93-0000349

The Deputy Secretary of Energy
Washington, DC 20585

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

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):

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

DOE's Implementation Plan - DNFSB Recommendation 91-6

Recommendation 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.

Restatement of Recommendation 1: The Board requested that: (1) DOE issue a clear statement of 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. It 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 reevaluation 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 at 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.

DOE's Implementation Plan - DNFSB Recommendation 91-6

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 radiation protection at defense nuclear facilities.*

Restatement of Recommendation 7: The Board requested that DOE, based on its review 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.

The Secretary of Energy
Washington, DC 20585

January 19, 1993

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

Dear Mr. Conway:

On September 22, 1992, you issued Recommendation 92-7, dealing with training and qualification throughout the defense nuclear complex.

A very important element of the Recommendation is that the Department of Energy (DOE) "expand senior management's involvement" in the implementation and effectiveness of training programs. Senior DOE line management must be responsible for the performance of its staff and contractors; to this end, senior DOE line management must be fully aware and involved in the development and implementation of technical training programs at their assigned facilities and sites. I have emphasized this underlying principle of senior management involvement in realigning the Department's functions and organizations through Secretary of Energy Notice 6.

I also believe a dedicated office reporting to the Under Secretary is essential to focus all of the Department's technical (nuclear and non-nuclear) education and training efforts. Such a major organizational change is needed to encompass all of these efforts for DOE and contractors' staff and managers involved in either nuclear or non-nuclear activities. However, it is not appropriate for me to take such action so close to a change in Administration. I will strongly recommend to the new Secretary that such action should take place early in the new Administration. In the meantime, I am directing the Program Secretarial Officers to use the established process for enhancing the five-year plan for technical training to identify all of the DOE's technical training efforts, to assess how to effectively integrate them, and prepare the implementation plan for Recommendation 92-7.

I am particularly pleased to read your favorable comments concerning the sufficiency of DOE Orders 5480.18A "Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities" and DOE Order 5480.20 "Personnel Selection, Qualification, Training and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities" which address training and qualification. DOE has expended considerable effort and resources to develop directives for reactor and non-reactor nuclear facilities which parallel and in many cases exceed the requirements for commercial Nuclear Regulatory Commission (NRC) licensed non-reactor facilities.

The Department, in response to prior recommendations of the Board, will conduct several evaluations which directly address the concerns expressed by the Board. In addition, I am establishing a Departmental level Technical Training Executive Committee made up of senior executive level personnel from the Secretarial Program Offices to set strategy, foster coordinated planning and oversee DOE and contractor technical training. The Technical Training Executive Committee is directed as its first priority to conduct a 6 month study to provide the Secretary of Energy with the necessary information and options to enable a decision on the establishment of a centralized technical education and training organization within DOE in order to support line management in the development of technical training policy and requirements and planning and delivery of DOE and contractor technical training programs. This committee will determine what personnel, funding, organizational or managerial strengthening actions may be needed.

Like 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 improvement in these efforts for our training and qualification programs at the defense nuclear facilities. As has been noted in the past by internal DOE studies, as well as reviews by the National Academy of Sciences (NAS) and the Defense Nuclear Facilities Safety Board, the Department of Energy must acquire, train and develop the technical resources and talent necessary to ensure the safe operation of DOE facilities. It is unacceptable for us to allow a return to those days when there existed as described by NAS, "a marked imbalance in technical capabilities and experience between the contractors and the DOE staff." DOE senior managers must foster the recruitment, training and development of technical staff so as to promote line management and accountability, to develop technical inquisitiveness, and to improve DOE standards of performance continuously. I believe that successful models for education and training of managers, staff and technicians within the commercial industry, demonstrate the need for a dedicated organizational unit.

Your recommendations in 92-7 are fully consistent with our ongoing initiatives, and consequently, I accept all elements of Recommendation 92-7. The enclosed directive describes the process that will be used to prepare, within 90 days, the implementation plan for Recommendation 92-7. This approach should provide the springboard for integrating all of the Department's technical training activities and also provide a specific plan of action for defense nuclear activities in regard to training and qualification.

Sincerely,

James D. Watkins
Admiral, U.S. Navy (Retired)

Enclosure

93:350

The Secretary of Energy
Washington, DC 20585

January 19, 1993

MEMORANDUM FOR SECRETARIAL OFFICERS

SUBJECT: TECHNICAL TRAINING AND QUALIFICATION

The Department of Energy (DOE) program managers, their supervisors and the operating contractors' managers and staff must have the expertise, training and qualification to ensure that they are capable of performing their assigned work. In this regard, line management is totally responsible for the recruitment, training and development of technical talent to run DOE's complex operations. Personnel who are adequately qualified by technical education and experience provide the kind of management direction and guidance essential to safe operation of DOE's facilities. I expect senior line managers to be involved and engaged and provide the leadership for their DOE staff as well as contractors. This concept of line management responsibility and accountability for training and qualification is reflected in DOE directives for quality assurance (DOE Order 5700.6C) and conduct of operations (DOE Order 5480.19). More importantly, this concept is the underlying principle for SEN-6E-92.

