

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

Region I

Report No. 50-322/81-01

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: January 1 - 31, 1981

Inspectors: *J. C. Higgins*  
J. C. Higgins, Resident Inspector

2/13/81  
date signed

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date signed

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date signed

Approved by: *H. B. Kister*  
H. B. Kister, Chief, Reactor Projects Section  
No. 4, RO&NS Branch

2/23/81  
date signed

Inspection Summary:

Inspections on: January 1 - 31, 1981 (Inspection Report No. 50-322/81-01)

Areas Inspected: Routine onsite regular, weekend and backshift inspections by the resident inspector (64 inspection hours) of work activities, preoperational testing, and plant staff activities including: tours of the facility; test witnessing; review of test procedures and preoperational program practices; comparison of as-built plant to FSAR description; review of IE Bulletins; and, followup on previous inspection findings.

Results: Of the seven areas inspected, no violations were identified in six areas and one in the seventh area (failure to follow procedures, paragraph 4.b).

## DETAILS

### 1. Persons Contacted

J. Carney, Site Engineering Representative (S&W)  
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)  
B. McCaffrey, Asst. Project Manager (L)  
M. Milligan, Project Engineer (L)  
J. Morin, Senior Licensing Engineer (L)  
J. Novarro, Project Manager (L)  
L. Peyser, Lead Test Engineer (L)  
J. Rivello, Plant Manager (L)  
J. Riley, Lead Startup Engineer (GE)  
J. Taylor, 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) Unresolved Item (322/80-16-02): Instrument Tolerances: The licensee has defined the following methods to establish required tolerances during the checkout and Initial Operations (C&IO) Testing Phase, as called for in procedure CG-000.004: General Electric or Stone & Webster sources, Startup Test Engineer's past experience, and  $\pm 2\%$  if the other means do not produce usable values. All tolerances are assigned by the Test Engineer; reviewed by the Lead Startup Engineer prior to implementation via startup Form 7.9; and, approved by the Joint Test Group (JTG) as part of the test results review. This item is closed.

(Closed) Inspector Follow Items (322/80-18-02): Approval for Jumpers. The licensee's representative clarified that the authorization block of the Lifted Lead and Jumper Tag must be filled in by the Test Engineer prior to placement. This was promulgated via a Startup Distribution Memo on January 12, 1981 and slated for inclusion in the Startup Manual with Revision 12, which is currently in preparation. This item is closed.

### 3. Plant Tour

The inspector conducted periodic tours of accessible areas in the plant during normal, backshift, and weekend 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 cleanliness 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.
- Instrumentation: Adequate protection for installed instrumentation.
- 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.

Minor problem areas were discussed with licensee representatives throughout the inspection.

No items of noncompliance were identified.

#### 4. Test Witnessing

##### a. General

The inspector witnessed portions of the below tests:

PT.315.001B and C, "125V DC Power Distribution Preop Test" and  
CF.307.001B, "Emergency Diesel Generator 102 Lube Oil Flush".

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;
- data was properly logged; and
- test acceptance criteria were met for portions observed.

With the exception of the below item, no discrepancies were identified.

##### b. Instrument Calibration

When systems and instruments are released from construction to the startup group, they are put through a Checkout and Initial Operation (C&IO) Testing Program. This program performs the initial calibration on all permanently installed plant instruments. During the formal preoperational tests (PT's) some data is taken using portable test equipment and some using permanent plant instruments. The test procedures specify how data is to be taken. Due to the extended length of the preoperational program, some instruments have not been calibrated during the year before the preoperational test (PT) is performed.

