

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-440/85-002(DRP); 50-441/85-002(DRP)

Docket Nos. 50-440; 50-441

Licenses No. CPPR-148; CPPR-149

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

Facility Name: Perry Nuclear Power Plant, Units 1 and 2

Inspection At: Perry Site, Perry, OH

Inspection Conducted: January 7 through February 11, 1985

Inspectors: J. A. Grobe

D. E. Keating

G. F. O'Dwyer

Approved By: *RC Knop*
R. C. Knop, Chief
Reactor Projects Section 1C

3-11-85
Date

Inspection Summary

Inspection on January 7 through February 11, 1985 (Reports No. 50-440/85-002 (DRP); 50-441/85-002(DRP))

Areas Inspected: Routine unannounced inspection by resident inspectors of an allegation, preoperational test witnessing, safety committee activity, preoperational test program implementation verification, regulatory guide conformance, applicant action on previous inspection findings, and plant tours. The inspection involved a total of 250 inspector-hours onsite by three NRC inspectors, including 35 inspector-hours onsite during off-shifts.

Results: Of the seven areas inspected, no items of noncompliance were identified in six areas; one item of noncompliance was identified in the remaining area (failure to verify design parameters in a preoperational test - Section I, Paragraph 2).

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DETAILS

1. Persons Contacted

- * M. D. Lyster, Manager, Perry Plant Operations Department
- * J. J. Waldron, Manager, Perry Plant Technical Department
- * C. M. Shuster, Manager, Quality Assurance Department
- * E. Riley, General Supervising Engineer, Construction Quality Section
- * B. D. Walrath, General Supervising Engineer, Operational Quality Section

The inspectors also contacted other applicant and contractor personnel during this inspection.

*Denotes those persons attending one or more of the exit interviews conducted on January 31 and February 4 and 7, 1985.

2. Open and Unresolved Inspection Items

Open and unresolved inspection items are matters which have been discussed with the applicant, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or the applicant or both. Open and unresolved inspection items disclosed during the inspection are discussed in Section I, Paragraphs 2, 4 and 5.

3. Exit Interviews

The inspectors met with applicant representatives denoted in Paragraph 1 throughout the inspection and at the conclusion of the inspection period on January 31 and February 4 and 7, 1985. The inspectors summarized the scope and results of the inspection and discussed the likely content of this inspection report. The applicant did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.

Section I

Prepared By: John A. Grobe
and
Gerard F. O'Dwyer

Reviewed By: Richard C. Knop

1. Allegation Followup

(Open) Allegation (ATS RIII-85-A-0011): Penetration sealing material deficiencies. On January 23, 1985, an allegation was communicated to the inspector at the Perry Nuclear Power Plant (PNPP) site. The allegor asserted that eight 55 gallon drums and about 200 five gallon cans of penetration sealing elastomer were allowed to freeze while they were located in the turbine building crane bay. The allegor provided the lot numbers for the eight drums. Additionally, the allegor asserted that the crane bay doors had been left open allowing the wind to blow off the lids and deposit snow in some of the five gallon pails. The allegor asserted that if the material is allowed to freeze or contains moisture, it does not make a good seal.

The allegor said that Brand Industrial Services Company (BISCO), the penetration sealing contractor at PNPP, was aware of the deficiency, but was currently using the material for sealing penetrations in the Fuel Handling Building.

The inspector located the eight drums with the lot numbers as given by the allegor. The inspector is also interviewing appropriate BISCO and applicant employees and observing pertinent penetration sealing and associated quality inspection activities. The applicant recently received and responded to similar allegations and the inspector is examining their response. This allegation remains open pending completion of inspection activities.

