

TRAINING AND QUALIFICATION

January 1983 to Present

In the Nuclear Waste Policy Act of 1982, Congress, acting on a proposal sponsored by Senator Lowell Weicker of Connecticut, directed the NRC to "promulgate regulations, or other appropriate Commission guidance" for training and qualifications not only of operators but of other plant personnel as well. Furthermore, it mandated that the NRC issue its regulations or guidance within twelve months. The act provided a new incentive for the agency to address promptly outstanding issues relating to training and qualifications of plant personnel.¹

In August of 1983, the first formal meeting of the National Nuclear Accrediting Board (NNAB) was held at the Institute of Nuclear Power Operations (INPO) headquarters in Atlanta. Five training programs at Duke Power's Oconee Nuclear Station were accredited.

On February 13, 1984, the staff submitted a proposed rulemaking for Training and Qualification of Civilian Nuclear Power Plant Personnel. This rulemaking proposal was intended to fulfill the requirements of the Nuclear Waste Policy Act. Rather than specifying requirements for the education, experience and training of plant employees, it was proposed that the NRC adopt a "systems approach to training" (SAT) that is based on the successful Department of Defense approach to training program development. Under this approach, utilities would determine their job performance requirements and the NRC would evaluate the appropriateness and effectiveness of licensee programs. In general, the proposed rule was performance-based regulation rather than prescriptive regulation.²

The staff's proposals on training were met with protests from the industry. Industry groups, particularly INPO, had been working for some time and at considerable expense to develop their own accreditation programs, and they feared that new NRC regulations would undermine their efforts. In an appeal to the Commission in February 1984, Eugene P. Wilkinson, retiring president of INPO, urged the NRC to postpone action on training until the industry could draft its

¹"Nuclear Waste Policy Act of 1982", Public Law No. 97-425, 96 Stat. 2201, January 7, 1983.

²"Proposed Rulemaking for Operator Licensing and for Training and Qualifications of Civilian Nuclear Power Plant Personnel," SECY-84-76 (February 13, 1984).

own proposals. If the Commission went ahead, Wilkinson declared, it would "bring most of the industry accreditation effort to a halt" and "end the march to excellence."³

In general terms, the industry worried that an agency rule would, in the words of an official of the newly-formed Nuclear Utility Management and Human Resources Committee (NUMARC), "destroy industry initiative." The result would be that licensees would settle for meeting NRC requirements rather than striving to meet a higher standard of excellence. Thus, NRC regulations could undercut rather than promote operational safety. Industry spokespersons conceded that the agency was obligated to issue certain rules to carry out the mandate of the Nuclear Waste Policy Act. Nevertheless, they insisted that the law provided enough flexibility to allow the NRC to publish guidelines or a policy statement rather than rules on issues relating to training.⁴

The Commission announced its decision in a June 15, 1984, memorandum from Samuel J. Chilk to William J. Dircks. The Commission's decision was sharply disputed by its two dissenting members who thought the staff should develop a Commission Policy Statement. Commissioner Gilinsky, whose second term on the Commission was ending, was outspoken in his disagreement. He voiced his unhappiness with the decision of his colleagues but was especially critical of the industry. "In pressuring the Commission to accept a feeble approach toward shift experience requirements," he wrote, "the industry is jeopardizing its long standing safety record . . . It says to me the industry is not yet capable of policing its members."⁵

The industry and industry organizations continued to oppose the publication of a rule; they argued that a generic letter or policy statement would satisfy the requirements of the Nuclear Waste Policy Act. The NRC staff disagreed and submitted revised proposed rulemaking to the Commission⁶.

³"Discussion on Need for and Availability of Experienced Reactor Operators for Future Reactor Nuclear Power Plants," transcript, February 24, 1984.

⁴Briefing by the Industry on Industry Initiatives in Non-Hardware Areas," transcript, April 9, 1984, pp. 4-10, 14-16, 24-27, 33-50; Lelan F. Sillin to Nunzio J. Palladino, August 29, 1983; Thomas M. Roberts to Lelan F. Sillin, October 18, 1983.

⁵Samuel J. Chilk to William J. Dircks, June 15, 1984; Nunzio J. Palladino to J. H. Miller, June 14, 1984, with attachments.

