facilities to include the assembly, disassembly, and testing of weapons and weapons components. With this increase in responsibility, the Board revised its priorities to include reviews of additional facilities, including principally Pantex, Y-12, Nevada Test Site, and the weapons design laboratories, and also encompassing Pinellas, Kansas City, the tritium facilities at Savannah River Site, and pit storage areas at Rocky Flats Plant and Savannah River Site. During 1992, the Board and its staff conducted initial reviews and site visits at these facilities. These have led to changes in technical review plans and associated resource commitments. Projections for future needs were incorporated in the Board's recent budget request to address the increased scope of the Board's mission.

In assessing priorities, the Board also considers problems brought to its attention by various sources, including Members and staff of the Congress, the General Accounting Office, and the public. Priorities are assigned for oversight activities at specific sites on the basis of: (1) potential risk to public health and safety, (2)

effectiveness of DOE management in managing those risks, (3) timeliness in relation to DOE programmatic or operational goals and objectives, and (4) urgency in terms of any imminent or severe threat to public health and safety. If an imminent or severe threat to public health and safety were identified at a DOE facility, the Board would respond and adjust priorities as necessary.

The Board's recommendations emphasized those factors which are important to the safe and efficient operation of defense nuclear facilities. Among those activities receiving priority to date are the identification, assessment, and application of standards; the selection, training, and qualification of operations, maintenance, and technical support personnel; the development of systematic approaches to evaluating and upgrading existing facilities; the development of a comprehensive radiation protection program including the control of radioactive sources and contamination; the need for adequate operational readiness reviews (ORRs); the selection, training and assignment of DOE Facility Representatives at defense nuclear facilities; the use of the systems approach for conducting projects; and substantive actions to improve safety. The Board also recommended that a standard for the conduct of ORRs be developed, including a requirement that ORR teams be composed of senior, experienced individuals. The Board indicated that ORRs should be conducted before the start-up of new facilities, the restart of greatly altered facilities, or restart of facilities shut down due to safety issues.

As a result of its ongoing activities, the Board at times develops information which warrants being brought to DOE's attention promptly while it is being assessed further by the Board. In such cases, the Board communicates the information to DOE through letters which are placed in the Board's public document room. In late 1992, the Board developed and issued Policy Statement 2 regarding "Board Policy on Transmittal of Trip Reports and Other Safety Information to the Secretary of Energy."

b. DOE Identification of Significant Safety Issues Remaining at Defense Nuclear Facilities

Throughout this report, in earlier Annual Reports, and in Board recommendations and other communications with the Department, the Board identified a number of significant safety issues affecting defense nuclear facilities. Naturally, as an external oversight agency, the Board is not the only, or for that matter, the primary source for identifying safety issues at defense nuclear facilities. DOE, its contractors, and line organizations, in particular, are closest to pressing safety problems. The Board is heartened to note that safety matters are now receiving higher priority attention from DOE and contractor management.

Improvements in safety awareness and responsiveness to identified safety issues, particularly within the past year, are evident at several major defense nuclear facilities, most notably at the Savannah River K Reactor and at the Rocky Flats Plant. Much

remains to be done at those facilities, but desirable change is occurring, and the rate of change is positive. Some examples of the Department's increasingly introspective involvement in substantive safety matters appear in the following sections.

DOE itself recognizes that in several important areas the Department has failed to correct long-standing safety problems. In the area of safety standards development and implementation, DOE, Congress, and the Board all agree that more needs to be done. DOE has noted, for example, that some DOE facilities are not accepting and implementing standards as quickly or as comprehensively as they should. Based on its statutory obligations in the standards area, the Board has made several recommendations regarding standards and shares the views expressed by the Office of Nuclear Safety (ONS): "Adherence to standards is particularly important at a time when DOE's mission is changing dramatically and the nuclear safety challenges associated with aging facilities, high level waste management, and decontamination and decommissioning are only beginning to be fully understood and addressed."

The subject of the Department's training and qualification program received close attention from the outgoing Secretary, who noted in a January 19, 1993 letter to the Board that "[l]ike many of our new policies, training and qualification programs are not yet implemented to the degree we expect, and these programs require high-level attention. We must seek continuous improvements in these efforts for our training and qualification programs at the defense nuclear facilities . . . It is unacceptable for us to allow a return to those days when there existed as described by NAS [National Academy of Sciences], 'a marked imbalance in technical capabilities and experience between the contractors and the DOE staff.'"

The Department's acknowledgement of these and many other problems in DOE reports to Congress and other official statements is an important first step towards their correction. The outgoing Secretary observed in his January 1993 Posture Statement that although much progress has been made, there is still more to be done. We agree. Although the Department's position on these matters is commendable, we believe their resolution will entail a sustained effort, within DOE, its contractor organizations, as well as on the part of the Board and its staff.

c. Initial Review of Safety-Related Issues at Nuclear Weapons Assembly, Disassembly and Testing Facilities

Amendments to the Board's enabling legislation were enacted on December 5, 1991, as part of the National Defense Authorization Act for Fiscal Years 1992 and 1993. One major change expanded the statutory definition of a "DOE defense nuclear facility" to include facilities and activities involved with the assembly, disassembly, and testing of nuclear weapons. As a consequence, additional technical activities were conducted at the following plants, sites and laboratories:

- Pantex Plant
- Oak Ridge Y-12 Plant
- Los Alamos National Laboratory
- Tritium Facilities at the Savannah River Site
- Building 991 at Rocky Flats
- Nevada Test Site
- Sandia National Laboratories (Albuquerque and Livermore)
- Lawrence Livermore National Laboratory
- Pinellas Plant

The Board went to these facilities to familiarize itself with the activities at the facilities and to explore an assortment of safety-related issues. To meet its near-term needs regarding weapons activities, the Board formed a group of experienced staff members, hired additional personnel, and contracted for outside technical experts with nuclear weapons expertise. One of these new personnel was assigned to the Pantex site as a Board site representative. To effectively execute its charter and meet the challenges presented above, the Board plans to hire additional personnel with experience in nuclear-chemical processing, in conventional and nuclear explosive technology and safety, in electrical power generation and distribution, in storage of nuclear materials and criticality safety, and in waste management and environmental restoration. In addition, the Board will need to contract for additional outside technical expertise, as required to meet its health and safety responsibilities in the weapons assembly, disassembly, storage, and testing areas.

Recent decisions to accelerate the extent and rate of nuclear weapons disassembly at DOE facilities led the Board to focus particular attention on the Pantex and Y-12 plants. The Board conducted activities and was briefed at each of these sites. In addition, the Board's staff and outside technical experts made a total of 155 trips to these facilities.

These reviews led to a number of safety-related issues being presented to DOE in the areas of standards utilization, safety analyses, training, and conduct of operations. In addition, on December 31, 1992, the Board requested that DOE report on aspects of nuclear criticality safety at the Pantex Plant by the end of January 1993.

Although the weapons assembly, disassembly and testing facilities, and the defense production facilities are different in kind, the topics of review for both types are similar. For example, the Board will analyze the following technical areas, among others:

- DOE and Contractor Analysis of Safety Conditions
  - Safety analyses and reports
  - Process for identification of potential safety problems

- Accident analysis
- Occurrence Reporting and Root Cause determinations

- Operational Safety
  - Conduct of Operational Readiness Reviews
  - Conduct of operations and maintenance
  - Quality assurance
  - Operator training
  - Radiological protection and emergency preparedness

- Systems Engineering
  - Engineering, including civil and structural design, configuration management, and systematic evaluation programs

- Standards Development and Implementation
  - Implementation of rules, regulations, and standards (including DOE Orders and consensus standards)

- Environmental Management
  - Safety aspects of waste minimization and environmental restoration

- Management and Organization Pertaining to Safety

The Board's initial reviews in these areas have highlighted certain analytical and operational matters that need to be upgraded in the long term. For example, at Pantex alone, numerous safety analysis reports need to be written or upgraded for a large number of facilities. At some other sites, safety analyses do not exist or they are deficient. Those that are available are often not prepared in accordance with current accepted industry guidelines and the recently issued DOE Order for safety analyses, and do not incorporate current methods of analyzing the safety of facilities and operations.

Previous Board actions to effect a change in the safety culture at other facilities (e.g., SRS K-Reactor and RFP Building 559) are beginning to have an effect on operations at these weapons sites. For example, standards and DOE Order compliance programs have recently been initiated at the facilities listed above. Most sites have strengthened existing training programs or established new training programs in accordance with recently revised DOE Orders and industry standards used for operating nuclear power plants, including INPO Guidelines and NRC regulations and standards. However, important areas will receive further evaluations by the Board and its staff, and a sustained effort will be made to ensure that the "lessons learned" at SRS K-Reactor and RFP Building 559, and DOE's upgrading of operations in response, are transferred to the weapons facilities.

Most of the weapons assembly facilities were designed and constructed in the period between the late 1940's and early 1960's. DOE is taking several actions to address issues associated with these aging facilities. Various actions are also being planned as a function of expected future use of the facilities. Some actions include refurbishing facilities intended for continued use (e.g., installing new electrical distribution systems), changing the functions of some facilities (e.g., conversion of a manufacturing facility to a storage facility) and placing some facilities in standby. The Board intends to evaluate DOE's facility modernization plans, related system test requirements, and facility configuration documentation, and will evaluate how existing plant systems are placed in a safe and stable condition prior to transition to standby.

Many DOE facilities previously managed by DOE's Office of Defense Programs are being transferred to DOE's Office of Environmental Restoration and Waste Management (EM). The status of these facilities needs to be well-characterized prior to their transfer to EM for decontamination and decommissioning. This then allows a determination to be made if additional measures are required for ensuring safety during a state of standby or decontamination and decommissioning.

d. Importance of Qualified DOE Technical Staff

The Board continues to believe that the single most serious and far-reaching problem affecting the safety of DOE defense nuclear facilities is insufficient numbers of highly qualified technical and management personnel within the DOE work force. That deficiency hinders DOE in providing fully effective technical direction and management of its contractors. The Board discussed this problem in its two previous Annual Reports. A number of earlier independent assessments also noted the same deficiency, including the 1981 post-Three Mile Island DOE review of the safety of its reactors (the Crawford Report) and the 1987 Report of the National Academy of Sciences.

The Board recognized DOE's attempts to correct the problem. Unfortunately, they have not been effective enough, and the problem persists. The Board addressed the qualifications problem in several of its formal recommendations, and frequently communicated its concern on this matter to senior DOE officials over the past three years.

The problem is pervasive. Such deficiencies exist to varying degrees not only in organizational units in Headquarters but also in the Field organizations of DOE. The Board believes that a root cause of this shortcoming in DOE staff qualifications lies in a deep-seated conviction among many senior DOE career managers that program management capabilities, and perhaps only general technical familiarity, are adequate. Those who hold this belief elevate financial management, project scheduling, cost accounting, and other administrative management capabilities above technical competence in assigning people to positions of responsibility for managing technological

programs of DOE. As a result, too many individuals without adequate technical qualifications are assigned jobs crucial to the safety of defense nuclear facilities.

Contributing causes include: limited capability of DOE to attract technically competent professionals to nuclear weapons activities and assignments as career choices; the lack of "excepted service" hiring authority by DOE, particularly for key technical management and direction positions; lack of an aggressive recruitment and retention policy for technical career personnel within DOE; insufficient attention by internal monitoring elements of DOE to this problem as a contributor to off-normal events; and the lack of an effective program for interchange of technical staff between Headquarters and Field organizations within DOE.

The Board recognizes that it is much easier to identify this problem than to correct it. The Board also recognizes that some senior DOE technical managers are indeed very well qualified and that those managers usually share the Board's frustration in coping with the problem.

The Board believes that resolution of this serious problem will require not only fundamental change in the plan of attack of DOE, but also the assistance of Congress over the long term. For its part, the Board will continue to identify specific instances in which the lack of qualified personnel at the DOE contributes to less-than-adequate protection of public health and safety, to call those to the attention of DOE and, where appropriate, to issue formal recommendations to the Secretary on those matters, as well as to exercise its other authorities as necessary to meet its statutory obligations.

The lack of sufficient numbers of qualified technical personnel in DOE is a serious issue in itself. It also has adverse consequences for the Board, which has a limited number of staff. The ability to meet its responsibilities and to expand its coverage are directly related to DOE's performance in taking prompt and effective remedial action on safety problems which are called to DOE's attention by the Board. If Board personnel must make repeated assessments of one facility or activity in order to assure that needed improvements are made, the Board's ability to expand its activities may be jeopardized. Further, the Board is sensitive to the need to ensure that its resources are not used as a substitute for DOE personnel and capability, both in line and internal oversight organizations, for detecting and correcting safety problems.

During 1992 DOE issued a new Order on quality assurance (5700.6C), which provides a powerful means by which DOE will be required to affirm for each DOE position that personnel are qualified, technically and otherwise, to perform the tasks associated with that position. Recognizing the opportunity thus provided, the Board intends to follow closely the activities of DOE line and oversight organizations, as well as Operational Readiness Reviews, to help assure full compliance with this Order.

e. Importance of DOE Facility Representatives

As a means for achieving closer DOE technical scrutiny of contractor operations of major DOE facilities, DOE instituted a program for detailing DOE personnel as Facility Representatives to specific facilities for direct oversight duties. As discussed previously, DOE needs to upgrade its Facility Representatives program across the DOE defense nuclear complex. Moreover, because many personnel are involved, the Board expects that intensive effort will be needed to ensure that initial DOE efforts are focused on the fundamental problems, to develop a single, formal DOE Facility Representative program. See discussion of Recommendation 92-2 in section II.A.1.b.

f. Development and Implementation of Safety Standards

Most engineering professionals would agree that the development and implementation of safety standards, orders, rules, and guidance are important elements of a sound nuclear safety program. Congress also considered safety standards to be essential for ensuring the public health and safety at DOE defense nuclear facilities in amending the Atomic Energy Act to create the Defense Nuclear Facilities Safety Board. As stated in its enabling legislation, the Board is required to 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 at each of its defense nuclear facilities, and to make appropriate recommendations to DOE in light of its review.

