ANNUAL REPORT
ON
THE EFFECTIVENESS OF TRAINING
IN THE NUCLEAR INDUSTRY
FOR
CALENDAR YEAR 2014

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TABLE OF CONTENTS

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BACKGROUND

NRC regulation of training in the nuclear industry dates to the 1982 Nuclear Waste Policy Act (NWPA), which directed the NRC to provide guidance on the instructional requirements for workers at nuclear power plants. To meet this directive, the Commission published a policy statement on training that endorsed the performance-based training accreditation process of the National Academy for Nuclear Training in March 1985. When issuing the policy statement, the Commission deferred rulemaking to allow the nuclear industry to continue its efforts to upgrade their training programs.

After a two-year trial period, the NRC staff's evaluations of the accreditation process concluded that it was generally effective in improving the training programs, so the Commission elected not to initiate rulemaking related to the training of non-licensed personnel. As such, in November 1988, the Commission issued an amended policy statement that reflected its views on training for non-licensed workers at nuclear power plants.

In May 1987, the NRC revised Title 10, Part 55, "Operators' Licenses," of the *Code of Federal Regulations* (10 CFR Part 55) to incorporate several new requirements and endorsements. The 1987 changes included removing instructor certifications, endorsing NRC Regulatory Guides 1.8 (personnel training) and 1.149 (plant-referenced simulators), requiring operator licensing examinations to be conducted on a simulator, and establishing the current licensed operator requalification training program. 10 CFR Part 55 requires the content of a facility licensed operator requalification program to either meet the requirements outlined in 10 CFR 55.59 (c) (1) through (7) or be developed using a systems approach to training (SAT) based process, as defined in 10 CFR 55.4. In response to a court decision requiring a rule rather than a policy statement to satisfy the training requirements of the NWPA, the NRC issued 10 CFR 50.120,

"Training and Qualification of Nuclear Power Plant Workers," in April 1993. 10 CFR 50.120, which had an effective date of November 1993, acknowledges that the safety of nuclear power plant operations and the assurance of general public health and safety depend on licensee personnel performing at adequate levels of competence. 10 CFR 50.120 requires training programs for nine categories of non-licensed workers at nuclear power plants to be established, implemented, and maintained using a SAT-based process.

SAT-based training provides for the systematic determination of job performance qualification requirements and for periodic retraining of personnel to enhance public confidence in the ability of workers to perform successfully. 10 CFR 50.120 complements the requirement for SAT-based training of licensed operators contained in 10 CFR Part 55.

The Operator Licensing and Training Branch (IOLB) of the Division of Inspection and Regional Support in the Office of Nuclear Reactor Regulation under the Deputy Executive Director for Reactor Safety Programs has programmatic responsibility for ensuring that licensees implement training requirements prescribed by 10 CFR 50.120 and 10 CFR Part 55 in an acceptable manner.

NRC MONITORING OF TRAINING EFFECTIVENESS

Public health and safety depend on proper operation, testing, and maintenance of power plant systems and components. Successful performance by nuclear power plant personnel is assured by having workers achieve and maintain job-task qualification through SAT-based training and retraining required by 10 CFR Part 55 and 10 CFR 50.120. The implementation of SAT-based training is monitored by the Institute of Nuclear Power Operations (INPO) through training program accreditation reviews conducted for the National Nuclear Accrediting Board (NNAB). Indications of favorable job performance and successful NNAB accreditation provide reasonable assurance that the training of nuclear power plant workers is adequate to maintain public health and safety.

This report assesses the effectiveness of the implementation of training via (1) the perspectives gained from implementation of the Reactor Oversight Process (ROP), and (2) NRC monitoring

of the NNAB Accreditation Process. To obtain the ROP perspective, the NRC reviews inspection reports and operator licensing examination reports for personnel performance issues. The NRC obtains additional data during the conduct of “for cause” inspections of licensee training programs and during the administration, inspection, and review of licensed operator initial and requalification training activities.

The NRC assesses the effectiveness of the accreditation process and industry's implementation of SAT-based training by observing selected INPO-led Accreditation Team Visits and meetings of the NNAB. These activities provide an efficient and effective assessment of industry training activities and initiatives with minimal impact on licensees. Although each activity provides plant-specific information, the information is used in the composite for this report to assess the overall effectiveness of training in the nuclear industry.

Guidance for administering examinations to licensed operator applicants and licensed operators is contained in NUREG-1021, “Operator Licensing Examination Standards for Power Reactors.” Guidance for inspecting the aspects of the licensed operator training programs unique to requalification is found in NRC Inspection Procedure 71111, Attachment 11, “Licensed Operator Requalification Program” (IP 71111.11). In addition, the NRC verifies compliance with the requirements for SAT-based training through its inspection program and has done so, when appropriate, using Inspection Procedure 41500, “Training and Qualification Effectiveness,” which references the guidance in NUREG-1220, “Training Review Criteria and Procedures.”

The NRC also monitors the effects on the industry as new regulations and associated guidance documents are implemented by participating in meetings with regional training organizations and industry focus groups. The NRC staff participates in meetings and workshops sponsored by the Mid-Atlantic Nuclear Training Group (Region I and Region III), the Southern States Nuclear Training Association (Region II), and Westrain (Region IV). The industry Operator Licensing Focus Group, formed in cooperation with the Nuclear Energy Institute (NEI), provides a forum for discussing and resolving issues related to the training, examination, and development of licensed operators. This forum has assisted the staff in identifying problematic areas and developing solutions.