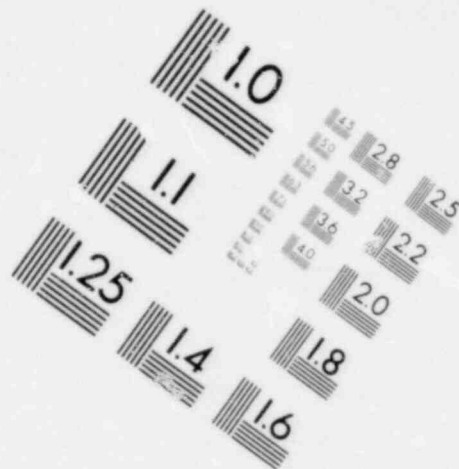
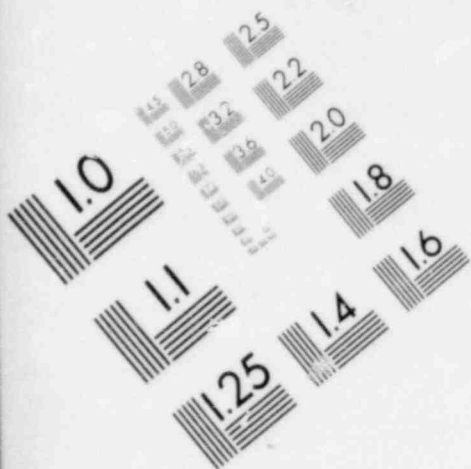
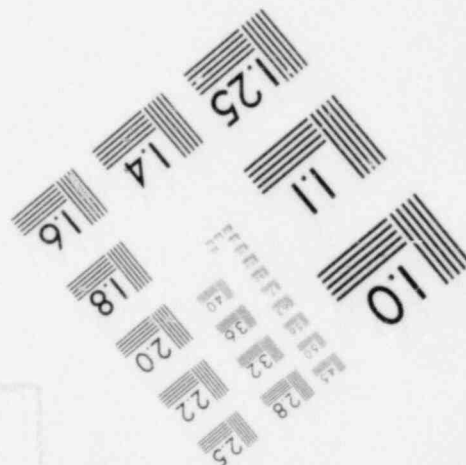
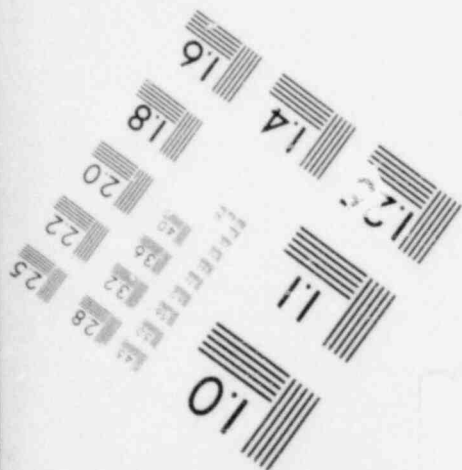
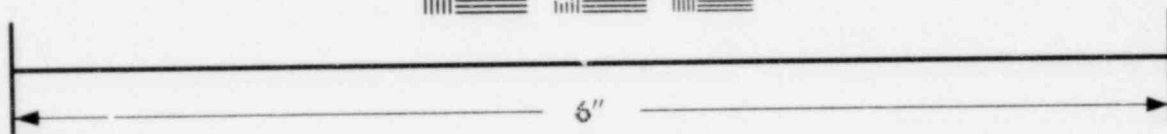


IMAGE EVALUATION  
TEST TARGET (MT-3)