The development and implementation of safety standards, orders, rules, and guidance by DOE for defense nuclear facilities has been neither as extensive nor as systematically accomplished as the programs of NRC and the nuclear community for the commercial industry. This observation has been well documented in independent studies of nuclear safety at DOE facilities, including two reports by the National Academy of Sciences.

One of the reasons often cited by DOE for this difference is that there were few nuclear industry standards available when many of the DOE facilities were constructed and first operated over 40 years ago. Contractors in the early years of operation often had to use non-nuclear industry standards and, in some cases, formulate ad hoc technical standards to meet unique applications.

Other, more valid and critical, explanations for not including safety standards in the design, construction, operation, and decommissioning of these facilities include: lack of understanding among DOE managers of the importance of standards to safety; resistance by contractors and national laboratories to the use of standards; and the past lack of exercise of authority over DOE field offices by appropriate DOE officials in

Headquarters. For reasons such as these, a set of coherent nuclear safety standards is neither well-developed nor in systematic use at DOE defense nuclear facilities.

The Board's approach to improving the development and use of safety standards within the DOE has been to initiate a program to assess the adequacy of DOE's standards effort and to issue recommendations that require DOE to make improvements. The Board issued two recommendations that deal explicitly with standards at the DOE defense facilities. In Recommendation 90-2 the Board recommended that DOE identify the applicable standards, assess their adequacy, and examine the extent to which they have been implemented at each DOE defense nuclear facility.

Revision 3 of the DOE's Implementation Plan for Recommendation 90-2 was submitted to the Board in December, 1992. In it, DOE proposed to develop Requirement Identification Documents (RIDs) for each of its defense nuclear facilities. These documents are intended to document, for the first time, the sum of individual requirements applicable to the life cycle phases of design, construction, operation, and decommissioning. The requirements will include standards established by statutes, regulations, DOE Orders, national consensus codes and standards, and other requirements imposed by DOE on the Operating and Management (O&M) contractors and laboratories at its defense nuclear facilities. The Board is following this development with great interest.

In Recommendation 91-1 the Board recommended that DOE examine the extent to which it has the organization and personnel in place to develop and implement standards effectively and to begin the process of upgrading its safety standards. In response to Recommendation 91-1, DOE developed a program for strengthening its nuclear safety standards. DOE issued several new safety orders, and is reviewing the staffing and qualifications of personnel involved in standards development and implementation. DOE also begun to expand the role of technical standards applicable to its facilities. The Board is also following DOE's progress in this important area.

Until the Requirement Identification Documents are developed, DOE orders are the primary mechanism used by DOE to impose requirements on its employees, its O&M contractors, and its laboratories. These orders contain many requirements related to health and safety and the environment. DOE instituted an order compliance and self-assessment program to inform DOE management of the status of implementation of DOE orders at its facilities. Self-assessments were performed by Defense Programs and its O&M contractors at several defense nuclear facilities.

As mentioned earlier, the Board instituted its own program for assessing the adequacy of requirements and standards at DOE defense nuclear facilities. In 1992, the Board, its staff, and several of its contractors reviewed the status and use of safety standards at several DOE defense nuclear facilities. In particular, the Board's staff

conducted reviews and prepared reports on the use of safety standards in areas such as quality assurance, training, general design criteria, maintenance, radiation protection, nuclear criticality safety, fire protection, emergency preparedness, and safety analysis at the following DOE defense nuclear facilities: the K-Reactor, the HB-Line, and the Replacement Tritium Facility at the Savannah River Site; Building 559 and 707 at the Rocky Flats Plant; and selected facilities at the Pantex Plant and the Y-12 Plant.

In these reviews, the Board has seen increased emphasis by DOE and its O&M contractors on key aspects of safety standards in both the written standard operating procedures and the application of the standards at the facilities. The Board continues to encourage DOE to examine the lessons learned at these facilities and to apply them to other facilities within their cognizance.

The Board staff also reviewed the adequacy of requirements imposed in several new draft DOE orders. Staff reviews and comparisons of proposed DOE requirements with those applicable to licensed commercial facilities regulated by the Nuclear Regulatory Commission have shown a need for improvements in safety requirements issued by DOE.

Frequent technical interchanges among Board staff, DOE, and DOE's O&M contractor personnel continue to emphasize that one of the Board's criteria for judging the safety of DOE defense nuclear facilities is the extent to which DOE uses adequate safety standards. The Board and its staff continue to monitor DOE's progress in this important area.

g. Systems Engineering and Systems Approach

Many of the safety issues and concerns at DOE facilities result from the complexity of the facilities, processes, and missions. For these complex systems, DOE or contractor actions taken to change or affect a part of the system can easily influence or interact with other parts of the system. Therefore, any action related to one part of the system must be evaluated for its potential effect on other parts of the system. Examples of such actions are design, construction, maintenance, operation, and decommissioning. Furthermore, activities which comprise these processes or actions are linked and are interactive.

The most complex system being contemplated by the DOE at this time is the Tank Waste Remediation System (TWRS) at the Hanford Site. The Board believes that the systems approach and systems engineering in the TWRS project could be considerably strengthened. Therefore, in Recommendation 92-4, the Board recommended to the Secretary that actions be taken on the Multi-Function Waste Tank Facility (MWTF) project at Hanford to incorporate principles of systems engineering

into the project. The MWTF project is a component of the overall TWRS system and appears to be scheduled for completion prior to other parts of the system.

Furthermore, Recommendation 92-4 involves possible modification of long-standing practices within DOE. These long-standing practices include segregation of the design processes, construction, and operation of facilities. See discussion of Recommendation 92-4 in Section II.A.1.c.

2. Overview of Improvements in Safety at DOE Defense Nuclear Facilities

The Board endeavors to ensure public health and safety by issuing formal recommendations to the Secretary of Energy, and then tracking DOE's implementation of those recommendations. Nevertheless, the recommendation process is not the only way in which the Board's actions and activities have had a positive impact on procedures and practices for ensuring nuclear safety by the Department of Energy. For example, technical reviews, investigations, questions, and comments by individual members of the Board or its staff and technical experts during briefings and site inspections also have their effects. These frequently highlight issues and lead to self-initiated changes and improvements in DOE's practices and technical directions.

The Board believes that its activities have made significant contributions to improving the level of DOE and contractor performance at defense nuclear facilities. In the following sections, improvements are listed in which Board recommendations, actions, and activities played substantial parts. As stated in last year's Annual Report to Congress, it is seldom possible to define which organization made the primary and which the subsidiary contributions to initiating improvements. The process that was defined in the enabling legislation empowers the Board to recommend, while the decisions and the actions to implement belong to DOE. Some improvements are the results of parallel initiatives in DOE and the Board. DOE must file its own separate report to Congress that details the Department's views regarding safety improvements within the complex.

3. Board Activities and Improvements at More Than One Facility

a. Operator Training

In its second Annual Report, the Board recognized the improvements made in training and qualification of operators and supervisors at the K-Reactor at Savannah River, Building 559 at the Rocky Flats Plant, and at WIPP, following the issuance of Recommendation 90-1 and the Board's oversight of training at those sites. The K-Reactor has an effective operator training and qualification program. At some facilities, such as the Replacement Tritium Facility at the Savannah River Site, DOE and its contractor have followed the K-Reactor's example and have successfully applied the principles of Board Recommendation 90-1 in developing effective operator training and

qualification. However, other defense nuclear facilities reviewed by the Board and its staff continue to exhibit deficiencies in training and the level of knowledge of their operators and supervisors. DOE Orders on training and qualification provide the sound primary requirements from which an adequate training and qualification program may be developed. Nevertheless, the Board continues to find inadequate attention to training by some senior DOE and contractor managers at many facilities.

Primarily as a result of assessments at the Hanford Site, the Pantex Plant, the Savannah River Site non-reactor facilities, the Oak Ridge Y-12 Plant, and the Rocky Flats Plant, the Board determined it was necessary to issue Recommendation 92-7, which called for systematic improvements in the training and qualification programs of contractor and DOE employees throughout the defense nuclear facility complex. DOE's response to Recommendation 92-7 was due on December 28, 1992. At year's end, the response had not been received by the Board. The full text of Recommendation 92-7 is presented in Appendix A of this report.

b. Operational Readiness Reviews

Responding to a Board recommendation, DOE instituted a commendable process covering operational readiness reviews (ORRs) for the start of new facilities or the restart of those that have not been operated for some time. The Board believes that such a carefully devised and executed process can add measurably to the assurance of operational safety.

DOE and its contractors made improvements in the conduct of readiness reviews during 1991, and continued to make improvements during 1992, in the selection of qualified ORR teams, the development and execution of adequate ORRs, and documentation of ORR results. DOE plans to select and train additional personnel to properly conduct ORRs in the future.

Significant safety improvements were made at several facilities, partly as a result of the Board's oversight of ORR activities. DOE conducted several ORRs during 1992 at facilities in the nuclear weapons complex. Several key ORRs have been discussed previously. At the Savannah River Site, ORRs were conducted to review proposed processing of Plutonium-238 at the HB-Line and to initiate chemical operations at the Defense Waste Processing Facility with non-radioactive feed. Also at Savannah River, preparations were made for an ORR to be conducted at the Replacement Tritium Facility (RTF) in 1993. An ORR was conducted for Building 707 at Rocky Flats. At the Idaho National Engineering Laboratory an ORR was conducted for the restart of the New Waste Calcining Facility within the Idaho Chemical Processing Plant.

The Board's staff also reviewed the process to be used for conducting planned ORRs for several facilities at the Hanford Site; several improvements to the process

were made following discussions with Hanford Site personnel. In particular, the ORR plans were significantly upgraded for the Uranium Oxide facility and the Fuel Encapsulation Facility at the K-East Basin. Also, ORR plans were developed by DOE for the Plutonium Reclamation Facility and the 242-A Evaporator, incorporating lessons learned through interactions between DOE and the Board's staff at other sites.

During 1992, the Board's staff closely monitored preparations for these ORRs and observed their conduct. The staff reported to the Board on several aspects of the ORR process as implemented by DOE throughout the complex. These included the following important points:

- The state of readiness of a facility to resume operations at the time an ORR was initiated differed widely among facilities, with no apparent rationale for the differences;

- The conduct of the reviews by the ORR teams (i.e., did they follow their review procedures) was not always consistent, nor was it as comprehensive as might be indicated by the procedures;

- In many instances, the ORR was used more to compensate for management weaknesses (i.e., by generating checklists for facility operations or Board recommendations) rather than as a tool for management to confirm that a facility is ready and safe to operate;

- ORRs by DOE should be performed only after the operating contractor certifies that the facility is ready to operate;

- The ORR teams' technical capabilities were not consistently adequate. Independence of ORR personnel from line responsibility was not always present; and

- The discipline and methodology used by DOE and its contractor to close out ORR findings associated with starting operations varied greatly.

The Board's review of ORRs led to the important conclusion that DOE lacked effective standards for the conduct of ORRs. Such standards should address the points just enumerated.

While certain improvements were made by DOE and its contractors in the use of ORRs during 1992, the inconsistencies in the conduct of ORRs at defense nuclear facilities led the Board to issue Recommendation 92-6, which is presented in Appendix A and discussed in Section II.A.1.e. This recommendation urges DOE to develop effective standards for the conduct of ORRs. Consistent with the Board's enabling Act,

DOE agreed to inform the Board in the future whenever an ORR is anticipated for a defense nuclear facility. The Board will continue to evaluate the DOE personnel selected to participate in ORRs, review the standards used to conduct the ORR, and assess the adequacy of ORR performance.

c. Standards, Including DOE Order Compliance

Some progress was made in 1992 by DOE in improving its safety standards program. Much remains to be accomplished. Development of a full compendium of suitable safety standards by DOE and a commitment to ensure that those standards are effectively implemented at DOE defense facilities in design, construction, operation, and decommissioning will require substantial effort. Nevertheless, commitment to these objectives is necessary to achieve the improved safety culture which the Secretary is endeavoring to establish in DOE.

Examples of the progress made by DOE in the standards arena during 1992 are as follows:

- The Implementation Plan for Board Recommendation 90-2 was re-worked by DOE and re-submitted to the Board as Revision 3 in late December. The Implementation Plan calls for the development of site and facility specific requirements identification documents (RIDs) for all major defense facilities with defined missions. The plan is being reviewed by the Board;

- Some new and revised DOE Orders have reached the promulgation stage;

- Three new DOE Orders on important safety subjects have been issued, and several existing Orders have been revised and updated;

- Understanding of the relationship of adequate standards to safety is improving, particularly among the staffs of the DOE field offices and the management and operating contractors;

- There is evidence of heightened awareness among officers of parent companies of DOE contractors of the importance of standards and the need for establishing clear, corporate-level policies for their use; and

- Pending the development of the RIDs per the Implementation Plan for 90-2, order compliance reviews are being conducted, and compliance with Orders is being independently assessed by ORRs.

The above DOE actions represent positive steps toward the achievement of a satisfactory DOE standards program.

d. Continuing Emphasis on Seismic and Systems Engineering

As part of its ongoing oversight activities, the Board continues to devote attention to the design adequacy of defense nuclear facilities. In particular, it will continue to review the seismic and systems engineering aspects of new facilities and those older ones with defined missions for continued use or standby roles. This emphasis arises from the conviction that properly conceived and executed designs provide the foundation for safe operation of facilities. The oversight activities follow a logical sequence of review of safety analysis to ascertain design bases; review of the implementation of the design to evaluate conformance with design bases; and review of the adequacy of the construction process, the facility startup, and facility operation.

