

December 18, 1998

FOR: The Commissioners

FROM: William D. Travers /s/
Executive Director for Operations

SUBJECT: PLAN FOR IMPROVING THE EFFECTIVENESS OF NRC'S TRAINING PROGRAMS

PURPOSE:

To inform the Commission of the staff's plan for improving the effectiveness of NRC's training programs.

BACKGROUND:

During the past few years the staff has undertaken a number of actions to identify, define, and resolve issues related to management and implementation of agency training activities. In response to an Executive Director for Operations (EDO) request that the technical training staff provide recommendations for better integration of regulatory knowledge, skills, and abilities (KSAs) into the technical training and qualification program to improve the regulatory skills of the staff, a staff paper titled "Regulatory Skills Training Integration Plan" was completed in February 1998. It included a number of recommendations intended to improve the quality and consistency of reactor operations inspector regulatory training. Similar improvements were recommended for other inspector disciplines and reactor program staff.

Job task analyses (JTAs) for positions in the Regional Divisions of Reactor Projects and the Nuclear Reactor Regulation (NRR) Divisions of Reactor Projects were completed in August 1997 and July 1998, respectively.

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In March 1998, the EDO requested that the Office of Human Resources (HR) devise a means for planning, prioritizing, and scheduling all agency training. A prototype of an automated integrated calendar for scheduling training, which can be accessed by all employees on the NRC Internal Home Page, was developed.

In April 1998, the Executive Council designated a team of senior managers and subject matter experts from the Offices of NRR, Nuclear Material Safety and Safeguards (NMSS), Nuclear Regulatory Research (RES), and Region II, led by Jack W. Roe, NRR, to review the agency's training activities in order to identify ways to improve the effectiveness and efficiency of the agency's training function in preparing NRC employees to perform their duties. The team presented their preliminary findings and recommendations to the Executive Council in August 1998, and delivered a written report in September 1998. This report is provided as an appendix to this paper.

DISCUSSION:

In its final report issued in September 1998, the Training Review Group proposed a number of recommendations. The group's specific recommendations and the staff's plan for improving the effectiveness of agency training activities are provided below. The [attachment](#) provides a list of the major staff actions discussed in this paper and associated milestones. As indicated in the responses to the specific recommendations and in the listing of major staff actions, the staff intends to prioritize training and development resources as necessary to address systematically the highest priority agency training needs. This includes optimizing the opportunities for improving the regulatory culture and regulatory skills of the staff consistent with established programmatic guidance. Additionally, the staff plans to establish an infrastructure through the Executive Resources Board to provide a forum for agency-wide discussion and coordination of training and development activities.

Recommendation 1: Combine existing providers of formal training into a single organization, reporting to a single Deputy EDO, with the responsibility and authority to effectively manage the agency's training function.

Many managers interviewed by the Training Review Group stated that there should be a single group to manage, oversee, and coordinate Agency training activities. Those interviewed recommended that the responsibility for Agency training should be at a level with adequate decision making and budgeting authority to ensure that training contributes appropriately to the accomplishment of the Agency's mission and goals.

The Technical Training Division (TTD) of the Office for Analysis and Evaluation of Operational Data (AEOD) and the Human Resources Development staff of the Office of Human Resources (HR) will be combined in the Office of Human Resources. Since training and development are integral parts of human resources management, placing the new, consolidated organization in HR under the Deputy Executive Director for Management Services is a logical choice. The rationale for consolidating the training function within HR is further developed and discussed in [SECY-98-228](#), "Proposed Streamlining and Consolidation of AEOD Functions and Responsibilities."

Efficiency and effectiveness will be enhanced by placing all training and development activities in one organization under one Deputy Executive Director. This organization will have responsibility and authority for management, coordination, oversight, program planning and budgeting, performance

measurement, approval, scheduling, and implementation of all agency training and development activities.

Recommendation 2: Integrate the budget for all training-related activities to ensure that the Agency can monitor, prioritize, and control the use of training funds to develop and maintain staff competencies.

