

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/95007

FACILITY

Perry Nuclear Power Plant, Unit 1

License No. NPF-58

LICENSEE

Cleveland Electric Illuminating Company
Post Office Box 5000
Cleveland, OH 44101

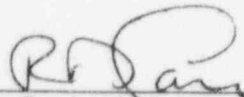
DATES

July 15 through September 1, 1995

INSPECTORS

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R. Twigg, Resident Inspector
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APPROVED BY



R. D. Lanksbury, Chief
Reactor Projects Branch 2

10/12/95
Date

AREAS INSPECTED

A special announced inspection of operations, engineering, maintenance, and plant support was performed. Safety assessment and quality verification activities were routinely evaluated. Follow-up inspection was performed for non-routine events and for certain previously identified items.

RESULTS

Assessment of Performance

Performance of activities evaluated within the area of OPERATIONS was good - see Section 1.0. No violations, deviations, or significant problems were found. Operators performed well during routine operations and a reactor scram. Past improvements in communications within operations and with other plant organizations were maintained; additional improvement was still needed in communicating with other organizations. Progress was made in reducing personnel errors, however several errors occurred which did not raise immediate safety concerns.

Performance of activities evaluated within the area of MAINTENANCE was good - see Section 2.0. No cited violations, deviations, or significant problems were found. One non-cited violation (NCV) was identified related to foreign material exclusion. (See Section 2.2) Work management problems and personnel errors continued, indicating a need for continued improvement. With the exception of one containment isolation valve, plant equipment performed well during the August 31 reactor scram. This was an improvement from past reactor scrams. However, the scram was caused by a relay failure.

Performance of activities evaluated within the area of ENGINEERING was good - see Section 3.0. No violations, deviations, or significant problems were found. There was good support of maintenance and operations activities. Prompt engineering support was provided in evaluating the August 31 reactor scram. However, reactor engineering did not maintain adequate communications related to a reactor power maneuver.

Performance of activities evaluated within the area of PLANT SUPPORT was good - see Section 4.0. No violations, deviations, or significant problems were found. Overall dose continued to be low with few personnel contaminations. Minor problems were identified with control of exempt quantity sources and an individual crossing a contamination boundary. The emergency preparedness organization provided good support of operations.

Performance of SAFETY ASSESSMENT and QUALITY VERIFICATION activities evaluated was good - see Section 5.0. No cited violations, deviations, or significant problems were found. One NCV was identified (Section 6.1). This was a Technical Specification violation for containment isolation valves based on environmental qualification considerations. The safety significance was minimal and identification of the violation during a QA audit was excellent. The licensee continued to identify important issues with a variety of methods and organizations. There has been a significant reduction in the backlog of corrective actions with few untimely corrective actions. However, a few corrective actions have not been fully successful. Several additional examples were identified where individuals failed to promptly identify and report problems that may have been outside the scope of their assigned tasks.

Summary of Open Items

Violations: Not identified in this report

Unresolved Items: Not identified in this report

Inspector Follow-up Items: Not identified in this report

Non-cited Violations: Identified in Sections 2.2 and 6.1

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INSPECTION DETAILS

1.0 OPERATIONS

NRC Inspection Procedures 71707, 71500, and 92901 were used to perform an inspection of plant operations activities. No violations or deficiencies were identified and overall performance in this area was good.

1.1 Operations Summary

The licensee operated the unit continuously at power levels up to 100 percent with brief power reductions for testing, control rod positioning, and maintenance of condenser vacuum and generator electrical limits. On August 31, failure of an instrument power supply caused a reactor scram and the plant remained shut down for the rest of the inspection period.

1.2 Operator Control of Routine Plant Operations Was Good

The inspectors observed routine plant operations and concluded that overall performance was good.

The licensee again made some progress in reducing personnel errors. The licensee's threshold for identifying personnel errors continued to be appropriately low, with emphasis being placed on self-identification by the operations section. Personnel errors identified by the licensee during the inspection included premature clearance of a red tag and stroking the wrong valve during a containment airlock test.

