U. S. NUCLEAR REGULATORY COMMISSION

Region I

REPORT NO. 50-322/85-20

DOCKET NO. 50-322

LICENSE NO. NPF-19

LICENSEE: Long Island Lighting Company
P. O. Box 618
Shoreham Nuclear Power Station
Wading River, New York 11792

INSPECTION AT: Shoreham, New York

INSPECTION CONDUCTED: April 1 - May 15, 1985

INSPECTOR: P W Eselgroth — 5/16/85
P. W. Eselgroth, Senior Resident Inspector — Date Signed

APPROVED: Jack Strosnider — 5/23/85
J. R. Strosnider, Chief, Reactor Projects Section 1B, Division of Reactor Projects — Date Signed

SUMMARY: The resident inspector reviewed licensee actions to date on the licensee's evaluation of wetwell/drywell inerting nitrogen cooling components and Colt diesel generator testing status. This report also includes follow-up reviews of previous inspection items covering lead/acid battery installations, control rod drive cooling orifice clogging, quality assurance deficiency system management overview and emergency diesel generator air start check valves.

The inspector closed three previous inspection items and opened one new item. No violations were identified.

This report involved 64 hours of inspection by the resident inspector.

DETAILS

1.0 Persons Contacted

R. Gutmann, Maintenance Engineer (L)
R. Kubinak, Director, QA, Safety & Compliance (L)
A. Muller, QC Division Manager (L)
W. Steiger, Plant Manager (L)
D. Terry, Maintenance Division Manager (L)

L - Long Island Lighting Company

The inspector also held discussions with other licensee and contractor personnel during the course of the inspection.

2.0 Status of Previous Inspection Items

2.1 (closed) Unresolved Item 85-18-01: Lead/Acid Battery Installation Review.

During the previous inspection period, the resident inspector reviewed the installation of safety related batteries and their battery racks at the plant, along with the licensee's maintenance engineer. This inspection was prompted by an NRC, Office of Inspection and Enforcement, memorandum which informed the regional office that analysis by GNB Batteries, Inc. (formerly Gould, Inc.) indicated that battery racks and batteries at some nuclear power plants may be installed with an improper end gap between the stringers and cells. This memorandum stated that the end gap should be between 1/8 and 1/4 inch and that improper end gap installations are not consistent with seismic qualification testing.

The resident inspector and maintenance engineer inspected the A, B and C battery rooms and found that at several locations on the bank C1 battery installation the stringer to cell end gap measurement exceeded 1/4 inch. The licensee initiated Maintenance Work Request (MWR) No. 85-1833 to correct this condition.

During this period, the inspector checked the completed end gap adjustment work at the bank C1 battery installation and found it to be satisfactory.

This item is closed.

2.2 (closed) Unresolved Item 85-18-02: Control Rod Drive Cooling Orifice Clogging.

During the previous inspection period the licensee commenced a control rod drive (CRD) cleaning program as a result of indications of clogging in the CRD cooling water flow path of 60 CRD's. Last month's report noted that when a control rod is fully inserted, attempts to insert the rod further typically result in a CRD "stall" flow in the control room of 1.3-1.5 gpm associated with flow through unobstructed CRD cooling water passages. Although CRD operability was not affected, the "stall" flow on 60 of the CRD's had dropped to the 0-0.8 gpm range. Attempts to free up the cooling water

flow path by flushing were not successful and the licensee concluded, following consultation with General Electric, that inspection of the CRD cooling water orifice in each of the CRD's was necessary.

Inspection of the CRD cooling water orifices in several of the drive mechanisms revealed that the orifices, which have a 1/32 inch hole, were partially or completely clogged by a plastic like sliver of material which turned out to be teflon. The licensee concluded that these teflon slivers had come from the scram inlet valve teflon seats which were found, upon examination, to be shredded at the inside diameter. Discussions between the licensee and General Electric revealed that this splintering of the scram inlet valve seat could be minimized by use of a stronger tefzell seat which is used in later design BWR plants that utilize a higher scram pressure.

The licensee elected to replace all 137 scram inlet valve teflon seats with the improved tefzell material and completed that work during this inspection period. The licensee also replaced the CRD cooling water orifice in 135 of the drive mechanisms with a newer design orifice having more holes and therefore being less prone to clogging of the cooling flow. In the remaining two drive mechanisms the orifice could not be removed without potentially damaging the CRD and General Electric recommended leaving them as is. The CRD cleaning effort also involved flushing of the lines between each of the 137 hydraulic control units and the CRD's when the latter was removed for cleaning.

CRD "stall" flow measurements taken on each of the CRD's following cleaning demonstrated that all "stall" flows have returned to normal.

The inspector had no further questions, this item is closed.