It is important that the Commission and agency senior management have accurate and reliable training and development cost data and can consider these costs systematically during budget reviews. The Training Review Group report articulates the difficulty the team encountered with quantifying agency costs for training and development activities. Under the current structure, separate budgets and operating plans for training and development managed by HR and technical training managed by AEOD are prepared and presented to senior management. Additional training and development costs incurred by the agency by other offices and regions which sponsor training as well as the costs (FTE and \$) to attend training are not factored into either of these two budgets. A consolidated training organization will enable necessary cooperation with program offices and regions and will facilitate the capture of information pertaining to agency costs for training activities.

As agency resources decline, careful monitoring and prioritizing of training funds are essential. Consolidation of training and development activities will enhance management's ability to weigh priorities judiciously so that the training and development activities that are most important for accomplishing the agency's mission and performance goals are supported. The consolidated training organization will be responsible for development and implementation of policy and process changes required to ensure effective and efficient management, coordination, and oversight of agency training and development. Additionally, the infrastructure established through the Executive Resources Board will provide a forum for agency-wide discussion, coordination, and prioritization of training and development activities.

Reactor technical training, materials technical training, and professional training and development will be managed and controlled as one integrated training program. The Agency's training budget will reflect this integration. Planned accomplishments and milestones will be structured according to the phases of the systems approach to training (needs analysis, design and development, implementation, and evaluation). Over time, training activities not currently under the purview of AEOD/TTD or HR will be identified, included in the planning framework, and evaluated for consolidation in HR's operating plan.

Recommendation 3: Improve the processes used to approve, develop, and implement training ensuring: the use of a standard, systematic approach to determine what training is needed as well as to determine the appropriate training audience; the use of objective criteria to obtain approval for making training a requirement; and the involvement of agency training professionals to guide key phases of training development and evaluation.

This recommendation is consistent with requirements imposed on NRC licensees. 10 CFR 50.120, "Training and qualification of nuclear power plant personnel," requires licensees to establish, implement, and maintain a training program derived from a systems approach to training. 10 CFR 55.4, "Definitions," states: "Systems approach to training means a training program that includes the following five elements: (1) systematic analysis of the jobs to be performed; (2) learning objectives derived from the analysis which describe desired performance after training; (3) training design and implementation based on the learning objectives; (4) evaluation of trainee mastery of the objectives during training; (5) evaluation and revision of the training based on the performance of trained personnel in the job setting."

The systems approach to training is a comprehensive, standard multi-phase program that includes training needs analysis, training program design and development, implementation of training, and program evaluation. A more detailed description of each of these elements follows.

The training needs analysis phase consists of identification of training needs and of knowledge, skills, and abilities (KSAs) and competencies needed for job performance. The purpose of the design phase is to convert the competencies and/or KSAs that were selected for training during the analysis phase into training objectives, and to sequence these training objectives into a training plan for initial and continuing training. The purpose of the development phase is to produce the materials (such as course manuals, graphics, lesson plans, examinations, etc.) needed for implementation of the training program. This includes development of new materials, as well as maintenance and upgrade of existing course materials. Training implementation is the conduct of training using the materials and lesson plans developed during earlier phases. This includes maintaining a qualified instruction staff and adequate training facilities and equipment. The purpose of the evaluation phase is to determine the effectiveness, efficiency, and impact of the training program and to identify whether and where revisions or improvements to the training are needed to maintain or improve the quality of job performance. This includes collecting and evaluating written feedback from students at course completion and, for selected courses, from students after working for a time in their assigned job functions, from the line management of students regarding the effectiveness and relevancy of the technical training curriculum as evidenced by employee performance, providing project management and technical oversight of contractors for contracted courses to ensure contractor courses are evaluated and improvements made in accordance with contract requirements, and conducting post-course reviews to evaluate feedback with course instructors.

