

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/91025(DRP)

Docket No. 50-440

License No. NPF-58

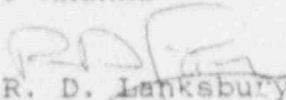
Licensee: Cleveland Electric Illuminating Company
Post Office Box 5000
Cleveland, OH 44101

Facility Name: Perry Nuclear Power Plant

Inspection At: Perry Site, Perry, Ohio

Inspection Conducted: December 2, 1991, through January 13, 1992

Inspectors: A. Vogel
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Approved By:  R. D. Lanksbury, Chief
Reactor Projects
Section 3B

1/28/92

Inspection Summary

Inspection on December 2, 1991, through January 13, 1992 (Report No. 50-440/91025(DRP))

Areas Inspected: Routine unannounced safety inspection by resident inspectors of licensee event report followup; surveillance observations; maintenance observations; operational safety verification; event followup; and safety assessment.

Results: Of the six areas inspected, no violations or deviations were identified. One Unresolved Item was identified in the area of operational safety verification (Paragraph 5.a.) concerning fire protection deficiencies identified and reported by the licensee. At the conclusion of the inspection period licensee management was in the process of developing a corrective action plan for the identified fire protection deficiencies.

The following is a summary of the licensee's performance during this inspection period:

Plant Operations

Response by plant operators to events was considered good.

Maintenance/Surveillance

The quality of observed maintenance and surveillance activities was good.

Engineering and Technical Support

Based on routine observations of engineering support to plant operations, this area was considered good.

Safety Assessment and Quality Verification

The quality of reviewed event reports was acceptable. Observed on-site review committee activities were adequate.

Emergency Planning

Response to the December 22, 1991, ALERT was adequate. Some hardware weaknesses were identified by the licensee subsequent to the event.

DETAILS

1. Persons Contacted

a. Cleveland Electric Illuminating Company

- *R. Stratman, General Manager, Perry Nuclear Power Plant (PNPP)
- *K. Donovan, Manager, Licensing and Compliance
M. Gmyrek, Operations Manager, PNPP
- *S. Kensicki, Director, Perry Nuclear Engineering Department (PNED)
- *F. Stead, Director, Perry Nuclear Support Department (PNSD)
- *H. Hegrat, Compliance Engineer, PNSD
- *E. Riley, Director, Perry Nuclear Assurance Department (PNAD)
- *V. Concel, Manager Technical Section, PNED

b. U. S. Nuclear Regulatory Commission

- *P. Hiland, Senior Resident Inspector, RIII
G. O'Dwyer, Resident Inspector, RIII
- *A. Vogel, Resident Inspector, RIII
- *M. Khanna, Reactor Engineer, RIII

* Denotes those attending the exit meeting held on January 13, 1992.

2. Licensee Event Report Followup (90712, 92700)

Through review of records, the following event reports were reviewed to determine if reportability requirements were fulfilled, immediate corrective actions were accomplished in accordance with Technical Specifications and corrective action to prevent recurrence had been established:

- a. (Closed) LER 50-440/89022-00: On June 27, 1989, the licensee discovered that a level transmitter for the Scram Discharge Volume (SDV), had been beyond the Technical Specification (TS) allowable value since its previous calibration on November 20, 1987.

Licensee Evaluation of Cause and Corrective Actions

Root Cause:

The licensee determined the cause of the event was a procedural deficiency. During the initial preparation of Surveillance Instructions (SVI)-C110T0045A thru D, "SDV Water Level High Channel Calibration," instrument calibration data was developed utilizing inaccurate calibration data sheets which supplied elevation data based on the difference between the SDV tap and the instrument high pressure tap as taken from the

instrument isometric drawings. This was detected when it was observed that the four level transmitters in the SDV were reading slightly different values. This inaccuracy was confirmed when actual elevation measurements were taken for each instrument.

Corrective Actions:

Corrective actions included revising SVI-C1: 0045A thru D and the instrument calibration data sheet to include the actual elevations. Each SDV level transmitter was re-calibrated utilizing the revised SVI's. All other Reactor Protection System (RPS) instrumentation was reviewed for potential head correction factor errors. No additional errors were identified.

Inspectors Evaluation:

The inspectors reviewed the applicable licensee documentation and noted that all corrective action commitments were completed. The inspectors concluded that the licensee's corrective actions appeared reasonable and adequate to prevent recurrence.