⁶Alternative to Proposed Rulemaking for Training and Qualification of Civilian Nuclear Power Plant Personnel," SECY 84-76A (June 20, 1984); "Rulemaking for Training and Qualification of Civilian Nuclear Power Plant Personnel," SECY 84-76B (September 6, 1984).

In December 1984, NUMARC, representing the industry, committed to the NRC that all nuclear power plants fueled prior to 1985 will have 10 key training programs ready for accreditation by the end of 1985. In January 1985, Senator Patrick Moynihan introduced Senate Bill 16, "The National Nuclear Power Plant Training Act of 1985." The bill proposed the establishment of a National Academy for Nuclear Safety to provide training to civilian nuclear power plant personnel.

After careful consideration, the Commission adopted much of the industry position by publishing a policy statement that endorsed INPO's accreditation program while affirming the NRC's responsibility for evaluating licensees' training efforts. The agency announced its intention not to impose new rules on training and qualifications of operators for a period of two years if the industry fulfilled its pledge to implement satisfactory accreditation procedures. The policy statement further stated that "in recognition of industry initiatives underway to upgrade training programs," the agency endorsed INPO's program to apply "the elements of performance-based training." The NRC made clear that it would monitor the progress and effectiveness of INPO's programs to make certain that they carried out their objectives. It also said again that the agency would continue to provide appropriate regulatory requirements for licensees and applicants outside the scope of INPO training and accreditation.^{7 8}

By September 1985 INPO had set up the National Academy for Nuclear Training, headquartered in Atlanta, to carry out the process of accrediting utility training programs. Within five months, INPO had accredited a total of 131 training programs at 31 sites. The Commission was impressed with INPO's activities but concerned about the remaining programs that had not yet received accreditation. INPO President Zack T. Pate committed the organization to tight deadlines for meeting its requirements. Utilities that failed to meet the deadlines would be publicly identified, he said, and would "suffer considerable public embarrassment."

⁷"Policy Statement on Training and Qualifications of Nuclear Power Plant Personnel," SECY 85-1 (December 31, 1984).

⁸"Commission Policy Statement on Training and Qualification of Nuclear Power Plant Personnel," March 14, 1985, published in Federal Register, Vol. 50, March 20, 1985, pp. 11147-48.

In August 1985, guidance was provided to the Regional Administrators on training program evaluation during the period the Policy Statement would be in effect.⁹ The staff evaluated the results of the INPO accreditation program between March 1985 and March 1987. The evaluation consisted of participating as observers when utility training programs were under evaluation by an INPO accreditation team, observing accrediting board activities, and site inspections. The staff also developed criteria and procedures to assess whether utility training programs included the five critical elements of a SAT process. The criteria were applied by the staff in auditing training programs at eight utilities with accredited training programs. Based on the staff's evaluation of the INPO training accreditation program, the NRC concluded that "progress is being made by the industry in improving training and implementing the Commission's Policy Statement."¹⁰

In November 1988 the NRC published a new policy statement that made minor revisions to the March 1985 version and said that "the program is effective in ensuring that personnel have qualifications commensurate with the performance requirements of their jobs," and declared that the industry has had sufficient time to establish the accreditation program. In its view, the policy guidelines fulfilled its mandate under the Nuclear Waste Policy Act of 1982.¹¹

In 1986, Public Citizen petitioned the NRC to issue binding regulations regarding training. First, it asked the NRC for rulemaking with respect to training, claiming that the 1985 Policy Statement was insufficient to satisfy NRC obligations under the Nuclear Waste Policy Act of 1982. While the petition was pending, Public Citizen sought review, in the United States Court of Appeals for the District of Columbia Circuit, of the NRC's failure to issue regulations. While the lawsuit was pending, the NRC denied Public Citizen's rulemaking petition. Public Citizen did not seek review of that denial possibly because of the pending lawsuit concerning NRC actions. The Court of Appeals dismissed the action as having been filed too late to challenge the 1985 Policy

⁹"NRC's Approach to Training Evaluation Based on the Policy Statement on Training and Qualification of Nuclear Power Plant Personnel," SECY 85-288 (August 22, 1985)

¹⁰"The 2-Year Evaluation on Implementation of the Commission Policy Statement on Training and Qualification," SECY 87-121 (May 11, 1987).

