

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-322/84-30

Docket No. 50-322

License No. CPPR-95 Priority - Category B

Licensee: Long Island Lighting Company
P.O. Box 618
Wading River, New York 11792

Facility Name: Shoreham Nuclear Power Station

Inspection At: Shoreham, New York

Inspection Conducted: July 10 - 11, 1984

Inspectors: *C. H. Woodard*
Carl H. Woodard
Reactor Engineer, DETP

8/2/84
date

Approved by: *Clifford J. Anderson*
C. J. Anderson, Chief
Plant Systems Section, DETP

8/3/84
date

Inspection Summary:

Inspection July 10 - 11, 1984 (Report No. 50-322/84-30)

Areas Inspected: Twelve of fourteen previous inspection findings reviewed were closed out. Item 84-02-07 addressing the TDI Emergency Diesel Generator (EDG) unit 103 capability to operate at 3900 kw remains open pending retests of the unit with the new block. Circular item 80-CI-05 addressing EDG lube oil additions and the onsite lube oil supply remains open pending further procedural work by the licensee. The licensee expects to develop the information required to close both items by September 1984. This inspection involved 12 hours on site by one region-based inspector.

Results: No violations were identified.

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DETAILS

1.0 Persons Contacted

Licensee and Licensee Consultants or Contractors

- * M. Herlihy, Lead Startup Engineer
- * R. Purcell, Startup Manager
- B. Yazbek, S&W Modification Engineer
- * G. Rhoads, QA Compliance Engineer (Impell Consultant)
- T. Brown, Startup Engineer
- * W. Steiger, Plant Manager
- * J. Wynne, QA Compliance Manager
- * A. Mullen, Operating QA Engineer

- * Exit meeting attendees

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C. Petrone, Resident Inspector

2.0 Licensee Actions on Previous Inspection Findings

2.1 (Closed) Unresolved Item 83-00-12 Emergency Diesel Generator (EDG) Piston skirt cracks. The licensee and manufacturer have analyzed this problem and have addressed it by replacing all of the older AF type pistons with an improved newer type AE piston. Operation of the engines with the new type pistons is reported to be satisfactory. The NRR TDI Project Group evaluation will cover the adequacy of the pistons.

This item is closed.

2.2 (Closed) Unresolved Item 84-02-02 EDG engine cylinder block cracking.

The NRR TDI Project Group evaluation will cover the resolution of the block cracking problem.

This item is closed.

2.3 (Closed) Unresolved Item 84-05-01 sticking piston rings in the number 5 cylinder of EDG 102.

The manufacturer has replaced all of the piston rings with a new type with a tapered wiping edge and has replaced the fuel injection nozzles to reduce their spray angle thus minimizing raw fuel impingement on the cylinder walls to eliminate this problem.

This item is closed

- 2.4 (Closed) Unresolved Item 84-11-01 cracking of camshaft bearing support saddles. These cracks were investigated under NRR Contract 05-82-249 by Energy Consultants. Their findings are that these are original casting shrinkage cracks and they are not expected to propagate.

This item is closed.

- 2.5 (Closed) Unresolved Item 83-17-02 improper torquing of EDG bolts.

The inspector reviewed the following recently completed assembly and installation procedures used in rebuilding EDG 103 with the new cylinder block.

305 - 315	Cylinder Block to Base Assembly
315 - 360	Cylinder Head Installation
362 - 390	Rocker Arm and Push Rod Installation
360 - 362	Rocker Arm Subcover Installation

These procedures indicate that all steps for cleaning, lubrication, installation and torquing of bolts were properly performed, signed off by the test engineer and verified by a Quality Assurance Inspector. Tools used were identified and also verified and signed off with current calibrations.

This item is closed.

