[DOE LETTERHEAD]

January 15, 1993

Mr. John T. Conway
Chairman, Defense Nuclear Facilities
Safety Board
625 Indiana Avenue, N.W., Suite 700
Washington,, D.C. 20004

Dear Mr. Conway:

Your letter of August 5, 1992 forwarded the results of the Defense Nuclear Facilities Safety Board's (DNFSB) review of the Department of Energy's (DOE) Implementation Plan for Recommendation 91-6 (Radiation Protection for Workers and the General Public at DOE Defense Nuclear Facilities). The purpose of this letter is to transmit the revised 91-6 Implementation Plan.

Sincerely,

Linda G. Stuntz

Attachment

DOE's Implementation Plan for DNFSB Recommendation 91-6 Radiation Protection Issues at DOE Defense Nuclear Facilities

The Defense Nuclear Facilities Safety Board (Board) issued Recommendation 91-6 dealing with radiation protection issues throughout the DOE defense nuclear facilities complex. In a letter to the Board dated January 31, 1992, as amended March 30, 1992, DOE accepted the Board's recommendations. The DOE response committed to provide an Implementation Plan to the Board that will address each of the following areas (specific to the Board recommendations noted in parentheses):

- DOE's commitment to a comprehensive and state-of-the-art radiological health and safety program (recommendation 1);
- DOE management and leadership in radiation protection programs (recommendations 1, 3, and 4);
- Training and competence of health physics staff (recommendation 2);
- Understanding and attention to radiation protection issues by individuals in DOE and its contractor organizations (recommendations 3 and 4);
- Analysis of reported occurrences and correction of radiation protection program deficiencies (recommendation 5); and
- Radiation protection standards and practices at defense nuclear facilities (recommendations 6 and 7).

Based upon an examination of the Board's recommendations and the Secretarial objectives to strengthen the DOE radiation protection programs and the similarity between them, this Implementation Plan was prepared. This Plan identifies specific commitments and schedules necessary to implement modifications to DOE radiation protection programs and practices. The following provides a detailed response to each of the Board's recommendations (note statements in italics are the recommendations by the Board).

Recommendation 1: The Secretary of the Department or 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.

Restatement of Recommendation 1: The Board requested that: (1) DOE issue a clear statement Or its policy related to radiation safety, (2) DOE identify the standards and the basis of it's radiation protection requirements, and (3) DOE reaffirm it's commitment to the ALARA philosophy.

By January 20, 1993, the Department will issue a formal statement on radiation safety policy that will delineate the goals of the Department's radiation protection program, identify the sources of guidance and bases for the radiological protection standards adopted by the Department, and reaffirm the DOE's full commitment to the ALARA principle for both occupationally exposed personnel and the general public. lt should be noted that the Department endorses the use of both Government and consensus standards and works with the commercial industry to promote the development and use of consensus standards. However, the Department will continue to develop its own standards, in accordance with the DOE Order on standards (DOE 1300.2A), when adequate consensus standards do not exist. This Radiological Health Policy Statement will be fashioned after SEN-35-91, "Nuclear Safety Policy". Upon promulgation of the policy statement, the Department considers this item closed.

Recommendation 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 87-008. 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 the American Board of Health Physics certification for appropriate individuals.

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

Restatement of Recommendation 2. The Board has asked that DOE review existing radiation protection training programs and if necessary, develop an expanded training program. This expanded program will consider a number of elements including a comparison of training contained in other existing programs; the level of knowledge, skills, abilities, and other qualifications necessary for each generic radiation protection personnel position within the DOE complex, a determination of the current level of knowledge of radiation protection program managers, professional, supervisors, and technicians by a combination of examination types; the identification of existing and supplemental training needed to ensure they meet their qualifications for their positions; a revaluation after supplemental training; and continued training and retention testing requirements. In addition, the Board asked DOE to delineate the existing and supplemental training for workers, contractors, and subcontractors, other than radiation protection personnel.

Response to Recommendations 2.a. and 2.g.

An extensive review of available training programs supporting radiation protection programs was conducted by DOE between February and June 1992. This included reviews of training materials used by the Westinghouse, Martin Marietta, EG&G, and the Training Resources and Data Exchange (TRADE). In addition, guidance on radiological training contained in "Guide to Good Practice in Radiation Protection Training, "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), were also utilized. A task group consisting of training experts and health physicists from DOE, DOE contractor personnel and outside experts was convened to review the material in those documents and extract the best elements of each training program. Based on this input, standardized core training programs for general employees, radiological workers, and radiological control technicians were developed.