Both HR and AEOD currently provide training using the principles of the systems approach to training. Examples of agency training success stories include the modifications to the PRA curriculum during FY 1996 and FY 1997 and development and implementation of the Field Techniques and Regulatory Processes course. These instances were successful primarily because the training needs were defined and training requirements established systematically. Closely coordinated efforts between the agency's subject matter experts and training professionals resulted in defining the audience and appropriate learning objectives, design, development, and validation of the training materials, and implementation of the courses including involvement of instructors and program office subject matter experts during course delivery. These instances will be used as benchmarks for defining and documenting an agency process for practical usage of the principles of the systems approach to training for all training and development activities provided by contractors and agency staff. HR will serve as consultants to Offices on using this systems approach to training.

Recommendation 4: Review, evaluate, and formalize staff training activities, including those proposed in the "Regulatory Skills Training Integration Plan," using a standard, systematic approach to the training process to ensure acquisition

and maintenance of regulatory, technical, professional, and management skills, as appropriate, for job positions and functions in support of the Agency mission and goals.

The consolidated training organization, in conjunction with line managers, will be responsible for systematically and methodically reviewing the knowledge, skills, and abilities needed for effective job performance, and formalizing staff qualification and training requirements, as appropriate. In August 1997 and July 1998, Job task analyses (JTAs) were completed for Regional and NRR Divisions of Reactor Projects positions, respectively. Staff is currently in the process of reviewing the JTA contractor training recommendations and JTA results and formulating actions to address the recommendations. The JTA contractor's recommendations generally follow the standard systems approach to training methodology and, therefore, the majority of the recommendations are valid and are being considered for implementation by the staff. For example, the JTA results confirmed a training gap (i.e., inadequacy in or lack of skills) associated with tasks and KSAs related to regulatory processes, procedures, and skills.

An integrated assessment of training needs for reactor projects staff is in progress and includes JTA insights as well as insights from other pertinent inputs including the Training Review Group Report, the Regulatory Skills Training Integration Plan, and regulatory process changes currently being designed in accordance with the EDO's tasking memo. Once resulting revisions to the training and qualification programs are completed for reactor projects staff, training requirements for other regional inspector positions, NMSS positions, and other agency technical and non-technical staff positions will be examined. The staff does not currently plan to perform any further formal JTAs. However, the data from the NRR JTAs can and will be extrapolated for application to other agency technical positions. In addition, as the core competencies/skills assessment information is collected, it will also serve as a foundation on which to build appropriate training programs and requirements for agency staff positions. A balanced approach between regulatory, technical, and professional training will continue to be sought, and is especially important at this time as the NRC strives to change its corporate culture and define its appropriate regulatory role in a changing political environment.

Recommendation 5: Use Agency training professionals to revise Management Directive 10.77 "Employee Development and Training" to delineate and require a standard, systematic approach to the training process for need determination, approval, development, implementation, and evaluation of all agency training activities.

Management Directive 10.77, "Employee Development and Training," currently delineates the agency's policy, organizational responsibilities and delegations of authority, and processes for providing, approving, and attending NRC sponsored training and development activities. The management directive is currently silent regarding any specific processes required for needs analysis, approval, development, prioritization, implementation, or evaluation of training activities. The management directive will be revised to delineate required implementation of the

standard systems approach to the training process for needs analysis, approval, development, implementation, and evaluation of all agency training activities. Changes would be discussed with management and bargaining unit representatives, as appropriate. The revised management directive will incorporate applicable material from existing TTD Policy Document 2, "Technical Training Program," which requires that technical training courses developed for the NRC by the TTD staff or contractors be developed and maintained using the systems approach to training principles and describes the process currently used to develop and maintain technical training courses.

In addition, the revised management directive will include the following specific elements:

1. New organizational responsibilities and delegations of authority for the consolidated training organization within the Office of Human Resources.
2. A process for planning, approving, and scheduling all training and development activities through the training organization.
3. A process for identifying new training needs and formally communicating them to the training organization.
4. A process for determining the most effective and efficient method to develop and deliver the training.
5. A process for reviewing and approving training and development activities.
6. A process for prioritizing and scheduling new training activities.
7. A process for incorporating new training activities into the appropriate qualification, training, and development programs.
8. A process for developing, implementing, managing, and overseeing staff qualification and development programs.
9. Methods for evaluation and performance measurement of training and development activities.

