U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/87022(DRS)

Docket No. 50-440

License No. NPF-58

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

Facility Name: Perry Nuclear Power Plant, Unit 1

Inspection At: Perry Site, Perry, Ohio

Inspection Conducted: November 3 through December 21, 1987

Team Leader

Inspectors:

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

Inspection Summary

Inspection on November 3 through December 21, 1987 (Report No. 50-440/87022(DRS)) Areas Inspected: Adequacy of 10 CFR 50.59 Safety Evaluations (conducted under IE Module 92702). Results: One violation was identified: failure to perform a safety evaluation

when required by 10 CFR 50.59 (Paragraph 2.b(3)).

12/29/87

12/29/87 Date

12/29/87 Date

DETAILS

1. Persons Contacted

Cleveland Electric Illuminating Company

*M. Lyster, General Manager, Perry Plant Operations Department (PPOD)
*B. Ferrell, Licensing and Compliance
*F. Stead, Director, Perry Plant Technical Department (PPTD)
*B. Walrath, Manager, EPSS, Nuclear Engineering Department (NED)
*D. Green, Manager, EDS, NED
*E. Buzzelli, Manager, LCS, PPTD
*K. Pech, Manager, MDS, NED
*G. Chasko, PPOD
*G. Dunn, Supervisor, Compliance, PPTD
*D. Igyarto, Supervisor, Operations Support and Programs, Nuclear Quality Assurance
A. Migas, EDS, NED
*E. EDS, NED

US NRC

*K. Connaughton, Senior Resident Inspector G. O'Dwyer, Resident Inspector

*Denotes those who attended the preliminary exit meeting on December 2, 1987.

**Denotes those participating in the exit meeting held by telecon on December 21, 1987.

The inspectors also contacted other licensee personnel as a matter of routine during the course of the inspection.

2. 10 CFR 50.59 Safety Evaluations

a. Purpose and Scope

The purpose of this inspection was to determine if the safety evaluations performed by the licensee pursuant to 10 CFR 50.59 were adequate to identify any unreviewed safety question or required change to the technical specifications and if the bases for conclusions were adequately documented.

During this inspection the inspectors reviewed the program for conducting safety evaluations and a sample of the safety evaluations performed for permanent plant modifications, temporary modifications, operating procedure changes, special tests, startup test procedure changes, and test exception reports (TER) written against startup test acceptance criteria. A listing of pertinent documents reviewed is given in the appendix.

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b. Inspection Results

(1) Program

The conduct of these safety evaluations was governed by two procedures, PAP-0305 "Safety Evaluations" (PPOD/PPTD) and NEI-0332 "Safety Evaluations" (NED). The procedures were similar except for administrative detail and some technical emphasis based on the types of the evaluations performed by the two groups. Salient features of the program described in these procedures are as follows:

- No distinction is made between safety-related, important-to-safety, or nonsafety-related. The process is controlled by the impact of the change on the technical specifications and the licensing basis (FSAR, SER, SSERs, etc.).
- The need for a safety evaluation is determined via a documented applicability check. This process determines if there is a change to the plant as described in the FSAR, a change to a procedure/instruction as described in the FSAR, a test or experiment not described in the FSAR, or if a change to the technical specifications is required. An attachment to the procedures provides guidance for completing the applicability check. The guidance provides a discussion of each item and typical examples. If a positive determination is obtained for any of the applicability check items, a safety evaluation is required.
- Guidance for the performance of safety evaluations is included in another attachment to the procedures. This guidance also provides a discussion and typical examples.
- Both the applicability checks and safety evaluations receive a peer review and are approved by a General Supervising Engineer (GSE). Safety evaluations are also reviewed by the Plant Operations Review Committee (PORC).
- The preparer and reviewer for both applicability checks and safety evaluations must be qualified. The qualification involves the completion of a required reading list, attending a formal eight hour training class, and completion of a written examination.
- The NED procedure requires that each discipline involved in a modification prepare an applicability and safety evaluation as appropriate.

The inspectors concluded that the program described by these procedures provided a generally adequate structure for performing safety evaluations as well as determining when one was required; however, the violation described in Paragraph 2.b(3) and the concern expressed in Paragraph 2.b(6) below indicate that the guidance and training in the areas of technical specification bases and the term "as described in the FSAR" could be strengthened. Licensee management should review these areas.

