

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-322/81-06

Docket No. 50-322

License No. CPPR-95 Priority -- Category B

Licensee: Long Island Lighting Company

175 East Old Country Road

Hicksville, New York 11801

Facility Name: Shoreham Nuclear Power Station, Unit 1

Inspection at: Shoreham, New York

Inspection conducted: April 15-May 17, 1981

Inspectors: J. C. Higgins 6/1/81
J. C. Higgins, Senior Resident Inspector date signed

_____ date signed

_____ date signed

Approved by: H. B. Kister 6/3/81
H. B. Kister, Chief, Reactor Projects Section IC date signed
Projects Branch #1, DRPI

Inspection Summary:

Inspections on: April 15-May 17, 1981 (Inspection Report No. 50-322/81-06)
Areas Inspected: Routine onsite regular, backshift and weekend inspections by the resident inspector (109 inspection hours) of work activities, preoperational testing and plant staff activities including: tours of the facility; test witnessing; review of procedures; comparison of as-built plant to FSAR description; and, followup on previous inspection findings.
Results: No violations were identified.

8106180267

DETAILS

1. Persons Contacted

D. Durand, OQA Engineer (L)
T. Gerecke, Quality Assurance Manager (L)
J. Kelly, Field QA Manager (L)
W. Klein, Lead Startup Engineer (L)
L. Lewin, Assistant Startup Manager (L)
W. Matejek, Lead Advisory Engineer (S&W)
B. McCaffrey, Assistant Project Manager (L)
J. Morin, Senior Licensing Engineer (L)
J. Navarro, Project Manager (L)
A. Pederson, Operations Manager (GE)
J. Riley, Lead Startup Engineer (GE)
J. Rivello, Plant Manager (L)
W. Steiger, Chief Operating Engineer (L)
E. Youngling, Startup Manager (L)

GE - General Electric
L - Long Island Lighting Company
S&W - Stone and Webster

The inspector also held discussions with other licensee and contractor personnel during the course of the inspection including management, clerical, maintenance, operations, engineering, testing, quality assurance and construction personnel.

2. Previous Inspection Item Update

(closed) Inspector Followup Item (322/77-19-02): System flush procedure, CF.121.001-1, for the Residual Heat Removal (RHR) System was revised on 3/24/81. The procedure now flushes the Ultimate Cooling Tie between the Service Water and RHR systems; including lines 1P41 20" WS-298-301-2 and 1E11 20" WS-151-301-2. This item is closed.

(open) Unresolved Items 80-16-01 and 03: Instrument Calibration Problems in C&IO data packages: The inspector reviewed completed Checkout and Initial Operation (C&IO) data packages for the following systems: Instrument Air, 24V DC and 125V DC power distribution, Liquid Radwaste, Demineralized Water and Battery Room Ventilation. The inspector noted that the required data was not always properly logged on the data sheets. The licensee's representative stated that each of the identified discrepancies would be addressed and then a determination made as to what further action was required. Additionally, a training session was scheduled for test personnel on the proper use of the data sheets. These items remain open.

(open) Violation 81-01-01: Failure to recalibrate instruments: The inspector reviewed the instrument calibration data packages for the recalibrated instruments associated with the 125V DC preoperational tests and noted some of the same discrepancies as discussed above. This item remains open.

(open) Violation 81-02-02: Containment Isolation Valves not as close to containment as practical: The licensee responded to this item in letter SNRC-560 dated April 27, 1981 and stated that the intent of the General Design Criteria for valve installation was met in light of other important considerations such as maintainability, seismic support design and accessibility for inservice inspection and testing. The inspector together with representatives of the licensee walked each of the lines in question and noted actual locations versus potentially closer locations for valve installation. The licensee agreed to perform engineering design reviews to determine if, in fact, 1P50*MOV-103A could be located closer to containment. At the conclusion of these reviews the other aspects of this issue will be addressed. This item remains open.

3. Plant Tour

The inspector conducted periodic tours of accessible areas in the plant during normal and backshift hours. During these tours, the following specific items were evaluated:

- Hot Work: Adequacy of fire prevention/protection measures used.
- Fire Equipment: Operability and evidence of periodic inspection of fire suppression equipment.
- Housekeeping: Minimal accumulations of debris and maintenance of required cleanness levels of systems under or following testing.
- Equipment Preservation: Maintenance of special precautionary measures for installed equipment, as applicable.
- Component Tagging: Implementation and observance of equipment tagging for safety, equipment protection, and jurisdiction.
- Logs: Completeness of logs maintained.
- Security: Adequate site construction security.
- Prohibited Items: Observations to determine no smoking in restricted areas and no alcoholic beverages on site.
- Weld Rod Control: Observations to determine weld rod was being controlled in accordance with site procedures.