- 2.6 (Closed) Unresolved Item 83-42-02. Improper positioning of EDG jacket water control valve. During early testing of the EDG units, one of the jacket water cooling valves (manually-positioned) was throttled during EDG startup at the end of one work shift for faster engine warmup. Operators on the next shift were unaware of the throttled valve. As a consequence, the jacket water heated to 190° F and the high jacket water temperature alarm tripped. An operator opened the valve, temperatures returned to normal, and the alarm cleared. The licensee has now included this valve in the operator valve lineup check off to prevent recurrence.

This item is closed.

- 2.7 (Closed) Unresolved Item 83-42-03 cracking of the EDG air inlet elbows.

The licensee attributed cracking around the mounting bolts to alignment and mate-up problems between the elbows and the block. All cracked elbows were replaced, the elbow mounting holes were enlarged (ovalled), and a different gasket was used.

This item is closed.

- 2.8 (Closed) Unresolved Item 83-42-04. Activation of the low lube oil level and low fuel oil pressure alarms when there is no legitimate alarm condition. Analysis made by the licensee and reported November 10, 1983 reveals that the low lube oil level alarm is activated by a small positive crankcase pressure which is present only during maximum power (3900kw) runs. The positive pressure depresses the oil level in the sump but in no way adversely affects the engine. Since this alarm would occur only during high power testing the licensee has modified Alarm Response Procedures to alert the operators that alarm at the high power level is not uncommon. It also requires checking the oil level, adding oil if needed, and continuing to monitor the oil level during this high power test alarm condition.

The licensee found that the low fuel oil pressure alarm was caused by a leaky pneumatic alarm control system connection. The loose connection was repaired and the false alarm has not recurred.

This item is closed.

- 2.9 (Closed) Unresolved Item 83-42-01 unreliable EDG alarm/shutdown system. During early testing of the EDG units faulty pneumatic valves caused alarms when in fact an alarm condition did not exist (example high lube oil temperature). The licensee has replaced the defective pneumatic valves.

This item is closed.

- 2.10 (Closed) Unresolved Item 83-42-05 EDG governor linkage, stability, and droop problems.

The governor manufacturer (Woodward) has modified and adjusted all of the governors. The licensee reports that subsequent operation of the governors is satisfactory.

This item is closed.

- 2.11 (Closed) Unresolved item 84-02-01 failures of EDG turbocharger thrust bearings. The turbocharger manufacturer (Elliot) attributed the failures to the many starts of the engines with little or no initial lubrication of the thrust bearing. All of the turbochargers have been modified to include a pre-lube system. Subsequent operation has been without thrust bearing failure.

This item is closed.

- 2.12 (Closed) Unresolved item 83-00-07 EDG high pressure fuel injection line failures. The licensee replaced the lines to all cylinders on all engines with shrouded lines during engine reassembly for crankshaft replacement. Replacement was in accordance with licensee

Engineering and Design Change Request Procedure F-45709. Subsequent operation of the engines for more than three hundred hours has been without fuel lines failure. In performing a portion of the Design Review/Quality Revalidation program, the licensee performed eddy current inspection of all lines. No flaws or failures were detected.

This item is closed.

3.0 General Motors EMD Diesel Generators.

The inspector reviewed the July 2, 1984 EMD Diesel generators test results with the licensee. The licensee has modified, repaired, and adjusted the engine governors and the automatic synchronizing circuitry to improve the diesel generator paralleling and load sharing ability. In addition the troublesome common alarm reset circuit installed by Lilco has been removed in favor of the individual alarms on each unit. Tests indicate that the synchronizing and tripping problems experienced in the July 2 tests have been resolved.

4.0 Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items. The inspector conducted investigation of fourteen unresolved items from previous inspections and was able to close twelve of the fourteen. These items are discussed in section 2. There were no new items observed during this inspection.

5.0 Exit Interview

At the conclusion of this inspection on July 11, 1984, an exit meeting was conducted with the licensee's representatives as denoted in paragraph 1.0. The inspector summarized the scope and findings of the inspection. At no time during this inspection was written material provided to the licensee by the inspector.