Progress has been made by DOE and its contractors at selected sites by taking steps to review the adequacy of the existing facility designs, as for example, the K-Reactor, and new facilities which are scheduled to start operation in the near future. In particular, DOE and the Westinghouse Savannah River Company have been conducting an intensive review of the adequacy of seismic and systems engineering design at the HB-Line and the Replacement Tritium Facility. As stated previously, DOE has accepted Recommendation 92-4, which deals with the organizational structure and implementation of the Department's safety goals at the Multi-Function Waste Tank Facility at the Hanford Site, and is developing an implementation plan for that recommendation. The design adequacy of the existing facilities at INEL-ICPP to safely store spent nuclear fuel, and the facility modifications necessary to store additional spent fuel in the existing facilities, are under detailed scrutiny by the DOE and its contractor.

e. Conduct of Engineering and Construction

As required by its enabling legislation, the Board conducts reviews and evaluations of the design of new DOE defense nuclear facilities before and during their construction. As just stated, the Board performed reviews of the Multi-Functional Waste Tank Facility (MWTF) project to be located at the Hanford Site in the State of Washington. A detailed discussion of the Board's review of the MWTF, and Board Recommendation 92-4 which resulted from that review, is presented in Section II.A.1.c.

The Board plans to review other DOE defense nuclear construction projects using similar criteria to those used for MWTF in the interest of protecting public health and safety. The recommendation, and the principles upon which it is based, address a continuing problem related to project execution by DOE. See Section II.A.1.c. Current procurement and contracting systems divide projects into several parts usually with different parties responsible for each. This practice causes a lack of continuity within the project, and has historically been the cause of serious problems at several DOE facilities. A number of the facilities constructed in this way function only poorly or not at all, due to inadequate design and construction.

f. Unusual Occurrence Reporting (UOR)

DOE has been implementing a major change in its occurrence reporting system through Secretary of Energy Notices and DOE Order revisions. This is an important system for determining the causes of events and ensuring that effective corrective actions are taken. In late 1990, the Board by letter identified its concerns regarding implementation of the revised occurrence reporting system throughout DOE, and requested follow-up briefings and additional information on specific procedures being developed for the various defense nuclear facilities. In its December 19, 1991 Recommendation 91-6, the Board recommended that changes be made in the UOR system to ensure that the root causes of unusual occurrences related to radiation protection would be determined. During 1992, the Board continued to review the implementation and effectiveness of the new DOE occurrence reporting system. Since new DOE practices will take some time to become fully effective, the Board will continue to review their implementation.

4. Board Activities and Improvements at the Rocky Flats Plant (RFP)

The Board continues to review a number of facilities and issues at RFP, with the goal of adequate protection of public health and safety. The Board's reviews were structured around evaluating proposed resumption of plutonium operations on a building-by-building basis; ensuring compliance with Board recommendations; and assessing public health and safety aspects of the transition process being initiated at RFP.

As reported previously in Section II.A.3.d., the Board's Recommendations regarding ORRs at Rocky Flats led to improvements in the ORR process for Building 559, which ultimately allowed resumption of operation in that Building. ORR activities during 1992 focused on Building 707.

In February 1992, the Secretary of Energy announced that in light of international developments, plutonium production operations at RFP would not be resumed. Accordingly, DOE planned to confine future activities at RFP to cleaning out and stabilizing process systems; decontaminating certain facilities; processing plutonium residues; possibly transferring non-plutonium manufacturing to other locations; maintaining a production contingency status in Building 707 pending completion of the reconfiguration Programmatic Environmental Impact Statement (PEIS); and providing technical assistance in developing the design of a replacement facility to be evaluated in the PEIS. The Board followed DOE's activities in these areas, including development of the RFP Mission Transition Program Management Plan, submitted to Congress in July 1992.

With a new mission, and the contingency of possible future production needs, Building 707 is the next building at RFP in which DOE has indicated its intent to resume certain plutonium operations. The Board, its staff, and outside technical experts followed DOE's preparations for and conduct of an ORR for this building. The readiness review was limited to the operations planned for thermal stabilization of plutonium residues to achieve a safer form for storage. The Board's staff provided continuous coverage of the ORR through its completion in November 1992. The Board's staff is scheduled for on-site presence up to and during startup operations.

The Board reviewed the team assigned to conduct the ORR and was satisfied that the team was composed of competent individuals capable of providing a technically sound and independent review of proposed operations. The Board, its staff, and outside experts reviewed the criteria and the methodology for conducting the Building 707 ORR. Based on staff review and discussions with DOE, improvements were made to the ORR team's criteria and the methodology for reviewing DOE Order Compliance.

In September 1992, the DOE-Rocky Flats Office and EG&G reported readiness to proceed with the Building 707 ORR. The ORR was started and completed in November 1992, after a break allowing several of the team members to participate in a readiness review of the HB-Line at Savannah River. The Board's staff and outside experts monitored the conduct of the ORR. DOE's compliance with DOE Orders and application of industry and consensus standards, as envisioned in Recommendation 90-2, received particular attention.

In December, 1992, the ORR team issued its report and briefed the Board on the findings and observations from the review. At the end of 1992, DOE notified the Board that it was close to concluding the corrective actions necessary for resumption as a result of the ORR. The Board scheduled a public meeting and hearing to be held in Boulder, Colorado in early 1993 to review final ORR results for Building 707.[5]

Several other Board recommendations of particular relevance to RFP were the subject of ongoing review by the Board, the staff, and outside technical expert. Recommendation 90-5, issued in May 1990, recommended that DOE develop and establish a Systematic Evaluation Program (SEP) at RFP to ensure proper evaluation and coordination of proposed long-term safety improvements and to address all outstanding safety issues. Recommendation 90-6, issued in June 1990, recommended that, prior to the resumption of plutonium operations at RFP, DOE prepare a program

[5]Subsequent to the close of calendar year 1992, DOE completed its ORRs, the Board conducted public hearings on Building 707, and the Board determined that corrective actions taken by DOE and the contractor were adequate responses to the Board's recommendations.

to address the accumulation of fissile and other materials in ventilation ducts and related systems. This was intended to reduce the potential for a criticality accident; to reduce the amount of fissile material in order to improve radiation protection, and to remove or substantially reduce the amount of fissile material that might be accidentally released from the ducts. The subject of safety standards was addressed in Recommendations 90-2 and 91-1. These recommendations were borne in mind during the Board's review of standards used in buildings at the RFP in which plutonium operations were proposed for resumption and other buildings there that DOE slated for transition.

Through regular site visits and the review of relevant documentation, the Board will continue to carefully monitor DOE's progress in implementing each of these recommendations.

The Board will continue its review of other important safety issues including:

- Standards for the design, construction, and operation of nuclear facilities;
- Training and qualification of plant operators;
- Fire protection program;
- Radioactive waste stabilization;
- System start-up test programs;
- Implementation of procedures for system operation, maintenance, and surveillance in accordance with a "conduct of operations" philosophy;
- RFP safety analysis reports (SARs); and
- Criticality safety.

The Board plans to expand its review to other areas of RFP while continuing to monitor long-term improvement of the kinds previously identified. Topics that will receive increased emphasis include:

- Transition of facilities from an operational to a decommissioned status;
- Size reduction and storage of radioactive and mixed waste;
- Preparation and storage of pondcrete;

- Structural adequacy of plutonium storage facilities to meet hazards of natural phenomena; and

- Facility decontamination and site remediation.

The Board's activities were significant contributions to the following achievements at Rocky Flats (in many cases, they were the initiating and/or determining factor):

- Reduction of plutonium concentration in ventilation ducting;

- Improved assessment of routine releases of plutonium from operations (past, present, and future);

- Improved storage of pits and other plutonium components;

- Assurance that operations in Building 559 will be useful in future cleanup;

- Improved safety analysis; and

- Adequacy of training and procedures for operations being restarted, or for new operations being started.

5. Board Activities and Improvements at the Savannah River Site

This and previous Annual Reports detailed some of the improvements which were made at the Savannah River Site as a result of DOE's having implemented Board recommendations. See sections II.A.3.a; II.A.3.b; II.A.3.e; II.A.2.a; and II.A.2.b. In addition to the actions and follow-up activities associated with Recommendations 90-1, 90-2, 90-4, 90-5, 91-1, and 91-2, as they affect the SRS in whole or in part, the Board and its staff continued to perform reviews of numerous major technical issues that can have a direct impact on public health and safety and that may affect operation of the SRS facilities. DOE made improvements in a number of technical areas, but the degree of improvement varies from facility to facility in the following areas:

- Operational Readiness Reviews;

- Seismic Design Basis and Adequacy;

- System Definition and Design Basis;

- Effectiveness of Radiological Protection;

- Basis and Adequacy of Fire Protection;

- Effectiveness of Configuration Management and Quality Assurance; and

- Conduct and Discipline of Operations.

While the Board initially focused its review on restart of the K-Reactor during 1991 and 1992, the other defense nuclear facilities at SRS also received attention. These include:

- Separations Facilities including the F-Canyon, FB-Line, H-Canyon and HB-Line;

- Tritium Facilities including the Replacement Tritium Facility (RTF);

- Waste Management Facilities including the Tank Farms, Defense Waste Processing Facility, and other waste processing facilities;

- Material Storage Facilities; and

- Weapons Component Storage Facilities.

In March 1992, the Board began an investigation into the ORR process and other safety issues related to the restart of the HB-Line in the SRS separations facility. (See Section II.A.1.a.) Early findings of the investigation led the Board to issue Recommendations 92-1 and 92-3, requesting that DOE not restart the HB-Line until the completion of the Board's investigation and until DOE completed a proper ORR for restart. DOE accepted these recommendations and conducted its ORR in October 1992. As a result, numerous safety improvements were made at HB-Line, with corrective actions being taken in the areas of fire protection, operator training, radiation protection, and order compliance. The Board closely followed these restart efforts and held a public hearing on December 15, 1992, to consider the restart of the HB-Line. The Board and its staff will continue to monitor the actions of DOE and WSRC during the restart and operation of the HB-Line facility in 1993 and 1994.

The Board noted that the "lessons learned" during the Board's reviews of the SRS reactors have not been used effectively at other SRS facilities. Because of the above concerns, the Board intends to monitor a number of other SRS facilities that DOE plans to start up and operate during 1993 and 1994. These include the following:

1993

- H-Canyon;
- Defense Waste Processing Facility (non-radioactive chemical testing at the outset);
- F-Canyon and FB-Line;
- In-Tank Precipitation (non-radioactive chemical testing at the outset);
- Replacement Tritium Facility; and
- In-Tank Precipitation (radioactive operations).

1994

- New-Waste Transfer Facility;
- F-Area Analytical Lab;
- Plutonium Storage;
- HB-Line Phase II;
- Uranium Solidification Facility;
- Defense Waste Processing Facility (radioactive operations); and
- Consolidated Incineration Facility.

Continued Board attention to operator training and conduct of operations, including on-shift technical capability, led to noticeable improvement in the level of knowledge of the K-Reactor operators and in the technical ability of the K-Reactor watch teams. Board effort and resources will continue to be applied to these and other areas. If the "lessons learned" from the experience at K-Reactor will be transferred across the site, the Board's review efforts could be reduced accordingly and the personnel involved in the reduction used at other sites.

The Board's activities were significant contributions to the following achievements at K-Reactor (in many cases, they were the initiating and/or the determining factor):

- A safe upper limit to K-Reactor power, and assurance that operation will not exceed such power;

- Safety rods that will not melt in a conceivable accident;

- Development and institution of consistent and acceptable operating procedures, including emergency procedures. The Board followed training in the procedures and ensured their use;

- Improved seismic resistance:

  Air filters
  Sub-surface grouting
  Piping analysis
  Equipment qualification
  Stack
  Structure reinforcing

- Systematic improvement of heat exchangers;

- Improved wiring of electrical systems important to safety, to cause them to meet environmental demands;

- Assurance that K-Reactor now meets commercial reactor site criteria;

- Assurance that the core adequately meets specifications; and

- Startup that ensured attention to the possibility of power oscillations from layering of coolant and established that this did not occur.

6. Board Activities and Improvements at the Hanford Site

The Board continues to review a number of facilities and issues at the Hanford Site with respect to public health and safety. Health and safety problems of most concern at the Hanford Site are related to K-East Basin and the monitoring and storage of high-level waste in underground tanks. Tank issues previously identified and pursued by the Board include:

- Ascertaining whether ferrocyanide compounds in single-shell tanks, previously added to induce precipitation of fission product cesium, could burn or explode under any realistically possible conditions, and cause fission products to be released from the tanks; and

- Determining if the hydrogen and nitrous oxides released periodically from some double-walled tanks (e.g., 101-SY) in a flammable and possibly explosive mixture could react in a hazardous manner.

In these regards the Board documented its concerns in Recommendation 90-3 (March 1990) and expanded its views in Recommendation 90-7 (October 1990). In them the Board recommended that DOE act expeditiously to quantify and mitigate these safety concerns. Since then, the Board followed DOE's progress toward understanding these issues and associated physical phenomena and reaction chemistry.

While progress addressing these issues has been slower than desired, technical investigations and assessment efforts have been accomplished. Studies on the ferrocyanide tanks to date indicate very low probability for burning or explosions. As a mitigating measure for Tank 101-SY, a mixer pump was developed and prepared for installation. The pump is scheduled for installation and experimental operation in early 1993.

Additional high-level waste tank safety problems which have received and will continue to receive increased attention from the Board include:

- The release of vapors from some tanks (e.g., 103-C) containing significant amounts of organic materials. Workers in the vicinity of such tanks experienced adverse physical reaction caused apparently by the vapors;

- Under certain conditions, a flammable mixture could develop in the vapor space of one of the tanks which contains organic material;

- Fissile material inventories of many of the tanks are not sufficiently well established for complete assurance that a criticality could not occur;

- Several tanks (e.g., 106-C) contain high concentrations of fission products that generate substantial heat and require cooling to keep temperatures below boiling; and

- Sixty-seven of the 149 single-shell tanks are suspected of leaking liquids to the soil (On October 4, 1992, Tank 101-T was declared to be "an assumed leaker").

