U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-322/84-16

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

Inspection At: Shoreham, New York

Inspection Conducted: April 16-20, 30, May 1-4, 1984

Inspectors: H.H. Nicholas 5/17/84
H.H. Nicholas, Lead Reactor Engineer date

Approved by: L.H. Bettenhausen 5/18/84
L.H. Bettenhausen, Chief, Test Programs Section date

Inspection Summary: Inspection on April 16-20, 30, May 1-4, 1984 (Report No. 50-322/84-16)

Areas Inspected: Routine unannounced inspection of licensee's action on previous inspection findings; preoperational test program including test program implementation and verification, test procedure review of completed tests for test results evaluation, test witnessing of integrated electrical test; and, tours of the facility. The inspection involved 61 hours on-site by one region-based inspector.

Results: No violations were identified.

DETAILS

1. Persons Contacted

Long Island Lighting Company

+ J. Alexander, Reactor Engineer
B. Beytin, Assistant Startup Manager (Acting)
+ L. Calone, Chief Technical Engineer
+* G. Gisonda, Compliance Engineer
+* G. Gogates, Compliance Engineer
M. Herlihy, Lead Startup Engineer
J. Kelly, Field Quality Assurance
+ J. Morin, Regulatory Compliance
+ A. Muller, OQA Engineer
R. Purcell, Assistant Startup Manager
+* T. Rose, OQA Engineer
+ A. Robeson, PATP Test Coordinator
+* W. Steiger, Plant Manager
+ J. Scalice, Operations Manager
D. Terry, Chief Maintenance Engineer
* J. Wynne, Compliance Engineer
E. Youngling, Startup Manager

Stone and Webster Engineering Corporation

* A. Dobrzeniecki, Startup Engineer
W. Matejek, Lead Advisory Engineer

General Electric Corporation

A. Ketcham, Lead Startup Engineer
J. Livingston, Startup Engineer
+ J. Riley, Operations Manager

U.S. Nuclear Regulatory Commission

+ J. Chung, Lead Reactor Engineer
* A. Finkel, Lead Reactor Engineer
* E. McCabe, Section Chief, RI
* C. Petrone, Resident Inspector

* denotes those present at exit interview on April 19, 1984

+ denotes those present at exit interview on May 4, 1984

2. Licensee Action On Previous Inspection Findings

(Closed) Unresolved Item (322/83-27-01)
Unresolved test exceptions to be closed for completed preoperational and acceptance tests.

These test exceptions for completed preoperational and acceptance tests have been resolved by the licensee. The resolutions were reviewed and verified by the inspector.

This item is closed.

(Closed) Unresolved Item (322/83-27-02)
Unresolved test exceptions to be closed for completed preoperational and acceptance tests.

These test exceptions for completed preoperational and acceptance tests have been resolved by the licensee. The resolutions were reviewed and verified by the inspector.

This item is closed.

(Closed) Unresolved Item (322/82-27-02)
Battery rooms, cleaning, repair of door locks, battery charger ammeter and battery cell jumper strap.

The inspector verified the cleanliness of the battery rooms and the repair of the door locks, the battery cell jumper strap and the replacement of the battery charger ammeter.

This item is closed.

(Closed) Unresolved Item (322/82-27-03)
Dirt, debris, construction equipment and materials in containment, reactor building and screenwell rooms.

The inspector toured the containment, the reactor building, and the screenwell rooms and verified the removal of all construction equipment and acceptable cleanliness and painting of these areas.

This item is closed.

(Closed) Unresolved Item (322/82-12-01)
Unresolved test exceptions to be closed for completed preoperational and acceptance tests.

These test exceptions for completed preoperational and acceptance tests have been resolved by the licensee. These resolutions were reviewed and verified by the inspector.

This item is closed.

(Closed) Unresolved Item (322/84-07-01)
Unresolved test exceptions to be closed for completed preoperational and acceptance tests.

These test exceptions for completed preoperational and acceptance tests have been resolved by the licensee. These resolutions were reviewed and verified by the inspector.

This item is closed.

(Closed) Unresolved Item (322/84-07-02)
Unresolved test exceptions to be closed for completed preoperational and acceptance tests.

These test exceptions for completed preoperational and acceptance tests have been resolved by the licensee. These resolutions were reviewed and verified by the inspector.

This item is closed.

3. Preoperational Test Program

References

The references for the preoperational test program are listed as indicated in inspection report 50-322/83-23 and are used throughout the entire test program.

