U.S. NUCLEAR REGULATORY COMMISSION REGION I

Report No. 50-322/87-20

Docket No. 50-322

License No. Long Island Lighting Company

Post Office Box 618

Shoreham Nuclear Power Station

Wading River, New York 11792

Inspection At: Wading River, New York

Inspection Conducted: October 24, 1987 - December 28, 1987

Inspectors:

C. W. Warren, Senior Resident Inspector F. J. Crescenzo, Resident Inspector

Approved By:

A. R. Blough, Chief, Reactor Projects Section No. 3B Division of Reactor Projects

1-15-88 Date

<u>Inspection Summary</u>: During the period covered by Inspection Report 87-20, the facility was maintained in a cold shutdown condition. Significant work activities continued on the Colt diesel modification and were completed on Residual Heat Removal valve interlock modifications and Reactor Building Ventilation maintenance. Routine maintenance and surveillance activities were also conducted. The licensee continued with programs to identify, inspect and disposition potentially defective components installed in various plant systems.

One hundred and fourteen (114) hours of direct inspection effort were expended for this inspection.

<u>Areas Inspected:</u> Routine resident inspection of plant operations, radiation protection, security, plant events, maintenance, surveillance, outage activities, and reports to the NRC. Additional inspections were also conducted by Region based inspectors.

<u>Results:</u> No violations were identified. One unresolved item was identified relating to programmatic deficiencies in the licensee's process of identifying inoperable safety related components. One inspector follow item was identified to track the licensee's progress in returning a radiation monitoring system to operable status.

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DETAILS

1. Review of Facility Operations, Surveillance and Maintenance

1.1 Plant Status Summary

During the period covered by Inspection Report 87-20, the facility remained in a cold shutdown condition. The licensee conducted routine surveillance and maintenance items as required by License NPF-36.

1.2 Operational Safety Verification

The inspector routinely toured the control room to verify proper shift manning, use of and adherence to approved procedures, and compliance with Technical Specification Limiting Conditions for Operation. Control panel instrumentation and recorder traces were observed and the status of annunciators was reviewed. Nuclear instrumentation and reactor protection system status were examined. Radiation monitoring instrumentation, including in-plant area radiation monitors and effluent monitors were verified to be within allowable limits, and observed for indications of trends. Electrical distribution panels were examined for verification of proper lineups of backup and emergency electrical power sources as required by the Technical Specifications. Eight (8) hours of this inspection effort were expended during backshift or weekend periods.

The inspector reviewed Watch Engineer and Nuclear Station Operator logs for adequacy of review by oncoming watchstanders, and for proper entries. A periodic review of Night Orders, Maintenance Work Requests, Technical Specification LCO Log, and other control room logs and records was made.

The inspector also observed and reviewed the adequacy of access controls to the Main Control Room, and verified that no loitering by unauthorized personnel in the Control Room Area was permitted. The inspector observed the conduct of shift personnel to ensure adherence to Shoreham Procedures 21.001.01, "Shift Operations," and 21.004.01, "Main Control Room - Conduct for Personnel."

1.3 Plant and Site Tours

The inspector conducted periodic tours of accessible areas of the plant and site throughout the inspection period. These included: the Turbine and Reactor Buildings, the Radwaste Building, the Control Building, the Screenwell Structure, the Fire Pump House, the Security Building, and the Colt Diesel Generator Building. During these tours, the following specific items were evaluated:

- Fire Equipment Operability and evidence of periodic inspection of fire suppression equipment.
- Housekeeping Maintenance of required cleanliness levels.
- Equipment Preservation Maintenance of special precautionary measures for installed equipment, as applicable.
- QA/QC Surveillance Pertinent activities were being surveilled on a sampling basis by qualified QA/QC personnel.
- Component Tagging Implementation of appropriate equipment tagging for safety, equipment protection and jurisdiction.
- Personnel adherence to Radiological Controlled Area (RCA) rules, including proper personnel frisking upon RCA exit.
- Access control to the Protected Area, including search activities, escorting and badging, and vehicle access control.
- Integrity of the Protected Area boundary.

No unacceptable conditions were identified.

