U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/85077(DRS)

Docket No. 50-440 License No. CPPR-148

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

Facility Name: Perry Nuclear Power Plant, Unit 1

Inspection At: Perry Site, Perry, OH

Inspection Conducted: November 12-15 and December 9, 1985

Inspector: P. D. Kaufman 12/20/85
Date

Approved By: D. H. Danielson, Chief 12/20/85
Materials and Processes Section
Date

Inspection Summary

Inspection on November 12-15 and December 9, 1985 (Report No. 50-440/85077(DRS))
Areas Inspected: Routine, unannounced safety inspection of testing of safety-related pipe support and restraint systems and examination of preoperational testing results; review licensee action on IE Bulletin 81-01, IE Circular 79-25, and previously identified items; review licensee's technical evaluation of overpressurization of nonsafety-related HPCS test return line piping and components; and evaluation of licensee's "call for Quality" technical dispositions of quality concerns. The inspection involved a total of 26 inspector-hours onsite by one NRC inspector.
Results: No violations or deviations were identified.

DETAILS

1. Persons Contacted

Cleveland Electric Illuminating Company (CEI)

*E. Riley, General Supervisor, NQAD
*C. M. Shuster, Manager, NQAD
*J. J. Waldron, Manager, PPTD
*K.R. Pech, General Supervising Engineer, NCD
*B. Walrath, General Supervising Engineer, OQS/NQAD
*T. A. Boss, Supervisor, NQAD
*B. S. Ferrell, Licensing Engineer
*N. J. Lehman, Staff Analyst
*P. A. Russ, Compliance Engineer
*B. B. Liddell, Operation Engineer
**R. Matthys, Lead Piping Mechanical, CQS
*G. Parker, Supervisor, NQAD
J. Haddick, Licensing Engineer
L. Wheeler, Senior Engineering Technician

The inspector also contacted and interviewed other licensee and contractor employees.

*Denotes those attending the onsite management exit meeting on November 15, 1985.

**Denotes those telephonically contacted on December 9, 1985, for the final exit interview.

2. Licensee Action on Previous Inspection Findings

a. (Closed) Violation (440/85016-01): Failure to adequately verify plant design to design requirements, as specified by GAI, "Project Pipe Stress Analysis Instruction." The primary stresses of pipe support 1P53-H3054 did not include the stresses due to differential building displacements, which were created by interconnecting the support between two independent building structures. The licensee instituted additional field walkdowns since identification of this violation and have verified that this was an isolated case. The design of 1P53-H3054 support frame has now been changed by ECN 23205-44-7687/C, which relocates the support brace from the exterior wall of the Reactor Building to an interior Intermediate Building wall. Thus, the support is no longer attached to two independent building structures.

b. (Open) Unresolved Item (440/85016-02): Pipe support calculations lack uniformity with respect to analyzing welded joint configurations and fillet weld end returns not being specified on the support design drawings, for connections about which bending moments are computed. To resolve the fillet weld end return issue, the licensee submitted a letter to the ASME Boiler and Pressure Vessel Code

Committee asking for a Code interpretation. The ASME Code Committees' response was reviewed by the NRC inspector and found to be consistent with the licensee's proposed reply from the Code Committee, which only requires that the designer consider the use of end returns. End returns are only required when specified by the designer and shown in the drawing. The procedure which controls the design input process and the selected sample of pipe support calculation, which were reanalyzed using a "fixed" type assumption, will be reviewed during a future inspection to be conducted at the Gilbert Associates office in Reading, Pennsylvania. The resolution of this item is not required for fuel load or low power levels (not to exceed 5%).

3. Licensee Action on IE Bulletins and IE Circulars

a. (Closed) IE Bulletin 81-01 (440/81-01-BB, 440/81-01-1B; 441/81-01-BB, 44/81-01-1B): "Surveillance of Mechanical Snubbers." The inspector verified that the Bulletin was received by licensee management and reviewed for its applicability to the facility. This IE Bulletin was issued to the licensee for information only, thus no response was required by the licensee. The licensee's preservice examination and preoperational testing of snubbers is per their FSAR commitments (Questions and Response, DSER 3.1-37a) and are implemented through Technical Specification 4.7.4, Perry Administrative Procedure (PAP)-115, "Snubber Testing Program," and CEI Document No. 80A5240," Snubber Augmented Visual Inservice Inspection/Examination and Functional Testing Program for Perry Nuclear Power Plant Unit 1." The mechanical snubbers being utilized at the Perry facility, were manufactured and supplied by Pacific Scientific Company. The NRC inspector agreed with the actions by the licensee and considers this IE Bulletin closed.