Standardized core courses and training materials for general employee and radiological worker training will be used to achieve consistency Department-wide. In establishing local training programs, the standardized core courses will be presented with site-specific information added. The standardized core training materials developed and maintained by DOE Headquarters consist of lesson plans, viewgraphs, student handbooks, qualification standards, question banks and wallet-sized training certificates. The standardized core training materials are based on ASTM E 1168 87, "Standard Guide for Radiological Protection Training for Nuclear Facility Workers."

Recommendations by training experts were solicited and incorporated into the final training materials through pilot training of the courses, distribution of the draft training materials for comment, and a training workshop. The training materials were distributed to DOE and DOE contractors on November 3, 1992. DOE sites are required to add their own site-specific information to the core training to ensure that training specific to individual sites is included for all workers. All training conducted after December 1, 1992 will be conducted in accordance with the standardized training material and will be completed by June 1994. Copies of the final DOE standardized core training materials can be provided to the Board upon request.

In addition, working committees consisting of DOE and DOE contractor personnel have been established to update the standardized core courses, develop and maintain examination banks for the core courses, and development of new supplemental training courses for workers, contractors, and subcontractors to ensure adequate protection for those workers.

The Department considers these recommendations closed.

Response to Recommendation 2.b.

The level of knowledge, skills, abilities, and other qualifications for Radiological Control Technicians are based on the review described above. Details of the resultant learning objectives are delineated in Chapter 6.0 of the RadCon Manual and the standardized training materials for these workers. In addition, the RadCon Manual addresses training requirements for radiological control technical staff and management.

As part of this recommendation, the Board suggested that in delineating the level of knowledge, skills, abilities, and other qualifications necessary for each generic radiation protection personnel position within the DOE complex, association and/or interaction with the American Board of Health Physics (ABHP) and the Health Physics Society (HPS) should be included. Based on a discussion with the Chairman of the ABHP and the President of the HPS, DOE has learned that neither of those organizations feel that it is appropriate for them to participate in the review of qualifications nor the approval of training programs. Therefore, this material was not coordinated with either organization. However, the RadCon Manual was widely circulated to individuals from various organizations outside the Department and their individual comments were solicited and resolved on the content of the RadCon Manual including the training requirements of Chapter 6.

Although DOE will not be using professional organizations such as the ABHP to review training, the delineation of qualifications for certain of the radiation protection positions promotes certification by the ABHP or registration by the National Registry of Radiation Protection Technologists.

The Department considers this item closed.

Response to Recommendations 2.c., 2.d., 2.e., and 2.f.

In accordance with the RadCon Manual implementation strategy, the PSOs have committed to

provide for training in accordance with the elements in the RadCon Manual to standardize personnel training and qualifications, assess baseline knowledge level, and determine additional training needs beginning December 1, 1992. In preparation of their RadCon Manual implementation plans, DOE Facility Operators and Field Offices performed an assessment of their radiological protection programs in accordance with the July 31, 1992, joint PSO strategy. RadCon Manual Implementation Plans were approved by the PSOs on November 16, 1992.

There are a number of activities, including prior commitments to the Board, which the Department believes most directly relate to the concerns expressed by this aspect of the Board's recommendations. In particular, a commitment was made to the Board to conduct a comprehensive assessment of the staffing, qualifications and training of DOE headquarters, field office, and contractor organizations involved in the development and implementation of standards in response to Board recommendation 91-1. The Department's Action Plan as part of the Department's Implementation Plan for Recommendation 91-1 was transmitted to the Board on August 14, 1992. The Department considers the 91-1 Action Plan to be a comprehensive and cost effective approach to examining the overall staffing, training, and qualification of personnel in all disciplines related to nuclear safety in lieu of conducting separate assessments and studies in individual discipline areas such as radiation protection.

In addition to the work in response to Recommendation 91-1, the Department has accepted all elements of Recommendation 92-7 dealing with training and qualification throughout the defense nuclear complex. Given this recent acceptance, the issues raised in Recommendation 2c, 2d, 2e, and 2f will be considered in developing the Implementation Plan for Recommendation 92-7. Therefore, the Department considers this item closed under Recommendation 91-6.