2. Preoperational Test Witnessing

- a. During the inspection period the inspector witnessed various portions of Safety-Related Instrument Air System Preoperational Test, 1P57-P-001, Revision 0. Overall test crew performance appeared adequate. The latest revision of the test procedure was in use as necessary. Sufficient System Test Engineers (STE) and operators were used to perform the test. Fifty percent of the test prerequisites were examined by the inspector and were met. The inspector verified that the test equipment required by the procedure was calibrated and in service. The test appeared to be performed in accordance with

the procedure. The inspector verified that the significant events, test discrepancies and interruptions to testing that he observed were documented in the chronological test log book. Adequate coordination and communication existed among crew members to conduct the test properly. Data was collected by the appropriate personnel. Temporary modifications were installed and tracked per PNPP's established administrative controls.

While witnessing the Safety-Related Instrument Air System Preoperational Test, 1P57-P-001, Revision 0, the inspector noted that in the original procedure a pressure test of only a portion of the system was being conducted to measure system leakage during the loss of instrument air supply test. The test originally monitored for one hour the pressure of the air receiver tanks while the upstream non-safety related piping was depressurized. The air leakage rate was then to be calculated with an acceptance criterion of less than or equal to 4 standard cubic feet per hour (scfh). This pressure test was inadequate because in calculating the air leakage rate, a significant volume of piping was discounted as negligible. This omission, however, causes the formula to underestimate the air leakage rate. This is not conservative, therefore, the test was inadequate. This version of the test was reviewed and approved by the Test Program Review Committee (TPRC) on October 31, 1984, and released for testing. This pressure drop test was also inadequate because it did not test leakage for a sufficient period of time. A one hour pressure drop test is not a significant test to reflect the leakage required to be accommodated for seven days or 168 hours. The FSAR, the SER and the design adopted by the applicant require that the safety related instrument air system provide sufficient capacity in the air receiver tanks to make up for system leakage for seven days. One hour is less than one percent of this required time period.

There is a pressure regulating valve which reduces the pressure from the air receiver tanks which are maintained at about 2500 pounds per square inch (psi) to the accumulators which are maintained at 150 psi. After installation, this valve was discovered to require a small flow to function properly. This flow was provided for testing by the installation of bleed orifices on the lines of drain valves F522 A and B which are downstream of the pressure regulating valves. These orifices were installed by a permanent engineering change notice. The applicant feels that when the system is completed, the leakage from the electric solenoid valves on the Safety Relief Valves (SRV) will be sufficient to allow the pressure regulating valves to function; therefore, the bleed orifices can be isolated. The inspector expressed a concern to the applicant that this newly required leakage might cause system air loss to be beyond the air receiver tanks' abilities to accommodate seven days of system leakage and may invalidate the results of this test.

The applicant changed this pressure drop test to a flow rate measurement with a rotometer through two in-line check valves. This

change was reviewed and approved by the TPRC. This is a more inadequate method of testing system leakage. This method only checks leakage through two check valves instead of system leakage from both the air receiver tank and its associated piping and valves.

While observing this leakage testing, the inspector noted that the actual loss of air through the check valve could not have been reflected in the test results because of the method of obtaining the rotometer's readings. When the rotometer first indicated leakage through the check valves it was offscale high for about the first three minutes. This indicates leakage for that time period was more than 6 scfh, the maximum reading of the rotometer. Then, for about the next three minutes, the instrument was reading about 4.5 scfh. Not until about six minutes later did the reading drop down to 3.5 scfh, which is the value recorded by the STE. The rotometer was only observed for about six minutes at this reading before the test was terminated. The value 3.5 scfh was recorded as acceptable by the STE. While the design criterion specifies an integrated leakage limit over a seven day period, this test method and the way it was implemented appears inadequate.

The STE indicated that supplementary leakage testing was done in preoperational test 1B21B-P-001, Revision 0, "ADS/SRV Preoperational Test". The inspector examined that test procedure and concluded that the system leakage testing in that procedure did not rectify the concerns with the safety-related instrument air test procedure. Additionally, the inspector noted similar test method inadequacies; leakage rate instrumentation was used to measure leakage through a check valve instead of measuring system leakage.