Assistance to line management is available from support elements within DOE. However, such support cannot absolve line managers of their total responsibility for recruitment, training, development and qualification of their staff. My approval of the DOE five-year training plan on January 7, 1992, was predicated upon the leadership role I expect the Program Secretarial Officers to provide in guiding and directing the evolution of a comprehensive, coordinated and sufficiently supported long-term technical training and qualification program.

By letter dated September 22, 1992, the Defense Nuclear Facilities Safety Board (DNFSB) made four recommendations regarding training and qualification for defense nuclear facilities. Although we will develop an implementation plan to respond to the Board relative to Environmental Restoration and Waste Management (EM) and Defense Programs (DP) activities, the intent and subject matter of these recommendations are consistent with our ongoing initiatives and are applicable to other elements of DOE. Accordingly, I am setting in motion the steps needed to take successful lessons learned from nuclear activities and broaden the application of the pertinent standards to non-nuclear activities. In this regard, the creation of an appropriate vehicle to provide increased focus on technical training and qualification of both DOE and contractor personnel is complex, and warrants close coordination. Such a focus should rely

on and build the expertise within the individual DOE offices designated responsibility for specified functions. That is, integration and coordination of existing technical training programs by a single entity does not mean that individual offices are absolved of or given up their responsibilities for their area of expertise.

The framework provided by the 5 Year Plan to Improve Technical Recruitment, Training and Development will continue to be the vehicle for focusing the attention of DOE's senior managers. In particular, the participation of Deputy Assistant Secretaries from the line organizations with Field Office Managers in an executive level technical training committee will provide both continuity and synergism within the Department.

Regarding technical training standards, DOE has expended considerable effort and resources to develop 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 the DOE Reactor and Non-Reactor Nuclear Facilities," which address training and qualification for nuclear facilities. A comparability study was conducted and a report issued in 1991 demonstrating the extent to which the DOE training requirements incorporate existing performance based training standards. This study concluded DOE directives met or exceeded the requirements for commercial, Nuclear Regulatory Commission (NRC) licensed, reactor and non-reactor facilities. The DNFSB has also provided favorable comments on the adequacy of these standards. It is therefore appropriate to broaden their applicability and promote the concept of performance-based training throughout all of DOE.

To ensure continuing high-level line management involvement in recruitment, training and development, I am directing the Assistant Secretary for Defense Programs, working in consultation with the other PSOs, to establish a reconstituted executive level steering committee (Technical Training Executive Committee) to set strategy, oversee all actions related to both the DOE and contractor technical training, and serve as the forum for upgrading and updating the five-year plan. The Technical Training Executive Committee shall report to the Under Secretary and shall have a charter which includes, as a minimum, the following:

1. Executive Committee members (about eight to ten members) from the Secretarial Program Offices shall be executive level, preferably at the Deputy Assistant Secretary level, be technically proficient and have other line management responsibility for overseeing technical activities. At least two members of the Committee shall be DOE Field Office Managers. Additional members from the policy developing offices should be included. The

Chairperson of the Committee shall be the Assistant Secretary for Defense Programs.

2. A five-year training and qualification plan will be updated annually, formally reviewed and approved by the cognizant PSOs, and provided by the Chairperson to the Under Secretary for issuance by September 30 of each year.

3. The five-year plan will be the DOE document that comprehensively integrates existing and planned DOE training activities. Consequently, all DOE technical education and technical training initiatives including those to be developed as part of the Implementation Plan for DNFSB 92-7 recommendations will be incorporated into the five-year plan. The five-year plan will be an integrated approach that addresses technical training needs of all specialties (e.g., environment, security, nuclear safety, industrial safety, etc.) for both DOE and contractors.

As a first priority, the Technical Training Executive Committee shall be responsible for preparing, within 90 days of the date of this directive, the implementation plan to address DNFSB Recommendation 92-7.

Meanwhile, the Technical Training Executive Committee is to begin immediately to conduct a 6 month study to provide the Secretary of Energy with the necessary information and options to enable a decision on the establishment of a centralized technical education and training organization within DOE in order to support line management in the development of technical training policy and requirements and planning and delivery of DOE and contractor technical training programs. This committee shall recommend to the Secretary what personnel, funding, organizational or managerial strengthening actions may be needed. They will evaluate the need for expanding personnel and supervisor training and qualification guidance and recommend resource requirements to facilitate the rapid review, approval, and implementation of training and qualification programs.