Recommendation 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 Departmental 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.

Restatement of Recommendation 3: The Board asked DOE to review and establish an infrastructure for radiation protection program development within the Department that will assure that the Department provides for the protection of its workers, the public and the environment from exposure to radiation.

Response to Recommendation 3.

The Tiger Teams, the Office of Nuclear Safety and the line organizations have pointed out the need for improvements in radiation protection programs within the Department and its contractors. Secretary of Energy Notice (SEN) 6E-92 acknowledged this situation and effected a

reorganization to improve the Department's existing infrastructure for radiation protection. That document called for a continuing program of review and assessment by line Program Secretarial Officers and independent oversight by NS. It further directed accelerated development and implementation of a RadCon Manual. The RadCon Manual, in part, required the Department to create oversight positions within Headquarters (i.e., Radiological Control Program Advisors) and the Field Offices in order to evaluate radiation protection issues and provide constructive feedback; and created a Radiological Control Coordinating Committee (RCCC) to promote uniform implementation of the Manual. Department of Energy Notice 5480.6 enacted the RadCon Manual and a schedule for its implementation. Radiological Control Program Advisors have been established for each of the applicable Headquarters Program Offices. The RCCC has been established, a charter has been approved, the Chairman and Vice Chairman have been appointed and the committee has met several times. Committee members include the Radiological Control Program Advisors and designated representatives from all DOE Field Offices.

Through the RCCC, consistent and appropriate implementation of the Department's radiological control programs will be coordinated. In addition, the RCCC provide a mechanism for the identification and need for additional modifications to the existing infrastructure. The RCCC establishes a forum for identification of additional personnel needs to both DOE Program Secretarial Officers and DOE Field Office Managers. The RCCC will provide semi-annual briefings to the Board on the status of the Department's radiological control programs.

SEN-6E-92 and the RadCon Manual reiterated the Department's responsibility for improving the quality of all affected radiation protection programs. Several ongoing activities within EH address this issue. Implementation of the RadCon Manual is in progress. Work is nearing completion on the promulgation of Title 10, Code of Federal Regulations, Part 835. To facilitate compliance with this rulemaking, a series of Implementation and Technical Guides are being developed which provide model procedures and practices consistent with Part 835's requirements. The first set of implementation documents will be issued for comment in early 1993. Copies of the draft Implementation Guides will be provided to the Board's staff for their information. EH would be happy to brief the Board on the final rule, 10 CFR Part 835 and its associated guidance documents upon request by the Board.

Recommendation 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.

Restatement of Recommendation 4: The Board asked DOE to review and establish an infrastructure for radiation protection program development within DOE's principle Operations and Field Offices and DOE contractors that will assure that the Department provides for the

protection of its workers, the public and the environment from exposure to radiation.

Response to Recommendation 4.

SEN-6E-92 mandated Program Secretarial Officers (PSOs) to critically assess the quality of their respective contractors' radiation protection programs at all levels; tasked NS with independently assessing the effectiveness of contractor radiation protection programs; and directed EH to develop the RadCon Manual wherein contractors are directed to establish programs that strive for excellence in radiation protection and ensure that management structures are in place which facilitate awareness and accountability.

Department of Energy Notice 5480.6 required contractors to develop, and submit for approval, plans and schedules for implementing requirements of the RadCon Manual. In these plans, contractors are to compare their existing radiation protection programs to the RadCon Manual and describes what changes, or requests for exemptions, need to be made. As indicated in the response to Recommendation 3 above, each DOE Field Office has identified a Radiological Control Program Advisor. PSOs have reviewed and approved these plans. EH concurred on PSO approved requests for exemptions and changes to the RadCon Manual. NS has begun conducting radiological evaluations in the field. In conjunction with DOE line program functional appraisals and operation assessment programs, DOE line programs have been assessing radiological controls throughout the DOE complex. These efforts constitute the most current review of contractors' radiation protection programs. Future assessments will be accomplished by the PSOs, the Field Office Managers and NS.

At the request of the Board, results of future assessments can be provided to the Board.

Recommendation 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 al DOE facilities by emphasizing determination of root causes and management follow-up of lessons learned.

Restatement of Recommendation 5. The Board recommended that DOE focus its review of the Department's Occurrence Reporting system with emphasis on the adequacy as a tool for improving radiological health and safety at DOE facilities. Also, this review should assess the capability for use in root cause determinations.

