

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/91024(DRS)

Docket No. 50-440

License No. NPF-55

Licensee: Centerior Service Company
c/o The Cleveland Electric
Illuminating Company
10 Center Road
Perry, OH 44081

Facility Name: Perry Nuclear Power Plant

Inspection At Perry, OH 44081

Inspection Conducted: December 2-6, 1991

Inspectors: Peggy Rescheske
Peggy R. Rescheske, RIII

12/19/91
Date

Greg M. Nejfelt
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12/19/91
Date

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Approved By: Monte P. Phillips
Monte P. Phillips, Chief
Operational Programs Section

12/19/91
Date

Inspection Summary

Inspection on December 2-6, 1991 (Report No. 50-440/91024, DRS)

Areas Inspected: Routine safety inspection focusing on the effectiveness of operator training and useability of the Perry Emergency Operating Procedures (EOPs). The inspection was conducted to complete the objectives of the NRC EOP Team Inspection which was performed in August 1991. (NRC Inspection Procedure 42001)

Results: No violations or other concerns were identified. Based on NRC observations of accident scenarios performed by two operating crews on the Perry simulator, it was evident that the EOPs were understood by the operators and could be accomplished using existing equipment, controls, and instrumentation. Operator training appeared to be effective in the area of EOPs.

Report Details

Persons Contacted

Cleveland Electric Illuminating Company

M. D. Lyster, Vice President
R. A. Stratman, General Manager
F. R. Stead, Director, Nuclear Support
M. W. Gmyrek, Manager, Operations
K. P. Donovan, Manager, Licensing & Compliance
D. P. Igyarto, Manager, Training
H. L. Hegrat, Supervisor, Compliance
M. L. Wesley, Supervisor, Operations Training Unit
N. H. Johnson, License Training Instructor
T. S. Hogan, Compliance Engineer

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G. C. Wright, Chief, Operations Branch, DRS, RIII
P. L. Hiland, Senior Resident Inspector, RIII
G. F. O'Dwyer, Resident Inspector, RIII
A. Vogel, Resident Inspector, RIII
M. K. Khanna, Intern, DRP, RIII

State of Ohio, Public Utilities Commission

R. Moazampour, Chief, Nuclear Safety

All of the above individuals attended the exit meeting held on December 6, 1991.

Other persons were contacted during the inspection including members of the licensee's operations and training staffs.

2. Inspection Activities

The inspection was conducted to assess the effectiveness of operator training and useability of the Perry EOPs (Plant Emergency Instructions, PEIs); which completed the objectives of the NRC EOP Team Inspection performed in August 1991 (Open Item 440/91013-09b(DRS)). Accident scenarios, which exercised the majority of the PEI flowpaths and several of the PEI text format procedures (Special Plant Instructions, SPIs), were performed on the Perry simulator by two licensed operating crews. Based on observations of the exercises and post-scenario discussions with the operators, it was evident that the PEIs were understood by the operators and could be accomplished using the existing equipment, controls, and instrumentation. Operator training was effective. No deficiencies were identified during the exercises.

The following summarizes the scenarios utilized during the simulator exercises:

- a. The common scenario performed by both operating crews demonstrated that: (1) the unit could be stabilized in various reactor water level ranges utilizing PEI-B13, "RPV Level/Power Control" (e.g., deliberately lowering reactor water level to control power); (2) the containment and drywell entry conditions for PEI-T23, "Containment Control," could be responded to; and (3) containment integrity could be maintained by venting with PEI-M51/56, "Drywell and Containment Hydrogen Control."
- b. A scenario unique to the first operating crew demonstrated the use of emergency depressurization with the loss of all high pressure coolant injection, utilizing PEI-B13.
- c. A scenario unique to the second operating crew demonstrated maintaining the suppression pool as a heat sink by reducing reactor pressure to remain within the safety relief valve tail pipe level limit (SRVTPLL), utilizing PEI-B13.

The following summarizes the observations regarding effectiveness of operator training and useability of the PEIs:

- a. The operators were able to follow logic set forth in the procedures and implement the appropriate decision and action paths. The operators recognized all entry conditions, appropriately and consistently used overrides, and correctly followed transitions within and between procedures. In areas where previous concerns had been identified, the operators had no difficulties during the simulator exercises; for example, in arriving at the criteria needed to determine if the reactor was shutdown, and if emergency depressurization was required or anticipated.
- b. The operators adequately maintained control of equipment and instrumentation. Interlocks were defeated as necessary.
- c. The emergency plan was applied uniformly by both operating crews.
- d. While the operators generally understood the decisions, actions, and indications specified in the procedures, at times several readings of a step were required before a reader was ready to implement a step. This

appeared to confirm previous concerns with clarity of procedure guidance. However, it also demonstrated good discipline on the part of readers, because they were careful not to proceed until they were sure they understood the intent of the instruction.

- e. In general, responsibilities and authorities were clear and communications and the use of repeat-backs were good. During the simulator exercises, the Senior Reactor Operator (SRO) assigned individual tasks as necessary. Generally, this approach was effective in completing the task. However, there was an instance where both the SRO and a Reactor Operator (RO) assigned duties to a second RO. The second RO appropriately asked the SRO to resolve the problem. Though the problem was resolved, there was momentary confusion that distracted three crew members from the accident scenario.
- f. Each SRO was permitted to develop their own technique for place-keeping and annotating the PEI flowcharts. During the simulator exercises the operators maintained awareness of their location in the PEI flowcharts and key plant parameters.
- g. Despite the human factors deficiencies in the PEI flowcharts, identified during the NRC EOP Team Inspection, the operating crews were able to use the PEIs successfully. Human factor assessments deal with the potential to commit errors under high stress conditions. While the scenario exercise did result in stress on the operators, the cause and level of that stress are significantly different than would be present under actual accident conditions. Because of the differences, the human factors findings relating to the PEIs are still valid even though the operating crews successfully implemented the procedures.

3. Exit Meeting

The inspectors met with licensee representatives (denoted in Paragraph 1) on December 6, 1991. The inspectors summarized the purpose, scope, and findings of the inspection and the likely informational content of the inspection report. The licensee acknowledged this information and did not identify any information as proprietary.