No violations were identified.

4. IE Bulletins and Circulars

Bulletin 79-25: Bulletin 79-25, Failures of Westinghouse BFD Relays in Safety-Related Systems, describes a problem with the subject relays and specifies reviews and a response for all power reactor facilities. The licensee responded on January 4, 1980 and stated that a review of the Shoreham design revealed that no such relays were used or planned for use. The inspector noted that these relays have subsequently been added to the licensee's Deficient Item List to prevent procurement of them in the future. Additionally, the inspector toured the plant and observed the various types of relays installed on a sampling basis. None of the subject relays were identified. This Bulletin is closed.

Bulletin 79-24: Bulletin 79-24, Frozen Lines, describes a problem with water freezing in High Pressure Coolant Injection (HPCI) recirculation line and in other instrument and sampling lines exposed to cold weather. The licensee reviewed this Bulletin and determined that several actions were required to prevent freezing of lines at his facility, namely: the control and alarm set-points for the heat tracing on the HPCI recirculation would be raised, locally controlled electric heaters would be added to the valve and pipe rooms by the outdoor water storage tanks, a control room alarm would be added for low temperature in Category 1 systems, and procedures would be developed for maintenance of the freeze protection system (heat tracing and insulation). These items have not been completed. The inspector noted that, throughout the cold weather, turnover of systems from construction to startup was coordinated with turnover of the associated heat trace circuits to prevent freezing in systems undergoing testing. This Bulletin remains open.

Bulletin 80-06: Bulletin 80-06, Engineering Safety Feature (ESF) Reset Controls, describes a situation where certain safety equipment changed its mode or position to the normal or non-safety state, after actuation, as a result of ESF reset button operation only. The issue was also addressed in an FSAR question, which the licensee answered in letter SNRC-546 dated 3/18/81. The letter stated that there were only two examples in the balance of plant design and two in the nuclear steam supply system design where equipment changed position on reset of ESF actuation. The letter detailed these instances. Based on a brief systems review the inspector noted an additional instance of the type in question; namely, in the Control Room Air Conditioning (CRAC) System (X61), MOV-031A, AOV-039A, MOV-032A and FN-026 all change position or operating mode on a reset of CRAC initiation. Additionally the Battery Room and Diesel Generator Room Ventilation systems automatically restart on a fire protection reset. The inspector questioned the basis for the statements in letter SNRC-546. This Bulletin remains open.

Circular 78-06: Circular 78-06, Potential Common Mode Flooding of ECCS Equipment Rooms at BWR Facilities, describes a situation where flooding in an ECCS room resulted in flooding of the other rooms via common drain piping. The licensee has located ECCS equipment on elevation 8 and has provided flood control via several non-safety related sumps and pumps and has plans for a safety-related leakage return system, level indicators and control room alarms. Final installation, testing requirements and Technical Specifications for the safety-related flood control equipment remain to be completed. This Circular remains open.

5. Review Committees

The Joint Test Group (JTG) is a testing committee formed to oversee and guide the operations of the preoperational test program. The Review of Operations Committee (ROC) is a committee formed to review and audit plant operations and procedures after fuel load. Both committees review procedures and changes to procedures, as described in the FSAR in Chapters 13 and 14. The JTG is currently functioning as required to oversee the preoperational test program. The inspector reviewed various procedures, and test results required to be reviewed by the JTG and noted that they all had received the specified approval.

The inspector also reviewed minutes of JTG meetings. The inspector noted that Test Change Notices (TCN's) were sometimes approved by the JTG using a routing method, without consideration before the committee as a whole and without logging the review in the committee meeting minutes. This method of handling changes to procedures is also planned for use by the ROC after the plant goes into operation. The inspector stated that this did not meet the intent to function as a committee when reviewing procedures and with respect to the JTG would be unresolved. The functioning of the ROC will be reviewed at a later date. This item is designated as unresolved item no. (322/81-06-01).