Response to Recommendation 5.

The Occurrence Reporting System, which is set forth in DOE Order 5000.3A, will be used as a tool for enhancing radiation protection at DOE facilities. On an on-going basis, DOE evaluates information compiled on the occurrence reporting system to determine what, if any, additional information is necessary to identify radiological health and safety issues. Root cause determination and management follow-up of lessons learned is being emphasized.

In regard to determination of root causes and management follow-up of lessons-learned, the

Office of Nuclear Energy (NE) briefed the Board in February 1992 on the status of the occurrence reporting system and the improvements made to properly address these issues. NE has issued a root cause analysis guidance document and the Headquarter's line programs and field offices have initiated the preparation of monthly and quarterly lessons-learned reports based on data from the occurrence reporting system. The analysis and trending of these monthly/quarterly reports provides management with assessments of operational performance including radiological health and safety issues.

The Office of Nuclear Safety makes significant use of the DOE's Occurrence Reporting System (ORPS) in a number of ways that contribute to improved oversight of nuclear safety, including radiation protection. NS reviews ORPS (1) to follow up on incidents reported in the Daily Operations Brief to the Secretary; (2) to obtain historical data on facilities being reviewed; (3) to identify specific events that require follow up; (4) to perform trending analysis, to review a series of events that may represent a generic issue or lesson learned across the Complex; and (5) to obtain data for NS publications, including the Operating Experience Weekly and NS Safety Notices.

NS's Operating Experience Weekly Summary is an excellent example of the usefulness of the ORPS System in nuclear safety oversight. NS developed the Operating Experience Weekly Summary as a means of distilling and disseminating lessons learned from operational occurrences. This publication is part of NS's Lessons Learned program.

Each week two NS staff members review a broad spectrum of news and technical journal articles, and DOE's ORPS system. From those sources, they select incidents that involve either personnel error (training- or procedure-related) or hardware problems. The incidents selected need not involve a nuclear facility or a radiological hazard, but the lessons learned from the incidents must be applicable to operations at a nuclear facility.

The reviewers' excellent backgrounds in nuclear facility maintenance, training and operations, and extensive experience in event investigation enable them to select the most relevant events and to perform their own investigative followup on the incidents. They contact the principals involved in each event, including the operator(s) and supervisor(s), and any facility rep who may have knowledge of the event.

Once the followup is completed and the event summary is drafted, it is reviewed with the principals (operator, supervisor, etc.) to ensure that it accurately characterizes what happened and how it happened. The summary is then revised accordingly, edited by a senior technical editor, and prepared for publication.

The NS OE Weekly Summary is supplemented by more detailed NS Safety Notices, which provide detailed descriptions of significant nuclear safety events, root causes, lessons learned, and recommendations for additional actions to prevent recurrence of the event.

NS's Lessons Learned Program has been extremely well-received by DOE and the M&O contractors. Feedback from the field has been incorporated into local operating experience and

training programs. The NS Lessons Learned Program has been cited as significantly increasing the usefulness of the ORPS system.

NS believes an effective occurrence reporting system is an essential tool for incident related research and followup. With knowledgeable, technically-competent review, it is a critical element in effective management of safety at nuclear facilities.

Recommendation 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 attachment A 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.

Restatement of Recommendation 6: The Board requested that DOE at a minimum conduct a comparison of the international, national, and other government standards contained in attachment A to the Board's December 19, 1991 letter with DOE's radiological protection standards and then conduct a comparison with its operating contractor practices and procedures.

Response to Recommendation 6.

Over the past three years, DOE has been conducting an ongoing review of radiological protection practices within the DOE complex and comparing those practices with international, national and industry standards including those contained in Attachment one of the Board's December 17, 1991 letter. This review has already resulted in significant action by DOE, including the revision of DOE Order 5480.11, the proposed rulemaking of 10 CFR Part 835, and the development of the RadCon Manual. The goal of these actions is the establishment of a radiation protection framework for the DOE complex that incorporates the best elements from all sources of national and international bodies, government, commercial and professional positions on radiological protection standards, procedures and practices.