- b. (Closed) LER 50-440/91003-00: On January 6, 1991, the performance of an inadequate procedure resulted in main steam line (MSL) drain isolations. Control room operators were in the process of restoring Feedwater Heater 6A to service in accordance with System Operating Instruction (SOI)-N27, "Feedwater System (Unit One)." The control room operators bypassed the trip functions for all four MSL radiation monitors and, in addition, placed the Nuclear Steam Supply Shutoff System (NSSSS) MSL drain isolation logic test switches to the "test" position. The resulting logic configuration resulted in the generation of isolation signals to the inboard and outboard MSL drain isolation valves.

Licensee Evaluation of Cause and Corrective Actions:

Root Cause:

The licensee determined the cause of this event was a procedure deficiency. SOI-N27 instructed operators to perform applicable steps of appropriate surveillance instructions to bypass the MSL radiation monitors. The surveillance instructions were used to meet Technical Specification surveillance requirements and contained steps that, in effect, "bypassed" MSL radiation monitor trip functions; however, the applicable steps were not readily discernible or placed in a specific section separated from other nonapplicable steps. As a result, control room personnel had to determine, without

procedural guidance, the "applicable steps" to be performed.

Corrective Actions:

To prevent recurrence, SOI-N27 was revised to reference the appropriate steps in procedure SOI-D17A to bypass the MSL radiation monitors. Additionally, as part of the established regualification training program, all plant licensed operators were instructed on the lessons learned from this event.

Inspectors Evaluation:

The inspectors reviewed the applicable licensee documentation and noted that all corrective action commitments were completed. In addition, the inspectors discussed this event with senior operators involved in the event and licensee management to evaluate the adequacy of corrective action taken. Specifically, the inspectors discussed licensee corrective action to an associated condition report which documented operator concerns about placing the "6A" heater in service with the turbine on line. The inspectors concluded that the operators concerns were addressed by licensee management, and that no apparent communication problems existed between the operators and the plant management. The inspectors concluded that the corrective actions appeared adequate to prevent recurrence.

No violations or deviations were identified.

3. Monthly Surveillance Observation (61726)

For the surveillance activities listed below, the inspectors verified one or more of the following: testing was performed in accordance with procedures; test instrumentation was calibrated; limiting conditions for operation were met; removal and restoration of the affected components were properly accomplished; test results conformed with technical specifications, procedure requirements, and were reviewed by personnel other than the individual directing the test; and any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

Surveillance Test No.

Activity

SVI-E51-T2001

RCIC Pump and Valve
Operability Test

No violations or deviations were identified.

4. Monthly Maintenance Observation (62703)

Station maintenance activities of safety-related systems and components listed below were observed and/or reviewed to ascertain that activities were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with Technical Specifications.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority was assigned to safety-related equipment maintenance which may affect system performance.

Specific Maintenance Activities Observed:

<u>Work Order</u>	<u>Subject</u>
91-005614	Retrieve Sluice Gate Safety Cover Plate
91-005755	1E22F0010 - Valve Anti-Rotation Device Repair
91-000427	Plenum Annulus Exhaust Gas Treatment System Calibration of M15D001A switches

No violations or deviations were identified.

5. Operational Safety Verification (71707)

The inspectors observed control room operations, reviewed applicable logs, and conducted discussions with control room operators during this inspection period. The inspectors verified the operability of selected emergency systems, reviewed tagout records, and verified tracking of Limiting Conditions for Operation associated with affected components. Tours of the pump houses, control complex, the intermediate, auxiliary, reactor, rad waste, and turbine buildings were conducted to observe plant equipment conditions including potential fire hazards, fluid leaks, and excessive vibrations, and to verify that maintenance

requests had been initiated for certain pieces of equipment in need of maintenance. The inspectors, by observation and direct interview, verified that the physical security plan was being implemented in accordance with the station security plan.