The goal of this effort is to provide the Secretary possible options by June 30, 1993, so the Secretary could implement the Technical Training Executive Committee's findings and recommendations as the Secretary sees fit, before the end of the fiscal year. Working in consonance with support staff the line managers will receive assistance and support to ensure that a standardized process exists to train and qualify technical personnel to oversee, manage and operate DOE facilities. The following elements, as a minimum, are to be included for consideration:

1. The role of electronic media for sharing technical training activities among geographically dispersed sites.

2. The initial identification of centers of excellence to provide leadership for prompt implementation of technical training in selected topics (e.g., conduct of operations, project management, etc.).

3. The timetable to revise the DOE Order 3410.1B "Training" to reflect the roles envisioned for field and headquarters entities, both support and line.

4. The timetable to revise the DOE Order on nuclear facility training (DOE Order 5480.20) and accreditation (DOE Order 5480.18A) in order to broaden their applicability to non-nuclear activities and facilities.

5. The actions needed to establish a DOE wide technical education and technical training program to ensure that skilled workers, both contractor, and federal, are available to meet the rapidly growing challenges to manage and clean up the numerous, contaminated nuclear materials production sites.

The Department has accomplished and has underway numerous technical training initiatives. In addition to the actual conduct of training, major accomplishments have been achieved in establishing the framework for upgrading training standards and guidance. The attachment to this directive provides additional perspective for recognized successful accomplishments.

James D. Watkins
Admiral, U.S. Navy (Retired)

Attachment

ATTACHMENT

DOE ACCOMPLISHMENTS IN TRAINING AND QUALIFICATION FOR NUCLEAR ACTIVITIES

The Department recognizes that the establishment and implementation of training and qualification programs as required by DOE Order 5480.18A and 5480.20 is absolutely essential to the safe and reliable operation of defense nuclear facilities. The management and oversight of these training and qualification programs must be conducted by individuals who possess the requisite managerial and technical skills. Maintaining and upgrading the training and qualification of DOE and contractor personnel at all levels of the Department requires a number of different but interrelated activities ranging from employee recruitment practices to the training and professional development of managerial and technical staff. There are a number of activities, including two prior commitments to the Board, which the Department believes most directly relate to the concerns expressed by the Board recommendations. These activities include:

- A commitment 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. This assessment will examine the resources committed by the Department to nuclear safety standards development and implementation, including the qualifications, background, organizational distribution, and numbers of management and technical personnel. This assessment will include training personnel. The Department's Action Plan resulting from 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 training.

- A commitment to the Board to conduct an assessment of the Department's Facility Representative (FR) program in response to Recommendation 92-2. This assessment will examine the duties, responsibilities, recruitment practices, training, examination and qualifications, organizational structure, assignment, and resources for the DOE Facility Representative (FR) program. The Department's Action Plan to implement Recommendation 92-2 was transmitted to the Board on November 5, 1992.

- The development of a five-year plan for the recruitment, training, and professional development of technically

trained individuals to staff DOE line and oversight offices at all levels of the Department. This initiative has established the framework to upgrade the training and qualification of DOE staff and has put the following program in place:

- A Steering Committee to provide for continuing Program Secretarial Office input and oversight of the five-year plan initiatives,

- Initiation of a project to analyze and describe mission critical work activities and to identify associated knowledge and skill requirements to support broad-based training activities for DOE staff. The Department's analysis project has described the environment, safety, and health and nuclear safety-related work activities. The information will be assembled in a Directory of Work Activities with work descriptions, associated knowledge and skills, mandatory training requirements, and internal sources of training for each work activity. This product, to be completed by September 1993, will be a key tool in planning and developing training and qualification courses for DOE staff and,

- The concept for the DOE Training Facility and its tentative curriculum has been approved by the Secretary and the process for site selection is underway.

o A training program which consists of six training courses to teach both DOE and contractor staff the systematic approach to training methodology adopted by the commercial industry. In the adoption of performance-based training in the commercial nuclear industry it was found to be necessary to conduct extensive training of utility personnel on each of the five phases of performance-based training (i.e., analysis, design, development, implementation, and evaluation) and to provide for basic instructor training. Comparable training courses have been developed for DOE and its operating contractors. These courses include: Basic Instructor Training, On-The-Job Training, Analysis and Design, Instructional Development, Testing Employee Performance, and Performance Evaluation and Corrective Action. While these courses are available to DOE personnel, the emphasis for course delivery over the last four years has been operating contractor personnel who have direct job responsibilities to develop and deliver training at defense nuclear facilities. A course turnover procedure has been developed to transfer the courses to individual contractors for incorporation in their internal training programs for their staff.

o A training course entitled, Management and Oversight of Performance-Based Training Programs, directed primarily at DOE and contractor line management and oversight personnel. This course was developed by DOE based on a recognized

deficiency in the ability of organizational units at DOE Headquarters, field offices, area offices and contractors to adequately understand and carry out their responsibilities for assessing, reviewing, and approving contractor plans for development of training programs necessary to meet DOE Orders 5480.18A and 5480.20. This new course was first delivered at the Savannah River Site to take advantage of their experiences in implementing Board Recommendation 90-1 and is currently scheduled for delivery at each DOE site. The purpose of the course is to:

- Explain the requirements of DOE Orders 5480.18A and 5480.20,
- Explain the roles and responsibilities of technical monitors and program managers for DOE Orders 5480.18A and 5480.20,
- Provide background in performance-based training and the review and approval of contractor training plans and training programs,
- Provide practice comparing training programs with criteria in DOE Orders, and
- Provide practice using job aids for tracking progress of training programs meeting DOE Orders.

o A series of conferences, workshops, briefings and meetings for DOE and contractor staff to improve their understanding of performance-based training, accreditation, selection, qualification, and training requirements and the development and review of plans for DOE Orders 5480.18A and 5480.20. To help expedite the development and implementation of training programs recent emphasis has targeted and focused on specific types of facilities, training programs, and training plans required by DOE Order 5480.20. Several examples of these recent efforts include:

- A workshop hosted by Westinghouse Savannah River Company to address the sharing and development of standardized training for chemistry technicians.
- A workshop hosted by Westinghouse Hanford Company to address the sharing and development of standardized waste tank farm training programs.
- A workshop hosted by Lawrence Livermore National Laboratory to share methods and approaches to meeting DOE training requirements in laboratory research environments.
- A workshop hosted by EG&G Rocky Flats to address the development and review of Training Implementation Matrices required by DOE Order 5480.20.

- Two separate workshops hosted by Martin Marietta Energy Systems and Westinghouse Savannah River company for senior line management and senior training management to discuss the critical role of line management in training.

These activities have a direct impact on the understanding and implementation of DOE training requirements and promote more timely and cost effective implementation of DOE training requirements.

o A training technical assistance program that has provided over 145 assistance visits to both DOE offices and contractor facilities with recent priority given to direct assistance to DOE Field and Area offices in the conduct of more timely and adequate reviews of TIMs required by DOE Order 5480.20.

o In response to DOE Order 5480.18A, DOE Order 5480.20, and Tiger Team Assessments, management and operating contractors have taken significant steps to strengthen their organizational units responsible for the training and qualification of operations, maintenance, and technical support personnel. One of the primary actions taken is the establishment of centralized training organizations to ensure the development of site-wide training policies, procedures, and requirements, and the development of generic fundamentals training programs in areas such as radiation protection, general employee, and technical staff training that have site-wide applicability. The number of operating contractor training staff and the amount of facility space dedicated to training has also increased significantly at DOE sites. The following are a few examples which demonstrate the increased emphasis given to the importance of training:

  - At Savannah River the training staff has increased from 30 in 1980 to 580 in 1991. The space dedicated to training (in square feet) has increased from 6,200 in 1980 to 84,000 in 1991 with an additional 60,000 planned.

  - At Idaho National Engineering Laboratory, the Westinghouse Idaho Nuclear Chemical Company training staff has increased from 10 in 1980 to 55 in 1991. The space dedicated to training has increased from 1,500 in 1980 to 28,000 in 1992.

  - At Richland the training staff has increased from 34 in 1980 to 169 in 1991. The space dedicated to training has increased from 8,920 in 1980 to 77,680 in 1991 with an additional 65,000 planned.

  - At Rocky Flats the training staff has increased from 39 in 1989 to 160 in 1990.

While complete data have not been compiled for each DOE operating contractor, these data are considered representative of actions being taken across the Department. Presently there are more than 3,000 personnel across the DOE system who are directly involved to some degree in training. These data are also very comparable to the increase in staffing and training facilities that occurred in the commercial nuclear power industry as they adopted performance-based training.

The Department has an ongoing program to assure that DOE Orders and standards are and remain comparable to trade, industry, and professional standards. The issuance of DOE Order 5480.18A on July 19, 1991 and DOE Order 5480.20 on February 20, 1991 were key actions taken by DOE senior management to assure that the Department's requirements met or exceeded industry standards for comparable facilities. In addition to these major new Orders, nineteen standards were developed and issued in 1991 and 1992 (see Table 1) and 9 more standards will be completed in 1993. These standards directly support the compliance requirements of DOE Orders 5480.18A and 5480.20, and are modeled directly after commercial industry standards. Each of these standards are based in part on the 12 years of experience of the Institute of Nuclear Power Operations (INPO). In researching the development and maintenance of DOE Orders and technical standards, all known trade, industry and professional materials are reviewed for relevance.