1.4 Surveillance Activities

The inspector observed the performance of various surveillance tests to verify that the surveillance procedure conformed to technical specification requirements. Administrative approvals and tagging requirements were reviewed and approved prior to test initiation, testing was accomplished by qualified personnel, current approved procedures were used, test instrumentation was currently calibrated, limiting conditions for operation were met, test data was accurately and completely recorded, removal and restoration of affected components was properly accomplished, and tests were completed within the required Technical Specification frequency.

The following surveillance procedures were reviewed or observed:

- SP 24.307.01 TDI Emergency Diesel Generator Start and Load test.
- SP 22.008.01 Daily/Shift surveillances.

No unacceptable conditions were identified.

1.5 Maintenance Activities

The inspector observed the conduct of various maintenance activities throughout the inspection period. During this observation, the inspector verified that maintenance activities were conducted within the requirements of the plant's administrative procedures and technical specifications, proper radiological controls were implemented and observed, proper safety precautions were observed, and that activities which have the potential to impact plant operations were properly coordinated with the control room.

No unacceptable conditions were noted.

2. Licensee Reports

2.1 In Office Review of Licensee Event Reports

The inspector reviewed Licensee Event Reports (LERs) submitted to the NRC to verify that details were clearly reported, including accuracy of the cause description and adequacy of corrective actions. The inspector determined whether further information was required from the licensee, whether generic implications were involved, and whether the event warranted onsite follow-up. The following LERs were reviewed.

- LER 87-031: Hourly fire watch patrol late by 20 minutes due to personnel error.
- LER 87-032: Voluntary report of Okonite splices in Primary Containment.

The inspector noted that LER 87-032 refers to an unresolved issue discussed in detail in NRC inspection Report 50-322/87-15. The LER does not contribute new information otherwise noted in the inspection report. This issue will remain unresolved pending further specialist inspection.

The inspector had no further questions related to these LER's.

3. Previous Inspection Items

3.1 Defective Crimping of Termination Lugs

On August 19, 1987, the licensee identified deficiencies related to the crimping of termination lugs in prewired components supplied by the General Electric Company. The components were 4160 volt switchgear equipment associated with the modification for eventual tie-in of the Colt Emergency Diesel Generator. This equipment included new switchgear circuit breaker cubicles, cubicle doors, and miscellaneous prewired devices. The defict involved AMP 14-16 terminal size insulated PIDG lugs which were inadequately crimped to the control wires. Specifically, lugs were found with incorrect or nonexistent identification marks (dots) required to characterize the crimping tool used in fabrication. Additionally, four lugs were found to be loose and were removed by hand from the control wires.

This issue was previously addressed in NRC Region I Inspection Report 50-322/87-15. In that report, it was noted that all defective crimps had been inspected/replaced with exception of those located in the No. 103 switchgear. During this inspection period, the licensee satisfactorily completed inspection/replacement of crimps in the No. 103 switchgear. The inspector has no further questions or concerns related to this issue.

4. Significant Issues Identified During the Inspection Period

4.1 Defective Snubbers Found in Residual Heat Removal System

On November 20, 1987, the licensee found a snubber baseplate associated with the Shutdown Cooling (SDC) suction piping of the Residual Heat Removal (RHR) system to be partially torn away from it's mounting. The snubber is located in the SDC suction line between the containment isolation valve and the pump suction valves in the "A" loop of RHR. This piping is common to the "B" loop of SDC but the two loops of RHR are considered redundant for Low Pressure Coolant Injection (LPCI) functions of RHR.

The damaged baseplate was mounted to a concrete structure by four twelve-inch wedge-type anchor studs. Two adjacent studs and one side of the baseplate were found "pulled" from the concrete surface approximately 1.5 inches. This condition was noted by the licensee during the performance of an unrelated inspection and was appropriately documented by a deficiency report (LDR) on November 20, 1987. On December 4, 1987, a Maintenance Work Request form (MWR) was issued to correct the problem, at which time Technical Specification Action 3.7.5 was identified by the Operations staff as applicable for the defective snubber. The SDC mode of RHR was declared inoperable by the Operations staff due to the defective snubber. The SDC had also been considered inoperable since November 23, 1987 due to an unrelated valve failure. Both subsystems of LPCI were also initially declared inoperable, but after further evaluation, subsystem "B" was declared operable. The Technical Specification Action for Emergency Core Cooling systems was not applicable since both subsystems of Core Spray were operable.