The inspector noted that Addendum B to the test specification for the safety-related instrument air system stated that the air loss for the air receiver tanks should not exceed 4 scfh each. This appears to be a design upper limit for system leakage whereas the applicant's test procedures use 4 scfh as an acceptance criteria for any single component in the system.

This testing does not demonstrate that the safety-related instrument air system meets the system leakage design requirements as required by 10 CFR 50, Appendix B, Criterion 11, and does not meet the requirements of Regulatory Guide 1.80, Revision 0, Section C.8, which states, "Conduct a loss-of-instrument-air-supply test on all branches of the system simultaneously." This is an item of noncompliance (440/85-002-01(DRP)).

- b. The inspector also expressed concern to the applicant over the recording of the rotometer reading of 3.5 scfh to satisfy an acceptance criteria of less than or equal to 4 scfh. The rotometer was marked on its face that the instrument accuracy was 10% for full

scale. The full scale was 6 scfh; therefore, the actual air flow could have been from 2.9 to 4.1 scfh. The actual leakage rate could have been more than the acceptance criteria on the basis of instrument inaccuracy alone. The inspector asked a nuclear steam supply system STE and a balance of plant STE how they factored in instrument accuracy to measurements used to satisfy acceptance criteria. They responded that they do not consider it when they write a preoperational test or approve test results. The STE's said they just use the test specifications for the system as generated by General Electric Company (GE) or Gilbert Associates Incorporated (GAI). The applicant is formulating its response to this concern; therefore, this will be tracked as unresolved item (440/85-002-02(DRP)).

- c. The inspector conducted a limited review of the preoperational test for the automatic depressurization system (ADS). In the process of determining the ADS design criteria for PNPP, the inspector located a letter dated September 16, 1982, from the applicant (D. R. Davidson) to the Office of Nuclear Reactor Regulation (NRR) (J. R. Miller) in which the applicant adopted for PNPP the ADS design discussed in the Licensing Review Group-II (LRG-II) position paper submitted by letter dated May 17, 1982, from D. L. Holtzsher (Illinois Power Company) to H. J. Faulkner (NRC). The ADS design described in the LRG-II position paper is designated Generic Issue 8-RSB. The position paper states that in order to demonstrate the ADS accumulator capability to provide two valve actuations under accident conditions (seventy percent design drywell pressure), an equivalent test will be conducted. This test will verify the accumulator's capability to provide five actuations under normal drywell pressure. The Safety Evaluation Report (SER) for PNPP, Section 6.3.1.3, however, states in its description of the PNPP ADS design that the ADS accumulators are designed to provide two SRV actuations at accident conditions which is equivalent to four actuations at atmospheric pressure. Consultation by telephone with NRR indicates that the discrepancy is a typographical error and the SER will be corrected to five actuations at atmospheric pressure in the next supplement of the SER. The correcting of this discrepancy will be tracked as open item (440/85-002-03(DRP)).

The inspector obtained a copy of Startup Test Instruction, "Safety Relief Valves", STI-B21-026, Revision 0, and determined that no test of accumulator capacity was accomplished in that procedure. The Startup Test Engineering Lead for PNPP also confirmed this and assured the inspector that no other Startup Test Instruction accomplishes such a test. The inspector believes it acceptable that testing of the accumulator capacities be accomplished during the preoperational test program since the SRV's do not require steam pressure to operate. The ADS/SRV Preoperational Test, B21B-P-001, as presently written, requires only two SRV actuations by accumulator capacity alone with the drywell at atmospheric pressure. The test

does not demonstrate the design requirement of five SRV actuations at atmospheric pressure as required by 10 CFR 50, Appendix B, Criterion 11. This is an item of noncompliance (440/85-002-04(DRP)).