The Board encouraged DOE to proceed expeditiously in obtaining the information needed for the resolution of these issues. The Board intends to continue to evaluate the possibility of safety hazards from the high-level waste storage tanks as more information becomes available. In addition, the Board intends to ensure that the

standards applicable to these facilities (Recommendation 90-2) are identified and will monitor DOE's progress in accordance with DOE's 90-2 Implementation Plan.

The Board also initiated reviews of planned new construction projects intended for use in treating the high-level wastes. In 1992, these were the Hanford Waste Vitrification Plant (HWVP) and the Hanford Multi-Functional Waste Tank Facility (MWTF). The Board expressed its concern as to the viability of the structural design of the MWTF in Recommendation 92-4, issued on July 6, 1992.

Regarding the longer term objective of recovery and vitrification of the high level wastes in the tanks, the Board encouraged and is following closely DOE's attempts to use a systems approach in defining and executing a program leading to waste vitrification. DOE is in the process of defining a system concept that includes tank storage, waste retrieval and processing, vitrification, and product storage as an integrated Tank Waste Remediation System. A re-baselining study of site efforts is scheduled for completion in early 1993.

The Hanford Site contains other major defense nuclear facilities, such as the PUREX Plant, the Plutonium Finishing Plant (PFP), and the N-Reactor. These facilities can be classified in three groups:

- Those that will be returned to limited operation for purposes of material stabilization or waste treatment;

- Those that are shut down or have no identified mission, and for which major efforts are anticipated to place them in a long-term lay-up condition; and

- Those that are in long-term lay-up awaiting decontamination and decommissioning (D&D).

The Board is particularly interested in the activities associated with the resumption of limited processing for cleanout purposes, scheduled to occur at PFP in mid-1993. Such limited operations are intended to stabilize materials that are residuals of the production era for this facility. Throughout the preparation, including the DOE ORR and subsequent start-up, the Board, its staff, and outside technical experts will monitor and review DOE's related activities. Among other things, attention will be paid to compliance with DOE Orders and applicable industry and consensus standards, as envisioned in Recommendation 90-2.

Several other facilities are also scheduled to be returned to operation for limited use in 1993, such as the Uranium Oxide Facility, the 242-A Evaporator, and the K-East Basin (Fuel Encapsulation). There is a particular need to operate the latter facility due

to the continued deterioration of irradiated fuel elements. The Board will continue to evaluate activities at these facilities for potential impact on public health and safety.

DOE and hence the Board have not yet initiated any major efforts for facilities destined for shut-down and lay-up. For the time being, the Board will monitor the condition of these facilities at reasonable intervals.

The Board also performed several major broad-based reviews at the Hanford Site related to subjects that have applicability across the site and the defense nuclear facility complex. Topics include the use of codes and standards (Recommendation 90-2), radiological protection (Recommendation 91-6), training and qualification (Recommendation 92-7), and ORRs (Recommendation 92-6). Future work will include updates at Hanford to assess status improvements in these areas as well as reviews of additional topics such as formal conduct of operations and improvements in the DOE Facility Representative program (Recommendation 92-2).

The Board's activities were significant contributions to the following achievements at Hanford (in many cases, they were the initiating and/or determining factor):

- Start of installation of new thermocouple trees in nuclear waste tanks, particularly those containing ferrocyanide compounds. Repair and return to service of many existing thermocouples;

- Accelerated chemical characterization of waste in tanks containing ferrocyanide compounds, leading to some degree of reassurance concerning safety of this waste against the possibility of explosion;

- Heightened attention to tanks undergoing slurry growth, especially 101-SY, has led to improved understanding of the processes causing slurry growth, and to plans to remediate the growth; and

- Introduction of on-line recording of temperatures in watch list tanks.

7. Board Activities and Improvements at WIPP

During 1992 the Board, assisted by its staff and outside technical experts, broadened its oversight of WIPP. The staff continues to track overall WIPP developments and research to keep the Board fully informed about WIPP-related public health and safety issues.

In 1991, DOE prepared a database describing the standards applied during design and construction of WIPP in partial response to Recommendation 90-2 (safety standards). A report to the Board was issued in 1992. Subsequently, DOE

prepared an overall Recommendation 90-2 Implementation Plan and schedule for all facilities under the Assistant Secretary for Environmental Restoration and Waste Management, including WIPP.

On April 25, 1991, the Board issued Recommendation 91-3, recommending that an independent and comprehensive DOE ORR be carried out at WIPP prior to initiation of the planned test phase. As stated previously, the Secretary of Energy accepted the Board's recommendation, and an ORR was satisfactorily completed.

The Board's staff continues to track the closure of a number of ORR findings requiring long-term corrective action. A site visit was made in February 1992 in conjunction with this effort. A second site visit was made by Board staff and outside technical experts in March 1992 to follow-up on a readiness review finding involving the organization, qualifications, and training of safety personnel at the WIPP site.

In July, 1992, the Board's staff and outside technical experts made an initial review visit to WIPP for the purpose of gathering documents related to safety standards. Documents were collected regarding design standards, quality assurance, safety analysis, configuration management, fire protection, maintenance, radiation protection, and waste management. Review of these documents by the Board's staff and outside experts indicated that substantial progress was made in these areas by DOE and its contractors at the site. In addition, the Board's staff examined quality assurance issues relevant to scientific data collection in connection with long-term performance assessment issues at the site.

The Board and its staff are continuing to track the overall progress at WIPP, and will monitor the technical and scientific aspects at WIPP as they relate to public health and safety through and beyond completion of the planned test phase, which could begin as early as July 1993. The Board's staff plans to observe and track the WIPP readiness reviews to take place prior to the startup of the test phase.

8. Board Activities and Improvements at Fernald, Mound, and West Valley

The Board's staff conducted initial visits to the Fernald Environmental Management Project (FEMP) and the Mound Plant in November 1991. These visits were intended as initial scoping visits to obtain information for formulation of future review plans.

After these initial visits, the Board's staff and outside technical experts conducted several reviews of FEMP's preparations for stabilization of Uranyl Nitrate Hexahydrate (UNH) liquid waste. Also, the Board's staff followed DOE's plans for removal and disposal of other radioactive wastes at FEMP. These activities will continue into 1994.

Because of the presence of defense wastes at the West Valley Demonstration Project in New York and because of the waste vitrification efforts conducted there, the Board believed it necessary to have its staff assess the activities at the site. The staff made an initial visit in February of 1992 to become familiar with the vitrification process. Additional reviews, on a limited basis, are planned in 1993 and 1994.

9. Board Activities and Improvements at Idaho Nuclear Engineering Laboratory (INEL)

During 1992 the Board staff intensified its scrutiny of activities at the Idaho National Engineering Laboratory (INEL) with primary emphasis placed on the Idaho Chemical Processing Plant (ICPP). Site visits to the INEL by staff and outside experts occurred in May, October, November and December.

The May visit emphasized seismic and systems evaluation of the high level waste (HLW) tanks and vaults, HLW calcine storage bin sets, fuel storage basins, and associated facilities and components of the ICPP.

During and subsequent to the May visit, staff and outside experts:

- Pursued the issue of structural integrity of the eleven 300,000 gallon stainless steel HLW tanks, which are enclosed in concrete vaults;
- Reviewed severe accident scenarios analyzed in the plant safety analysis, particularly the potential for a release of calcined high-level radioactive waste to the environment, with associated potential dose consequences;
- Reviewed the seismic qualification of both the CPP-603 and CPP-666 basins;
- Probed the physical condition of the older, unlined concrete fuel storage basins at CPP 603, in view of the possibility of deterioration due to exposure to water with a high chloride concentration;
- Briefly reviewed the condition of groundwater at the site; and
- Identified for future review the issue of the potential impact on criticality safety of re-racking plans for the newer CPP-666 basins.

The October, November, and December trips focused on progress of operational readiness reviews for restart of the New Waste Calcining Facility following an extended shutdown. Questions from the Board's staff prompted DOE to conclude that a more comprehensive readiness review than originally planned was appropriate. Findings made

during the enlarged readiness review led to improvements in the safety of calciner operations.

10. Board Activities and Improvements at Oak Ridge Y-12 Plant

Board Members and staff made four trips to Y-12 during 1992. Technical subjects addressed include radiological controls, waste management, emergency preparedness, training and qualification of personnel, criticality safety, safety analysis, material storage, and compliance with DOE Orders and other standards. An area of particular importance is the role played by Y-12 in the dismantlement of nuclear weapons.

Other Board activities included reviews of documents in connection with such issues as conduct of readiness reviews at Y-12, disassembly operations, environmental monitoring, and modifications to the electrical distribution system. Information gained from evaluations concerning Y-12 was factored into a number of Board recommendations, including 92-2, 92-5, 92-6, and 92-7.

The Board plans to expand its oversight of operations at Y-12 in the coming year and follow up on issues previously raised. Additional reviews of chemical hazards, environmental remediation and restoration, and special nuclear material storage are planned for the near future.

C. ADMINISTRATIVE AND MANAGEMENT ISSUES

1. Litigation

In early 1990, the Energy Research Foundation and the Natural Resources Defense Council (Petitioners) challenged the Board's position that it was not an "agency" for purposes of the Sunshine Act and the Freedom of Information Act (FOIA). Petitioners initially sought an injunction against Board activities, including site visits, until Board regulations implementing the Sunshine Act and FOIA were promulgated. Faced with Board opposition, the Petitioners dropped this aspect of their request for relief. The District Court ruled in favor of the Board on all issues, finding that the Board was not an agency. *Energy Research Foundation v. Defense Nuclear Facilities Safety Board*, 734 F. Supp. 27 (D.D.C. 1990). On appeal, the Circuit Court of Appeals reversed, ruling that "the Board . . . must be considered an 'agency' within the meaning of both statutes." *Energy Research Foundation v. Defense Nuclear Facilities Safety Board*, 917 F.2d 581, 585 (D.C. Cir. 1990).

The Board did not await an order from the district court on remand, but immediately began developing Sunshine Act rules. In accordance with the Circuit Court of Appeals' ruling and mandate of December 14, 1990, the Board promptly published

proposed rules implementing the Sunshine Act. After receipt of a single set of public comments from the same Petitioners, the Board amended certain aspects of its rules, published its response to the comments, and promulgated its final Sunshine Act rules. Petitioners then filed a Petition for Review with the D.C. Circuit Court of Appeals challenging a single provision of the Board's rule which allows closure of Board meetings involving formal recommendations to the Secretary of Energy or the President. Both sides briefed the issues and oral argument was conducted by the Court on November 14, 1991.

On July 24, 1992, the D.C. Circuit Court of Appeals decided that the Defense Nuclear Facilities Safety Board's enabling statute permitted closed Board meetings on recommendations for the President or the Secretary of Energy regarding health and safety issues at DOE defense nuclear facilities. *NRDC/ERF v. Defense Nuclear Facilities Safety Board*, No. 91-1199 (D.C. Cir., July 24, 1992). The Board's enabling statute provides for public availability of Board recommendations "after receipt by the Secretary of Energy" or the President in appropriate cases. 42 U.S.C. §2286d(a); g(3). Therefore, the court concluded that Board discussions on such recommendations could be held in closed meetings under the Government in the Sunshine Act, 5 U.S.C. §552b (1988).

Petitioners became aware of the adverse decision on July 24, 1992, and chose to petition the Court of Appeals for rehearing, with a suggestion that the rehearing be conducted en banc. That petition for rehearing was denied on October 9, 1992. *NRDC/ERF v. Defense Nuclear Facilities Safety Board*, No. 91-1199 (D.C. Cir., October 9, 1992). Pursuant to the Board's bill of costs, the Court of Appeals awarded costs against the Petitioners, Natural Resource Defense Council and Energy Research Foundation, on November 16, 1992. Costs were subsequently paid in full by Petitioners. On December 23, 1992, Petitioners requested that the Supreme Court grant an extension of time (30 days) in which to file a petition for certiorari with the Supreme Court. The Petitioners have been allowed through February 8, 1993, to file a petition for certiorari to the Supreme Court.

2. Investigations

During 1992, the Board directed the General Counsel to establish a legal and technical investigative team and conduct four formal investigations of health and safety issues at defense nuclear facilities pursuant to 2286b(b). One of the investigations disclosed safety deficiencies sufficient to cause the Board to issue recommendations to the Secretary of DOE regarding ORRs at the HB-Line, Savannah River Site. See pages 3 to 4 above. Separate reports were issued on the investigations.

3. Personnel and Recruitment

The identification and hiring of professional personnel with outstanding qualifications is critical to the successful accomplishment of the Board's mission.

As of December 31, 1992, the Board had hired 84 full-time employees including a full-time Site Representative at the Department of Energy's Pantex facility, Amarillo, Texas. During 1992, the Board reviewed 2,263 applications for employment and conducted 84 sets of interviews. This effort is necessary to recruit highly-qualified employees with exceptional scientific, engineering, or legal backgrounds who can effectively carry out the specialized work required.

Due to the excepted appointment authority granted by Congress, the Board has been able to achieve progress in hiring engineering and scientific personnel of the highest calibre to address the health and safety questions associated with the design, construction, operation, and decommissioning of DOE's defense nuclear facilities. This excepted appointment authority has enabled the Board to significantly strengthen its ability to compete with other excepted Federal agencies and the private sector for the talent to properly perform its mission. Prior to this authority the Board was unable to significantly increase its technical staff.