During the development of DOE Orders 5480.18A and 5480.20 industry standards and guidance were used to develop both the methods incorporated and the guidance provided relative to training development and the selection, qualification, and training of nuclear facility personnel. In the case of 5480.18A, the model that was used to develop the systematic approach to training and the accreditation process was entirely patterned after the training system design model and accreditation process used by the commercial nuclear industry and endorsed by the NRC. During the development of the Department's requirements for performance-based training, accreditation process and supporting training program accreditation manuals, three former members of the INPO National Nuclear Accreditation Board served on a program review committee to review and provide oversight of the entire development process. These former members included two Accrediting Board Chairmen, one of whom is now an NRC Commissioner and one that is now on DOE's accrediting board. The third person was the NRC's nominee to the Industry National Nuclear Accreditation Board and is a senior DOE operating contractor official. In addition, in discussions with INPO staff, the Department received advice on the methods that they use to administer the industry program through the National Academy for Nuclear Training. As a result of these critiques, reviews, and advice, the Department's requirements and training accreditation objectives, criteria, processes, and guidance incorporate improvements and lessons learned based on extensive industry experience.

The standards and guidance that dictate training for commercial facilities were incorporated into DOE Order 5480.20 from its inception through final approval and issuance. The Order includes standards and guidance for training from American Nuclear Society (ANS) Standards (five different versions of ANS 3.1 that are used by commercial nuclear utilities and two versions of ANS 15.4 used by licensed research and test reactors), the Code of Federal Regulations (10 CFR 19/50/55/70/72), NRC Regulatory Guidance (RegGuides), NRC publications (NUREGS), NRC Generic Letters, Electric Power Research Institute (EPRI) documents, and existing and previous DOE orders. In April 1991, a study was completed that compared training and qualification program requirements of DOE nuclear facilities with similar requirements of commercial nuclear facilities. This comparative study demonstrates that DOE Category A reactor personnel selection, qualification, education and experience, and training requirements parallel, and in many cases exceed, NRC requirements and guidelines for commercial nuclear reactor plants. Also, the requirements for DOE Category B reactor personnel equal or exceed NRC requirements for licensed test and research factors. The study also revealed that past and present DOE requirements for non-reactor nuclear facility training and qualification requirements exceed NRC regulatory requirements and guidance for licensed commercial non-reactor facilities.

In order to remain abreast of industry standards, experiences, and lessons learned, the Department maintains a working relationship with standards bodies, INPO and numerous other industry groups. These groups include the Mid-Atlantic Nuclear Training Group (MANTG), the North-East Training Association (NETA), the Mid-West Nuclear Training Association (MNTA), the Southern States Nuclear Training Association (SSNTA), and the NRC Region 5 Nuclear Training Group. The Department is involved on a quarterly basis with activities sponsored by one or more of these training organizations to maintain current with trends and experiences that have been gained by the participating nuclear utilities. The working relationship is reciprocal in that utility members routinely participate in activities that are sponsored by the Department and frequently review and comment on training-related material that the Department is preparing. Additional working relationships with professional training organizations, such as the Society for Applied Learning Technology, provide avenues for more exchanges of resources and data.

The Department acknowledges the effectiveness of institutionalizing the systematic approach to training prescribed by DOE Order 5480.18A. To extend this approach to all nuclear facilities, the Department issued DOE Order 5480.20, Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities, in February 1991. This Order embodies and endorses the principles of performance-based training and goes even further to incorporate the content of nuclear industry standards. The Order establishes position-by-position selection

criteria, encourages pre-testing to establish benchmark data upon which to base training programs, and requires that training in fundamental subjects be administered on the basis of position needs. In addition, the Order requires that written, oral, and practical examinations be administered to personnel in critical safety-related positions, it prescribes the content of training programs for all categories of positions at nuclear facilities, and requires that both individuals in training programs and the training program itself be evaluated periodically to determine the effectiveness of the training and the program. The Order also specifies that continuing training programs be implemented and contains guidance for the content of these programs. It further requires that requalification/recertification examinations be given at intervals not to exceed two years.

The Department also believes it is important to recognize that performance-based training and accreditation principles, practices, and requirements have only been implemented within the commercial nuclear power industry. Neither performance-based training accreditation is required or recommended for NRC licensed test and research reactors or NRC licensed non-reactor nuclear facilities such as fuel fabrication plants. The Department, on the other hand, has extended performance-based training principles and practices to all of its nuclear facilities and has taken the additional major step to require performance-based training and formal accreditation at DOE Category A test and research reactors and our larger and more complex non-reactor nuclear facilities.

Progress on the part of DOE operating contractors may appear slow. However, in the commercial nuclear industry it took eight years to accredit the first utility's training programs. In just three years, the Department has made significant progress in changing the training culture complex wide, and anticipates the review of the first accreditable facility in the current fiscal year. The breadth, depth and far-reaching vision of the accreditation program is in effect a long-range plan. The plan is in motion and the goals can and will be met. In 1989 when DOE Order 5480.18A was issued, each facility was given one year to submit a plan. Every facility named in the order submitted their plan on time. The facility has three years to upgrade its training programs to a level where they are ready for accreditation. In the past most DOE sites had little knowledge of performance-based training methods, had little or no structure to their training programs, and had no plans to upgrade their programs. Today, it is a different picture. Although progress still needs to be made, facilities have come a long way in adopting consistent terminology and methodology, and in developing support for performance-based training methods and accreditation of training programs.