As a result of the ongoing review, the Secretary of Energy decided in January 1992 there was a need for immediate action and directed the development of the RadCon Manual. The development of the RadCon Manual was based on the knowledge already gained through the ongoing review of DOE practices and outside standards, such as those of the International Commission on Radiological Protection (ICRP) and the National Council on Radiation Protection and Measurements (NCRP). The process by which these standards were adapted to the circumstances of DOE involved extensive participation and comments from all elements of DOE, including PSOs, Field Offices and contractors. The RadCon Manual will be a "living document" subject to ongoing assessment by NS concerning implementation within the DOE complex and by EH concerning improvements in radiological control policies. For additional information in this area, see the response to Recommendation 7. The Department considers this recommendation to be closed.

Recommendation 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 radiological protection at defense nuclear facilities.

Restatement of Recommendation 7: The Board requested that DOE, based on its renew of applicable radiation standards, identify any necessary actions needed to strengthen its radiation protection programs.

Response to Recommendation 7.

In its development of radiation protection policy and guidance, the Department is continually reviewing recommendations from national and international radiation protection organizations. In the development of DOE Order 5480.11, which was published in December 1988, the Department considered the significant recommendations available at that time, including: EPA Radiation Protection Guidance, International Commission on Radiological Protection (ICRP) Report 26, the National Council on Radiation Protection and Measurements (NCRP) Report 91 and various ANSI standards.

Although the Department continually reviews current standards and recommendations, it will not commit to unilaterally adopting every specific recommendation. Many of the various standards are contradictory; for example in its list of recommended standards for consideration, the Board recommended that the Department base its policies and requirements on ICRP 60 and NCRP 91. The recommendations in these standards disagree upon the basis for a decision in establishing occupational exposure limits. The Board also recommends evaluation of 29 CFR 1910. The radiation protection requirements contained in this regulation of the Occupational Safety and Health Administration are generally outdated and significantly conflict with limits established in DOE orders and the revised 10 CFR Part 20. The Department also strongly feels that the federal agencies must act in a coordinated fashion and that DOE's radiation protection requirements should reflect a standard of excellence. In the development of the RadCon Manual, the Department conducted a review such as that requested be done by the Board to ensure that all appropriate limits and recommendations were included.

On the basis of its ongoing review of international, national and industry standards, as well as identified current practices within the DOE complex, DOE views the proposed 10 CFR Part 835 as consistent with currently adopted National and International Standards and the RadCon Manual as a statement of the best practices currently available in the area of radiological controls, the implementation of which by DOE and its contractors is a priority Departmental goal. To this end, DOE Notice 5480.6 states the "RadCon Manual provides a reasonable measure to protect the health and safety of workers and the public." DOE Order 5480.11 has been revised to establish the DOE policy of implementation of the RadCon Manual.

On December 9, 1991, the Department issued proposed rule 10 CFR Part 835 for public comment in the Federal Register. The public comment period closed March 25, 1992 and included a public

hearing on February 27, 1992. Approximately 550 individual comments from 33 public commenters were received. Since that time, the Department has been analyzing and incorporating comments received where appropriate. The draft Final Rule is currently out for concurrence with transmittal to the Secretary anticipated by January 20, 1993. However, publication of the final rule is dependent upon clearance by the Office of Management and Budget.

DOE Notice 5480.6 and the accompanying revision to DOE Order 5480.11, provide a basis for requiring contractors to prepare RadCon Manual Implementation Plans and contractually enforcing compliance with the RadCon Manual. Prompt implementation of the RadCon Manual will provide a focal point for efforts to improve radiological control practices.

It is anticipated that the RadCon Manual will be revised at least annually, therefore in essence being a "living" document. A tracking system has been established for all references for each specific Article of the RadCon Manual. The database was established in a manner to facilitate timely changes to the RadCon Manual based upon changes to the source documents used in developing the current requirements. This will ensure that the RadCon Manual remains current with appropriate and relevant recognized international, national, government and industry standards for radiation protection.

Each PSO and their contractors are responsible for establishing a schedule delineating when compliance with the requirements of the RadCon Manual will be completed. These schedules are contained in the approved RadCon Manual Implementation Plans for each DOE site. As part of the Department's on-going self-assessment programs and independent oversight reviews, the PSOs and NS will continue to identify any discrepancies between standards and on-going contractor practices. These issues will be identified, analyzed and reflected in applicable corrective action plans for resolution.

EH will provide briefings to the Board annually on the status of radiation control policy in the Department.