(2) Plant Modifications

Permanent plant modifications are controlled by a Design Change Package (DCP) process. This process is controlled by the NED which also performs the applicability checks and safety evaluations.

The inspectors reviewed 38 DCPs which included 38 applicability checks and 22 safety evaluations. No violations or deviations were identified. Documentation of the applicability checks and safety evaluations was adequate and had been performed by the appropriate disciplines. The technical issues were correctly and completely addressed.

(3) Temporary Modifications

The licensee monitors and controls the temporary installation and/or removal of Mechanical Foreign Items/Lifted Leads, Jumpers, and Electrical Devices (MFI/LLJED) by Procedure PAP-1402, "Control of Lifted Leads, Jumpers, Temporary Electrical Devices and Mechanical Foreign Items." All MFIs and LLJEDs were required by Procedure PAP-1402 to have a 10 CFR 50.59 applicability check performed in accordance with Procedure PAP-305, "Safety Evaluations." In addition, all MFIs and LLJEDs were technically evaluated for system effects, operating instruction effects and plant limitations. Approved MFI/LLJED Tag Orders were maintained outside the control room. The tag orders were reviewed monthly by a system engineer and quarterly by a designee of the Unit Supervisor. After the third monthly review, the system engineer was responsible for issuing a Work Order to remove the MFI/LLJED; initiating an Engineering Design Change Request (EDCR) to make the MFI/LLJED permanent; or initiating a Facility Change Request (FCR) along with Nuclear Engineering Department (NED) concurrence that the MFI/LLJED could remain in effect to a specified date.

The inspectors reviewed six temporary modifications. One violation was identified.

The licensee installed (LLJED No. 1-87-077) a harmonic smoothing filter choke in each electrical phase of the HPCS Division III diesel generator immersion water jacket heater. The water jacket heater was described in FSAR Chapter 9.5.9.2.2. The heater thermostatically maintains the jacket water and lube oil warm to provide the engine with the capability to start quickly. The licensee performed a 10 CFR 50.59 applicability check and answered no to all the questions. It appeared to the inspectors that question No. 1 (Is there a change to the plant as described in the FSAR?) should have been answered yes. The addition of the smoothing filters is a change to the water jacket heater circuit and as such requires a safety evaluation to be performed.

The licensee concurred with the inspectors that LLJED No. 1-87-077 was a change to the plant as described in the FSAR and a safety evaluation should have been performed. A 10 CFR 50.59 safety evaluation was performed and approved by the PORC on December 2, 1987 prior to the end of the inspection. The evaluation determined that an unreviewed safety question did not exist. The inspectors concurred with this conclusion. This might be considered an isolated case; however, in view of a previous violation (50-440/87003-03(DRP)) issued for the failure to perform safety evaluations for temporary modifications, a continuing weakness in this area may be indicated. The failure to perform a safety evaluation for LLJED No. 1-87-077 is a violation of 10 CFR 50.59 (440/87022-01(DRS)).

(4) Special Tests

The inspectors reviewed four special tests and the associated applicability checks and safety evaluations. No violations or deviations were identified.

(5) Procedure Changes

The inspectors reviewed all changes to five operating procedures (including one emergency operating procedure) and the associated applicability checks and safety evaluations. No violations or deviations were identified.

(6) Startup Tests

The inspectors reviewed the changes to six Startup Test Instructions (STI) and the associated applicability checks and safety evaluations. The safety evaluations included those performed in support of Test Exception Reports (TER).

The inspectors had one concern involving the documentation of the bases for concluding that the margin of safety for any technical specification was not reduced. The Level 1 criteria for startup test STI-B33-030B "Recirculation Pump Trip" could not be met in that the recirculating pump flow coastdown was faster than specified in the acceptance criteria flow band. A test exception report (TER-285-1) was written against this discrepancy. The NSSS (GE) resolution of the TER stated that credit is taken for the flow coastdown in the LOCA analysis and is important during the first 1-2 seconds following the break. It further stated that the coastdown rate measured at Perry would increase the peak cladding temperature (PCT) during a LOCA by no more than 10°F from that previously calculated (2131°F). Thus, there was still margin to the 10 CFR 50.46 limit (and safety limit) of 2200°F and the measured coastdown was acceptable.