The Department has strengthened its commitment to continuing training and retention of knowledge through the requirements that are contained in DOE Order 5480.20. On page I-5, subparagraph 7.d.,

the Order states "Continuing training programs shall be designed and implemented to maintain and enhance (underlining added) the proficiency of operating organization personnel---". The subparagraph requires programs that are:

- o Commensurate with specific position needs,
- o Include periodic written and oral examinations and/or operational evaluations,
- o Provide training and examination at least annually on abnormal facility procedures and emergencies,
- o Include a combination of training methods and evaluation steps on a regular and continuing basis, and
- o Include specific direction for activities and topics that must make up the continuing training program for positions that are critical to safe operation of the facility.

The Department routinely provides information to DOE and contractor training representatives throughout the system that is suitable for inclusion in continuing training programs. These transmittals originate from the DOE Training Coordination Program, the DOE Training Accreditation Program, the Office of Nuclear Safety Information Center and Operating Experience Program, the Training and Resource Data Exchange (TRADE), and the Office of Environment, Safety, and Health Safety Notices and Safety Bulletins. Guides to Good Practice have also been developed and distributed to improve continuing training program implementation in contractor organizations.

The DOE Standard DOE-STD-1010-92 Guide to Good Practices for Incorporating Operating Experiences, two draft standards scheduled for fiscal year 1993, and the Guide to Good Practices for Continuing Training provide additional support for effectively developing and implementing continuing training.

The Department agrees with the necessity to maintain clear, concise, and auditable records of its operations. This need is especially important when training records are the issue. DOE Order 5480.20 has defined specific requirements that relate to both individual training records and training program records. The requirements of 5480.20 include auditable records of attendance, results of medical evaluations, qualifications attained, and other data to provide assurance of an individual's training and qualification status. The Department also incorporated expectations for individual and program records in the training accreditation program manuals. In the past most operating contractors had decentralized training organizations. Today many operating contractors have established centralized training organizations and are implementing centralized training recordkeeping systems to meet the requirements of the Order and to

help them manage site recordkeeping requirements not just for technical training (i.e., DOE Order 5480.20) but also for Occupational Safety and Health (OSHA) requirements. As an example of new recordkeeping initiatives, the Rocky Flats Plant uses a system of centralized and computerized data that provides ready access to the status of each individual's site and facility training record. The Training Scheduling and Record (TSR) system is maintained from a central location and is accessible for "read only" purposes from each of the individual facility training organizations on site. The system has proved to be a vast improvement over the previous system, which consisted of noncentralized, fragmented records. The Oak Ridge Y-12 Plant has recently implemented a system called the Training Management System (TMS) that also is more effective for managing, tracking, and scheduling training. The system's capabilities include: satellite access for read only purposes; input access by division for the personnel in that division only; and central control from the Plant Training organization (Y-12 central training). The TMS system can build a training curriculum on the basis of each position, has registration capabilities, is used to track individual status, and ties in to the plant's Medical and Personnel databases to track restrictions that may be applicable to an individual. It is fully expected that other defense nuclear facilities will develop improved recordkeeping systems in response to DOE Order 5480.20.

To help improve the recordkeeping systems of operating contractors the Department identified the need for further sharing of methods and resources through the Department-managed TRADE network administered for DOE through the Oak Ridge Institute for Science and Education. Several workshops addressing the subject of training recordkeeping have already been held and more are planned. As a result of these workshops a DOE TRADE Good Practice for Recordkeeping and Recordkeeping Systems is being developed.

Procedures

In Recommendation 92-7 the Board also asked the Department to consider other applicable aspects of recommendation 90-1 at Savannah River. The Department believes that training on normal and emergency operating procedures is essential. The use of sound operating procedures is one of the most direct and effective methods available to ensure that operations are conducted in a safe, deliberate, and controlled manner. Because the development of sound procedures and on-going procedure management are complex and new activities for some DOE facilities, and because of the key role that procedures play in ensuring safe, deliberate, and controlled operations, DOE has initiated a program to define requirements for procedure system management and to provide guidance in areas that have not previously been addressed in detail in DOE literature. A principal strategy of the DOE procedures program is the formation and use of a DOE Procedures Standards Committee. This committee is made up of DOE Headquarters and field office personnel, procedures

managers from DOE facilities, and personnel from the DOE national laboratories. The DOE Procedures Standards Committee, under the direction of DOE Headquarters personnel, decides what guidance is needed, and reviews that guidance once it is produced. Research for, and production of, the guidance is generally performed by the personnel from the DOE national laboratories.

The *DOE Writer's Guide For Technical Procedures* was published in September 1991 as a DOE Standard for trial use (DOE/NE/SP-0001T, *Writer's Guide For Technical Procedures*). The Department has also established a Procedures Special Interest Group (SIG) as part of the TRADE network to promote further sharing of procedure systems, methods, and lessons learned. Drafts and revisions of a *DOE Writer's Guide For Emergency and Alarm Response Procedures* were developed in July 1992, with a more final revision due by December 1992. It is anticipated that this document will be released as a DOE Standard in the first half of 1993.