3.1 Test Program Implementation and Verification

Scope

The inspector held discussions with the plant manager, the startup manager and members of his staff, concerning the completed preoperational and acceptance tests (with the exception of the diesel generator sets), test results to be reviewed and approved, and test exceptions to be prioritized and resolved. The discussions and reviews centered on the status of the preoperational test program, with agreement reached between the NRC inspector and the licensee's staff as to those:

(1) Completed Tests with no exceptions

(2) Completed Tests with exceptions (required for fuel load)

(3) Completed Tests with exceptions (not required for fuel load)

(4) Diesel Generator tests to be handled separately

Findings

Through discussions with licensee personnel, review of documents, review of test results evaluation and approval of completed tests, and review of resolve test exceptions, the inspector verified that with the exception of the diesel generators, the licensee's preopera-

tional test program is essentially, complete and adequate. The inspector verified the following:

(1) Completed tests that had no exceptions

(2) Completed tests that had exceptions and were required for fuel load, and,

(3) Completed tests with exceptions but not required for fuel load.

In the prioritization of the licensee's preoperational test program test exceptions, the following priority code definitions have been given to the remaining test exceptions that will be followed up in subsequent inspections.

OC1	Generation Synchronization (1st time) and run thereafter
OC2A	Low Power Physics Testing Initial Criticality
OC2B	Normal Startup Initial Plant Heat-Up
OC3	Hot Shutdown
OC4	Cold Shutdown
OC5	Refuel: Required for Fuel Load (Synonymous with OPA or prior to Fuel Load)
TC1	Test Conditions No. 1 > 5% to 20% Thermal Power
TC2	Test Conditions No. 2 between 25% to 50% Thermal Power
TC3	Test Conditions No. 3 between 50% to 75% Thermal Power
TC4	Test Conditions No. 4 100% Rod Line with Natural Circulation only
TC5	Test Conditions No. 5 100% Rod Line 75% Thermal Power
TC6	Test Conditions No. 6 100% Thermal Power
M1S	Miscellaneous, Reviewed but not required to support Fuel Load or Power Ascension Program
1 REF	Item deferred to 1st Refueling Outage
2 REF	Item deferred to 2nd Refueling Outage

The 13 completed test procedures that have test exceptions remaining, but are not required for fuel load, will be examined on subsequent inspections in accordance with the prioritized test exception status

schedule, for resolution and approval by the licensee. This is Unresolved Item (388/84-16-01).

3.2 Procedure Review For Test Results Evaluation

Scope

The 4 completed test procedures listed below were reviewed to verify that adequate testing was conducted in order to satisfy regulatory guidance and licensee commitments and to ascertain whether uniform criteria were being applied in the evaluation of completed preoperational tests in order to assure their technical and administrative adequacy.

(1) PT 307.003A-2 Revision 2, Approved January 5, 1984
EDG 101 Electrical Preoperational Test
Test results approved April 23, 1984

(2) PT 307.003B-2 Revision 2, Approved January 5, 1984
EDG 102 Electrical Preoperational Test
Test results approved March 24, 1984

(3) PT 307.004A-2 Revision 2, Approved November 8, 1983
EDG 101 Qualification Preoperational Test
Test results approved April 23, 1984

(4) PT 307.004B-3 Revision 3, Approved January 26, 1984
EDG 102 Qualification Preoperational Test
Test results approved April 3, 1984

The inspector reviewed the test results and verified the licensee's evaluation of test results by review of test changes, test exceptions, test deficiencies, "As-Run", copy of test procedures, acceptance criteria, performance verification, recording conduct of tests, QC inspection records, restoration of systems to normal after tests, independent verification of critical steps or parameters, identification of personnel conducting and evaluating test data, and verification that the test results have been approved.

Findings

No discrepancies or unacceptable conditions were noted in the review of these procedures. These unresolved test exceptions were noted:

Procedure	Title	Exception
PT 307.003A-2	EDG 101 Elec Test	041
PT 307.003B-2	EDG 102 Elec Test	018

These test procedures will be examined on a subsequent inspection for resolution and approval by the licensee. This is Unresolved Item (322/84-16-02).

3.3 Test Witnessing

References

-- Integrated Electrical Test With Diesels 101 and 102 Available, Diesel 103 Not Available, PT 307.007

-- Final Safety Analysis Report, SNPS

-- Stone and Webster General Description, Diesel Generators

-- Stone and Webster Elementary Diagrams

-- Stone and Webster Electrical Drawings

-- General Electric Elementary Diagrams

-- Station Maintenance Procedures, SNPS

-- Station Operating Procedures, SNPS

-- Station Emergency Procedures, SNPS

-- Technical Specifications, SNPS

-- Nuclear Regulatory Commission Regulatory Guides

Scope

The objective of the Integrated Electrical Test was to verify the existence of independence among redundant onsite power sources and their load groups to the maximum extent possible with EDG 103 not available. Various equipment configurations were utilized to demonstrate independence during plant response to the Loss of Coolant Accident (LOCA) with and without a Loss of Offsite Power (LOOP). Plant equipment was aligned for each test to demonstrate maximum response to each event while attempting to adhere to normal system lineups. Equipment response was verified using Control Room indications.