¹¹"Commission Policy Statement on Training and Qualification of Nuclear Power Plant Personnel," November 14, 1988, published in Federal Register, Vol. 53, November 18, 1988, pp. 46603-05.

Statement and too early for a review of the petition for rulemaking denial.¹² Following the dismissal, Public Citizen filed a Freedom of Information Act request for any information related to training in the nuclear industry and any correspondence between NRC and INPO regarding training.¹³

Within 60 days of publication of the 1988 Policy Statement, Public Citizen again sought review, in the United States Court of Appeals for the District of Columbia Circuit. In April 1990, the Court issued a ruling on a suit filed by Public Citizen, which contended that the NRC's response to the Waste Policy Act was insufficient. The court found that the agency's policy statements on training and qualification did not satisfy its obligations under Section 306. The court said, the NRC "must establish instructional requirements, and nonmandatory suggestions fail to do this." It added: "When Congress gives the agency its marching orders, the agency must obey all of them, not merely some." The NRC sought rehearing of the decision by the full Court. On June 19, 1990, the rehearing was denied.¹⁴ On November 26, 1990, the Supreme Court denied certiorari on petition by the Nuclear Utility Management and Resource Council.¹⁵

Because of the court's decision, the staff drafted a new rule on training and qualification of nuclear power plant personnel and sent it to the Commission in April 1991. The proposed rule would require that each applicant for and each holder of an operating license for a nuclear power plant establish, implement, and maintain programs for the training and qualification for specific categories of nuclear power plant personnel which consider all modes and conditions of operations including shutdown, normal, abnormal, emergency, and accident conditions. The

¹²"Public Citizen, Denial of Petition for Rulemaking," January 14, 1987, published in Federal Register, Vol. 52, February 2, 1987, pp. 3121-25.

¹³Kenneth Boley to Don Grimsley, November 17, 1987.

¹⁴"Response to U.S. Appeals Court's Decision in Public Citizen vs. NRC," SECY 90-270 (August 6, 1990).

¹⁵"Public Citizen, et al., v. NRC, (D.C. Cir., 1990).

proposed rule was based on industry practice for training and qualification in that it would require these programs to be derived from a systematic analysis of job performance requirements.^{16 17}

On June 10, 1991, the staff briefed the Commission on the proposed rule. As a result of the briefing, the Commission expressed "a number of concerns over the broad scope of the rule as prepared by the staff." The staff was asked to consider whether the approach of ANSI/ANS.3.1-1987, "American National Standard for Selection, Qualification, and Training of Personnel for Nuclear Power Plants," coupled with the proposed revision to NUREG-1220, "Training Review Criteria and Procedures," would be sufficient to satisfy the court mandate. In the response to the staff requirements memorandum of June 28, 1991, the staff considered coupling ANSI/ANS-3.1-1987 with NUREG-1220 and proposed additional alternatives to meeting the court mandate.¹⁸

The Commission unanimously disapproved publication of the proposed rule because it believed that the "highly prescriptive" approach that the staff suggested was "not only unnecessary to accomplish the intended objective, but may prove to be unnecessarily disruptive of the highly successful training programs that have been established." It instructed the staff to draw up a proposed rule that required training programs be developed using SAT methodology, with a definition of SAT consistent with that contained in 10 CFR Part 55. The positions to be covered were to be consistent with the scope of the industry's accreditation program.¹⁹

The staff was also directed to develop regulatory guidance that relied on relevant existing documents developed by the industry to define and evaluate SAT programs. The staff met with industry representatives to discuss the availability of those documents for reference in the regulatory guidance. The National Academy for Nuclear Training, the organization responsible for the industry documents, would issue a single document containing the objectives and criteria for initial accreditation and accreditation renewal that would be available to the public through the

¹⁶"Proposed Rulemaking for Training and Qualification of Nuclear Power Plant Personnel," SECY 91-108 (April 25, 1991)

¹⁷Briefing on Proposed Rule on Training and Qualification of Nuclear Power Plant Personnel,; transcript, June 10, 1991.