Fundamentals Training and Examinations:

Although not specifically a part of Recommendation 92-7, the Board's introductory material expressed concern with the level of knowledge of personnel and supervisors in basic fundamentals and a concern with the cognitive level of examinations they reviewed at various sites. The Board has already been advised of standardized fundamentals training that is being developed in the area of radiation protection, which is one of the primary areas where the Board and its staff have noted concerns. While this standardized training will improve the level of knowledge in radiation protection, the Board should also be aware that the Department has initiated improvement of training and qualification programs for operations, maintenance, and technical support personnel at defense nuclear facilities through development of Fundamentals Handbooks for use by reactor and non-reactor nuclear facilities. To aid in implementation and consistency of fundamental training programs, the Department recently issued the first five in a series of twelve Fundamentals Handbooks on topics that have been identified by the industry as necessary to support the basic concepts of nuclear operations. In addition to the Fundamental Handbooks, Primers on individual topics and components are in the development stage, and will be distributed to the complex as they are completed. The remaining five Fundamental Handbooks that have been identified and a minimum of three Primers are scheduled to be completed during fiscal year 1993.

The DOE Fundamentals Handbooks that were recently distributed (August 1992) to DOE and contractor training representatives throughout the complex contain information designed to improve the fundamental knowledge of personnel at all DOE nuclear facilities. The information is presented in a format that is consistent with a systematic approach to training and is supported by an examination bank of questions that test each learning objective in several

formats. These handbooks were developed by training and technical professionals from all of the Department's major nuclear facilities. In addition, the handbook that addresses Thermodynamics, Heat Transfer, and Fluid Flow was compared to the INPO Guideline document on the same subject for content prior to being issued. INPO's Guideline document sets the industry standard for Thermodynamics, Heat Transfer, and Fluid Flow. The comparison verified that all of the subject matter that is recommended in the INPO Guideline document was addressed and discussed in the DOE Handbook and informal feedback from INPO stated that these "quality documents" were "valuable training resource for the U.S. nuclear power industry."

In addition to the Handbooks the Department has also recently developed two standards to improve the design and development of examinations. These standards were based on industry good practices and NUREG 1021, Operator Licensing Examiner Standards and NUREG BR-0122, Examiners Handbook for Developing Operator Licensing Written Examinations. The standards, DOE-STD-1009-92, Guide to Good Practices for Development of Test Items and DOE-STD-1010-92, Guide to Good Practices for the Design, Development, and Administration of Examinations, were developed because of similar concerns with the quality of examinations that have been identified by the Department.

TABLE

DOE Training Standards Issued

1. DOE-NE-STD-1001-91, Guide to Good Practices for Training and Qualification of Instructors;

2. DOE-NE-STD-1002-91, Guide to Good Practices for Training and Qualification of Chemical Operators;

3. DOE-NE-STD-1003-91, Guide to Good Practices for Training and Qualification of Maintenance Personnel;

4. DOE-STD-1005-92, Guide to Good Practices for Developing Learning Objectives;

5. DOE-STD-1006-92, Guide to Good Practices: Evaluation Instrument Examples;

6. DOE-STD-1007-92, Guide to Good Practices for Teamwork Training and Diagnostic Skills Development;

7. DOE-STD-1008-92, Guide to Good Practices for Training of Technical Staff and Managers;

8. DOE-STD-1009-92, Guide to Good Practices for the Development of Test Items;

9. DOE-STD-1009-92, Guide to Good Practices for Incorporating Operating Experiences;

10. DOE-STD-1011-92, Guide to Good Practices for the Design, Development, and Implementation of Examinations;

11. DOE-STD-1012-92, Guide to Good Practices for On-the Job Training;

12. DOE/EH-0259T-92, General Employee Radiological Training;

13. DOE/EH-0260T-92, Radiological Worker I Training;

14. DOE/EH-026IT-92, Radiological Worker II Training;

15. DOE/EH-0262T-92, Radiological Control Technician Training;

16. DOE/NE-0100T-91, Training Accreditation Program - Training Program Manual;

TABLE

DOE Training Standards Issued
(continued)

17. DOE/NE-0102T-91, Training Accreditation Program - Performance Based Training Manual;

18. DOE/NE-0103T-91, Training Accreditation Program - Training Program Support Manual, and

19. DOE/TIC-4633-83, Nuclear Criticality Safety Training: Guidelines for DOE Contractors.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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

January 15, 1993

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

Dear Mr. Secretary:

The Board has reviewed the Department's Recommendation 92-2 Implementation Plan, and will consider it acceptable provided the conditions delineated below are included.