NRC MONITORING OF LICENSEE TRAINING PROGRAMS

The NRC can inspect facility training programs at any time to verify implementation of the training requirements contained in 10 CFR Part 50 and 10 CFR Part 55. Through inspections conducted prior to the implementation of 10 CFR 50.120 in 1993, the NRC determined that training programs accredited and implemented consistent with National Academy for Nuclear Training (NANT) accreditation criteria and objectives would be in compliance with the requirements to have SAT-based training programs. As facility training programs continue to renew accreditation, the NRC monitors training program performance indicators in lieu of conducting routine inspections. Using the guidance of the ROP, inspections of training programs are only conducted whenever the causes of declining licensee performance suggest training-related deficiencies outside the normal "licensee response band" (i.e., Column 1 of the ROP Action Matrix). There were no training inspections conducted during CY 2014.

Evaluations of licensed operator continuing training are conducted on a biennial basis by NRC Region-based operator licensing examiners and on a quarterly basis by site resident inspectors. During CY 2014**,** 60 licensed operator requalification program inspections were conducted using IP 71111.11, the baseline inspection procedure. Issues identified during these inspections included two green findings that resulted from a failure to conduct and evaluate simulator testing in accordance ANSI/ANS 3.5-2009 at Wolf Creek and a failure to retain scenario-based testing documentation at H. B. Robinson. Four other findings resulted from licensed operator medical issues. However, findings associated with medical issues are not directly related to operator training effectiveness.

On a national basis, inspections of licensed operator requalification training programs have identified a limited number of site-specific weaknesses. The results of these inspections indicate that power reactor facilities, overall, are satisfactorily maintaining their licensed operator requalification training programs. Licensees continue to demonstrate their ability to effectively develop and administer licensed operator requalification examinations. Licensee evaluations continue to satisfactorily identify licensed operator performance deficiencies. Licensees constructively use feedback mechanisms to improve licensed operator training and involve management in the observation and evaluation of licensed operator performance. Overall, the

NRC's licensed operator requalification inspection program continues to confirm that those individuals who are licensed to operate, or supervise the operation of reactor controls, maintain the required level of competence to safely perform their licensed duties. In addition, the NRC's initial operator licensing examination program continues to provide reasonable assurance that only those applicants who have mastered the knowledge, skills, and abilities required to safely operate and/or supervise the reactor controls are being licensed.

NRC MONITORING OF THE ACCREDITATION PROCESS

The NRC has statutory responsibility to ensure adequate protection of public health and safety. As described in the Memorandum of Agreement between INPO and NRC (updated September 11, 2013), the NRC fulfills this obligation with respect to licensed operator training by reviewing applicable National Academy Documents, nominating independent NNAB members (with voting rights) and observing all aspects of the accreditation process, among other activities. The NRC monitors NNAB, NANT, and INPO accreditation activities as indicators of the overall effectiveness of the industry's use of the SAT process. The NRC monitors accreditation in lieu of conducting inspections to assess the level of compliance with the SAT requirements contained in 10 CFR 50.120 and 10 CFR Part 55. Monitoring training program effectiveness through a review of the accreditation process increases the NRC’s efficiency by focusing agency resources on the inspection of licensee training programs only when performance problems have been identified through routine monitoring.

Observing Accreditation Activities

The NRC uses observations of NNAB meetings to provide assurance that training programs accredited and implemented in accordance with the NANT objectives are in compliance with the SAT requirements contained in 10 CFR 50.120 and 10 CFR Part 55. NRC staff, drawn from various levels that included representatives from Headquarters and the Regional Offices, attended one Accreditation Team Visit and observed ten meetings of the NNAB during CY 2014. In total, the staff observed representatives from 32 sites present their training programs to the NNAB for accreditation renewal. During the sessions observed by the NRC, the NNAB reviewed technical programs from 13 sites and operator training programs from 19 sites. NRC observation of accreditation activities indicated that training programs accredited by the NNAB

continue to be effective. The NRC staff continued to review INPO plant evaluation and accreditation reports to ensure that any significant safety issues receive appropriate follow-up. No safety-significant issues were identified in CY 2014 as a result of the reviews of plant evaluation or accreditation reports.

Coordinating Activities with INPO

The NRC staff meets with INPO's Training and Education organization at least once each year to exchange information related to training in the nuclear industry and to discuss comments made by NRC observers of INPO-led Accreditation Team Visits and the NNAB.

The most recent meeting was held at NRC Headquarters, in Rockville, MD, on May 7, 2014. Discussion topics included accreditation activities, progress to update the Knowledge and Abilities Catalogs for Nuclear Power Plant Operators (NUREG's 1122 and 1123), and INPO training initiatives to improve facility response to extreme events. The minutes of the 2014 INPO/NRC meeting and its enclosures (accession number ML14175B278) are available electronically from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

CONCLUSIONS

While the monitoring of industry performance in the area of training during CY 2014 provided some indications of minor training program weaknesses, overall, the industry successfully implemented required training programs in accordance with the regulations.

Monitoring the INPO-managed accreditation process continued to provide confidence that accreditation is an acceptable means of ensuring the training requirements contained in 10 CFR 50 and 10 CFR Part 55 are being met. In addition, the NRC's assessment of the accreditation process indicates that continued accreditation remains a reliable indicator of successful SAT implementation and contributes to the assurance of public health and safety by ensuring that nuclear power plant workers are being appropriately trained.