[DNFSB LETTERHEAD]

December 19, 1991

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

Dear Mr. Secretary:

On December 19, 1991, the Defense Nuclear Facilities Safety Board, in accordance with 42 U.S.C. 2286a(5), approved Recommendation 91-6 which is enclosed for your consideration. The Board is aware that the Department has just proposed rules in the Federal Register concerning Radiation Protection for Occupational Workers. 56 Fed. Reg. 64334 (Dec. 9, 1991). Recommendation 91-6 deals with radiation protection issues throughout the DOE 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 intends to publish this recommendation in the Federal Register.

Sincerely,

John T. Conway
Chairman

Enclosure

RECOMMENDATION TO THE SECRETARY OF ENERGY
pursuant to Section 312(5) of the
Atomic Energy Act of 1954, as amended

Dated: December 19, 1991

The Board and its staff have conducted extensive reviews of radiation protection programs at Department of Energy (DOE) Headquarters and several DOE sites in the defense nuclear facilities complex. In particular, the Savannah River Site (SRS) health and radiological protection programs have been reviewed on several occasions.

After an inquiry into worker exposures to tritiated water from a moderator water spill at the site, the Board transmitted a report to the Secretary of Energy on May 31, 1991, which reviewed the management and radiation protection issues, as well as other factors that DOE and its contractor identified as root causes of the spill. before completion of that report, the Board had directed its staff to continue review of technical radiation protection issues that had been surfaced during the inquiry. In October 1990, the Board's staff reviewed the SRS radiation protection program, which is included by SRS within what are commonly referred to as Health Protection (HP) program and Health Physics program. Board staff conducted follow-up reviews in February, 1991, trips were provided to DOE's Defense Programs personnel in letters from the Board dated November 1, 1990, and June 10, 1991, respectively. In its transmittal letter of June 10, 1991, the Board indicated it was giving consideration to the possibility of developing recommendations to the Secretary of Energy in the radiation protection area after further Board review.

On June 20, 1991, representatives from DOE's Defense Programs, the DOE Savannah River Site Special Projects Office, and the operating contractor at SRS briefed the Board and its staff on radiation protection program issues. As a follow-up to that briefing, the Board conducted a site visit at SRS in July, 1991. During that visit, Board Members interviewed SRS HP personnel and supervisors.

The most recent Board staff assessment of DOE's radiation protection program and the operating contractor's HP program at SRS occurred during the period September 27 through October 10, 1991. The Board's staff reviewed relevant documents, attended briefings and discussions with DOE and operating contractor personnel at DOE Headquarters and at SRS, and observed selected evolutions at reactor and non-reactor facilities.

Other independent organizations and committees have documented required improvements in DOE's radiation protection program, including the Institute for Nuclear Power Operations (INPO) in December 1990, the Advisory Committee on Nuclear Facility Safety in section 5 of its final report dated November 13, 1991, and the final DOE Operational Readiness Review (ORR) team in its report for Savannah River's K-reactor dated November, 1991.

Primarily as a result of these assessments at Savannah River, but also because of other reviews at Rocky Flats Plant and elsewhere in the defense nuclear facilities complex, the Board has found a need for increased DOE attention in five major areas: (1) DOE management and leadership in

radiation protection programs; (2) radiation protection standards and practices at defense nuclear facilities; (3) training and competence of Health Physics technicians and supervisors; (4) analysis of Reported Occurrences and correction of radiation protection program deficiencies; and (5) understanding and attention to radiation protection issues by individuals in DOE and its contractor organizations.

Therefore, the Board recommends that:

1. The Secretary of the Department of Energy expeditiously issue a formal statement of the Department's radiological health and safety policy. Among the subjects that should be considered for inclusion are:

    a. The goals of the Department's radiation protection program.

    b. Potential sources of guidance and bases for the radiological protection standards adopted by, or to be adopted by, DOE.

    c. A reaffirmation, by the Secretary of Energy, of DOE's full commitment to the "As Low As Reasonably Achievable" (ALARA) principle for both occupationally exposed personnel and the general public, which emphasizes the various commitments to radiological protection contained elsewhere in DOE rules, orders, and other requirements.