2.3 (closed) Violation 84-50-03: Quality Assurance Deficiency System Management Overview.

During a previous inspection period the resident inspector reviewed the Quality Assurance deficiency reporting/tracking system and found that the licensee's program for ensuring that LILCO Deficiency Report (LDR) findings have corrective actions identified in a timely manner was lacking. Specifically, the inspector found twenty-three LDR's greater than ninety days old for which no licensee corrective action had been established. This situation resulted in issuance of a Severity Level V violation (Supplement I) to the licensee against 10CFR50, Appendix B requirements.

During the previous inspection period the resident inspector reviewed corrective actions submitted by the licensee to the NRC for this violation. The violation corrective actions, submitted in a timely manner by the licensee, appeared to incorporate some follow-up shortcomings similar to those which may have contributed to the original condition of non-compliance found by the resident inspector. Specifically, the licensee response indicated that at the 90 day point, absent a QA Department approved corrective action for the steps to be taken to clear the deficiency, the QA Manager would then

request more information of the responsible party. If a reply to this request was not received in 10 days, a Corrective Action Request would be issued. This course of action, at this point in time, was considered by the NRC to be a weak approach to resolving the matter of unapproved corrective actions for items which have existed for an already prolonged period of time.

Following additional NRC/Licensee discussions in this area, the licensee revised the LDR disposition follow-up steps to state the following:

> "The Section responsible for the disposition should provide a disposition to the LDR within 30 days. If the disposition cannot be finalized within 30 days, the responsible individual should notify the appropriate Quality Division Manager (QDM) in writing of the estimated disposition completion date. If the disposition or a memo explaining a reason for LDR disposition in the future is not received by the QA Department within 30 days, a memo by the applicable Quality Division Manager will be issued to the appropriate Section Head and/or Division and/or Department Manager with a copy, to the appropriate Responsible Division and/or Department Manager and QA Department Manager. If a disposition to an LDR is not received by an appropriate QA Division within 45 days, the QA Manager, shall request, in writing, from the responsible Department Manager, a request for evaluation of significance of the unresolved LDR and an estimated completion date. A copy of this request shall be forwarded to the V.P. Office of Nuclear Operations. Failure to respond to the 45 day memo within 10 days, shall require the issuance of a Corrective Action Request."

The resident inspector considers this to be a satisfactory resolution of the timeliness issue and has no further questions on this aspect. The inspector has also noted a marked improvement in the timeliness of establishing LDR dispositions.

During the previous inspection period, the inspector reviewed the QA approved dispositions which had been established subsequent to the violation for some of the LDR's and found the dispositions acceptable without further questioning on LDR's 1538, 1736, 1759, 1840, 1844, 1982, 2092, 2155, 2215, 2324, 2368, 2379, 2403, 2457, 2466 and 2488. During the current inspection period the inspector reviewed QA approved dispositions for the remainder of the original 23 delinquent LDR's plus two others and found the dispositions to all to be acceptable. Specifically, this included LDR's 2341, 2352, 2355, 2455, 2485, 2470, 2471, 2472 and 2473.

The inspector has no further questions. This item is closed.

3.0 Emergency Diesel Generator (EDG) Air Start Check Valves

By copy of a letter to the NRC from Trans America DeLaval, Inc. (TDI), the licensee was formally notified of an air start check valve problem that occurred at Grand Gulf. This problem involved broken check valve internals (disc guide) which was found in one of the engine cylinders.

The TDI EDG's at Shoreham utilize the same type of 3 inch air start check valves which are manufactured by Williams Gauge Co., of Pittsburgh, Pa.

During the previous report period the licensee commenced an inspection of the air start check valves on all three TDI engines. Each engine utilizes two of these valves in the air start system and the licensee's inspections of all six valves revealed one cracked valve body, one cracked valve disc, and one disc with a linear indication. This linear indication was determined by the licensee and TDI to be non-rejectable, however, the licensee elected not to return this disc to service. Also, among two spare valves received from the Midland plant, the licensee found a valve body with rejectable casting voids.

Following completion of this inspection program, the licensee was able, through the use of in-house and offsite spares, to release six valves for use on EDG's-101, 102 and 103. These valves will be reinspected by the licensee at a later date.

Williams Gauge Co. check valves of the above valve design are also used in the TDI engine jacket water cooling and lube oil systems in 1½, 3 and 5 inch sizes. However, the licensee has determined that inspection of these valves is unwarranted due to the lower pressure and significantly less severe application of the valves in these systems. The air start system valves operate at 225 psig and receive an initial high impact opening from compressed air starting tanks whereas the jacket water cooling and lube oil systems operate at less than 100 psig and the valves are operated by pumping pressure which builds up more gradually.