The licensee properly performed a 10 CFR 50.59 safety evaluation (SE-87-0335) since the acceptance criteria described in Chapter 14 of the FSAR could not be met. The licensee concluded that there was no reduction in the margin of safety as defined in the basis for any technical specification (based on the GE resolution) and that the flow coastdown was not covered by technical specifications. The bases for Technical Specification 3.2.1 "Average Planar Linear Heat Generation Rate (APLHGR)" states that these limits are based on a LOCA analysis. Since credit is taken for the flow coastdown in the LOCA analysis, it is part of the bases for the APLHGR limits. Further, the potential increase in PCT during a LOCA could represent a decrease in the margin of safety for technical specification 3.2.1.

The Field Deviation Disposition Request (FDDR) written to change the Level 1 criterion for this test referenced 10 CFR 50, Appendix K.II.1.b, as a basis for the acceptability of this change. This section of the appendix states that a change in the LOCA model resulting in a change of 20°F or less in the calculated PCT is not significant and does not require the filing of an amendment with the NRC. The licensee stated that this was the basis for concluding that no unreviewed safety question existed; however, this was not explicitly identified or referenced in the safety evaluation nor was the technical specification of concern explicitly addressed. The inspectors were satisfied that no unreviewed safety question existed and the appropriate analyses had been performed; however, they had a concern that the technical specification safety margin may not have been explicitly considered in the evaluation process.

The inspectors reviewed a second safety evaluation (SE 87-0484) in which a technical specification safety margin was an issue. This safety evaluation was written in support of the resolution of TER 339-1 to STI-B21-027 "Turbine Trip and Generator Load Rejection Test." In this case the bypass valve capacity did not meet the 35% rated steam flow as used in the accident analyses in Chapter 15 of the FSAR. The technical specification of concern in this case was 3.2.2 "Minimum Critical Power Catio (MCPR)." The bases for this limit states that the limit is established such that the safety limit for MCPR (1.06) is not exceeded during any abnormal operating transient. The safety evaluation in this case explicitly addressed the technical specification of concern and provided adequate analyses to show that an unreviewed safety question did not exist. Thus, the failure to explicitly address technical specification margins (as in the first example) did not appear

to be a generic problem; however, the small sample available for review precluded a definitive conclusion. Licensee management should reevaluate the guidance and training given in this area as discussed in Paragraph 2.b(1) of this report.

3. Exit Interviews

The inspectors met with licensee representatives (denoted in Paragraph 1) on December 2, 1987 to discuss the scope and preliminary findings of the inspection. A final exit meeting was held with a licensee representative (also denoted in Paragraph 1) via telecon on December 21, 1987. The licensee stated that the likely content of the report would contain no proprietary information.

Attachment: Appendix, Documents Reviewed

Appendix

Documents Reviewed

A. Controlling Procedures

| 1. 2. | PAP-0305, NEI-0322, | "Safety "Safety | Evaluations, Evaluations, | 11 11 | Revision Revision | 4 0 | |
|----------|------------------------|--------------------|------------------------------|----------|----------------------|--------|--|
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B. <u>Modifications</u>