In accordance with Technical Specification 4.7.5.g. an engineering evaluation was performed by the licensee to determine the cause of the damaged snubber and the extent of any additional damage to the RHR system. This included inspection and non-destructive testing of adjacent snubbers, rigid supports, anchors, and piping within the RHR system. The results of the inspection revealed one other snubber in the suction to RHR pump "C" to be "locked up" and, therefore, inoperable. There was no other damage noted during the inspection. The licensee has concluded that the damage was caused by a water hammer event. Although the specific initiating event has not yet been determined, the licensee believes the likely cause for the water hammer event to have been void formation in the SDC suction piping concurrent with a system operational transient. The voiding was most likely caused by drainage from the SDC piping to the suppression pool through isolation valve leakage or from improper valve alignments. Investigations by the licensee to determine the exact nature of the initiating event are continuing.

Both defective snubbers have been replaced and the damaged baseplate has been shimmed and retorqued to two thirds of design torque value. The licensee has considered this temporary corrective action to be sufficient to meet operability requirements for the SDC mode of RHR and the "A" subsystem of LPCI in conditions 4 and 5 (cold shutdown) only. This is based on calculations which included seismic loads cnly and ignored the dynamic loads associated with operations at rated reactor vessel temperatures. Permanent corrective actions to replace the damaged baseplate and restore the fasteners to design torque values will be necessary prior to facility operation in modes 3 and above. The licensee has entered this item into their LCO tracking system.

The licensee has completed the following additional actions to prevent recurrence:

- A procedure change was issued to improve the operational effectiveness of the keep fill system.
- A Full Flow Test was conducted on the A and C RHR pumps to demonstrate operability. Inspections of the system piping and piping supports were conducted during the surveillance. No abnormalities were noted.
- A special snubber inspection will be implemented whereby the affected and similar snubbers will be inspected every thirty (30) days for at least one year.

An interlock to prevent simultaneous opening of the RHR SDC and suppression pool suction valves has been installed. This was completed in early November and was coincidental to identification of the problem; however, the licensee believes this modification will most effectively prevent recurrence.

The inspector noted the licensee's temporary corrective actions related to this matter to be adequate and thorough. An exception to this was the two week period from the time the snubber was documented as inoperable until the Operations Department was aware of the problem and identified the appropriate Technical Specification actions. The applicable action for inoperable snubbers allows a seventy two (72) hour period from the time the snubber is found inoperable until the associated system is declared inoperable. In this instance, the snubber was found inoperable, and 69.5 hours later the SDC system was declared inoperable due to an unrelated valve failure. Had this unrelated valve failure not occurred, it is probable that Technical Specification requirement for declaring the system inoperable would not have been met. The licensee is aware of this problem and is currently evaluating procedural methods for ensuring that deficiencies potentially affecting operability of Technical Specification related equipment are promptly brought to the Operations Department's attention. The inspector will follow the licensee's actions relating to permanent resolutions of the specific snubber problem and the programmatic problem of prompt identification of degraded equipment. This item will be tracked as Unresolved Item 87-20-C1.

4.2. Bomb Threat

On December 4, 1987, at 9:20 a.m., a bomb threat was received by the NRC Resident Inspector. The caller was attempting to reach the licensee's security department but apparently became inpatient waiting for the switchboard to answer and called the NRC resident office. The resident office secretary was directing the caller to the licensee when the caller stated a vague bomb threat and hung up. The licensee was notified of the call and an Unusual Event was declared at 9:45 a.m.. The Suffolk County Police responded to the site and a search was made of the facility by licensee security personnel. No bomb was found and the Unusual Event was terminated at 11:13 a.m.