The Board has been able to hire outstanding technical talent with extensive backgrounds in nuclear, mechanical, electrical, chemical, and metallurgical engineering and physics, using a nationwide recruiting campaign. As an indication of the Board's technical talent, 18 percent of the staff hold degrees at the Ph.D. level and 61 percent have degrees at the Masters level. In addition, almost all technical staff members, except Interns, possess practical nuclear experience gained from duty in the U.S. Navy's nuclear reactor program or the civilian reactor industry. Additionally, three other senior members of the Board's staff have law degrees (JD) as well as degrees in a technical specialty. The Board plans to continue its aggressive program to attract and hire additional technical staff with backgrounds commensurate with the Board's public health and safety responsibilities.

4. Technical Intern Program

In September 1991, the Board initiated a Technical Intern Program designed to aid in the recruitment and development of the Nation's top engineering graduates. After an extensive recruitment and interview program, eight interns with superior academic accomplishments in an engineering discipline and other attributes that indicate the potential for effective performance joined the Board's technical staff during the latter half of 1992. The recruitment and selection methods used have proven very effective as the Interns all have demonstrated themselves to be outstanding in their work and

academic programs. Board staffing projections include the recruitment of three technical interns in 1993.

5. Regulatory Agenda

The Board aggressively pursued its agenda for promulgating administrative regulations required by law for operation of an agency. Although time-consuming and resource intensive, substantial progress was made. The Board now has final rules covering the Government in the Sunshine Act, the Freedom of Information Act (FOIA), Contractor and Consultant Conflicts of Interest, and the Privacy Act. During 1992, preliminary work was also completed on the following regulations: Employee Standards of Conduct and Conflicts-of-Interests and Equal Employment Opportunity.

III. LEGISLATIVE CHANGES AFFECTING BOARD PLANNING FOR 1993 AND BEYOND

A. INCLUSION OF PANTEX PLANT AND NEVADA TEST SITE WITHIN BOARD'S JURISDICTION

Two new responsibilities were assigned to the Board late in 1991 that have had, and will continue to have, a significant impact on the Board's mission, both short-term and long-term. First, Congress amended the Board's enabling Act, broadening the Board's jurisdiction over defense nuclear facilities to include the assembly and disassembly of weapons and the testing of weapons. The significant reduction in nuclear arms by the Soviet Union and the United States projected for the next several years caused an increase in weapons disassembly activity at certain defense nuclear facilities, particularly the Pantex facility.

Second, the Board plans substantial expansion of activities related to decontamination and decommissioning (D&D) of defense nuclear facilities within the DOE complex during the next year and for the foreseeable future. Because of the President's and the Secretary of Energy's plans to consolidate and modernize the nuclear weapons complex, oversight of D&D activities is currently planned for certain facilities at Fernald, Mound, Savannah River, Hanford, and elsewhere throughout the weapons complex. Until the President's plans are finalized, however, the Board's oversight planning for D&D activities cannot be completed.

The Board's activities were significant contributions to the following achievements at Pantex (in many cases, they were the initiating and/or the determining factor):

- Institution of a practice whereby the responsible DOE laboratories (Los Alamos, Livermore, Sandia) review procedures for disassembly of nuclear weapons, for identification of potential safety questions;

- Improved conduct of operations in disassembly of nuclear weapons;

- Safety analysis initiated for some facilities where none had been done before, and up-dated safety analysis where it had been done some years ago; and

- Start of engineering analysis of competence, under environmental stress, of facilities for storage of pits and nuclear weapons awaiting disassembly. Included in the analysis are effects of possible aircraft crashes.

B. OTHER CONGRESSIONAL MEASURES CONCERNING BOARD ACTIVITIES

1. Resumption of Plutonium Operations in Buildings at the Rocky Flats Plant

Section 3133 of Public Law 102-190 of the recently enacted Defense Authorization Act for Fiscal Years 1992 and 1993 provided the following:

> (a) RESUMPTION OF PLUTONIUM OPERATIONS.–The Secretary of Energy may not resume plutonium operations in a plutonium operations building at the Rocky Flats Plant, Golden, Colorado, until the Defense Nuclear Facilities Safety Board determines, to the satisfaction of the Board, that the Secretary's response to the Board's recommendations numbered 90-2, 90-5, and 91-1 adequately protects public health and safety with respect to the operation of such building.

At the close of 1992, the Board scheduled activities, including public hearings and meetings, designed to allow the Board to fulfill this statutory obligation regarding the proposed resumption of plutonium operations in Building 707 at Rocky Flats.

2. Nuclear Waste Storage and Environmental Remediation

Congress also called for expansion and acceleration of Board activities related to nuclear waste storage, and safety and health issues associated with environmental restoration activities at defense nuclear facilities. The Board's statutory employee ceiling was raised from 100 to 150 full-time equivalents. Congress deemed this change necessary to accommodate the Board's increased responsibilities in 1992 and beyond.

APPENDIX A

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

[Recommendation 92-1]

Operational Readiness of the HB-Line at the Savannah River Site

AGENCY: Defense Nuclear Facilities Safety Board.

ACTION: Notice; recommendation.

SUMMARY: The Defense Nuclear Facilities Safety Board has made a recommendation to the Secretary of Energy pursuant to 42 U.S.C. 2286a concerning operational readiness of the HB-Line at the Savannah River Site. The Board requests public comments on this recommendation.

DATES: Comments, data, views, or arguments concerning this recommendation are due on or before June 29, 1992.

ADDRESSES: Send comments, data, views, or arguments concerning this recommendation to: Defense Nuclear Facilities Safety Board, 625 Indiana Avenue, NW., suite 700, Washington, DC 20004.

FOR FURTHER INFORMATION CONTACT: Kenneth M. Pusateri or Carole J. Council, at the address above or telephone (202) 208-6400.

Dated: May 22, 1992.

John T. Conway,

Chairman.

Dated: May 21, 1992.

The Board is presently completing an investigation of the readiness of resumption of operations at the HB-Line at the Savannah River Site. This investigation raises a number of significant safety issues that the Board believes must be discussed and resolved before the resumption should occur.

Therefore, the Board recommends that:

- DOE defer resumption of processing at the HB-Line for the present, pending issuance of the report of the Board's investigation, resolution of the issues, and possible further Board action.

In order that this matter can be dealt with expeditiously, we are giving high priority to completing the report embodying the results of the investigation.

John T. Conway,

Chairman.

Appendix—Transmittal Letter to the Secretary of Energy

Defense Nuclear Facilities Safety Board

May 21, 1992.

The Honorable James D. Watkins,
Secretary of Energy, Washington, DC 20585.

Dear Mr. Secretary: On May 21, 1992, the Defense Nuclear Facilities Safety Board, in accordance with 42 U.S.C. 2286a(5), unanimously approved Recommendation 92-1 which is enclosed for your consideration. Recommendation 92-1 deals with operational readiness of the HB-Line at the Savannah River Site.

42 U.S.C. 2286d(a) requires the Board, after receipt by you, to promptly make this recommendation available to the public in the Department of Energy's regional public reading rooms. The Board believes the recommendation contains no information which is classified or otherwise restricted. To the extent this recommendation does not include information restricted by DOE under the Atomic Energy Act of 1954, 42 U.S.C. 2161-66, as amended, please arrange to have this recommendation promptly placed on file in your regional public reading rooms.

The Board will publish this recommendation in the Federal Register.

Sincerely,

John T. Conway,

Chairman.

Enclosure.

[FR Doc. 92-12514 Filed 5-28-92; 8:45 am]

BILLING CODE 8820-KD-M

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

[Recommendation 92-2]

DOE's Facility Representative Program at Defense Nuclear Facilities

AGENCY: Defense Nuclear Facilities Safety Board.

ACTION: Notice; recommendation.

SUMMARY: The Defense Nuclear Facilities Safety Board has made a recommendation to the Secretary of Energy pursuant to 42 U.S.C. 2286a concerning DOE's facility representative program at defense nuclear facilities. The Board requests public comments on this recommendation.

DATES: Comments, data, views, or arguments concerning this recommendation are due on or before July 6, 1992.

ADDRESSES: Send comments, data, views, or arguments concerning this recommendation to: Defense Nuclear Facilities Safety Board, 625 Indiana Avenue NW., suite 700, Washington, DC 20004.

FOR FURTHER INFORMATION CONTACT: Kenneth M. Pusateri or Carole J. Council, at the address above or telephone (202) 208-6400.

Dated: May 29, 1992.

John T. Conway,

Chairman.

DOE's Facility Representative Program at Defense Nuclear Facilities

Dated: May 28, 1992.

Department of Energy (DOE) Order 5000.3A, *Occurrence Reporting and Processing of Information*, establishes a policy "to assure that both DOE and DOE contractor line management, including the Office of the Secretary, [be] kept fully and currently informed of all events which could affect the health and safety of the public." As a central feature of the measures used to implement this policy, the order defines the position "DOE Facility Representative" as follows:

" *DOE Facility Representative.* For each major facility or group of lesser facilities, an

individual * * * assigned responsibility by the Head of the Field Organization for monitoring the performance of the facility and its operations. This individual shall be the *primary point of contact* with the contractor and will be responsible to the appropriate Program Secretarial Officer (PSO) and Head of Field Organization * * *" [emphasis added]

In addition, DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, directs that "operations at DOE facilities be * * * conducted in a manner to assure an acceptable level of safety," and specifies that DOE Facility Representatives be "assigned responsibility [to] oversee the day-to-day conduct of operations * * * in accordance with * * * direction received from the Program Manager." Secretary of Energy Notice SEN-6E-92, Departmental Organization and Management Arrangements, extends this chain of responsibility, holding Program Managers accountable to Program Secretarial Officers (PSOs), who in turn are "accountable to [the Secretary] for their respective programs, including safety of the workers and the public * * *."

Recognizing the importance of these positions with regard to assuring adequate protection of the public health and safety at DOE defense nuclear facilities, the Board reviewed existing department-wide guidance on the selection, training and responsibilities of DOE Facility Representatives. DOE Order 5000.3A and DOE Order 5480.19 (both cited above), provide only limited details concerning DOE Facilities Representative duties and responsibilities; moreover, there are no orders that prescribe any guidance for selection and training of DOE Facility Representatives, nor any effective guidance for establishing the duties and responsibilities associated with these positions. (See Appendix A)

Having made numerous reviews throughout the DOE defense nuclear facilities complex, the Board notes that the DOE managers for several facilities in the defense nuclear complex have begun to establish formal Facility Representative programs. However, these programs are operating without centralized direction. Generally, this is resulting in widely differing qualifications, duties, and responsibilities for DOE Facility Representatives from facility to facility, even at the same site. For example, DOE Facility Representatives encountered by the Board have ranged from personnel holding doctoral degrees to summer interns (college students).

This situation could result in failure by DOE to achieve the level of technical vigilance necessary to assure the safe operation of the department's defense nuclear facilities. The Board believes that the performance of the interrelated safety, technical, and management functions by DOE Facility Representatives would be enhanced if a formal qualification program for these positions, commensurate with their importance, was promulgated at the department level and implemented throughout the defense nuclear facilities complex.

Therefore, the Board recommends that for defense nuclear facilities:

1. The Secretary of the Department of Energy expeditiously carry out a comprehensive analysis of the existing DOE Facility Representative programs.

a. The analysis should be conducted under the direction of a senior individual who has demonstrated high technical and managerial ability and has demonstrated an understanding of the use of facility representatives.

b. The analysis should emphasize the identification of those aspects of the existing programs that either support or impede the achievement of DOE objectives for assuring the protection of public health and safety. Consideration should be given to evaluating:

(1) Qualification requirements and recruitment practices employed in selecting prospective DOE Facility Representatives;

(2) General and facility-specific training and examination requirements and practices necessary to prepare prospective DOE Facility Representatives for field assignments, and to maintain their proficiency;

(3) DOE Facility Representative duties and responsibilities;

(4) Existing supervision and management of the Facility Representative position, now provided by several individuals in some facilities, especially inquiring whether there are clear lines of responsibilities with both the contractor and DOE line management;

(5) Criteria and practices for assigning DOE Facility Representatives to each defense nuclear facility; and

(6) DOE personnel practices and procedures that provide incentives and impediments to making the position of DOE Facility Representative attractive and career-enhancing. At a minimum, restraints imposed by the practice of measuring responsibility predominantly in terms of numbers of individuals supervised should be addressed.

c. The analysis should identify practices employed in successful Facility Representative programs outside of the defense nuclear facilities complex that are appropriate for the DOE Facility Representative Program.

d. At the conclusion of the analysis, an estimate should be prepared of the personnel and management resources that would be required to establish and maintain an effective DOE Facility Representative Program, and which reflects the results of the analysis.

2. Utilizing the results of the comprehensive analysis, the Secretary of the Department of Energy establish a formal program to select, train, and assign DOE Facility Representatives for the defense nuclear facilities.

a. In establishing this program, DOE should be prepared to modify personnel practices and programs as necessary to establish a beneficial and effective DOE Facility Representative Program.

b. This program should give consideration to:

(1) Delineating DOE Facility Representative selection requirements, including specified standards of educational achievement, professional experience, technical aptitude, and forcefulness;

(2) Establishing DOE Facility Representative training requirements, including a formal centralized core training program, a formal site- and facility(s)-specific training program, and a continuing education and improvement program, each including periodic objective examinations;

(3) Defining DOE Facility Representatives duties and responsibilities, both generically and with regard to each facility in every mode of operation including transition states such as between PSO's; and

(4) Establishing formal requirements to specify those activities or facilities requiring the assignment of DOE Facility Representatives.

John T. Conway,
Chairman.

Appendix A—Review of DOE Facility/Site Representative Position Descriptions

The DNFSB staff has reviewed several current or proposed position descriptions, defining the duties and responsibilities of DOE Facility/Site Representatives at Savannah River, Richland, Idaho National Engineering Laboratory (INEL), Rocky Flats, and the Waste Isolation Pilot Plant (WIPP). Based on these position descriptions, there appears to be a wide disparity in the duties and qualifications for DOE Facility/Site Representatives from facility to facility. The lack of any effective guidance in establishing the duties and responsibilities associated with these positions is supported by the following observations.