The inspectors observed plant housekeeping, general plant cleanliness conditions, and verified implementation of radiation protection controls.

a. Fire Protection Deficiencies

On October 7, 1991, the licensee identified discrepancies in the installation of fire wrap on 10 CFR Part 50, Appendix R, raceways which could adversely affect safe shutdown requirements. Specifically, while performing Periodic Test Instruction (PTI)-P54-P0075, "Appendix R Fire Wrap Inspection," several examples of improper mechanical fastener spacing were identified. The mechanical fasteners were found installed beyond the tested and approved maximum spacing of twelve inches. As a result, all uninspected raceways, and those found to exceed the twelve inch spacing, were declared impaired as a fire barrier and hourly fire watches were initiated. On November 5, 1991, the licensee issued Licensee Event Report (LER) 91-020 which documented this event. On December 4, 1991, while correcting the mechanical fastener spacing deficiencies, the licensee identified deficiencies in the length and thickness of fire barrier material (TSI Thermolag) on raceway supports and heat transfer items. The immediate corrective action was to continue hourly fire watches until the raceways were upgraded to design specifications. A revision to LER 91-020 was issued on January 3, 1992, documenting the additional discrepancies.

The licensee determined that the cause for the mechanical fastener discrepancy was inadequate design. The installation requirements provided by the Plant Architect Engineer did not conform with the vendor's installation criteria concerning maximum spacing of the mechanical fasteners. The cause for the insufficient fire barrier material on the raceway supports and heat transfer items was determined by the licensee to be inadequate installation procedures and inadequate quality control of the installation.

In order to evaluate the adequacy of the licensee's program to identify and correct fire barrier impairments, the inspectors specifically reviewed the licensee's corrective actions in response to these discrepancies. The inspectors concluded that the short term corrective actions, the initiation of hourly fire watches along with the fire detection system, were

adequate compensatory measures for the fire impairments. The adequacy of the fire protection program itself, specifically the long period of time that it took the program to identify these problems, remains unresolved. Further evaluation of the fire protection program scope and technical adequacy will be conducted by the inspectors following completion of the licensee's corrective action plan discussed in LER 91-020. This will be tracked as an unresolved item (440/91025-01(DRP)).

b. Training Observations

During the report period, the inspectors attended the licensee's general employee training (GET), radiological control training (RCT), and respiratory protection training (RPT). For the training observed, the inspectors noted that pertinent course material was available to each trainee and classroom lectures were provided by knowledgeable licensee personnel. Of note was the practical exercise required for successful completion of training. Based on the observations noted above, the inspectors concluded that the training provided was well planned and useful for the attendees.

c. Plant Startup

On December 22, 1991, while operating at 100 percent power, loss of circulating water due to a ruptured auxiliary circulating water pipe resulted in a manual scram and ALERT declaration. Following repairs to the failed auxiliary circulating water pipe, the plant was returned to 100 percent power on January 6, 1992. The inspectors review of the manual scram and declaration of ALERT are discussed below in Paragraph 6.d. In addition, a NRC Augmented Inspection Team (AIT) was formed and conducted a followup inspection of the cause for the initiating auxiliary circulating water pipe failure, overall plant response, and response of specific plant equipment to the plant transient. The results of the AIT inspection are documented in Inspection Report 50-440/91026.

The inspectors observed control room activities during the plant startup. Direct observations of control rod withdrawals to criticality and subsequent power increases were observed. The inspectors noted that plant restart was conducted in a controlled manner with senior operations management personnel present.

d. Plant Tour With Licensee Management

During the report period the inspectors toured specific areas of the plant with the General Plant Manager. Specifically, a walkdown of the emergency service water

(ESW) pumphouse was conducted to ascertain the "post-ALERT" licensee inspection effort to locate paths of water intrusion. As discussed in AIT report 440/91026, following the auxiliary circulating water pipe failure on December 22, unexpected water intrusion through buried electrical raceways occurred in the ESW pumphouse. The inspectors noted that the licensee had inspected Division 1 electrical penetrations into the ESW pumphouse; however, since no visible water intrusion was found on the Division 2 and 3 side of the building, detailed inspections of associated Division 2 and 3 penetrations had not yet occurred. In response to the inspectors concerns that Division 2 and 3 penetrations may have moisture not visible externally, the licensee removed penetration junction box covers and verified that the water intrusion was limited to Division 1. The inspectors were satisfied that the licensee had inspected all reasonable entry points for water intrusion at the ESW pumphouse following the December 22 ALERT and corrective actions had been completed to prevent recurrence.

No violations or deviations were identified; however, one unresolved item was identified.