¹⁸Samuel J. Chilk to James M. Taylor, June 28, 1991; James M. Taylor to the Commission, July 29, 1991; Kenneth C. Rogers to Samuel J. Chilk, August 22, 1991; William C. Parler to the Commission, September 5, 1991.

¹⁹Samuel J. Chilk to James M. Taylor, October 2, 1991.

NRC public document room. This document, "The Objectives and Criteria for Accreditation of Training in the Nuclear Power Industry" (ACAD 91-015), was received on November 15, 1991. The cover letter granted the NRC permission to reproduce copies of ACAD 91-015 for internal use and for placement in public document rooms. By letter dated December 23, 1991, INPO submitted a revised copy of ACAD 91-015 that reflected minor changes discussed during an NRC/INPO training and qualification coordination meeting held December 4, 1991.²⁰

The staff's new draft rule proposed to require each applicant for and each holder of a license to operate a nuclear power plant to establish, implement, and maintain a training program for nuclear power plant personnel that provides for qualified personnel to operate and maintain the facility in a safe manner for all modes of operation. The proposed rule required training programs to be derived from a systematic analysis of job performance requirements. Industry programs had been developed consistent with the proposed approach, and, from monitoring of industry training programs, the NRC concluded that these programs had been generally effective in ensuring that personnel had qualifications commensurate with the performance requirements of their jobs. The proposed rule required licensees to implement performance-based training procedures without imposing changes in INPO's existing accreditation programs.²¹

The Commission unanimously approved publication of the proposed rule with minor editorial changes. It instructed the staff to evaluate whether a more balanced training inspection philosophy is appropriate, evaluate whether modifications to the INPO Memorandum of Agreement (MOA) are necessary, and to evaluate whether modifications to NUREG-1220, "Training Review Criteria and Procedures," are necessary.²²

On January 7, 1992, the NRC published its proposed rule on "Training and Qualification of Nuclear Power Plant Personnel." It stated that if adopted, the rule would supersede the Policy Statement on Training and Qualification of Nuclear Power Plant Personnel and would not result in

²⁰Byron Lee to Kenneth Carr, June 19, 1991; Zack Pate to Kenneth Carr, June 20, 1991; James Taylor to the Commission, August 29, 1991; Zack Pate to James Taylor, October 18, 1991; Terence Sullivan to James Taylor, December 23, 1991.

²¹"Proposed Amendments to 10 CFR 50 and 52 on Training and Qualification of Nuclear Power Plant Personnel," SECY-91-371 (November 15, 1991); Samuel J. Chilk to James M. Taylor, December 16, 1991.

²²Samuel J. Chilk to James M. Taylor, December 24, 1991.

any change to the accredited programs. The Commission concluded that accredited programs, implemented consistent with industry objectives and criteria would be in compliance with this regulation. The comment period expired on March 9, 1992.²³

Comments were received from thirty individuals and corporate entities. The comments were summarized into the following categories: (1) responsibility for training and third-party training/accreditation programs; (2) appropriateness of SAT-based training; (3) definition of personnel to be trained; (4) relationship between training and qualification; (5) applicability of the rule; and (6) implementation of the rule. One change was made to the rule because of the comments. The title of the category "Technical Support Personnel" was changed to "Engineering Support Personnel. This change made the category of personnel listed in the rule consistent with the title of the accredited training program.

In the December 24, 1991, staff requirements memorandum (SRM) related to the proposed training rule, the staff was instructed to evaluate whether a more balanced training inspection philosophy is appropriate. The staff conducted such an evaluation and determined that the existing practice would provide a balanced view of training effectiveness without the need for proactive training inspections. The staff would continue to inspect training programs for cause as is the current practice. For cause training inspections would be conducted using Inspection Procedure (IP) 41500, "Training and Qualification Effectiveness," which references the guidance in NUREG-1220, "Training Review Criteria and Procedures."