2. DOE review existing radiation protection training programs, and develop and implement a plan for an expanded training program that includes consideration of the following elements:

    a. Comparison with guidance on training contained in "Guide to Good Practice in Radiation Protection Training," Training Resources and Data Exchange (TRADE) Oak Ridge Associated Universities (ORAU) 88/4-99 and "Guidelines for Training and Qualification of Radiological Protection Technicians," Institute of Nuclear Power Operations (INPO), INPO 87-088. While the Board does not necessarily endorse all of the guidance contained in these documents, it believes they are important sources of professional and commercial information on training which can be productively used by DOE in identifying improvements for DOE's programs.

    b. Delineation of the level of knowledge, skills, abilities, and other qualifications necessary for each generic radiation protection personnel position within the DOE complex, based on professional and industry standards and guidance. This should include association and/or interaction with professional health physics organizations such as the Health Physics Society and American Board of Health Physics certification for appropriate professionals.

    c. Determination of the current level of knowledge of radiation protection managers,

professionals, supervisors, and technicians, by means of written, oral, and practical examinations.

d. Delineation of the existing and supplemental training necessary to ensure that radiation protection personnel meet the qualifications of their respective positions.

e. Evaluation of individuals after supplemental training to ensure that they meet the qualifications for their positions.

f. Continuing radiation protection training requirements and retention testing.

g. Delineation of existing and supplemental training for workers, contractors, and subcontractors, other than radiation protection personnel, necessary to ensure adequate radiation protection for those workers.

3. The Department critically examine its existing infrastructure for radiation protection program development and implementation at DOE Headquarters to determine if resource, organizational, or managerial changes are needed to (a) emphasize the priority and importance of the radiation protection program to assuring public health and safety; (b) communicate the importance of the radiation protection program from the highest level of management to all appropriate Department personnel; (c) expand the radiation protection program and increase program resources to facilitate the rapid development and implementation of radiological protection standards throughout the defense nuclear facility complex; and (d) make other changes as are warranted.

4. The Department examine the corresponding radiation protection organizational units at DOE's principal Operations and Field Offices and DOE contractor organizations to determine if those organizations' radiation protection programs' infrastructure, responsibilities, and resources can be strengthened to expedite implementation of radiological protection standards. A critical aspect of DOE's review should be an assessment of management's involvement and effectiveness in implementing radiation protection programs and management's ability to communicate the steps to be taken to implement an effective radiation protection program to all levels within relevant DOE and contractor units, particularly within line organizations.

5. DOE focus its efforts relating to reporting of occurrences to enhance the usefulness of the Occurrence Reporting (OR) system as a tool for enhancing radiological health and safety at DOE facilities, by emphasizing determination of root causes and management follow-up of lessons learned.

6. DOE compare (a) its operating contractor practices and procedures, and (b) DOE radiological protection standards with the guidance used by other government, commercial, and professional organizations. The documents which DOE should use for this study and comparison include, at a minimum, those listed in the attachment to this recommendation. While the Board does not necessarily endorse any of the listed

documents in their entirety, it believes they are important sources of government, commercial, and professional opinion on radiological protection standards, procedures, and practices. As such, they serve as valuable tools for identifying improvements needed in DOE's programs.

7. After completion of the study recommended in item 6, DOE identify any supplemental measures that are necessary or appropriate to compensate for the differences identified between practices which conform to the guidance enumerated above and actual operating contractor practices; and between standards and procedures listed and DOE standards and procedures for radiation protection at defense nuclear facilities.

John T. Conway, Chairman

Recommendation 91-6, Radiation Protection Program
ATTACHMENT

1. 29 CFR 1910 "Occupational Safety and Health Standards"

2. Nuclear Regulatory Commission Regulatory Guides Division 8 Series "Occupational Health"

3. NUREG-0041 "Manual of Respiratory Protection Against Airborne Radioactive Materials"

4. American National Standards Institute (ANSI) Standard Z88.2 of 1980 "Practices for Respiratory Protection"

5. "Guidelines for Radiological Protection at Nuclear Power Stations" Institute of Nuclear Power Operations (INPO), INPO 88-010.

6. International Commission on Radiological Protection (ICRP) Publication 60 "1990 Recommendations of the International Commission on Radiological Protection," 21 Annals of the ICRP No. 1-3, 1991 Pergamon Press.

7. NRC, Draft Regulatory Guide 8.N.1, "Radiation Protection Programs for Nuclear Power Plants" (Implements revised 10 CFR Part 20) (Draft RG no. DG-8004 was noticed for public comment in 56 Fed. Reg. 56671, 11/6/91).

8. NCRP Report No. 91 "Recommendations on Limits for Exposure to Ionizing Radiation," National Council on Radiation Protection and Measurements 1987.

9. Other relevant commercial or private standards and practices, including NCRP publications.