- d. The inspector is concerned that the applicant's test personnel rely too heavily on test specifications written by GAI or GE because those specifications do not appear to always reflect licensing requirements. Test personnel should be cognizant of design requirements in the FSAR, SER and other licensing documents. This concern will be tracked as an open item (440/85-002-05(DRP)).

3. Safety Committee Activity

The inspector reviewed the minutes of Plant Operations Review Committee (PORC) meetings No. 85-02, No. 85-03 and 85-05 through No. 85-07, conducted during the inspection period, to verify conformance with PNPP procedures and regulatory requirements. This examination included PORC membership and qualifications, quorum at PORC meetings and PORC activities.

No items of noncompliance or deviations were identified in this area.

4. Preoperational Test Program Implementation Verification

- a. The inspector observed control room operation and test coordination, reviewed applicable logbooks and conducted discussions with control room operators and test personnel during the inspection period to ensure that test activities were being conducted in accordance with regulatory requirements and facility procedures. Tours of the Unit 1 reactor building, intermediate building, Unit 1 auxiliary building, fuel handling building, control complex and diesel generator building were conducted to observe test and maintenance work in progress, area housekeeping, equipment condition and system cleanliness. The inspector also reviewed the minutes from Test Program Review Committee (TPRC) meetings No. 331 through 344 conducted during this inspection period to verify conformance with Nuclear Test Section Procedures. The inspector is concerned with the frequency that certain TPRC members send alternates to TPRC meetings and will examine this during future inspections.
- b. During the inspection period, the applicant issued controlled copies of the proposed technical specifications for PNPP, Unit 1. The inspector informed the applicant that system and equipment limits specified in the limiting conditions for operation and the surveillance requirements of the technical specifications as well as design limits specified in other documentation must be verified during the preoperational test program. The applicant acknowledged this requirement and indicated that an administrative program would be established to ensure that technical specification limits were satisfied during the test program. The inspector will examine

applicant action resulting from this commitment during a future inspection. This is an open item (440/85-002-06(DRP)).

- c. The inspector reviewed Test Program Instruction (TPI)-18, "Temporary Alterations", which provides controls for electrical and mechanical alterations to systems under Nuclear Test Section (NTS) jurisdiction. TPI-18 does not require the implementation of the controls over temporary alterations in four situations. Two of those situations provide equivalent controls through other procedures, but two of the exempted situations do not provide equivalent controls:

- . Controlling temporary alterations under Project Administration Procedure (PA)-1104, "Project Safety, Jurisdictional and Special Purpose Tagging".
- . Controlling temporary alterations with a person in continuous observation of the alteration.

Neither of these exceptions provide for independent verification or functional retest to ensure proper system restoration. The applicant is examining those exceptions and formulating a response to the inspector's concern. This issue will be tracked as an open item (440/85-002-07(DRP)).

5. Regulatory Guide Conformance - Independent Inspection

While examining certain aspects of the preoperational test program and how that program complied with the applicable regulatory guides, the applicant indicated that the assessment of regulatory guide conformance contained in Final Safety Analysis Report (FSAR) Section 1.8, Table 1.8-1, "Conformance to NRC Regulatory Guides", was not intended to reflect commitments to implement the recommendations of regulatory guides other than those addressing quality assurance. The applicant indicated that the intent of each regulatory guide would be implemented, but exceptions to the literal reading of each regulatory guide regulatory position statement were not documented in Table 1.8-1 in all cases. Regarding conformance to Regulatory Guide 1.70, Revision 3, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants - LWR Edition", the applicant states in FSAR Table 1.8-1, "PNPP FSAR conforms to this guide." Regulatory Guide 1.70, Section 1.8, "Conformance to NRC Regulatory Guides" indicates that Table 1.8-1 should describe the extent to which PNPP intends to comply with each applicable regulatory guide and indicate any proposed exceptions to the regulatory position of each regulatory guide. The applicant has not complied with this aspect of Regulatory Guide 1.70 as described in the FSAR. The applicant utilizes the same word, "conform", when describing the extent to which PNPP complies with non-quality assurance regulatory guides as well as quality assurance regulatory guides, but claims that the word has different meaning in the different situations. This is not evident to