1.3 Reactor Scram Due to an Instrument Power Supply Failure

On August 31 a relay in the Division 2 Instrument Power Supply failed. This caused two reactor water level transmitters to falsely indicate low, which completed the initiation logic for the reactor core isolation cooling (RCIC) system. Initiation of RCIC caused main turbine and reactor feedwater (FW) pump turbine trips, which caused a reactor scram. Loss of both FW pumps caused an auto start of the motor driven FW pump. The inspectors observed the control room operators' prompt response to the scram. Reactor vessel level dropped rapidly to level 2 which caused initiation of high pressure core spray (HPCS), reactor recirculation pump trips, and containment isolation. Although the unit supervisor promptly directed two supervising operators to control level by coordinating control of the motor driven FW and HPCS pumps, the combined flow of FW, HPCS, and RCIC caused level to increase too rapidly for the operators to prevent a level 8 (high level) isolation. The operators then stabilized the plant in Mode 3. Command and control of operator activities and verbal control room communications were excellent. All safety equipment functioned as expected except for one outboard containment isolation valve. The inspectors will complete their review of this event upon receipt of the licensee event report.

2.0 MAINTENANCE AND SURVEILLANCE

NRC Inspection Procedures 62703, 61726, and 92902 were used to perform an inspection of maintenance and testing activities. No violations or deficiencies were identified and overall performance in this area was good.

2.1 Continued Problems with the Ability to Get Work Done Effectively

The backlog of work activities continued to slowly decrease. However, there continued to be examples of maintenance activities that indicated the work control process was not fully effective, potentially causing unnecessary increases in total personnel radiation dose. An example of the less than fully effective work control process was the need to bring in a mobile crane while refurbishing the fuel handling bridge in the Fuel Handling Building. The mobile crane was needed because the building overhead crane was out of service for preventive maintenance. Approximately 3 weeks earlier a work activity had been halted because the overhead crane was not available, but required. Both work activities were scheduled based on the overhead crane being available. The fact that the crane was not available indicated that communication between work groups and coordination of work activities was not fully effective.

2.2 Foreign Material Exclusion Program Not Fully Effective

During the previous inspection period the licensee determined that a ground on a Division 2 battery charger had been caused by a small metal filing which had not been excluded from the work area (see Inspection Report No. 440/95005). During this inspection period, the inspectors observed two Instrumentation and Controls technicians exchanging power supplies for a post accident radiation monitor. The technicians dropped a small terminal washer which was located at the bottom of the cabinet. The technicians determined the washer was difficult to retrieve and would not cause a problem if left. Later that day, discussions with the technicians revealed that no documentation of the washer was made in the work package and the work supervisor had not been informed. The supervisor's expectations were that the washer would be removed. A Potential Issue Form was written, the washer was removed, and actions were taken to effectively communicate management's expectations concerning foreign material exclusion (FME) in such situations. Leaving the washer in the cabinet was of minor safety significance. However, this was another indicator that the licensee's programs for FME were not yet fully effective. The initial failure to inform the work supervisor of the FME problem was a violation of licensee procedure PAP 0204, "Housekeeping/Cleanliness Control Program."

This failure constitutes a violation of minor safety significance and is being treated as a Non-Cited Violation, consistent with Section IV of the NRC Enforcement Policy.

2.3 Personnel Errors

During the previous inspection period (Inspection Report 95006) the plant manager stopped all work on site due to personnel errors. During this inspection period the plant manager stopped work by the general maintenance contractor and the contractor for removal of the Unit 2 diesels. Work was stopped due to inattention to detail or personnel errors. Work resumed after extensive discussion and review with the management of the two contractors. The conservative actions by the licensee management to continue emphasizing the expectation that personnel errors must be minimal was good. The general maintenance contractor's response to the stop work was excellent. Personnel errors by other work groups also continued. Errors identified by the licensee during the inspection included placing a temporary flow measuring device on the wrong pipe and inadequate control of measuring and test equipment (see Section 4.1 also).

3.0 ENGINEERING

NRC Inspection Procedures 37551 and 92903 were used to perform onsite inspections of the engineering function. No violations or deficiencies were identified and overall performance was good.