First, DNFSB Policy Statement No. 1: *Criteria for Judging the Adequacy of DOE Responses and Implementation Plans*, 55 Federal Register 43398 (October 29, 1990), states that the purpose of the Implementation Plan is to "... present the details of **how** and **when** the recommendation will be met." In the case of Recommendation 92-2, the Implementation Plan states, "... the Department will develop an Action Plan that identifies specific commitments and schedules to quickly implement improvements in DOE Facility Representative programs." Therefore, this Action Plan will be reviewed for acceptance by the Board. The Board expects the Action Plan to include, at a minimum, all of the elements outlined in Attachment 1 to this letter.

Second, the Implementation Plan states, "In order to limit the impact on personnel and management resources, it is expected that the majority of the Facility Representative program will be implemented using existing Field Office resources that are restructured, as required, to support a more structured Facility Representative program." This DOE expectation includes an implicit limitation that restricts unduly the manpower pool from which facility representatives will be drawn. At this formative stage, imposing such a barrier could conceivably prevent the establishment of an effective DOE Facility Representative program. The Board expects that personnel selection for the program will be based upon identifiable qualities and attributes that indicate an ability to successfully complete qualification *and* perform effectively on the job, regardless of whether such persons are in the field, at Headquarters, or drawn from the outside.

Finally, the Board expects that the quarterly written status reports cited in Section VI will include data derived from Facility Representative program management and independent assessments conducted by DOE-Headquarters in accordance with Criteria 9, *Management Assessment*, and 10, *Independent Assessment*, respectively, of DOE Order 5700.6C.

If you have any questions on this subject, I would be pleased to discuss this with you further.

Sincerely,

John T. Conway
Chairman

c:
Dr. M. Fiori, DR-1

Attachment 1

Elements to be Included in the Recommendation 92-2 Action Plan

The Action Plan will be reviewed to ensure it contains a specific schedule detailing *when* all elements of the recommendation will be met. The Board expects the Action Plan to include (1) firm commitment dates by which qualified DOE Facility Representatives will be in place and performing with measurable effect at several defense nuclear facilities as selected by the Department, and (2) a schedule for implementation at the balance of the defense nuclear facilities.

The Board will also review the Action Plan to ensure the details of *how* the Recommendation (and therefore the Facility Representative Program) will be implemented, particularly in the following four areas:

a. **DOE Personnel Practices and Procedures.** Paragraphs 1.b.(6) and 2.a of Recommendation 92-2 specifically identified DOE personnel practices, procedures and programs as an area requiring attention. As stated in the Office of Nuclear Safety Policy and Standards May 1992 Training Document for DOE Order 5700.6C, *Quality Assurance*, "... producers of goods and services have been forced to reexamine their approach to managing their operations." In light of this, changes may be required at the DOE Headquarters level, including recruitment practices, definition of career paths, and compensation and recognition policies to achieve an effective Facility Representative program.

b. **Facility Representative Selection and Training.** Paragraphs 1.b.(1), 1.b.(2), 2.b.(1), and 2.b.(2) of Recommendation 92-2 discussed the selection and training of Facility Representatives. Accordingly, the Board will review the Action Plan to ensure the following elements of the training and qualification process are included:

   (1) Identification of candidates with the qualities and attributes to complete the program;

   (2) the training sequence (e.g., initial fundamentals training, site specific training, facility specific training);

   (3) Assignment;

   (4) Qualification; and

   (5) Continuing training with requalification.

The Board expects that Facility Representatives will be trained to the level of the "Manager" category as defined in DOE Order 5480.20, *Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Facilities*. The Board further expects that the training sequence will satisfy DOE Order 5700.6C, Criterion 2, *Personnel Training and Qualification*, and meet the requirements contained in DOE Order 5480.20, including "...written *and* oral examinations" [emphasis added].

c. **Incumbent Facility Representatives.** Recommendation 92-2 (n.b. page 1, ¶ 5) was predicated on the Board's observations that existing Facility Representative programs at defense nuclear facilities required improvement. Therefore, the Board anticipates that the majority of incumbent DOE Facility Representatives will achieve formal qualification under the Department's new Facility Representative standard. Accordingly, the Action Plan will be expected to describe the Department's process for identifying those elements of the recruitment, training and qualification sequence that will be fulfilled by incumbent Facility Representatives.

d. **Remedial Training.** As the Department raises the standards of performance expected of its Facility Representatives, it is likely that some individuals will not satisfactorily complete all aspects of the training and qualification sequence. This situation may involve incumbent Facility Representatives as well as new recruits. (Some incumbents, conceivably, may not even meet the initial screening requirements for new recruits.) Therefore, the Board expects the Action Plan to identify what actions will be taken to remediate initial failures, and to replace those individuals for whom remedial training is ineffective. Of particular import are those actions to be taken in the event an *incumbent* fails after remedial training, including expeditiously installing an individual that has qualified in accordance with the proposed Facility Representative standard.