6. ECCS Pump NPSH

In order to assure the pump will not cavitate during operation and become damaged, sufficient Net Positive Suction Head (NPSH) must be provided at the pumps' suction. This is done by effectively increasing the pressure or lowering the temperature. The inspector reviewed the NPSH available for the Emergency Core Cooling System (ECCS) pumps to verify that it met the minimum required NPSH as specified by the pump manufacturers. Documents utilized in this review included:

- Regulatory Guide 1.1, Net Positive Suction Head for Emergency Core Cooling and Containment Heat Removal Pumps,
- Shoreham FSAR paragraph 6.3.2,
- Standard Handbook of Engineering Calculations,
- Centrifugal Pumps, Selection, Operation, and Maintenance by Karassik and Carter,
- Pertinent system drawings and specification, and
- ECCS pump manufacturer's documents.

The inspector also toured the ECCS, High Pressure Coolant Injection (HPCI), Reactor Core Isolation Cooling (RCIC), Residual Heat Removal (RHR) and Core Spray (CS), and observed the suction line arrangements, including suction strainers, containment penetrations, valving, piping and pumps. Installation quality and storage conditions of equipment were also observed.

For the HPCI and CS pumps the inspector made independent measurements and performed independent calculations to determine that the NPSH provided exceeded manufacturer's recommendations. Conservative assumptions used included: minimum permissible suppression pool level, maximum expected temperature for the particular system operating mode, minimum permissible primary containment pressure and no credit for pressure increase post-accident, 40 year old piping and suction strainer 50% clogged. No discrepancies were identified in the tour or the calculations.

The inspector also reviewed the testing of the ECCS suction strainers and noted that FSAR paragraph 6.3.2.20.1, on ECCS pump suction strainers, states that adequate NPSH is provided with 50% of the free strainer area clogged. The preoperational tests for the core spray and RHR systems are performed with the suction strainers 50% hooded. However, neither the preoperational test nor the startup test for HPCI and RCIC perform such a check. The inspector questioned this practice and the licensee's representative stated that the area would receive further review. This is designated as inspector follow item no. (322/81-06-02).

7. Instrumentation and Controls

10CFR50, Appendix A, General Design Criteria (GDC), Criterion 13, Instrumentation and Control, states that instrumentation shall be provided to monitor variables and systems over their anticipated ranges and that appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges. One discrepancy relative to GDC-13 was identified in report 50-322/80-06 for the Diesel Generator Rooms' Temperature Alarms. Similarly the minimum and maximum Battery Room temperatures at which the equipment in the rooms is designed to operate is listed in FSAR paragraph 9.4.5.1 as 77°F and 104°F. The inspector noted, however, that the low and high temperature alarms are set at 70°F and 110°F, respectively. The inspector noted that this design philosophy, utilized at least for the Diesel and Battery Rooms, creates the potential for temperatures remaining outside their prescribed operating range for extended periods should normal control equipment not operate properly. The inspector noted that these alarm setpoints did not appear to provide the appropriate controls called for by GDC-13. The item is unresolved pending a review to determine where this design philosophy was used and a resolution of the issue. The item is designated as unresolved item no. (322/81-06-03).

8. Test Witnessing

The inspector witnessed portions of the below tests:

CF.109.001, Integrated Flush of Systems Utilizing the Reactor Pressure Vessel with TCN's 1, 2 and 3,

PT.410.001B-3, Battery Room Ventilation System.

During the tests the inspector noted that:

- the test procedure was approved and released for performance as required;
- test procedure was in use by personnel performing the test;
- test personnel were suitably qualified;
- test exceptions were appropriately documented;
- test instrumentation was properly calibrated;
- data was properly logged; and
- test acceptance criteria were met for portions observed.

During the performance of PT.410.001B-3 the inspector noted a few discrepancies in the associated alarm response procedures (ARP's). These have now been corrected. Some bolts attaching a damper, X41*MOD-40A, were noted by the inspector to be loose. Repair Rework Request #X41-55 was written to tighten these bolts and to inspect the bolting of the remaining dampers for the Battery Ventilation System (X41). No additional discrepancies were identified.

9. Unresolved Items

Areas for which more information is required to determine acceptability are considered unresolved. Unresolved items were contained in paragraphs 5 and 7 of this report.

10. Management Meetings

At periodic intervals during the course of this inspection, meetings were held with plant management to discuss the scope and findings of this inspection. The resident inspector also attended the entrance and exit meetings of region-based inspectors and the meeting to discuss the findings of the Systematic Appraisal of Licensee Performance (SALP) Board with licensee management. That meeting is the subject of a separate report.