| 1. | DCP | No. | 86-0221: | ESW Pump House Pressure Switch |
|-----|-----|-----|-----------|--|
| 2. | DCP | No. | 86-0251: | ERIS System Additions |
| 3. | DCP | No. | 86-0289: | RWCU Delta Flow Temperature Compensation |
| 4. | DCP | No. | 86-0352: | ECCW Pressure and Flow Transmitters-High Point Vent Valves |
| 5. | DCP | No. | 86-0358: | Change Fuse Rating for Refueling Bridge |
| 6. | DCP | No. | 86-0371: | RWCU Differential Flow Meter |
| 7. | DCP | No. | 86-0377: | RWCU Isolation Test Switch |
| 8. | DCP | No. | 86-0393: | Startup Neutron Source Change |
| 9. | DCP | No. | 86-0481: | Relay Changes |
| 10. | DCP | No. | 86-0495: | Mounting Brackets for Instrument Calibration Chambers |
| 11. | DCP | No. | 86-0500: | HCU Hold Down Bolts |
| 12. | DCP | No. | 86-0514: | HCU Branch Junction Module Changes |
| 13. | DCP | No. | 86-0521: | Main Steam Leak Detection Flow Element Connector |
| 14. | DCP | No. | 86-0567: | Add Weld to Shroud Head |
| 15. | DCP | No. | 86-0572: | EPIS Signed Deletion |
| 16. | DCP | No. | 86-0665: | Add Time Delay Relays to MSIV Leakage Control System |
| 17. | DCP | No. | 86-0714: | Add Time Delay to RWCU Isolation Timer |
| 18. | DCP | No. | 86-0719: | Replace RPS Transformer |
| 19. | DCP | No. | 86-0804 A | -D (5 Modifications): RWCU Design Changes |
| 20. | DCP | No. | 86-0875: | Replace Fuse with a Resistor on DADC |
| 21. | DCP | No. | 86-0883: | Jib Crane As-built Resolution |
| 22. | DCP | No. | 86-1013: | Modify CRD Valve |
| 23. | DCP | No. | 86-1042: | Modify Reactor Head Vent Flange |
| 24. | DCP | No. | 87-0076: | Rewire Feedwater Master Level Controller |
| 25. | DCP | No. | 87-0108: | Add Cross Connect Valve in Common Drain Line Between DG Division I and II Air Receiver Tanks |
| 26. | DCP | No. | 87-0486: | Modify APRM Flow Cards |
| 27. | DCP | No. | 87-0123: | Change Valve From NO to NC and from DC to AC Operator |
| 28. | DCP | No. | 87-0234: | Add Drain Line and Isolation Valve to RHR/RCIC Steamlines |
| 29. | DCP | No. | 87-0724: | Change to DG Control System |
| 30. | DCP | No. | 87-0216: | Change Limit Switch Gasket Material |
| 31. | DCP | No. | 87-0304: | Add Injection Plugs to MSIV Leakage Control Valve |
| 32. | DCP | No. | 87-0037: | Add Time Delay to Recirculation Pump Trip from RRCS |

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33. DCP No. 87-0756: Change Valve to Close on High Vessel Pressure Rather Than High Drywell Pressure 34. DCP No. 86-0493: Add Hi-Point Vents to Impulse Lines

Temporary Modifications C.

| 1. | MFI No. 1-87-250: | Install Temporary Sensing Line Snubbers |
|----|---------------------|--|
| 2. | LLJED No. 1-87-296: | Lift Lead and Install Jumper in Feed Pump Circuitry |
| 3. | LLJED No. 1-87-305: | Add Redundant Relay Contacts to Feedwater Control System |
| 4. | MFI No. 1-87-326: | Install Pipe Cap on Root Valve Test Connector |
| 5. | MFI No. 1-87-416: | Install Thermocouples to Monitor MSIV Solenoid Temperature |
| 6. | LLJED No. 1-87-077: | Install Harmonic Smoothing Filters in Division III DG Immersion Heaters |

Operating Procedures (Changes) D.

 SOI-E21, "LPCS"
 IOI-6, "Cooldown - Main Condenser Not Available" ONI-R42-3, "Loss of DC Bus ED-1-C"
 ONI-S11, "Loss of Offsite Power"
 PEI-M51/56, "Hydrogen Control"

Startup Tests (Changes and TERs) Ε.

| 1. | STI-E51-14, "RCIC" |
|----|---|
| 2. | STI-B21-25A, "MSIV" |
| 3. | STI-B33-30B, "Recirculation Pump Trip" |
| 4. | STI-B33-30D, "Recirculation Runback" |
| 5. | STI-E12-71, "RHR" |
| 6. | STI-B21-027, "Turbine Trip and Generator Load Rejection Test" |

F. Special Tests

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- 1. SXI-0010, "N61 Condenser Temperature Test," Revision 0
- SXI-011, "RCIC Vessel Injection Test," Revision 0
 SXI-012, "RCIC Injection/Reactor Vessel Level Anomaly Test," Revision 0
- 4. SXI-013, "RCIC Injection Following Level Instrument Reference Leg Nozzle Insert," Revision O