The test completely demonstrated the engineered safety feature reset concern outlined in NRC Bulletin 80-06. This demonstration was incorporated in tests 1 and 2 so that all equipment was included.

Test 1

This test was a simulated LOCA with offsite power available. This demonstrated that diesels 101 and 102 started without load shedding and with the automatic initiation of emergency core cooling systems (ECCS) by high drywell pressure accident signal.

Test 2

This test was an initiation of simultaneous simulated LOCA and LOOP conditions, with the orange emergency DC battery system and associated emergency AC diesel generator out of service. This demonstrated separation of the orange DC and 103 emergency bus from the red and blue DC buses and the 101 and 102 emergency AC buses.

Test 3

This test was an initiation of simultaneous simulated LOCA and LOOP conditions, with the blue and orange emergency DC battery systems and associated emergency AC diesel generators out of service. This demonstrated separation of the red DC 101 emergency bus from the blue and orange DC buses and the 102 and 103 emergency AC buses.

Test 4

This test was an initiation of simultaneous simulated LOCA and LOOP conditions with the red and orange emergency DC battery systems and associated emergency AC diesel generators out of service. This demonstrated separation of the blue DC and 102 emergency bus from the red and orange DC buses and the 101 and 103 emergency AC buses.

The testing of emergency diesel generator 103 response to a LOCA and/or LOOP was not demonstrated in this test due to engine unavailability. Final testing to verify ECCS response of EDG 103 and integrated plant response with various EDG combinations will be performed under test procedure PT 307.002, Integrated Electrical Test.

Discussion

During this inspection, the inspector witnessed six of the eight test runs of the integrated electrical test (PT 307.007) for EDG 101 and 102 only. This included dry runs as well as official record runs. The following plant emergency procedures were used successfully during the integrated electrical test.

(1) SP 29.023.01 Revision 3, Approved October 5, 1983
EP RPV Water Level Control

(2) SP 29.015.01 Revision 4, Approved October 5, 1983
EP Loss of Offsite Power

(3) SP 29.010.01 Revision 4, Approved August 16, 1983
EP Emergency Shutdown

(4) SP 29.023.03 Revision 8, Approved March 30, 1984
EP Containment Control

Witnessing by the inspector during these tests included review of overall crew performance as reflected in the following observations:

-- Approved procedures with latest revision available and in use by test personnel,

-- Designated person in charge and conducting the test,

-- Minimum test personnel requirements met,

-- Test prerequisites met,

-- Proper plant supporting systems in service,

-- Special test equipment required by test procedure calibrated and in service,

-- Testing performed as required by test procedure,

-- Test personnel actions appeared to be correct and timely during performance of test,

-- QA observations and documentation of witness points,

-- Data was collected for final analysis by proper personnel, and,

-- Periodic observation and notation of generator loads and parameters of diesel engines and supporting systems were made.

Findings

Through observations, records review, independent calculations and performance evaluation of licensee personnel involved in test runs of the integrated electrical tests, the inspector verified that testing was conducted in accordance with approved procedures that included the licensee's test commitments and regulatory requirements. The inspector verified the preliminary acceptability of test results for these test runs witnessed. The inspector had no further questions on these test runs at this time.

4. Plant Tours

The inspector made several tours of the plant during the course of the inspection. The tours included the containment drywell, reactor building, turbine building, steam tunnel, control room, emergency switchgear rooms,

cable spreading/relay rooms, battery rooms, diesel generator rooms, fuel oil transfer pump rooms, MG set room, auxiliary boiler room, yard switch gear, screenwell rooms and circulating water pump area.

The inspection tour included observation of disassembly of EDG 103 for analysis of cracks in the engine block; preparations being made for the Integrated Electrical Test (IET); and the addition of the 20 MW gas turbine and the four 2.5 MW blue diesel generators; housekeeping and cleanliness, storage and protection of components and equipment. No items of noncompliance were observed during these tours.

5. Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items, resulting from this inspection are discussed in Section 3.1 and 3.2.

6. Exit Interview

At the conclusion of the site inspection on May 4, 1984, an exit meeting was conducted with the licensee's senior site representatives (denoted in Paragraph 1). The inspector summarized the scope and findings of the inspection. Previous inspections in this area were also discussed. At no time during this inspection was written material provided to the licensee by the inspector.