6. Onsite followup of Events at Operating Power Reactors (93702)

a. General

The inspectors performed onsite followup activities for events which occurred during the inspection period. Followup inspection included one or more of the following: reviews of operating logs, procedures, and condition reports; direct observation of licensee actions; and interviews of licensee personnel. For each event, the inspectors reviewed one or more of the following: The sequence of actions; the functioning of safety systems required by plant conditions; licensee actions to verify consistency with plant procedures and license conditions; and verification of the nature of the event. Additionally, in some cases, the inspectors verified that licensee investigation had identified root causes of equipment malfunctions and/or personnel errors and were taking or had taken appropriate corrective actions. Details of the events and licensee corrective actions noted during the inspector's followup are provided in paragraph b. below.

b. Details

(1) Loss of Emergency Service Water Division 1

On December 4, 1991, while operating at 100 percent power, a plant operator noted that the

emergency service water (ESW) discharge pressure was below the required standby value. The plant operator also discovered that the normal "keep-fill" supply was isolated to the ESW discharge header. Further investigation found air present in the system at various high point vents. With air present in the ESW Division 1 system, a concern for potential water-hammer existed. The shift supervisor declared the system inoperable and directed that a fill-and-vent be performed in accordance with approved procedures.

With Division 1 ESW declared inoperable, associated supported equipment was also considered inoperable. Since the Division 2 control room ventilation system had been out-of-service for planned maintenance, loss of the redundant Division 1 ventilation system required entry into Technical Specification 3.0.3. The licensee made preparations to commence an orderly shutdown; however, no actual power reduction was initiated since Division 1 ESW was returned to service within the Action time limit of Technical Specification 3.0.3.

The licensee informed the NRC Operations Center of this event via the emergency notification system (ENS) at about 11:30 p.m. on December 4, 1991.

(2) High Pressure Core Spray Inoperable

On December 12, 1991, while operating at 100 percent power, the licensee identified a crack on a 3/4 inch vent line weld in the high pressure core spray (HPCS) system. After evaluation of the potential impact on system performance, the licensee declared HPCS inoperable and initiated a "rework" of the affected weld. The cracked weld was repaired by "rework" and the HPCS system was returned to service on December 15, 1991.

The licensee informed the NRC Operations Center of this event via the ENS at about 5:00 p.m. on December 13, 1991.

(3) Hazardous Waste Storage Trailer Fire

On December 13, 1991, a fire occurred at a hazardous waste storage trailer located outside the protected area. The fire was reported at 7:22 a.m., the site fire brigade and the Perry Township fire department responded and reported the fire out at 7:40 a.m. The fire was isolated to outside and below the trailer and no hazardous material was actually involved in the fire. The source of

the fire was unknown and was still under investigation. The inspectors toured the affected trailer, which was used for the storage of acetone and resin used for pipe repair, and noted that the fire damage was limited to the externals of the trailer. The inspectors evaluated the licensees response to this fire as timely and effective. The quick response prevented the fire from spreading to inside the trailer where the highly flammable materials could have been ignited, thereby resulting in a larger fire.

(4) Reactor Core Isolation Cooling System Isolation

On December 16, 1991, while operating at 100 percent power, an unexpected isolation of the reactor core isolation cooling (RCIC) system occurred. The cause for the isolation was determined to be a personnel error during the performance of a planned surveillance test on RCIC instrumentation. During the conduct of surveillance instruction E31-T0100A, "RCIC Steam Supply Pressure-Low Channel A Functional," the test performers omitted a test step that required "lifting" leads to prevent system isolation when the test signal was inserted. Failure to lift the leads resulted in a system isolation when the test signal was inserted. About 30 minutes after isolation, the RCIC system was returned to its normal standby condition.

The licensee reported this event to the NRC Operations Center via the ENS at about 3:00 a.m. on December 16, 1991.

(5) Loss of Circulating Water, Manual Scram, and ALERT

On December 22, 1991, at about 2:00 a.m., while operating at 100 percent power, a 36 inch reinforced fiberglass pipe in the circulating water (CW) system failed. The failure location was outside plant buildings in the CW supply line to auxiliary condensers used for the two feedwater turbines exhaust steam. In anticipation of the expected loss of main feedwater and also the main condenser, plant operators initiated a rapid power reduction and manual scram. The plant operators were not able to isolate the CW break and after about 30 minutes all CW pumps were secured. During that time, about three million gallons of CW had been pumped from the cooling tower basin out the pipe break. At about 3:00 a.m. the shift supervisor declared an ALERT due to reported water intrusion in plant buildings outside of the Containment and elevated water levels in the

underdrain system. Specific details of the NRC followup inspection are contained in Inspection Report 50-440/91026 and address the root cause of this event and corrective actions taken.