The licensee also completed a review of all other plant safety related systems (including the Colt EDG) and determined that the subject check valve design is not used elsewhere in Shoreham safety related systems.

The inspector had no further questions.

4.0 Wetwell/Drywell Nitrogen Inerting Concerns

IE Information Notice 84-17, "Problems with Liquid Nitrogen Cooling Components Below the Nil Ductility Temperature", dated March 5, 1984 and General Electric Service Information Letter (SIL) No. 402 dated February 14, 1984, discuss an event at an operating BWR which resulted in a large crack in the vent header in the torus. This was attributed to brittle fracture caused by the injection of cold nitrogen into the torus during inerting and SIL No. 402 provided specific recommended actions for all BWR's with Mark I or II containment systems that utilize nitrogen for inerting.

During this reporting period the inspector reviewed the SIL No. 402 recommendation and the licensee's actions to date. SIL No. 402 states that the following recommendations apply to all Mark I and II BWR's:

1. Evaluate Inerting System Design

   Evaluate the design of the nitrogen inerting system. Investigate the potential for introducing cold (less than 40°F) nitrogen and the orientation of the nitrogen port relative to the vent header, downcomers, or other equipment in the wetwell and drywell which may be in the path of the injected nitrogen. Assure that the temperature monitoring devices, the low temperature shutoff valve and overall system design are adequate to prevent the injection of cold nitrogen into the containment.

2. Evaluate Inerting System Operation

   Review the operating experience of the inerting system to assure that the vaporizer, the low temperature shutoff valve and the temperature indicators have functioned properly. Evaluate the plant calibration, maintenance and operating procedures for the inerting system. Assure that cold nitrogen injection would be detected and prevented.

By letter, SNRC-1098 dated October 17, 1984, the licensee stated that the following containment inerting system modifications would be made to preclude introduction of cold nitrogen into the containment:

- A temperature-controlled valve will be added upstream of the nitrogen vaporizer.
- A control panel local to the vaporizer (in the yard) will be installed. This will signal the temperature-controlled valve to close when the nitrogen temperature downstream of the vaporizer is below 40°F.
- A thermocouple will be located on the nitrogen piping inside secondary containment, and will provide the signal to the control panel in the yard.
- A pressure relief valve (setpoint of 350 psig) will be installed upstream of the temperature-controlled valve.

During follow-up on these modifications the inspector determined that the associated design work is not finished, but the design/modification work is scheduled to be complete in 1985 prior to the initial inerting of the containment. This modification is covered by Engineering Evaluation and Assistance Request (EEAR) No. 84-275. The licensee intends to perform the recommended evaluation No. 2 during the initial containment inerting.

The inspector will review the completed design/modification work and system testing data at a later date. This is unresolved item 85-20-01.

5.0 Colt Diesel Generator Testing

During this inspection period the licensee started the run-in for EDG902 on Monday, April 8, 1985, with the lineup for the engine subsystems. All remaining prerequisites and initial conditions were completed by Tuesday morning. The engine was successfully started on the first attempt at 0645 hours on Tuesday, April 9, 1985. Low RPM runs, governor setting, overspeed trip verification, voltage regulator and excitation checks and generator phase rotation were all completed by 1600 on the same day. The generator was initially synchronized and closed to the grid at 1715 hours on Tuesday, April 9, 1985. By 1333 hours on Wednesday, April 10, 1985, the run-in was completed and the engine was shutdown after completing all step load runs through the two hour run at 100% load (4430KW). As with the other two engines, all start attempts were successful.

The licensee is currently proceeding with plans for a six diesel generator (TDI and Colt) tie-in at the first reactor refueling outage. The licensee intends to perform as much of the physical modification work as possible prior to that time so as to minimize any impact on outage length. The licensee has indicated that Colt engines, EDG-901, 902 and 903 will supplement the TDI engines EDG-101, 102 and 103, respectively; however, the automatic/manual selection features have not as yet been finalized.

6.0 Site Tours

The resident inspector conducted periodic tours of accessible areas in the plant, in the new Colt Diesel Generator Building and around the site in general. 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;
- Security - Adequate security coverage for areas toured;
- Component Tagging - Implementation of appropriate equipment tagging for safety, equipment protection, and jurisdiction.

All items observed during general site/plant tours were found to be satisfactory.

7.0 Unresolved Items

Areas for which more information is required to determine acceptability are considered unresolved. An unresolved item is contained in paragraph 4.0.

8.0 Management Meetings

At periodic intervals during the course of this inspection, meetings were held with licensee management to discuss the scope and findings of this inspection. Based on the NRC Region I review of this report and discussions held with licensee representatives on May 16, 1985, it was determined that this report does not contain information subject to 10 CFR 2.790 restrictions.

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