

**[DOE LETTERHEAD]**

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 Administrating. 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 HAS, "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

**[DOE LETTERHEAD]**

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 3410.18 "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.
  
- 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.
  
- 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 are timely and cost effective implementation of DOE training requirements.

- 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 are- timely and, adequate reviews of TINs required by DOE Order 5480.20.
- 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 MS 3.1 that are used by commercial nuclear utilities and two versions of MS 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 reactors. 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:

- Commensurate with specific position needs,
- Include periodic written and oral examinations and/or operational evaluations,
- Provide training and examination at least annually on abnormal facility procedures and emergencies,
- Include a combination of training methods and evaluation steps on a regular and continuing basis, and
- 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 (0511A) 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 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 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 OE 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-S'TD-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.