Upon declaration of an ALERT the inspectors responded to the facility and observed licensee actions in the main control room and the technical support center (TSC) until termination of the ALERT at about 12:00 noon on December 22. In general, safety-related plant equipment responded as expected to the manual scram. Control room personnel were augmented by Operations Management and additional licensed operators. The inspectors noted that control room personnel followed required emergency instructions and controlled reactor plant parameters. Of particular note was the oversight provided to plant operators while using safety relief valves during the plant cooldown. Observations in the TSC noted that staffing was adequate to support informational requests from control room personnel. The TSC manager responded promptly to control room requests and kept TSC personnel informed of priorities throughout the event.

Shortly after the ALERT declaration, the licensee established telephone communications with the NRC Operations Center via the ENS and maintained that information link until termination of the ALERT.

(6) Scram Discharge Volume Drain Valve Failure

On December 22, 1991, while in "HOT STANDBY" following the manual scram discussed above, the licensee identified that one of the two scram discharge volume (SDV) drain valves failed to open when reactor operators attempted to "reset" the scram signal. Followup investigation identified the "valve actuator to valve disc" coupling had become separated. The cause for the separation was determined to be an improper bolting connection. The licensee repaired the failed coupling and inspected similar valves. The failed valve was the only one to have an improper bolting connection.

In accordance with Inspection and Enforcement Bulletin (IEB) 80-14, the licensee informed the NRC Operations Center of this valve failure event via the ENS at about 10:30 p.m. on December 22, 1991.

No violations or deviations were identified.

7. Evaluation of Licensee Self-Assessment Capability (40500)

a. On-Site Review Committee

During the report period, the inspectors observed on-site review committee (the Plant Operations Review Committee (PORC)) meetings to evaluate that organization's effectiveness. For the meeting attended, the inspectors considered the following attributes: degree of plant management involvement and/or domination of discussions; if constructive discussion occurred; if the majority of the committee consistently voted the same as the chairman; if the committee was biased toward operations or safety; and, if the committee used design basis Final Safety Analysis Report (FSAR), or vendor technical manuals for their determinations in addition to the Technical Specifications.

In preparation for the attended meetings, the inspectors reviewed draft submittals of items that were submitted for the on-site review committee's approval. Items presented to the on-site review committee included safety evaluations, temporary changes to procedures, setpoint change requests, procedural revisions, and design change packages.

During this report period, the following on-site review committee meetings were observed by the inspectors:

<u>Meeting No.</u>	<u>Date</u>
91-078	12/19/91
91-080	12/30/91
92-005	1/10/92

PORC meeting 91-080 included a review and discussion of the post-scrum report and corrective actions taken in response to the December 22, 1991, event. The PORC recommended approval for the post-scrum restart with modifications to the report that were discussed at the meeting and were detailed in the meeting minutes.

One discrepancy was identified by the licensee during the report period concerning the conduct of on-site committee review. As discussed in licensee Condition Report 92-003, dated January 1, 1992, PORC meeting 91-081 was held, via teleconference, without the required quorum. The subject of that meeting was a design change which removed a junction box bottom entry plug to create a "weep hole." The licensee reconvened the PORC and re-approved that minor modification on January 7, 1992, (reference PORC meeting No. 92-03).

For the meetings observed, the inspectors concluded that the function of the on-site review committee was effectively implemented.

No violations or deviations were identified.

8. Unresolved Item

Unresolved items are matters about which more information is required in order to ascertain whether it is an acceptable item, a violation or a deviation. An unresolved item is identified in Paragraph 5.a.

9. Exit Interviews

The inspectors met with the licensee representatives denoted in Paragraph 1 throughout the inspection period and on January 13, 1992. The inspectors summarized the scope and results of the inspection and discussed the likely content of the inspection report. The licensee did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.

During the report period, the inspectors attended the following exit interviews:

<u>Inspector</u>	<u>Exit Date</u>
P. Rescheske (EOP followup)	12/09/91
R. Westburg (AIT)	12/29/91