3.1 Engineering Support of Plant Operations Was Good

The inspectors observed system engineers in the plant effectively involved in maintenance activities and resolution of operational concerns. Prompt engineering support was provided in evaluating the August 31 reactor scram. However, reactor engineering was not effective in maintaining adequate communications with other plant organizations in planning for the August 5 reactor power maneuver for routine control rod configuration changes and other activities. It was fortuitous that the reactor engineers learned of the planned power change through informal channels on short notice and recognized the need for their involvement. Their subsequent prompt response helped avoid an impact on the power reduction schedule.

4.0 PLANT SUPPORT

NRC Inspection Procedures 71750 and 92904 were used to perform an inspection of Plant Support Activities. No violations or deficiencies were identified and overall performance in this area was good.

4.1 Radiation Protection Performance Was Good

The licensee continued to maintain total radiation dose significantly lower than in the past, with fewer personnel contaminations.

While inspecting the containment, the inspector observed a plant operator complete adjustment to Recirculation Pump Seal flow and leave the area. Afterwards, the inspector noted that the plant operator had been reaching across a radioactive contamination boundary without

gloves. Discussions with the plant operator indicated a full understanding of the rules for working in a contaminated area, but his inattention to detail caused his failure to recognize the contaminated boundary. Most areas of containment were recently decontaminated which may have contributed to the inattention to detail since plant operators no longer are required to dress in anti-contamination clothing. Following the discussion with the inspector, the operator reported the incident to the shift supervisor and a potential issues form (PIF) was generated. In addition, the operator was counseled and he provided training on the event to all of the other operations staff. This matter will be reviewed further by the assigned NRC radiation protection specialist during routine inspection activities.

While selling surplus equipment, the licensee inadvertently transferred exempt quantity radioactive sources to buyers who did not initially know that they were receiving radioactive material. The buyers notified the licensee upon recognizing that they had received radioactive material. This was of minor safety significance in that those were sealed sources, were small (exempt) quantities and they remained intact. The material was promptly retrieved and a thorough investigation was conducted by the licensee.

4.2 Emergency Preparedness Response Was Good

On July 29 at about 1 p.m. the inspector observed an emergency preparedness representative in the control room assisting operations management in determining the appropriate response to a fault in the plant telephone connection to the off-site telephone system. Other phone connections were available and the condition did not appear to be reportable. The system fault was in an off-site telephone cable and the licensee later learned from the telephone company that the NRC ENS connection had been lost as well. This was promptly reported to the NRC upon discovery. The emergency preparedness response to this condition was good.

5.0 SAFETY ASSESSMENT AND QUALITY VERIFICATION (SAQV)

NRC Inspection Procedures 40500, 92901, 91902, 91903, and 91904 were used to perform an inspection of Safety Assessment and Quality Verification activities. No violations or deficiencies were identified and overall performance in this area was good.

5.1 Identifying and Responding to Anomalies in the Plant

In the last Inspection Report (IR 95006), the inspectors noted a concern with failures on the part of the Perry Organization to identify and respond to equipment and work performance problems. The inspectors were concerned that the failure to promptly identify and respond to these problems indicated that some individuals were narrowly focused on their assigned tasks with a limited sense of responsibility for the overall performance of the plant. There were four additional minor examples identified by the inspectors during this inspection period.

Leaking demineralized water valves in two battery rooms.

A demineralized water connection in a high traffic area was found leaking water on a temporary electrical cable and nearing a drain to radwaste.

Temporary lighting was strung in the Heater Bay Building such that one light had the potential to interfere with the closing of a fire door.

Two fire seals were breaking away from the edges of the sealed opening in the containment shield building.

5.2 Quality Assurance Audits and Corrective Actions

Audits reviewed by the inspectors were thorough with detailed findings. Progress continued to be made in reducing the backlog of corrective actions. Significant improvement was made in timeliness of completing corrective actions. However, there were repetitive audit findings related to material accountability and control of measuring and test equipment. There was also another foreign material exclusion issue identified by the inspectors (see Section 2.2).

