

**REPORT ON THE EFFECTIVENESS OF TRAINING  
AT OPERATING POWER REACTORS  
FOR CALENDAR YEAR 2022**

**May 2023**

Enclosure

## EXECUTIVE SUMMARY

This report documents a review by the Nuclear Regulatory Commission (NRC) staff of training effectiveness at operating power reactors that are subject to Title 10 of the Code of Federal Regulations (10 CFR) 50.120, "Training and Qualification of Nuclear Power Plant Personnel." This report is calendar year 2022. The NRC staff reviewed data from the NRC Reactor Oversight Process (ROP), reported events at operating power reactors, and NRC observations of training and accreditation activities conducted by the Institute of Nuclear Power Operations (INPO).

Based on the results of this review, the NRC staff concludes that operating power reactor operations and technical training programs continue to meet NRC requirements and therefore continue to provide adequate protection of public health and safety.

## BACKGROUND

In 10 CFR 50.120, the NRC requires training programs for nine categories of plant personnel to be established, implemented, and maintained using a systems approach to training as defined in 10 CFR 55.4 (SAT). A SAT provides for the systematic determination of job performance and qualification requirements and for periodic retraining of personnel. The requirements in 10 CFR 50.120 complement similar requirements in 10 CFR 55.59 for licensed operator requalification programs.

The NRC staff inspects implementation of the training and qualification requirements for nuclear power plant personnel in the ROP. The NRC staff uses Inspection Procedure (IP) 71111.11, "Licensed Operator Requalification Program and Licensed Operator Performance," to assess licensed operator continuing (i.e., requalification) training programs. Additionally, as discussed in NRC Inspection Manual Chapter (IMC) 0310, "Aspects within the Cross-Cutting Areas" (Agencywide Documents Access and Management System (ADAMS) Accession No. [ML19011A360](#)), NRC inspectors assign cross-cutting aspects to inspection findings in accordance with IMC 0612, "Issue Screening" (ADAMS Accession No. [ML19214A243](#)). The NRC reviews cross-cutting aspects for cross-cutting themes and potential cross-cutting issues in accordance with IMC 0305, "Operating Reactor Assessment Program" (ADAMS Accession No. [ML21092A111](#)), to provide licensees the opportunity to address performance issues before they result in more significant safety concerns. Cross-cutting aspect (CCA) H.9, "Training," is assigned if the organization fails to provide training or fails to ensure knowledge transfer to maintain a knowledgeable and technically competent workforce or fails to instill nuclear safety values.

The INPO National Academy for Nuclear Training (NANT) monitors the implementation of the SAT process at power reactor facilities through periodic training program accreditation reviews conducted by the National Nuclear Accrediting Board (NNAB). The NRC recognizes NANT accreditation as a means of meeting the SAT requirements of 10 CFR 50.120 and 10 CFR 55.59(c). As of the date of this report, all operating nuclear power reactor facilities have training programs that are accredited by the NANT.

The NRC staff monitors INPO accreditation activities as indicators of the overall effectiveness of the industry's use of the SAT process as discussed in the "Memorandum of Agreement Between the Institute of Nuclear Power Operations and the U.S. NRC" (MOA) (ADAMS Accession No. [ML23026A093](#), dated December 1, 2022). This includes observing one INPO-led accreditation team visit (ATV) and selected accreditation meetings of the NNAB each year.

## REVIEW METHODOLOGY

Indications of adequately trained and qualified plant personnel and continued NNAB accreditation provide reasonable assurance that the training of nuclear power plant workers is adequate to maintain public health and safety. Accordingly, the NRC staff reviewed findings identified during implementation of the ROP, event reports prepared by industry, and NRC staff observations of the NNAB accreditation process.

## RESULTS

The MOA was revised on December 1, 2022 [ML23026A093](#)

The ATV process will be changed starting on July 1, 2023. Previous ATVs will be replaced with Continuum Visit – Accreditation Readiness Review (CV-ARR). INPO will need to revise academy documents to make this change that integrates performance-based evaluations, ATVs, and continuous monitoring into one process.

### Reactor Oversight Process Insights

#### *Licensed Operator Requalification*

From May of 2022 to 2023, the NRC conducted over 539 inspections each year of the licensed operator requalification program in accordance with IP 71111.11, the baseline inspection procedure.

Overall, the results of these inspections indicate that power reactor facilities are satisfactorily maintaining their licensed operator requalification training programs. No adverse trends were identified. 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.

#### *Inspection Findings*

The number and significance of inspection findings related to CCA H.9 provide an indication of whether plant personnel are adequately trained and qualified. Table 1, “Findings Related to Training and Qualification Deficiencies,” shows the total number and percent of NRC inspection findings that were attributed to CCA H.9.

<b>Table 1, Findings Related to Training and Qualification Deficiencies</b>			
<b>Year</b>	<b>Total Number of Findings</b>	<b>Number of Findings Related to H.9</b>	<b>Percent of Findings Related to H.9</b>
<b>2022</b>	425	6	1.4%
<b>2021</b>	278	7	2.5%
<b>2020</b>	291	4	0.7%
<b>2019</b>	440	9	1.9%
<b>2018</b>	478	9	2.33%

All the findings associated with CCA H.9 were of very low safety significance (i.e., Green). As shown in Table 1, the number of inspection findings related to CCA H.9 was relatively small compared to the total number of inspection findings.

Based on these results, NRC staff concluded that there were no notable negative trends in the ROP inspection findings that indicated an adverse trend related to training effectiveness.

### Industry Events

The NRC staff reviewed event reports prepared by industry. The percentage of events that were determined to be related to issues with training and/or qualifications was relatively low compared to other causal factors reported. The one LER that involved a licensed operator human performance issue was Peach Bottom Automatic scram (ML2272022001) that was reported were related to inadequately trained workers or inadequate training content.

### NRC Observations of the Accreditation Process

NRC staff observed the ATV in 2022 at Quad Cities Operations.

NRC staff observed the following NNAB meetings from May of 2022 to May of 2023, 19 of 20 NNABs.

One technical NNAB had an in-person licensee NNAB.

## **CONCLUSIONS**

The NRC staff documented a relatively small number of issues related to training weaknesses at operating power reactors, which were all very low safety significance, in the implementation of the ROP. The event reports prepared by industry also showed that weaknesses in the training and qualification of plant personnel contributed to a relatively small percentage of all reported events. NRC observations of the INPO-managed accreditation process continued to provide confidence that accreditation is an acceptable means of ensuring the requirements for a SAT contained in 10 CFR 50.120 and 10 CFR Part 55 are being met. In addition, the NRC's assessment of the accreditation process indicates that renewed accreditation of facility training programs remains a reliable indicator of successful implementation of a SAT and contributes to the assurance of public health and safety by ensuring that nuclear power plant workers are being adequately trained and qualified.