The position description for the Facility Representative, WIPP Project Office, (General Engineer GM-801-13) most closely tracks the definition of a "DOE Facility Representative" as defined in DOE Order 5000.3A. The position description properly summarizes the major duties of the facility representative as follows:

"Conducts daily on-site evaluation of contractor operations with emphasis on personnel health and safety, nuclear safety, environmental protection, facility modifications and maintenance, and formality of operations. Assures safe operations at the facility at all times. This is accomplished by frequent walk-through inspections of all facility spaces, observation of facility activities, and continuous interface with contractor personnel at all levels. Deficiencies or concerns are resolved directly with the contractor Facility Manager (with timely appropriate notification to DOE management of the actions taken) or, as necessary, are elevated through DOE line management up to the Operations Office Manager and the Headquarters Program Manager.

"Serves as the primary conduit of information concerning facility operations for DOE management. Maintains awareness of all activities, ongoing and planned, at the facility through discussions with personnel at all levels, through participations in meetings on daily operations and problem resolution, as well as short and long range planning, and through problem identification and resolution resulting from interfacing with personnel at all levels on walk-through inspections and observation of operations. Is responsible for assuring that inspections, observations, and discussions are sufficiently frequent and timely to ensure current knowledge of operations at all times.

"Is normally the first point of contact for DOE in all event notifications and is available to respond to the facility around-the-clock. Serves as the primary DOE expert regarding operational activities and problem identification and resolution."

In contrast, the position description for the Site Representative, Chemical Processing Plant Branch, INEL, includes the following definition of duties:

"Performs surveillance of the facilities to assure that work is being done in accordance with applicable safety standards and specifications, and approved operating and work control procedures. Facility shutdown authority rests with the Assistant Manager for Nuclear Programs. The Site Representative may exercise this authority, after contacting the AM/NP, when in his opinion, operations may result in undue risk to health, safety, or the environment. If time permits, such action will be coordinated with the MPD Director, AM/ES&H, and ID manager. In cases other than imminent danger, the Site Representative will first bring the matter to the attention of facility management. If resolution is not reached, the Site Representative will go through normal DOE-ID line management for directing any change in operations."

The level of knowledge required of individuals assigned to these positions varies widely among the position descriptions reviewed. All of the position descriptions suffer from a lack of specificity as to how an applicant or an incumbent in these positions will be required to demonstrate his or her proficiency in meeting any of the "Knowledge Requirements" stated in the position description. In fact, no level of educational achievement is cited in any of the position descriptions. The Facility Representative position description for the WIPP Project Office does cite a Professional Engineer license as being highly desirable, but not required. This position description also establishes several performance criteria, including:

"The ability to complete training on safety and environmental regulatory issues, and to apply general and site-specific training toward the demonstration of detailed knowledge of safety-related systems design basis, functions, and operational characteristics."

The position descriptions reviewed are not consistent in the assignment of responsibilities and compensation incentives. It is not readily discernable as to how certain DOE Facility/Site Representatives are given General Schedule classifications (e.g. GS-13) whereas selected DOE Facility/Site Representatives are included in the DOE Performance Management Recognition System. This latter system, based on the concept of pay for performance, is used for individuals assigned to supervisory or policy influencing positions. A convincing argument can be made that a DOE Facility/Site Representative influences the operational policies and procedures for assigned facilites and, therefore, should be assigned to this pay for performance incentive system.

Appendix B—Transmittal Letter to the Secretary of Energy

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004, (202) 208-6400 Δ FTS 268-6400

John T. Conway, Chairman, A.J. Eggenberger, Vice Chairman, John W. Crawford, Jr., Herbert John Cecil Kouts

May 28, 1992.

The Honorable James D. Watkins,
Secretary of Energy,
Washington, DC 20585

Dear Mr. Secretary: On May 28, 1992, the Defense Nuclear Facilities Safety Board, in accordance with 42 U.S.C. 2286a(5), unanimously approved Recommendation 92-2 which is enclosed for your consideration. Recommendation 92-2 deals with DOE's facility representative program at defense nuclear facilities.

42 U.S.C. 2286d(a) requires the Board, after receipt by you, to promptly make this recommendation available to the public in the Department of Energy's regional public reading rooms. The Board believes the recommendation contains no information which is classified or otherwise restricted. To the extent this recommendation does not include information restricted by DOE under the Atomic Energy Act of 1954, 42 U.S.C. 2161-68, as amended, please arrange to have this recommendation promptly placed on file in your regional public reading rooms.

The Board will publish this recommendation in the Federal Register.

Sincerely,

John R. Conway,
Chairman.

Enclosure

[FR Doc. 92-12998 Filed 6-3-92; 8:45 am]

BILLING CODE 6820-KD-M

[Recommendation 92-3]

Operational Readiness Reviews for the HB-Line at the Savannah River Site, Aiken, SC

AGENCY: Defense Nuclear Facilities Safety Board.

ACTION: Notice recommendation.

SUMMARY: The Defense Nuclear Facilities Safety Board has made a recommendation to the Secretary of Energy pursuant to 42 U.S.C. 2286a concerning operational readiness reviews for the HB-Line at the Savannah River Site, Aiken, South Carolina. The Board requests public comments on this recommendation.

DATES: Comments, data, views, or arguments concerning this recommendation are due on or before July 6, 1992.

ADDRESSES: Send comments, data, views, or arguments concerning this recommendation to: Defense Nuclear Facilities Safety Board, 625 Indiana Avenue NW., suite 700, Washington, DC 20004.

FOR FURTHER INFORMATION CONTACT: Kenneth M. Pusateri or Carole J. Council, at the address above or telephone (202) 208-6400.

Dated June 1, 1992.

John T. Conway,

Chairman.

[Recommendation 92-3]

Operational Readiness Reviews for the HB-Line at the Savannah River Site, Aiken, South Carolina

Dated: May 29, 1992.

As indicated in our recent Recommendation 92-1, the Board is continuing its oversight and investigation of health and safety issues related to the proposed resumption of plutonium processing in the HB-Line at the Savannah River Site, South Carolina. Our review of Department of Energy (DOE) and contractor documents, as well as other information obtained during the investigation to date, leads the Board to conclude that the Operational Readiness Review (ORR) of the HB-Line conducted by Westinghouse Savannah River Company (WSRC)

during the summer of 1991, and DOE's subsequent review called an "ORE", were premature, limited in scope, and inadequate. Moreover, some of the conclusions reached seem suspect. The Board was particularly concerned that some safety issues requiring resolution prior to resumption of operations (Category 1) were reclassified as post-resumption issues (Category 2), without the concurrence of certain DOE team members, raising a question regarding the supportability of the findings. The ORRs did not ensure adequate resolution and closure of safety and health issues associated with the HB-Line, which had not been operated since 1987. When attempts were made to resume operations in the HB-Line during the summer of 1991, following the ORRs, a series of radiological exposures to workers and other safety incidents occurred, causing operations to be suspended. In October of 1991, the HB-Line resumed operations until March of 1992, when operations were again suspended due to an unreviewed safety question. The Office of Nuclear Safety's review, as well as other assessments of HB-Line, identified safety issues which still have not been resolved.

The Department has placed a priority upon safety resuming HB-Line operations to meet commitments made to NASA. While recognizing that the HB-Line may not pose an undue risk to the off-site public, the Board remains concerned with protection of on-site personnel, since an adequate assessment of operational readiness has not been conducted, nor has an adequate assessment of an accidental ground level release been performed.

The Board has determined that the conduct of adequate and thorough ORRS by WSRC and DOE are essential for identifying and resolving remaining health and safety issues affecting workers, and at the same time promptly achieving readiness for restart.

Therefore, the Board recommends that, prior to resuming operations in the HB-Line:

1. DOE direct WSRC to reopen its ORR, and that WSRC and DOE conduct adequate ORRs in accordance with previous Board recommendations and DOE implementation plans for ORRs at other facilities.

2. Comprehensive criteria documents be established for judging and measuring readiness to restart. The criteria documents should include the bases for judging which safety issues must be resolved prior to resumption, and which issues may be deferred for resolution subsequent to restart.

3. WSRC issue a Readiness to Proceed Memorandum requesting DOE approval for resumption of operations after WSRC has completed its ORR and has determined that safety issues appropriate for closure prior to resumption have been adequately resolved.

4. DOE provide whatever assistance it deems appropriate to WSRC during the contractor's conduct of its ORR, recognizing that such assistance is separate and distinct from DOE's subsequent and independent execution of its own ORR.

5. A DOE ORR team, including a Senior Advisory Group, conduct an independent and comprehensive ORR for HB-Line after (a) WSRC has conducted an adequate ORR and issued a Readiness to Proceed Memorandum requesting DOE approval for resumption of approval of resumption of operations, and (b) DOE has sufficient reason to believe that significant deficiencies affecting the resumption and safe operation of HB-Line have been corrected by the contractor.

6. The DOE ORR team consist of experienced individuals whose backgrounds collectively include all important facets of the operations involved; that the majority of the team members be independent of HB-Line direct line management responsibilities to ensure an independent and unbiased assessment.

7. In preparing for the Operational Readiness Review for the HB-Line, DOE and WSRC should reexamine the HB-Line Safety Analysis Report (SAR) to ensure that: (a) The accident analyses adequately consider all credible scenarios; (b) all appropriate engineered safety systems which are necessary to prevent accidents or mitigate the on-site and off-site consequences of those accidents are identified; and (c) the information obtained from the updated Fire Hazards Analysis is consistent with the accident analyses.

8. WSRC and DOE should complete their assessment of compliance with DOE safety orders at HB-Line, and finish their review, approval, and implementation of any compensatory measures that are necessary and appropriate to achieve the objectives of order compliance and safe resumption of operations at HB-Line.

John T. Conway,
Chairman.

Appendix—Transmittal Letter to the Secretary of Energy

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004, (202) 208-6400 • FTS 268-6400

John T. Conway, Chairman, A.J. Eggenberger, Vice Chairman, John W. Crawford, Jr., Herbert John Cecil Kouts

May 29, 1992

The Honorable James D. Watkins,
Secretary of Energy, Washington, DC 20585

Dear Mr. Secretary: In accordance with 42 U.S.C. 2286a(2) the Board has conducted an investigation of DOE and contractor activities at the HB-Line at the Savannah River Site. Pursuant to that investigation which is drawing to a close, the Board sent to you Recommendation 92-1 by letter dated May 21, 1992.

In furtherance of that recommendation, the Defense Nuclear Facilities Safety Board, in accordance with 42 U.S.C. 2286a(5), unanimously approved Recommendation 92-3 which is enclosed for your consideration. Recommendation 92-3 deals with operational readiness reviews for the HB-Line at the Savannah river Site, Aiken, South Carolina.

42 U.S.C. 2286d(a) requires the Board, after receipt by you, to promptly make this recommendation available to the public in the Department of Energy's regional public reading rooms. The Board believes the recommendation contains no information which is classified or otherwise restricted. To the extent this recommendation does not include information restricted by DOE under the Atomic Energy Act of 1954, 42 U.S.C. 2161-68, as amended, please arrange to have this recommendation promptly placed on file in your regional public reading rooms.

The Board will publish this recommendation in the Federal Register.

Sincerely,

John T. Conway,
Chairman.

Enclosure

[FR Doc. 92-13061 Filed 6-3-92; 8:45 am]

BILLING CODE 6820-KD-M

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

[Recommendation 92-4]

Multi-Function Waste Tank Facility at the Hanford Site

AGENCY: Defense Nuclear Facilities Safety Board.

ACTION: Notice: recommendation.

SUMMARY: The Defense Nuclear Facilities Safety Board (Board) has made a recommendation to the Secretary of Energy pursuant to 42 U.S.C. 2286a concerning the Multi-Function Waste Tank Facility at the Hanford Site. The Board requests public comments on this recommendation.

DATES: Comments, data, views, or arguments concerning this recommendation are due on or before August 13, 1992.

ADDRESSES: Send comments, data, views or arguments concerning this recommendation to: Defense Nuclear Facilities Safety Board, 625 Indiana Avenue, NW., suite 700, Washington, DC 20004.

FOR FURTHER INFORMATION CONTACT: Kenneth M. Pusateri or Carole J. Council, at the address above or telephone (202) 208-6400.

Dated: July 8, 1992.

John T. Conway,
Chairman.

Multi-Function Waste Tank Facility at the Hanford Site.

Dated: July 8, 1992.

As required by the Atomic Energy Act, the Defense Nuclear Facilities Safety Board (DNFSB), conducts reviews and evaluations of the design of new Department of Energy defense nuclear facilities before and during their construction. Under this statute, the DNFSB is also required to recommend to the Secretary of Energy, within a reasonable time, such modifications of the design as the DNFSB considers necessary to ensure adequate protection of public health and safety.

The Board has performed reviews of the Multi-Function Waste Tank Facility (MWTF) project to be located at the Hanford Site in the State of Washington. The MWTF is an element of the Hanford Tank Waste Remedial System (TWRS) Program which eventually will provide for the ultimate treatment and disposal of the Hanford Site tank waste. We have reviewed information received in the form of briefings and presentations by DOE Headquarters personnel, DOE Richland personnel, Westinghouse Hanford Company personnel, and Kaiser Engineers Hanford personnel as well as analysis of relevant documents. The Board's reviews to date have been concerned with such matters as the application of standards, including DOE orders and directives, and commercial nuclear industry practices as well as other aspects of the project which relate to ensuring adequate protection of the health and safety of the public.