6.0 LICENSEE ACTION ON PREVIOUSLY IDENTIFIED ITEMS

NRC Inspection Procedures 92700, 92701, 92702, 92901, 92902, and 92903 were used to perform follow-up inspection of the items below.

6.1 Action on Licensee Event Reports (LER)

(Closed) LER 50-440/93-012-00: "Local Leak Rate Testing for Residual Heat Removal System Test Return Lines Not Performed in Accordance with 10 CFR Part 50, Appendix J, Requirements." This was identified by the licensee and was a situation where orifice flanges were not identified as a potential leak path since construction of the plant and therefore considered not properly tested. Upon identification, the flange fittings were tested by an acceptable means prior to reactor startup. The containment systems were reviewed for similar potential leakage paths and none were found. These specific flanges were modified to accommodate the appropriate "air test" vice "water test." The local leak rate test program was reviewed and the program was modified to add provisions to retest these flanges following any disassembly. The safety significance was considered low in that if these flanges had been leaking in the past it would have been identified during the routine containment integrated leak rate tests (CILRTs).

In addition, this event was reported late and the licensee subsequently implemented a Potential Issues Form (PIF) and made provisions for more timely followup and reporting in the future.

(Closed) LER 50-440/93-018-00: "Technical Specification Violation Due to Installation Deficiencies for Target Rock Valves." This issue was licensee identified through an EQ audit where three Target Rock solenoid operated containment isolation valves were declared inoperable when loose solenoid housing covers were found. The licensee promptly conducted a followup review of all solenoid operated Target Rock valves (48 total), conducted corrective maintenance where necessary, contacted the vendor for guidance, and conducted a safety evaluation. During the followup review, three additional valves were declared inoperable due to loose, broken or missing cap screws for the solenoid housing terminal brackets. This issue was determined to be a carry over from plant construction and the current maintenance procedures were adequate to prevent recurrence. The safety impact was minimal due to the small diameter of the affected containment penetrations and there was reasonable assurance that the valves would have worked if called upon. In addition, the licensee provided training on this event for all maintenance personnel that may be involved in related maintenance.

As stated, this is a violation of Technical Specification 3.6.4, Containment Isolation Valves, in that the Limiting Condition for Operation was exceeded and the Action Statement was not met. However, the safety significance was considered minimal, the violation was not the result of activities related to present performance (from construction period) and there had not been a prior notice such that the licensee would have identified it earlier.

This licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII of the NRC Enforcement Policy.

6.2 Review of Previously Opened Items (Violations and Unresolved Items)

(Closed) Violation (50-440/94004-01 a through d (DRP)): Multiple examples of inadequate procedures or failure to adhere to procedures. Corrective actions for all examples follow.

By memo dated July 1, 1994, the Vice President (VP) Nuclear at Perry provided instructions to all site personnel on the expectations of management with regard to adherence to procedures and instructions. In addition, meetings were held by the VP Nuclear at Perry and all site employees, where the issues of ownership, accountability, and management expectations were reviewed and discussed. These meetings were completed on or before August 31, 1994.

A study was also conducted by a task force on procedure development, review, approval, and revision for improving the procedure development process. The results were developed into a report (Millican Report) and the recommendations had been or were planned to be incorporated into the procedure process for quicker, more accurate development.

Finally, a procedure review check list developed to improve the quality of procedures was implemented on July 12, 1994. This was implemented by temporary change to the procedures, instructions, and temporary changes that were used for procedure development.

The specific responses to the examples follows:

(Closed) Violation Example (50-440/94004-01a(DRP)): Failure to record (log) a water hammer event and inform management in a timely manner (Note: this example is identified as 50-440/94004-01b in the body of the inspection report).

To prevent recurrences of this specific type of issue, procedure PAP 0201, "Conduct of Operations," was amended with additional instructions to include piping/system thermal transients in the category of water hammer events requiring further investigation and documentation.

In addition, Condition Report 94-0270 was generated to address the specific piping and equipment involved on the steam seal evaporator. Two piping supports were identified that required adjustment and the steam seal evaporator fill bypass valve 1N33F020 was found with extensive flow damage to the seat and disc. The valve was replaced.