4.3. Incorrect Radiation Monitor Setpoints

On December 1, 1987, the licensee discovered the Main Control Room Radiation Monitor alarm setpoint had been set higher than specified by Technical Specifications. Technical Specification 3.3.7.1 requires the setpoint to be less than, or equal to, two (2) times background. The licensee had incorrectly interpreted this to mean less than, or equal to, two (2) times background above background (i.e. three times background). This condition had existed since June, 1986 and the plant was operated in conditions which required the monitor to be operable. The monitor is not required to be operable in the plant's current condition (cold shutdown). The licensee has declared the monitor inoperable and has elected to keep setpoint at three (3) times background. This is due to the very low background readings which would cause spurious alarms if the monitor were set at two times that background. This event is of minimal technical significance, since a very small amount of radioactivity in the air would alarm the monitors. The licensee further intends to submit a license amendment to allow the setpoint to be a specified numerical value above background to prevent spurious alarms during operation.

The inspector will follow the licensee's actions to return the monitor to an operable condition. This will be tracked as Inspector Follow Item 87-20-02.

4.4. Missed Sampling Requirement

On December 1, 1987, the licensee reported a failure to adequately complete a monthly radioactive effluents sample analysis from continuously discharging systems. The weekly composite sample for November 16, 1987 was obtained and analyzed, as required by Technical Specifications; however, it was disposed of prior to it's inclusion in the monthly composite sample. The monthly sample is a combination of the weekly samples and is performed in accordance with requirements of Technical Specification 4.11.1.1.1. to determine continuous release of tritium or other alpha emitters.

The problem was first identified by the technician who was to perform the monthly analysis. Subsequent review revealed that the technician performing the weekly analysis had taken the sample, correctly analyzed it for gross gamma emitters and Iodine 131, then inadvertently failed to store it with the other weekly samples to be analyzed in the monthly composite. There was not a specific signoff for the step in the procedure to indicate the weekly sample was properly stored. The weekly analysis for the lost sample indicated activities were less than minimum detectable levels.

The licensee has instituted the following corrective actions to prevent recurrence:

- The technician responsible for misplacing the sample has received a written reprimand for failure to follow procedures.
- The procedure SPF 74.020.10-4 has been changed to include a specific signoff indicating proper storage of the sample.

- All radiochemistry technicians were trained on this event. The inspector had no further questions related to this issue.

5. 1987 Containment Integrated Leak Rate Test (CILRT) Results Evaluation

The inspector reviewed the licensee's January 1987 CILRT results documented in accordance with the requirements of 10 CFR 50, Appendix J, paragraph V.B.3. These results were summarized in a Technical Document entitled "Reactor Containment Building Integrated Leak Rate Test" and attached to the licensee's letter dated April 21, 1987 to the NRC.

The report contains a general test description, a discussion of Type A test prerequisites and procedures, presentation of test results, and Type B and C leak rate histories. Pertinent Type A test parameters and results are presented below. Both mass point and total time calculational methods were employed for the January, 1987 CILRT. Note that the mass point calculational method of ANSI/ANS 56.8-1981 is not endorsed by 10 CFR 50, Appendix J. Therefore, the mass point results are presented here only for information. The total time calculational method ANSI N45.4-1972 is consistent with Appendix J requirements and is therefore the method of record for the test.

The purpose of the test was to demonstrate that leakages through the reactor containment building and systems penetrating the containment building do not exceed that allowed by plant technical specifications. The test was conducted with containment isolation valves ($CIV^{\circ}s$) and containment pressure boundaries (CPB's) in an "As-Left" condition and was witnessed by an NRC regional inspector as a routine safety inspection. Inspection findings are documented in USNRC Region I Inspection Report No. 50-322/87-02. The pertinent test parameters and results are presented below:

A. Type "A" Test Parameters and Acceptance Criteria

1. Test Method.....Absolute

2. Calculational Method.....Total time (per ANSI N45.4-1972) Mass Point (Per ANSI/ANS 56.8-1981)

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3.	Test Duration:	
	Stabilization Period	8.5 hours.
	Data Gathering for Leakage Ca	lculation24 hours.
	Verification Leak Rate Test	4 hours.
4.	Test Pressure	
5.	Maximum Allowable	
	Leak Rate (AT	.75 La (La = 0.50 Wt.
	Upper Bound of 95%	%/Day)
	Confidence Limit.)	
lest	Results	Type A Test Results, Weight %/Day
Acceptance criteria, 0.75 La (Maximum Allowable Leak Rate) Measured Leak Rate, Lam:		0.375
	Mass Point	.181
	Total Time	. 171
.eak)f tl	Rate at the Upper Bound he 95% Confidence Interval	
	Mass Point	.183
	Total Time	.211
Corre Type Water	ections for B & C Penalties, r Level, Instrument	
_eaki	age, etc	.088
Total Type A Leak Rate Mass Point Total Type A		.271
Leak Conc	Rate Total Time	.299 Acceptable
NOTE	: The above results (tota	1 type A leak rate) include correc-

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fore, reflect the containment "as-found" leak rate.