The conceptual design of the MWTF project is now nearing completion. The Board believes that it is appropriate at this time to assure that the design of the MWTF and other new defense nuclear facilities incorporates engineering principles and approaches, detailed engineering criteria, and practices that are essential to ensure adequate protection of public health and safety. These include:

- The design needs to be appropriately conservative with respect to safety.
- The design bases (criteria) need to be clearly defined, coherent, and compatible with the facilities' perceived lifetime functions (i.e., Functional Design Criteria) and documented.
- The design bases the resulting facility design need to reflect and incorporate the requirements of appropriate standards as that term is used in the Board's enabling statute and thus including DOE orders and directives and commercial nuclear practices, as well as any other factors that may be required for the safe and reliable operation of the facility throughout its entire life.
- The design, construction, and start-up activities need to be performed by those who will ensure the completed project is of the quality necessary to provide adequate protection of public health and safety.
- The design effort needs to be organized such that there is continuity through all phases (conceptual design, preliminary design, final design, construction, testing) so that all aspects of the process that affect safety are clearly delineated and that line responsibility is clear.
- The DOE organization responsible for the project needs to have technically qualified personnel in numbers sufficient to provide direction and guidance to contractors performing all

phases of the effort and to assess the effectiveness of contractor efforts.

• The project organization and operations need to reflect a clear and effective chain of command with responsibility, authority, and accountability clearly defined and assigned to individuals within the respective project organizations.

• The functions and responsibilities of all DOE and contractor organizations involved in the project need to be delineated in writing in a single document.

The Board's view of the Hanford MWTF's conceptual design performed to date is that the design does not clearly present and delineate those aspects that ensure that the public health and safety can adequately be protected. In particular, the MWTF appears to be a project (1) without a well-defined mission or functional requirements (e.g., waste treatment or storage), (2) predetermined to consist of four one-million-gallon tanks regardless of their intended uses, and (3) managed without sufficient regard for technical issues and engineering involvement. The continuing phases of the design and construction are about to begin and the Board seeks to be assured that the design of the tanks as they are built incorporates the appropriate levels of nuclear safety. Further, the Board recognizes that many of the nuclear safety concepts and assurances would normally be provided in the series of facility Safety Analysis Reports and would include design bases, safety system analyses, analysis methods and accident analyses. However, to ensure that appropriate nuclear safety characteristics are included in the design efforts, the Board recommends the following to the Secretary of Energy:

1. Establish a plan and methodology that results in a project management organization for the MWTF project team that assures that both DOE and the contractor organization have personnel of the technical and managerial competence to ensure effective project execution. This should emphasize management aspects of the project necessary to ensure adequate protection of public health and safety and should include the integration of professional engineering and quality assurance as necessary into the project, the application of appropriate standards and approved Department of Energy requirements, and the establishment of clear lines of responsibility and accountability.

2. Identify the design bases and engineering principles and approaches for the MWTF project that provide the data and rationale to show that the design for the MWTF conservatively meets the quantitative safety goals described in the Departments' Nuclear Safety Policy (SEN-35-91). The Board believes that would include items related to standards, identification of safety related items, detailed design bases, functional design criteria, and safety analyses.

John T. Conway,
Chairman.

Appendix—Transmittal Letter to the Secretary of Energy

July 6, 1992.

The Honorable James H. Watkins,
Secretary of Energy, Washington, DC 20585

Dear Mr. Secretary: On July 1, 1992, the Defense Nuclear Facilities Safety Board, in accordance with 42 U.S.C. 2286a(5), unanimously approved Recommendation 92-4 which is enclosed for your consideration. Recommendation 92-4 deals with the Multi-Function Waste Tank Facility at the Hanford Site.

42 U.S.C. 2286d(a) requires the Board, after receipt by you, to promptly make this recommendation available to the public in the Department of Energy's regional public reading rooms. The Board believes the recommendation contains no information which is classified or otherwise restricted. To the extent this recommendation does not include information restricted by DOE under the Atomic Energy Act of 1954, 42 U.S.C. 2161-68, as amended, please arrange to have this recommendation promptly placed on file in your regional public reading rooms.

The Board will publish this recommendation in the Federal Register.

Sincerely,

John T. Conway,
Chairman.

[FR Doc. 92-16465 Filed 7-13-92; 8:45 am]
BILLING CODE 6820-KD-M

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

[Recommendation 92-5]

Discipline of Operation in a Changing Defense Nuclear Facilities Complex

AGENCY: Defense Nuclear Facilities Safety Board.

ACTION: Notice; recommendation.

SUMMARY: The Defense Nuclear Facilities Safety Board (Board) has made a recommendation to the Secretary of Energy pursuant to 42 U.S.C. 2286a concerning the Discipline of Operation in a Changing Defense Nuclear Facilities Complex. The Board requests public comments on this recommendation.

DATES: Comments, data, views, or arguments concerning this recommendation are due on or before September 28, 1992.

ADDRESSES: Send comments, data, views or arguments concerning this recommendation to: Defense Nuclear Facilities Safety Board, 625 Indiana Avenue, NW., Suite 700, Washington, DC 20004.

FOR FURTHER INFORMATION CONTACT: Kenneth M. Pusateri or Carole J. Council, at the address above or telephone (202) 208-6400.

Dated: August 24, 1992.

John T. Conway,

Chairman.

Discipline of Operation in a Changing Defense Nuclear Facilities Complex

[Recommendation 92-5]

Dated: August 17, 1992.

The changes in defense-related plans in the Department of Energy are beginning to have a profound effect on the activities directed to systematic upgrading of the conduct of operations at defense nuclear facilities, plans that have often been discussed between the Board and its staff, on the one hand, and members of your staff on the other.

The Rocky Flats Plant presents an excellent example of the major changes being made by DOE while reconfiguring the nuclear weapons complex. It had been planned that as the Rocky Flats Plant moved toward resumption of production of plutonium components of nuclear weapons, a succession of facilities would be readied for renewed operation, beginning with Building 559 (the analytical chemistry laboratory), and followed by Building 707 and then others. This process was to include systematic upgrading of the quality of operations in each case, including Operational Readiness Reviews by the contractor and by DOE to verify that the desired improvements had been accomplished by line management. Resumption of operations is now proceeding in Building 559, in accordance with this process and following the path proposed in your Implementation Plan for the Board's Recommendations 90-4 and 91-4.

You have announced, however, that in light of international developments, plutonium production operations will not be resumed at the Rocky Flats Plant, and future activities there will be confined to cleanup and decontamination of the site, decommissioning of some facilities and parts of others, and placing of some facilities and parts of others in a state of readiness for resumption of operations in the future in the event such a step should be needed. Thus for most facilities at Rocky Flats there is now a major change from the mission and activities previously planned and for which the Board's Recommendations and your Implementation plans specific to the Rocky Flats Plant were to be applied, for those recommendations were predicated upon resumption of plutonium production.

At a number of other defense nuclear facilities, similar changes are taking effect. Many facilities are now scheduled for

cleanout, shutdown, and decommissioning. Some are to be devoted to aspects of cleanup and decommissioning of sites and of facilities located within sites. Some are slated to be placed in a standby mode, available for restart at a later date if needed. Some are to be continued in operation either in reduction of the stockpile of nuclear weapons or in the maintenance of a reduced stockpile on improvement of its safety.

Some of these facilities have been inactive for long periods of time. Some are to become involved in operations that differ from past usage. Experience shows that when operations are resumed at a facility that has been idle for an extended period, or a facility is operated in a new mode, there is in an above-average possibility of mistakes, equipment failures, and violations of safety requirements, that could cause accidents. We believe that special attention is needed at such times. The appropriate measures to be followed depend on specific features of the facility, the nature of the planned campaign of use, and the long-term plan for the facility. For example, one needs to know if further campaigns are likely, of the same or different kinds; if the facility is to be decommissioned after the planned use; or if it is to be placed in a standby mode.

The Board has found, through experience at the Savannah River Sites and the Rocky Flats Plant and other defense nuclear facilities, that an extended period of time has been required at major facilities to develop an acceptable style and level of conduct of operations. Accomplishing the cultural changes you have required and meeting safety standards comparable to those required of the civilian nuclear industry remains an ongoing challenge. Major improvements have been necessary including development of configuration control, revised and acceptable safety analysis, revised Limiting Conditions of Operation derivative from the safety analysis, operating procedures consistent with the configuration and the safety analysis, and training and qualification of operators for the new mode of operation. Continued improvement has been sought by the Board.

The Board has been informed that DOE does not intend to devote equivalent time and resources to improving the quality of operation at a facility being restarted only for a short campaign or intended for use only in a short campaign in a different mode, but would on a cost-benefit basis use a graded approach, always being sure, however, to take whatever compensatory and other measures are needed to ensure the acceptable level of safety.

The definition and exposition of a graded approach as it is meant to be used in ordering the conduct of operations have not been provided. In discharging its responsibilities in the context of the new defense-related plans of the Department of Energy, the Board intends to carefully review future operations at defense nuclear facilities on a case-by-case basis, starting in each instance from the best information as to the intended future use of the facility. Any proposals to use special measures or controls to compensate for deviations from those ordinarily used to achieve high quality conduct of operations will be closely scrutinized.

Therefore, it is requested that as you decide the future status of individual defense nuclear facilities you inform the Board, designating which ones are to continue in operation and their mission, which are to be shut down for decommissioning within a short time period, which are to be used for an extended time period and then shut down for decommissioning, and which are to be moved to a standby mode (along with the schedule for this).

Regardless of the category, the Board believes that operation and maintenance of defense nuclear facilities in all modes should be in accordance with the Nuclear Safety Policy statement that you issued on September 9, 1991 as SEN-35-91, and the safety goals stated therein.

The Board also believes that, to the extent practicable, facilities that are to be shut down and decommissioned should be cleaned up, and hazards from radiological exposures sufficiently reduced that access can be made freely without need for precautions against radioactivity, and facilities meant for standby status should be placed in such a condition that sudden need to reactivate them would not subject a new operating group to unacceptable radiation hazards.

In furtherance of this view it is recommended that:

1. For defense nuclear facilities scheduled for long term continued programmatic defense operations,[1] or for other long term uses such as in cleanup of radioactive contamination or in storage of nuclear waste or other nuclear material from programmatic defense operations, the Department of Energy should institute a style and level of conduct of operations comparable to that toward which DOE has been working at Building 559 at the Rocky Flats Plant and the K-Reactor at the Savannah River Site, and which is at least comparable to that required for commercial nuclear facilities, addressing at a minimum the areas referred to above in connection with style of conduct of operations.

2. Where a facility, after a long period of idleness for whatever reason, is being readied for new use or reuse, special care should be taken to ensure that the line organization, both DOE and contractor, has the technical and managerial capability needed to carry out its responsibilities. Appropriate and effective Operational Readiness Reviews should be conducted by the contractor and by DOE before restart of the facility, to establish confidence that line management has provided satisfaction of safety requirements. Where national security requirements lead to urgent need to restart such facilities before necessary upgrades can be fully completed, compensatory measures should be instituted and their adequacy in ensuring the desired level of safety should be confirmed through appropriate independent review.

3. For facilities designated for the various other future modes of use (such as standby), DOE should undertake to develop specific criteria and requirements that ensure meeting the safety goals enunciated in your Nuclear Policy Statement (SEN-35-91). Accomplishment of these criteria and requirements by line management should be confirmed by appropriate independent review.

John T. Conway,

Chairman.

[1] This term is meant to encompass research, development, and production for defense purposes, and operations related to testing, assembly, disassembly, and storage of nuclear weapons and nuclear weapons components.

Appendix—Transmittal Letter to the Secretary of Energy

Defense Nuclear Facilities Safety Board

August 17, 1992.

The Honorable James D. Watkins,
Secretary of Energy, Washington, DC 20585.

Dear Mr. Secretary: On August 17, 1992, the Defense Nuclear Facilities Safety Board, in accordance with 42 U.S.C. 2286a(5), unanimously approved Recommendation 92-5 which is enclosed for your consideration. Recommendation 92-5 deals with Discipline of Operation in a Changing Defense Nuclear Facilities Complex.

42 U.S.C. 2286d(a) requires the Board, after receipt by you, to promptly make this recommendation available to the public in the Department of Energy's regional public reading rooms. The Board believes the recommendation contains no information which is classified or otherwise restricted. To the extent this recommendation does not include information restricted by DOE under the Atomic Energy Act of 1954, 42 U.S.C. 2161-68, as amended, please arrange to have this recommendation promptly placed on file in your regional public reading rooms.

The Board will publish this recommendation in the Federal Register.

Sincerely,

John T. Conway,

Chairman.

[FR Doc. 92-20590 Filed 8-27-92; 8:45 am]

BILLING CODE 6820-KD-M

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

[Recommendation 92-6]

Operational Readiness Reviews

AGENCY: Defense Nuclear Facilities Safety Board.

ACTION: Notice: recommendation.

SUMMARY: The Defense Nuclear Facilities Safety Board (Board) has made a recommendation to the Secretary of Energy pursuant to 42 U.S.C. 2286a concerning Operational Readiness Reviews. The Board requests public comments on this recommendation.

DATES: Comments, data, views, or arguments concerning this recommendation are due on or before October 2, 1992.

ADDRESSES: Send comments, data, views or arguments concerning this recommendation to: Defense Nuclear Facilities Safety Board, 625 Indiana Avenue, NW., suite 700, Washington, DC 20004.

FOR FURTHER INFORMATION CONTACT: Kenneth M. Pusateri or Carole J. Council, at the address above or telephone (202) 208-6400.

Dated: August 27, 1992.

John T. Conway,

Chairman.

Operational Readiness Reviews

Dated: August 26, 1992.

Several of the Board's Recommendations to you have referred to Operational Readiness Reviews, and some have been specifically directed to such activities. In this way, the Board has shown that it holds these reviews, whether by the contractor or by DOE, in high regard as important measures in verifying readiness of new activities to be started safely or of previously conducted activities to be safely resumed after an appreciable hiatus.

The Board recognizes that the actual operation of defense nuclear facilities is accomplished through defense contractors. While first line responsibility for safe operation is in effect delegated through contract provisions, such delegation does not relieve DOE management of its responsibility for ensuring that the operation will be protective of public health and safety. It is the Board's firm conviction that adequate protection of the public health and safety must be achieved through sustained exercise of vigilance by line management of DOE and the contractor.