The inspectors also observed that the operators were more sensitive to the possible occurrence of water hammer events.

(Closed) Violation Example (50-440/94004-01b(DRP)): Specific surveillance test (SVI) and periodic test instructions (PTI) did not contain qualitative acceptance criteria for instrument air for the main steam isolation valve (MSIV) actuators (Note: this example is identified as 50-440/94004-01d in the body of the inspection report).

Specific SVIs and PTIs were revised to provide appropriate prerequisites for availability of instrument air to the MSIV actuators.

(Closed) Violation Example (50-440/94004-01c(DRP)): Inadequate SVIs for testing safety relief valves (SRVs) caused unintentional SRV openings on February 25 and 26, 1994. In addition, on February 25, 1994, the lead test performer failed to stop the test when unexpected plant behavior was experienced. The licensee's review of the event revealed that the SVIs in use had been revised and steps to assure that "seal in" logic was reset had been omitted. All affected SVIs were reviewed, revised, and successfully performed. The lead test performer had mistakenly thought that the opening of the SRVs was an expected response to the SVI. Upon identification by the staff on the next shift, the test was terminated. The event was reviewed and shift crews were informed by briefings with emphasis on the operations policy,

"Control Room Response to Annunciators." In addition, the licensee issued LER 50-440/94-008-00 which was reviewed and closed in inspection report 50-440/95004.

(Closed) Violation Example (50-440/94004-01d(DRP)): Piston ring gap measurement on an emergency diesel generator was not accomplished in accordance with documented instructions (Note: this example is identified as 50-440/94004-01a in the body of the inspection report).

The cause of this occurrence was found to be erroneous instructions to the workers from a supervisor. Meetings were held with craft supervisory and non-supervisory personnel where procedure compliance was stressed. In addition, a letter was issued from management to all maintenance supervisors emphasizing management's expectations.

The forgoing appeared to have corrected the specific examples and more recent observations of activities at Perry revealed a greater awareness of the necessity to have and follow approved procedures. This violation is closed.

(Closed) Unresolved Item (50-440/94010-02(DRP)): Failure to Meet Management Expectations with Respect to Timely Internal Communications of Potentially Significant Events. Included with this URI is a portion of IFI 50-440/94010-03 on the same subject (Inspection Report 50-440/95002, Section 6.1). At the time of this URI, the licensee was in the process of establishing and implementing its corrective actions for Violation 50-440/94004-01a. The violation was for lack of appropriate records (logs) and timely communications to plant management related to a water hammer event on February 2, 1994.

By memo dated March 13, 1995, from station management to all shift supervisors, "Communications Expectations of Operations Section Personnel," communications expectations were reemphasized. The memo also included attachments of applicable portions of PAP 0201, "Conduct of Operations"; POS Policy Item 1-12, "Assessment of Plant Problems"; POS Policy Item 1-5, "Command and Control Guidelines"; POS Policy Item 1-3, "PNPPD Verbal Operational Communications Policy"; and POS Policy Item 1-13, "Management Expectations -- Introduction of the B-A-S-I-C Keys for Success Principles." These were also provided to the Operations Staff through shift crew training and through the routine training cycle. Subsequent observations had shown steady improvement in this area and the inspectors planned continued observation as part of routine inspections. This URI is closed.

7.0 Persons Contacted and Management Meetings (Exit)

The inspectors contacted various licensee operations, maintenance, engineering, and plant support personnel throughout the inspection period. Senior personnel are listed below.

After the conclusion of the inspection on September 11, 1995, the inspectors met with licensee representatives (denoted by *) and summarized the scope and findings of the inspection activities. The licensee did not identify any of the documents or processes reviewed by the inspectors as proprietary.

- D. C. Shelton, Senior Vice President
- *R. D. Brandt, General Manager Operations
- *N. L. Bonner, Engineering Director
- *R. W. Schrauder, Nuclear Services Director
- *K. R. Pech, Nuclear Assurance Director