In January 1993, NUREG-1220, Revision 1, was published. This revision provided direction to NRC personnel for reviewing training programs to verify compliance with the proposed training rule (10 CFR 50.120) and 10 CFR 55 as applicable. NUREG-1220 describes the process for evaluating the effectiveness of training programs, provides aids for collection of information, and provides criteria for evaluating the implementation of SAT-based training. NUREG-1220, Revision 1, was intended as guidance for NRC inspectors only.²⁴

In April 1993, the NRC published its final rule (10 CFR 50.120) on training and qualification of nuclear power plant personnel in accordance with its obligations under the Nuclear Waste

²³"Training and Qualification of Nuclear Power Plant Personnel," January 6, 1992, published in Federal Register, Vol. 57, January 7, 1992, pp. 537-41.

²⁴"Training Review Criteria and Procedures," NUREG-1220, Revision 1, January 1993.

Policy Act.²⁵ Also in April 1993, NRC revised IP 41500 to reference the guidance contained in NUREG-1220, Revision 1.²⁶

The training rule, as published, required nuclear power plant applicants and nuclear power plant licensees to have established, implemented, and maintained SAT-based training programs by October 25, 1993, 180 days after publication. This assumed that implementation was required 180 days after the publication date of April 26, 1993. It was later determined that implementation of the rule was required 180 days after the effective date of May 26, 1993. Thus, on July 21, 1993, a correction to the final training rule was published changing the implementation date to November 22, 1993.²⁷

In June 1995, the NRC again revised IP 41500 to change the inspection objectives. The original inspection objectives were (1) to ensure the training and qualification of nuclear power plant personnel were in accordance with 10 CFR 50.120 and 10 CFR 55 and (2) to evaluate the effectiveness of the program used to control active and inactive operator licenses. The revised inspection procedure retained the first objective, deleted the second objective, and added an objective to ensure that a training inspection was an appropriate response to an identified performance problem. The revised IP 41500 also contained guidance for the staff to use when monitoring the effectiveness of nuclear power plant personnel training programs.²⁸

IP 41500 describes two primary methods to evaluate the effectiveness of training programs -- the first is to monitor licensee performance, and the second is to monitor the industry's training program accreditation process. Declining human performance can be the result of training deficiencies; therefore, NRC looks for evidence of training problems when reviewing information regularly documented by the licensees and the NRC staff. Information reviewed includes resident inspector insights; licensee event reports; operator initial examination, requalification examination and inspection reports; and all other inspection reports. To help NRC determine what actions to

²⁵"Amendments to 10 CFR 50 and 52 on Training and Qualification of Nuclear Power Plant Personnel," SECY-93-021 (February 1, 1993), Samuel J. Chilk to William C. Parler and James M. Taylor, March 31, 1993; "Training and Qualification of Nuclear Power Plant Personnel," April 23, 1993, published in Federal Register, Vol. 58, April 26, 1993, pp. 21904-12.

²⁶"Training and Qualification Effectiveness," Inspection Procedure 41500, April 30, 1993.

²⁷Federal Register, Vol. 58, July 21, 1993, p. 39092.

²⁸"Training and Qualification Effectiveness," Inspection Procedure 41500, June 13, 1995.

take when the staff finds that declining performance may be a result of ineffective or omitted training, the "Training Program Inspection Protocol" was developed.

The protocol is a systematic approach that helps NRC determine the appropriate response to each instance of declining human performance. The initial assessment of licensee performance using the protocol may suggest the need to (1) address an immediate safety concern, (2) conduct an operator requalification examination, (3) inspect all training programs, or (4) review a specific aspect of a limited number of training programs. The protocol enables NRC to tailor a response to the specific situation. Each decision to respond is made after careful consideration of plant-specific information and discussion between NRC headquarters and regional staff. The protocol was included as an attachment to the June 1995 revision of IP 41500.

NRC monitors INPO accreditation activities by observing accreditation team visits and observing the monthly National Nuclear Accrediting Board (Board) meetings. The purpose of these visits is to monitor the implementation of programmatic aspects of the accreditation process.

Placing a training program on probation or withdrawing accreditation indicates a Board concern. It does not necessarily place a training program in noncompliance with either 10 CFR Part 50.120 or 10 CFR Part 55 since training programs are accredited to a "standard of excellence" rather than a minimum level of regulatory compliance. However, NRC does review the circumstances leading to the withdrawal or probation to ensure safe operations and continued compliance with regulations.