Recommendation 6: Consolidate Agency training resources in the Washington area.

A decision to move the Technical Training Center facility to the Washington area must be done deliberately and only after taking into consideration a number of factors. Such a move would have to be planned well in advance and carefully sequenced. There are programmatic, financial, infrastructure, timing, and staffing considerations which must be carefully evaluated. The Office of the Chief Financial Officer has developed a Statement of Work to examine costs, and the Office of Administration is looking at the space requirements and space availability for relocating the Technical Training Center at headquarters. HR will examine programmatic, timing, and staffing issues.

Recommendation 7: Reduce the number of simulators to 1 BWR and 1 PWR.

The Training Review Group obtained opinions from senior managers on their perceptions regarding the need for vendor-specific simulator training. These senior managers felt that NRC could provide adequate inspector training using 1 BWR and 1 PWR simulator. Simulator training is an integral part of providing both reactor technology and regulatory skills training within the inspector qualification and training programs. Vendor-specific simulator training is a highly effective method for developing and maintaining skills related to performance-based regulatory safety assessment of control room configuration, vendor-specific design and operation, integrated systems operation for all plant modes, plant transient and accident response, and

application of emergency procedures and severe accident guidelines necessary to support inspection, licensing, assessment and enforcement decisions.

The programmatic need for vendor-specific simulator training will be determined within the context of the integrated assessment of training needs discussed previously for Recommendation 4. Based on the results of the integrated assessment, actions will be developed to ensure that appropriate training is implemented to provide the technical and regulatory foundation necessary for reactor projects staff to effectively and efficiently execute their tasks in support of NRC mission, policy, and goals. The issues of cost-benefit of multiple simulators and location of simulators will be considered in the cost and space requirements study to address Recommendation 6. A decision to dispose of two additional simulators should be made deliberately given the replacement costs of \$10-14M per simulator.

RESOURCES:

The actions to address Recommendations 1 through 5 will be accomplished with existing agency resources. Evaluation and development of resulting action plans to address Recommendations 6 and 7 will be accomplished with existing resources.

COORDINATION:

The Office of the General Counsel has reviewed this Commission paper for legal implications and has no legal objection.

The Office of the Chief Financial Officer has reviewed this Commission paper for resource implications and has no objections to its content.

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[Attachment:](#) As stated

ATTACHMENT

Table of Agency Training Action Items

No.	Action Item	Assigned	Date Due
1	Establish consolidated training organization.	DEDM	1/99
2	Develop actions to address contractor training recommendations resulting from JTAs for Regional and NRR DRP positions.	HR/NRR	1/99
3	Establish infrastructure through ERB for discussion and coordination of training activities.	HR	5/99
4	Develop action plan and milestones for development of qualification and training program modifications resulting from NRR JTAs.	HR	6/99
5	Identify support offices and support office activities necessary to support and manage agency training activities.	HR	6/99
6	Coordinate with support offices to add training support activities to office operating and performance plans.	HR/ Program Managers	FY 1999 Third Quarterly Update
7	Develop consolidated agency training and development operating and performance plan.	HR	FY 1999 Third Quarterly Update
8	Revise Management Directive 10.77 to include the process for identification, development, implementation, management and oversight of training activities.	HR	9/99
9	Revise Management Directive 10.77 to include guidance for inclusion of staff development and training planned accomplishments and performance measures in office operating and performance plans.	HR	9/99
10	Provide staff recommendation on consolidating agency training resources in DC area based on evaluation of programmatic, financial, infrastructure, timing, and staffing considerations.	HR	9/99
11	Provide staff recommendation on the appropriate number and types of simulators based on an integrated assessment of training needs.		