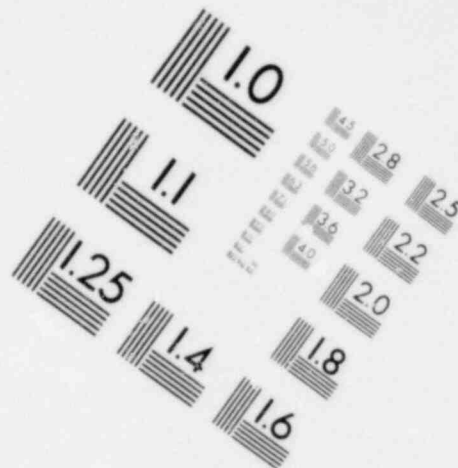
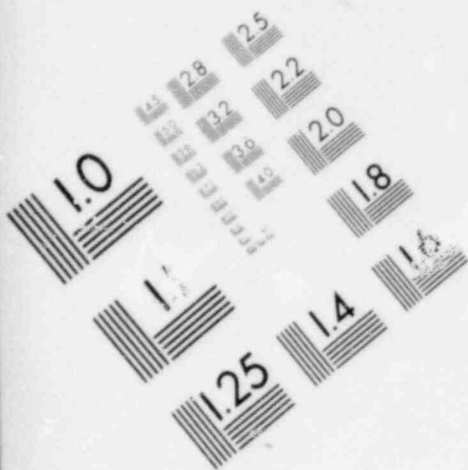
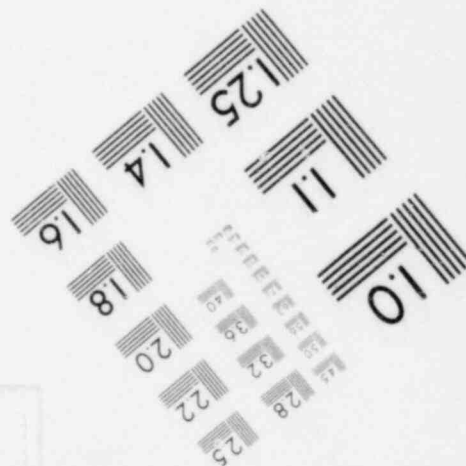
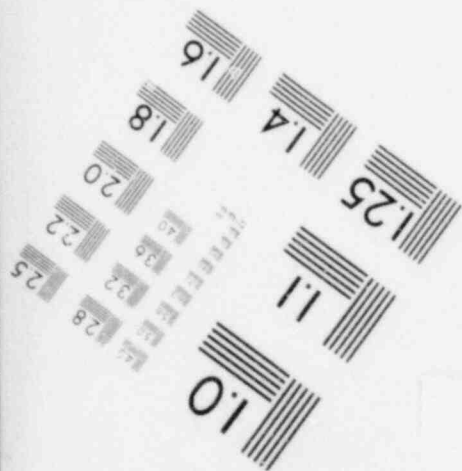
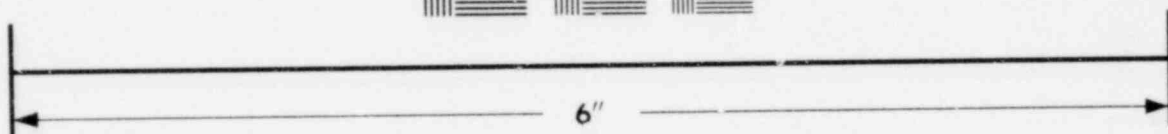
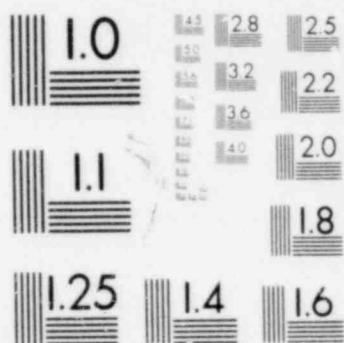


IMAGE EVALUATION  
TEST TARGET (MT-3)





As a result, the licensee recently established requirements in the Startup Manual for recalibration of these instruments prior to performance of a PT. Contrary to these requirements, in January 1981 the inspector observed PT.315.001B and C, being performed without all of the instruments required for use in the test having been recalibrated within one year. The inspector noted that the Test Engineer had made some informal checks of some instruments with test equipment to satisfy himself that the permanently installed instrumentation was usable. After management was informed of the instruments, which had not been recalibrated, the tests were stopped and all required instruments recalibrated before the test was restarted. This item is a violation and designated item no. (322/81-01-01).

5. Turbine Building Ventilation System

a. Documents Reviewed

- Shoreham FSAR section 9.4.4.
- System Description for U41 System, Turbine Building Ventilation System.
- AT.419.001.2, "Turbine Building Ventilation System".
- Completed C&IO test procedures and data packages for U41 System.
- Alarm Response Procedures for U41 System.
- E&DCR's for U41 System written by Startup Group.
- Pertinent system piping and instrumentation drawings (P&ID's) and logic drawings.

b. Scope

The inspector, in company with the Startup Test Engineer, toured the as-built system in the plant and observed all major system components, ductwork and selected instrumentation and controls. The inspector also witnessed portions of the acceptance test and maintenance performed on the system. Based on document review and the system tour, the inspector compared the as-built system and the approved test procedures to the commitments and design objectives of the FSAR.