NRC and could be misleading to licensing reviewers. Pursuant to a conference call on January 14, 1985, between the applicant, inspector, NRC Region III staff and NRC licensing staff, the applicant submitted a letter to NRC dated February 6, 1985, stating that the information in FSAR Table 1.8-1 would be re-evaluated and any necessary corrections would be incorporated into FSAR amendments submitted on a monthly basis with completion of the re-evaluation scheduled for May 1, 1985. The inspector will follow the applicant's activities and ensure that significant changes in Table 1.8-1 are brought to the attention of the appropriate licensing reviewer. This issue will be tracked as an open item (440/85-002-08(DRP)).

Section II

Prepared by: D. E. Keating

Reviewed by: R. C. Knop, Chief, Projects
Section IC

1. Applicant Action on Previous Inspection Findings

During the inspection period, the inspector reviewed the following previous inspection findings which were presented as ready for NRC review. The results of this review are as follows:

- a. (Open) Noncompliance (440/81-19-11; 441/81-19-11): Failure to identify non-conforming conditions. The original noncompliance identified several items of failure to meet specified separation criteria by the electrical contractor. This was divided into two (2) separate items. The first item related to three (3) safety-related conduits which were in violation of the one inch minimum separation requirement between safety-related and non-safety related conduits. This item was closed in inspection report 50-440/84-18; 50-441/84-16, dated August 20, 1984. The remaining item identified five (5) instances of cable raceway minimum horizontal and vertical separation violations, i.e., six (6) inches minimum between conduits of different divisions. This item was left open pending further review of the programmatic changes required to correct this condition, to prevent recurrence, and to expand the surveillance of the electrical contractor.

The inspector reviewed the document package containing inspection reports, surveillance reports, audit reports, and nonconformances and deviation reports generated. The inspector also walked down areas in the Control Complex and the Emergency Service Water Pumphouse. The applicant's and contractor's efforts appeared to meet the commitments made at the time of the issuance of the original citation. This item will, however, remain open pending further regional review.

- b. (Open) Noncompliance (440/81-19-19; 441/81-19-19): Equipment procurement and storage deficiencies. This item deals with the lack of adequate control of purchased material and segregation of safety and non-safety related items and nonconforming items.

The inspector reviewed the applicant's audit reports, nonconformance reports, and the electrical contractor's procedural changes. A tour of the contractor's warehouse was also performed to verify the implementation of these changes and to observe the segregation of safety and non-safety items and nonconforming items.

These activities appeared to be adequate and meet the specifics and intent of the above-mentioned changes. However, this will remain an open item pending further regional review.

- c. (Open) Unresolved item (440/82-09-10; 441/82-08-10): Review of L. K. Comstock receipt inspection training practices. This item concerns the certification of receipt inspectors who perform receipt inspection of all types of material received by a site contractor even though the training received was primarily concentrated in one area. This was the practice a few years ago. However, this no longer exists. Training procedures have been revised to include all items to be received on site. This includes training in the requirements specified on the purchase orders as to the type of documentation required to be furnished by the vendor such as Certificates of Conformance, mill certifications for items requiring chemical analyses and tensile strength records, nondestructive examination performance records, etc.

The effectiveness of the training was substantiated by a review of nonconformance reports and deviation analysis reports along with the associated material receipt tickets. The certifications of personnel met the requirements of ANSI N45.2.6.

Based on the review of this activity, the associated training, the training records, and certification of the receipt inspectors, receipt inspection appears to be in order. This item will, however, remain open pending further regional review.

2. Plant Tours

The inspector conducted several walkdowns of the plant during normal and off-normal hours. A steady improvement in general housekeeping has been noted. This activity will continue to be monitored as part of the routine inspection program.