C. Verification Leak Rate Test (VLRT)

- 1. Test MethodSuperimposed leak
- 2. Calculational Method......Mass Point, Total Time
- 3. Test Duration...... 4 hours
- 4. Superimposed Leakage (Lo).....0.530 WT. %/Day
- 5. Composite Leakage (Lc) Mass Point.....0.690 Total Time.....0.716

The VLRT acceptance criteria require that the VLRT result does not deviate from the total leakage (superimposed, Lo, plus measured leakage, Lam) by more than 25% of the Maximum allowable leak rate (.25 La.). Therefore, the result must be greater than the lower limit and less than the uppe. limit, as shown below:

Lam + Lo - .25La \leq Lc \leq Lam + Lo + 5 La Result Mass Point: (0.181 + 0.530 - 0.125) < 0.711 < (0.181 + 0.530 + 0.125) 0.586 < 0.711 < 0.836 Result Total Time: (0.171 + 0.530 - 0.125) < 0.701 < (0.171 + 0.530 + 0.125)

The inspector concludes that, based on a review of the total time results,

0.576 < .701 < 0.826

the containment leak rate has met it's test acceptance criteria.

6. Licensee Organizational Changes

Pursuant to Mr. J. W. Dye's announced decision to retire from his position as Executive Vice President of LILCO, the licensee has proposed the following personnel and organization changes. Effective January 1, 1988, Mr. A. F. Earley will assume the duties of Executive Vice President. Responsibility for management of nuclear facilities, previously assigned to the Executive Vice President, will be assigned to the Vice President, Nuclear. The Vice President, Nuclear, and Director, Office of Training, will report directly to the President. The Quality Assurance Manager will report to the Vice President, Nuclear and will retain direct access to the President on an as-needed basis. These changes were preliminarily discussed with NRC Region I management and have been formally presented to the NRC via licensee letter SNRC - 1403, dated December 8, 1987.

7. Establishment of Maintenance Planning and Scheduling Section

In December 1986, the licensee established a Maintenance Task Force with a stated goal of assuring maintenance activities were conducted efficiently, timely and to high standards. This Task Force completed it's activities in May of 1987 and made the following recommendations to plant management:

- Existing Work Controls and Planning activities should be reorganized into a single section, "Work Planning and Scheduling," staffed by experienced maintenance personnel.
- The Maintenance Work Request (MWR) form and process should be revised to reflect the new work processes.
- Warehousing and material staging efforts should be improved.

The purpose of these recommendations was to eliminate administrative burdens on maintenance foremen and thus allow them to spend more time "in the field," ensuring quality supervision. Other purposes focused on more efficient and effective use of maintenance resources.

Since these recommendations were made, the licensee has implemented a program to establish a Work Controls and Planning Section. The section was established in October and although full implementation is not yet complete, a realistic schedule for completion is in place. Concurrent with this, the licensee is establishing several new programs within the new section to improve efficiency and quality of performance. These include:

- Developing strategies to work off MWR backlogs.
- Developing a "forced outage" program which would prepare work packages in anticipation of forced plant or equipment outages.

NRC Systematic Assessment of Licensee Performance report 50-322/86-99 documented concerns related to overburdening of maintenance foremen. This program, if properly implemented, should substantially relieve this burden and improve the quality and effectiveness of maintenance activities at the facility.

The inspector will continue to monitor the licensee's progress towards full implementation of this program.

8. Management Meetings

At periodic intervals during the course of this inspection, meetings were held with the licensee management to discuss the scope and findings of this inspection. Based on NRC Region I review of this report, and discussions with licensee representatives, it was determined that this report does not contain information subject to 10 CFR 2.790 restrictions.

The inspectors also attended entrance and exit interviews for inspections conducted by region-based inspectors during the period.

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