First, NRC reviews the concerns raised by the Board. For this review, the senior resident inspector, appropriate regional personnel, or both, read INPO's accreditation report on-site and discuss the issues with the licensee and NRR's Division of Inspection Program Management (DIPM) to determine the safety significance of the concerns. If NRC determines that compliance with the regulations is not affected and finds that the probationary status is not safety-significant, no further agency action may be required. NRC documents the results of this safety review in the resident inspector's monthly inspection report by stating that the accreditation report was reviewed, discussing any safety-significant issues raised, and discussing any follow-up actions planned or taken to resolve safety-significant issues. The report does not address the accreditation status of the training programs.

If safety-significant issues are found, NRC may request the licensee to provide a basis for continued operation, schedule a licensed operator requalification examination, schedule a training

inspection of the affected programs, or meet with licensee's management to discuss the safety significance of the concerns and the corrective actions taken or planned. Safety-significant concerns may also prompt the region to request that the licensee describe in writing the concerns found and the plan for corrective actions.

If safety-significant issues are not found, NRC may still conduct a training inspection in accordance with IP 41500 if declining human performance as a result of ineffective or omitted training is identified. If a training inspection is conducted, it will normally be scheduled to start after the training program has been removed from probation. If the Board extends probation, the region and DIPM will determine the appropriate action on a case-by-case basis. Training inspections conducted after probation are intended to determine if the licensee's training programs support safe operation and continue to comply with regulations, not to verify the licensee's corrective actions.

The Board may withdraw accreditation in response to major deficiencies in a licensee's accredited training program. If accreditation is withdrawn, the NRC would request the licensee to report the circumstances of the withdrawal in order for the staff to determine the significance of the issues related to the withdrawal. If the NRC determines that compliance with the regulations is not affected, no further agency action may be required. If the withdrawal relates to a breakdown in the SAT process or a safety-significant issue, an immediate inspection focused on the process problem or safety issue(s) shall be conducted. Further action, such as Confirmatory Action Letters or orders, would be taken, as appropriate.

TRAINING AND QUALIFICATION

- 10/1979 Kemeny Commission issued report with a recommendation to establish accredited training institutions for operators and supervisors of operators.
- NRC issued NUREG 0585, "TMI Lessons Learned Task Force - Final Report," stating "We have been told that INPO will: Accredite training programs..."
- 12/1981 Department of Energy reported to congress that INPO's industry wide program could adequately train personnel to perform operator and supervisory functions.
- 1/1983 Nuclear Waste Policy Act of 1982 enacted. Section 306 directed the NRC to "promulgate regulations of regulatory guidance for the training and qualification of nuclear power plant personnel."
- 8/1983 Five training programs at Duke Power's Oconee Nuclear Station were accredited.
- 12/1983 Acting for the nuclear industry, NUMARC committed to the NRC that all nuclear power plants fueled before 1985 would have 10 key training programs ready for accreditation by the end of 1986.
- 3/1985 The Commission Policy Statement on Training and Qualification of Nuclear Power Plant Personnel published, endorsing an accreditation program managed by INPO.
- 5/1985 PP&L's Susquehanna Steam Electric Station had 10 programs accredited.
- 9/1985 The National Academy for Nuclear Training established at INPO.
- 4/1990 The United States Court of Appeals for the District of Columbia Circuit concluded the Commission Policy Statement on Training and Qualification did not meet the intent of the Congressional directive to create mandatory requirements for training programs at nuclear power plants. The Court remanded the issue back to the NRC for action consistent with the Court's findings.
- 10/1991 The Commission directed the Staff to develop a performance based rule that does not exceed the scope of the existing accreditation process for those positions within the scope of the industry accreditation program. The rule should specifically require that training programs be developed using a systems approach to training.
- 10/1991 ACAD 91-015, containing the objectives and criteria for accreditation and accreditation renewal, placed in the NRC public document room.
- 1/1992 The NRC proposed an amendment to 10 CFR 50 for the ten accredited training programs. Licensed operators are not covered by the new rule but continue to be covered by 10 CFR 55.
- 5/1993 The NRC published the final rule which establishes accreditation as a means of compliance with federal regulations.