c. Automatic Damper Operation

Paragraph 9.4.4.2 of the FSAR states that a damper will close automatically upon air flow failure from the turbine building to the exhaust stack to prevent back-flow of other stack effluents into the turbine building. In actuality the single damper provided is not automatic, but there are three automatic dampers in parallel which will close to isolate the turbine building in this situation. This item is unresolved pending action to bring the system and the FSAR into agreement and is designated item no. (322/81-01-03).

d. System Testing

(1) Design Temperatures

The FSAR in paragraph 9.4.4.1, Design Bases, lists the various temperatures to which the Turbine Building Ventilation System will limit the turbine building and the main steam pipe tunnel. The inspector noted that neither the preoperational or startup test programs provide a check of the temperature values under design conditions, namely with full steam flow. This item is unresolved and is designated as item no. (322/81-01-05).

(2) Air Movement

The FSAR in paragraph 9.4.4.1, Design Bases, states that the system is designed to provide air movement from lesser to progressively greater potential contamination areas to final exhaust. Paragraph 9.4.4.3, Safety Evaluation, states that individual building cubicles have a slight negative pressure compared to the general turbine building. Paragraph 9.4.4.2 System description, states that contaminated cubicle entrances are designed for a minimum velocity of 100 fpm. The inspector noted that neither the C&IO nor the AT verify any of the above for the various cubicles in the turbine building. In fact procedure tolerances for flow balancing could permit flow in the opposite direction. The inspector noted that the same comment applies to the turbine building as a whole. This item is unresolved and is designated as item no. (322/81-01-04).

6. IE Bulletins

Bulletin 79-21

Bulletin 79-21, Temperature Effects on Level Measurements, describes the effect of increased containment temperature on the reference leg water column of level instruments. The details in this Bulletin are for PWR Steam Generator instruments, however BWR's were also informed of the problem in the Bulletin, in letters from the Office of Nuclear Reactor Regulation (NRR) and in General Electric Service Information Letter (SIL) No. 299. The licensee has not yet responded to the NRR request for information (FSAR question #223.91), but has addressed the Bulletin and SIL internally. The inspector reviewed these responses, which noted that all Reactor Vessel Water Level Instruments with automatic trips attached have equal length reference and variable legs in the primary containment and hence would not experience the described problem. The inspector noted that the post-accident fuel zone Reactor Vessel Level Instrument, used for indication only, had significantly different length reference and variable legs and was not addressed in the responses reviewed. The licensee's representative stated that they would review this instrument and address it in their response to the FSAR question. This Bulletin remains open.

7. LPCI Diversion

The FSAR on pages 7.3-25 and 7.3-52a/b describes an interlock which actuates on increasing Reactor Vessel Water Level at two-thirds core height. As described, this interlock would prevent post-LOCA diversion of Low Pressure Coolant Injection (LPCI) System flow to the Containment Spray headers until reactor water level was recovered to two-thirds core height. Additionally, the FSAR and other submittals to the NRC (e.g. letter SNRC-319, Attachment 1) assume that no LPCI diversion occurs until 10 minutes after a loss of coolant accident (LOCA). The inspector noted that the two-thirds core height interlock no longer exists but has been replaced by an interlock off the inboard LPCI injection valves (IEII \* MOV-037A and B). This interlock prevents opening of the containment spray valves unless an inboard LPCI injection valve is shut, signifying that the need for LPCI injection is over. The inspector further noted that the outboard LPCI injection valve (a throttle valve) could be shut after a time delay of five minutes vice 10 minutes. The inspector stated that the current arrangement without further analysis did not appear to afford protection equivalent to that described and assumed in the FSAR. This item is unresolved and is designated as item no. (322/81-01-06).

8. Unresolved Items

Areas for which more information is required to determine acceptability are considered unresolved. Unresolved items are contained in paragraph 5 and 7 of this report. Item no. (322/81-01-02) was not used in this report.

9. Management Meetings

At periodic intervals during the course of this inspection, meetings were held with senior plant management to discuss the scope and findings of this inspection.