b. (Closed) IE Circular 79-25 (440/79-25-CC, 440/79-25-1C; 441/79-25-CC, 441/79-25-1C): "Shock Arrestor Strut Assembly Interference." The inspector verified that the IE Circular was received by the licensee and reviewed for applicability. The IE Circular was determined by the licensee, not to be applicable to their facility, since Bergen Paterson Pipesupport Corporation was not a supplier of their rear brackets, Part 2540 Strut Assemblies, to Power Piping Company or Pacific Scientific Company where the licensee procured their safety-related rear brackets and mechanical snubbers. Thus, the NRC inspector determined the IE Circular not to be applicable to this facility and considers the IE Circular closed.

4. Licensee Action on 10 CFR 50.55(e) Items

(Closed) 50.55(e) Item (440/85011-EE) DAR-234 (441/85011-EE): This item concerns a potential deficiency in the Diesel Generator Building floor response spectra, because a change in soil parameters had only been analyzed for the impact on the Diesel Generator building structural accelerations, but not for the impact on the floor response spectra. The licensee's Architect/Engineer, Gilbert/Commonwealth, Inc., conducted

a review and analysis of all safety-related items, and related supports in the Diesel Generator Building. The analysis identified four pipe supports which required a design modification in order to meet project design criteria, although the current design, if unchanged, would not have resulted in hardware failure during a design basis seismic event. The NRC inspector concurs with above disposition, since the achieved factor of safety on these four support Hilti Anchor Bolts exceeded 2.0 and the calculated structural steel stresses were below the yield point of the material. Thus, the item was determined not to be reportable. Based on the above information, this item is considered closed.

5. Testing of Pipe Support and Restraint Systems

a. FSAR

The licensee's FSAR requirements and commitments regarding examination and testing of safety-related pipe support and restraint systems during system vibration and thermal expansion preoperational testing were reviewed by the NRC inspector. The piping system vibration, thermal expansion, and dynamic effects are outlined in FSAR Chapter 3.9.2. The licensee's program for examination and testing of designated piping/supports for selected systems is outlined in FSAR Chapter 14.2.12.4. The acceptance criteria specified in the licensee's Special Test Procedures, SP 1E68-002, "System Thermal Expansion Special Test," and SP 1E68-001, "System Vibration Special Test Procedure," is commensurable with the FSAR commitments.

No violations or deviations were identified.

b. Procedure Review

CEI's snubber surveillance and functional testing requirements are addressed in Section 4.7.4 of their Technical Specifications and tabulation of all the safety-related snubbers required to be visually inspected/examined and functionally tested for Perry Unit 1 during Inservice Inspections are designated in Perry Administrative Procedure PAP-115, "Snubber Testing Program," Revision 0, dated October 31, 1985, with attachment Document No. 80A5240, "Snubber Augmented Visual Inservice Inspection/Examination and Functional Testing Program for Perry Nuclear Power Plant Unit 1," Revision 0. The licensee's requirement to classify snubber location accessibility prior to the first Inservice Visual Inspection (within 4-10 months of Power Operation), has already been performed and documented in the above Document No. 80A5240.

No violations or deviations were identified.

c. Review of Preoperational Test and Results

The inspector reviewed some of the documented test deficiencies written on the 12 piping systems and approximately 800 pipe supports

required to be visually monitored during pre-fuel load hot functional testing. Data was gathered by specially trained individuals and deficiencies noted for all clearance violations of one-half inch or less. The specified piping was inspected prior to conducting the test and with the reactor vessel temperature stabilized at 275°F±25, at 500±15°F, and upon return to ambient temperature. The test results and deficiencies were evaluated by the Architect/Engineer, Gilbert Associates, Inc. (GAI) during and immediately following the non-nuclear heatup. GAI has accepted and approved the results. The inspector concluded that the test evaluations were adequate. Therefore, the tests demonstrated that the piping is capable of performing its design function.

No violations or deviations were identified.