The Operational Readiness Reviews is a process undertaken after the intermediate level of line management has arrived at its conclusion that a state of readiness has been achieved for safe startup of the activity. It is a means whereby top management in the contractor and/or DOE can then arrive at the independently determined conclusion that this readiness exists. If the line organizations that have been delegated responsibility for preparing a facility for operation have performed effectively, findings of any shortfalls are expected to be few, and of such a character that they can be remedied in short order and on a scheduled basis prior to startup.

In this vein, the Board has recognized the laudable advance toward definition of ORR requirements made in SEN-16B-91, "Approval for Restart of Facilities Shut Down for Safety Reasons and for Startup of Major New Facilities", dated November 12, 1991, and the attached "Process for Secretary Approval of Nuclear Facility Restart or Startup". However, we believe that guidance could be improved by specifying the required features of a satisfactory ORR, and by stating specifically on what occasions an ORR will be required.

Some of the Boards Recommendations have also reflected recognition that conducting an Operational Readiness Review prematurely, before line management responsible for preparing a facility for operation has concluded on a sound basis that readiness has been achieved, has adverse effects on safety. Among these are:

(a) It masks possible lack of competence and other defects in contractor and/or DOE line management.

(b) It becomes a management tool for achieving readiness to proceed safely rather

than verifying it. In this way it becomes a crutch for line management.

(c) It postpones discovery of safety deficiencies which effective line management would have identified earlier.

(d) It encourages resort to actions which compensate for safety deficiencies, instead of correcting them.

(e) It vitiates the value of the Operational Readiness Review as a means of independent confirmation of readiness.

The board believes that among the features of an acceptable ORR are the following:

(a) The review team should not include, as senior members, individuals who are responsible for accomplishing the work being reviewed.

(b) When the contractor performs an ORR, it and the DOE's ORR should be carried out in serial fashion, and the latter should not begin until the contractor has informed DOE in writing that the facility is ready to commence operation.

(c) The criteria governing the review should include the scope of the review and the factors to be used by individual technical experts in judging satisfactory performance.

(d) The DOE review should include assessment of the technical and managerial qualifications of those in the DOE field organization who have been assigned responsibilities for direction and guidance to the contractor, including the Facility Representative. A similar review should be made of the qualifications of contractor personnel responsible for facility operations.

(e) The review team should be required to reach a conclusion as to whether the facility will be operated in conformance with applicable DOE orders, directives, and Secretary of Energy Notices; and that any nonconformances or Compliance Schedule Approvals have been justified in writing, have been formally approved, and in the opinion of the review team do not unduly diminish protection of the public health and safety, including worker safety.

The above being recognized, the Board recommends that:

(1) DOE expeditiously develop an effective set of rules, procedures, orders, directives, and other requirements to govern safety aspects of the Operational Readiness Review process, subject to the principle that the purpose of such a Review is confirmation of an acceptable state of readiness.

(2) DOE develop specific criteria for when Operational Readiness Reviews are required and when they are not.

(3) The plan for each ORR incorporate the features discussed above as desirable, as well as those that were recommended in the Board's Recommendation 90-4.

John T. Conway,

Chairman.

Appendix—Transmittal Letter to the Secretary of Energy

August 26, 1992.

The Honorable James D. Watkins,
Secretary of Energy, Washington, DC 20585.

Dear Mr. Secretary: On August 26, 1992, the Defense Nuclear Facilities Safety Board, in accordance with 42 U.S.C. 2286a(5), unanimously approved Recommendation 92-6 which is enclosed for your consideration. Recommendation 92-6 deals with Operational Readiness Reviews.

42 U.S.C. 2286d(a) requires the Board, after receipt by you, to promptly make this recommendation available to the public in the Department of Energy's regional public reading rooms. The Board believes the recommendation contains no information which is classified or otherwise restricted. To the extent this recommendation does not include information restricted by DOE under the Atomic Energy Act of 1954, 42 U.S.C. 2161-68, as amended, please arrange to have this recommendation promptly placed on file in your regional public reading rooms.

The Board will publish this recommendation in the Federal Register.

Sincerely,

John T. Conway,

Chairman.

[FR Doc. 92-21051 Filed 9-1-92; 8:45 am]

BILLING CODE 6820-KD-M

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

[Recommendation 92-7]

Training and Qualification

AGENCY: Defense Nuclear Facilities Safety Board.

ACTION: Notice; recommendation.

SUMMARY: The Defense Nuclear Facilities Safety Board (Board) has made a recommendation to the Secretary of Energy pursuant to 42 U.S.C. 2286a concerning Training and Qualification. The Board requests public comments on this recommendation.

DATES: Comments, data, views, or arguments concerning this recommendation are due on or before October 28, 1992.

ADDRESSES: Send comments, data, views or arguments concerning this recommendation to: Defense Nuclear Facilities Safety Board, 625 Indiana Avenue, NW., suite 700, Washington, DC 2004.

FOR FURTHER INFORMATION CONTACT: Kenneth M. Pusateri or Carole J. Council, at the address above or telephone (202) 208-6400.

Dated: September 23, 1992.

John T. Conway,

Chairman.

[Recommendation 92-7]

Training and Qualification

Dated: September 22, 1992.

Since its inception, the Defense Nuclear Facilities Safety Board has emphasized that a well constructed and documented program for training and qualifying operations, maintenance, and technical support personnel and supervisors at defense nuclear facilities is an essential foundation of operations and maintenance and, hence, the safety and health of the public, including the facility workers. A substantial portion of the Board's efforts has been devoted to on-site observation and review of personnel and supervisor selection, training, qualification, certification and facility operation.

The Board recognizes and commends DOE's efforts to date to upgrade training programs at its defense facilities. While the Board applauds the effort expended in developing DOE Orders 5480.18A, *Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities and 5480.20, Personnel Selection, Qualification, Training and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities*, implementation of these Orders to date has been slow and the Board continues to find common deficiencies at most facilities it visits. DOE nuclear facility Maintenance and Operations (M&O) Contractors were required by DOE Order 5480.20 to submit implementation plans called Training Implementation Matrices (TIMs) for each nuclear facility by November 8, 1991. The Order does not contain a time requirement for DOE to approve the TIMs and, for the facilities reviewed by the Board and its staff, DOE has not approved the plans they have received to date.

Until the TIMs are approved, training at defense nuclear facilities is governed by more general requirements contained in DOE Orders on safety (DOE Order 5480.5 *Safety of Nuclear Facilities* and DOE Order 5480.6 *Safety of DOE-Owned Reactors)* that have been in effect since September 23, 1986. Despite the long standing requirements of these Orders, the contractors at the many different facilities evaluated by the Board have not yet, in our view, provided management attention and resources for training and qualification commensurate with the health and safety implications of their defense nuclear programs. Indications at each of these sites demonstrate weaknesses in contractor training programs that have potential negative safety consequences. For example:

—A primary measure of an effective training program is the level of knowledge of the personnel and supervisors. At almost all defense nuclear sites, there are numerous technical personnel and supervisors of defense nuclear activities who do not adequately understand many basic fundamentals of engineering, chemistry, nuclear physics, and radiation protection to the extent required to ensure safe operation or maintenance of the facility to which they are assigned.

—Written examinations at many sites often consist of unchallenging multiple choice and short answer questions which do not adequately assess operator knowledge. Additionally, written operator qualification exams do not effectively correlate fundamental engineering principles with job specific knowledge requirements. As a result, management may not have sufficient information to determine if technical personnel in a defense nuclear facility have achieved a level of expertise required to safely conduct their activities.

As stated in DOE Order 5480.20, Program Senior Officials are responsible for assuming "line management responsibility and accountability for reactor and non-reactor nuclear facility personnel qualification programs." The contractors' lack of effective implementation of DOE Orders concerning training is indicative of the need for more emphasis, direction and guidance on training by line management at DOE Headquarters and Field Offices. For example, the Department has been slow to extend the underlying principles of Board Recommendation 90-1 to other defense nuclear facilities. Recommendation 90-1 called for the development of an effective training program at Savannah River Site K-reactor. It is especially disturbing that despite the successful application of Recommendation 90-1 to K-reactor and the Replacement Tritium Facility, DOE has not improved training of corresponding technical personnel at some other Savannah River Site defense nuclear facilities.

Primarily as a result of assessments conducted by the Board's staff at the Hanford

Site, the Pantex Plant, the Savannah River Site non-reactor facilities, the Oak Ridge Y-12 Plant, and the Rocky Flats Plant, but also because of reviews conducted elsewhere in the defense nuclear facilities complex, the Board believes there is a need for DOE to take action to further strengthen training of technical personnel at defense nuclear facilities. While the benefits of training are felt in many ways, the recommendations below are to be seen for their positive effects on assuring public health and safety. Therefore, in keeping with the Board's statutory requirements and recognizing the priority DOE has placed on the facilities listed above, the Board recommends for these sites that:

1. The Department take timely action to expand senior management's involvement in implementing training programs at defense nuclear facilities and to enhance senior management's communication of the importance of effective training and qualification programs to all levels within relevant DOE and contractor defense nuclear facilities organizations, particularly within line organizations. With regard to operations, maintenance, and technical support personnel, the Department should determine what personnel, funding, organizational, or managerial strengthening actions are needed to (a) elevate the priority and importance of training and qualification programs to assure public health and safety; (b) communicate the importance of training and qualification from the highest level of management to all appropriate Department personnel; (c) expand personnel and supervisor training and qualification guidance and increase program resources to facilitate the rapid review, approval, and implementation of training and qualification programs; and (d) make other changes as are warranted.

2. Where it is found to be necessary, the Department strengthen organizational units responsible for training and qualification at the DOE Field Offices, DOE Area Offices, and contractor organizations responsible for defense nuclear facilities at these sites, especially to include the appropriate technical qualifications of the personnel assigned to defense nuclear activities. The infrastructure, responsibilities, and resources of the training and qualification programs of those organizations need to be strengthened to expedite implementation of existing and additional training and qualification requirements issued by DOE.

3. The Department accelerate efforts internal to DOE to improve training and qualification programs of operations, maintenance, and technical support personnel at defense nuclear facilities. An integral part of this effort should be an assessment of the roles and effectiveness of technical oversight groups to ensure that these groups' reviews, at all organizations and levels within the defense nuclear facilities complex, appropriately recognize the importance of training and qualification to public health and safety. The Department's program should also consider restructuring on-site technical oversight groups to ensure that training and qualification are afforded adequate attention and team members possess the technical expertise necessary to effectively evaluate training and qualification programs of operations, maintenance, and technical support personnel.

4. The Department and its contractors establish and implement measures to improve training and qualification programs of operations, maintenance, and technical support personnel at defense nuclear facilities that embody the principles applied at the Savannah River Site K-reactor in response to Board Recommendation 90-1. These measures, adjusted commensurate with the risk associated with operating each specific facility, should include consideration of elements such as:

a. Incorporation of appropriate applicable guidance on training and qualification comparable with trade, professional, and industry standards for reactor and non-reactor nuclear facilities. While the Board does not necessarily endorse all guidance contained in these standards, it believes they are important sources of information which can be productively used by DOE in identifying improvements for DOE's programs.

b. Identification of differences between current requirements and applicable trade, professional, and industry standards and implementation of supplemental measures necessary to compensate for the differences identified until training and qualification programs at defense nuclear facilities achieve a level at least equal to trade, professional and industry standards.

c. Extension of the performance-based training principles described in DOE Order 5480.18A to all defense nuclear facilities. Particularly the requirements to: (1) Determine the current level of knowledge of appropriate personnel, supervisors, and managers of technical activities by means of written, oral, and practical examinations covering job specific process knowledge requirements as well as fundamentals concepts required to perform a job in a manner that protects the safety of the worker and the public; (2) delineate the training necessary to ensure that these personnel achieve and maintain the qualifications of their respective positions; and (3) evaluate individuals' knowledge level and training curriculum to ensure that the training program effectively prepares these personnel to safely operate, maintain, or support the facility to which they are assigned.

d. Extension of current continuing training, retention testing, and periodic requalification programs to require these personnel to demonstrate continued improvement with increasing experience.

e. Maintenance of readily accessible, auditable records to identify required training and objectively verify training received by these personnel and supervisors including the degree of success achieved.

We believe it is essential that the Department and its contractors accomplish the above for each DOE defense nuclear facility. The facilities specifically identified in this Recommendation are those which the Board understands to be among those which have high priority within the Department and on which the Board has focused its attention.

John T. Conway,

Chairman.

Appendix—Transmittal Letter to the Secretary of Energy

Defense Nuclear Facilities Safety Board

625 Indiana Avenue NW, Suite 700, Washington, DC 20004, (202) 208-6400

September 22, 1992.

The Honorable James D. Watkins,

Secretary of Energy, Washington, DC 20585

Dear Mr. Secretary: On September 22, 1992, the Defense Nuclear Facilities Safety Board, in accordance with 42 U.S.C. 2286a(5), unanimously approved Recommendation 92-7 which is enclosed for your consideration. Recommendation 92-7 deals with Training and Qualification.

42 U.S.C. 2286d(a) requires the Board, after receipt by you, to promptly make this recommendation available to the public in the Department of Energy's regional public reading rooms. The Board believes the recommendation contains no information which is classified or otherwise restricted. To the extent this recommendation does not include information restricted by DOE under the Atomic Energy Act of 1954, 42 U.S.C. 2161-68, as amended, please arrange to have this recommendation promptly placed on file in your regional public reading rooms.

The Board will publish this recommendation in the Federal Register.

Sincerely,

John T. Conway,

Chairman.

Enclosure

[FR Doc. 92-23468 Filed 9-25-92; 8:45 am]

BILLING CODE 6820-KD-M