6. Overpressurization Technical Evaluation Review

The licensee inadvertently overpressurized some nonsafety-related High Pressure Core Spray (HPCS) pump test return line piping while performing system vibration testing on October 23, 1985. Improperly specified valve alignment of Temporary Operating Instruction (TOI) IE22A-001, Revision 2, caused system pressure to build up to 1380 psig. Thus, overpressurization occurred in the piping up to the Condensate Storage Tank (CST) test return line header isolation valve 1P11-F582. In addition, other branch piping connections to the CST test return line header, up to system isolation valves 1P11-F581, 1E51-F059, 0G50-F605, and 0G50-592 were also overpressurized.

The licensee's investigation, evaluation, and documentation of this event, which was reviewed by the NRC inspector, encompassed the following Deficiency Reports (DR), Nonconformance Reports (NR), and Condition Reports (CR):

- DR-0QS-5802 - Evaluated the damage to the 3" diaphragm valves 0G50-F605 and 0G50-F592.

  Disposition: Repair valves, replace diaphragms.

- NR-0QC-3224 - Evaluated possible overpressurization of the safety-related HPCS-E22 system piping.

  Disposition: Use As Is, since the design pressure for this section of piping is 1575 psig at 212°F, therefore, the piping and components were not overpressurized when the system pressure reached 1380 psig.

- NR-0QCN-109 - Evaluated the overpressurization of the nonsafety 1P11E subscoped system.

  Disposition: Line Specification No. (L2-4) 3", 4", and 10" diameter, schedule 40, (150#) stainless steel

piping. Use As Is, based on calculations performed using 1220 psig as the maximum pressure obtained in the piping system.

Line Specification No. (G1-4) 10" diameter, schedule 40, (300#) carbon steel piping. Use As Is, based on calculations performed using 1220 psig as the maximum pressure obtained in the piping system.

1P11-F581-10" Wafer valve, 150 psi rated. Use As Is, based on disassembly and examination of pipe flange and valve body/disc per Condition Report (CR)85-261.

1P11-F582-10" Wafer Valve, 150 psi rated. Based on disassembly and examination, damage was found and valve replaced per Condition Report (CR) 85-261.

In addition to the above documents reviewed, the NRC inspector verified the information to be correct by examining P&ID drawings, project design specifications, and calculations performed to justify the licensee's dispositions. The calculations demonstrated that the stresses in the affected piping, eventhough subjected to this overpressurization, did not exceed 90 percent of its yield strength at test temperature as permitted by the American National Standard Power Piping Code - ANSI B3.1.1, Section 137.1.2.

No violations or deviations were identified.

7. Review "Call For Quality" Investigations

The following three "Call For Quality" concerns were reviewed by the NRC inspector to determine the adequacy and thoroughness of the licensee's investigations and engineering technical evaluations conducted to address each of the concerns:

Concern No. 5

"A small bore pipe connection made to a Main Stream Isolation Valve in the Steam Tunnel may snap during thermal expansion due to a rigid tie in instead of using a flex hose connection."

Concern No. 13

"The contractor has been directed to complete N-5 Data Reports using information from the "614 series" drawings prior to inclusion of the information in the design specifications."

Concern No .24

"The interpretation of weld symbols shown on detailed design drawings are not consistent with AWS or AISC requirements."

The inspector felt that licensee's dispositions and reviews of the above concerns were adequate and justifiable. However, the response or investigative details of Concern No. 5 could have been more assuring, other than just stating that the piping was constructed/installed in accordance with drawing requirements and formally analyzed to account for the thermal movement.

To clear up any uncertainty, the inspector reviewed Gilbert Associates, Inc. pipe stress analysis (TPIPE) for MSIV Leakage Control System 1E32G01A, Revision 3. The inspector found that the analysis did account for the thermal stresses and of the four MSIV valve rigid connections, the highest stressed connection was on valve F020B, and those stresses were 18533 psi versus the allowable stress of 32400 psi. Thus, the disposition was determined to be adequate.

No violations or deviations were identified.

8. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the onsite portion of the inspection and discussed the scope and concerns of this inspection. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during this inspection. The licensee did not identify any such documents/processes as proprietary. Additional information was discussed telephonically with a licensee representative (denoted in Paragraph 1) on December 9, 1985 concerning the purposed inspection at Gilbert Associates, Inc. office in Reading, Pennsylvania to address Unresolved Item 440/85016-02.