

U.S. NUCLEAR REGULATORY COMMISSION

Region I

Report No. 50-322/83-13

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 26-28, 1983

Inspectors: AC Cerne
A. C. Cerne, Sr. Resident Inspector

5/9/83
date signed

date signed

date signed

Approved by: Robert M Gallo
R.M.Gallo, Chief, Projects Section IA,
Division of Project and Resident Programs

5/18/83
date signed

Inspection Summary: Inspection on April 26-28, 1983 (Report No. 50-322/83-13)

Areas Inspected: Routine inspection by a Region I, construction site-based, senior resident inspector of work activities, procedures, and records relative to the current status and conduct of construction and construction quality assurance activities. Specifically, the inspector reviewed licensee action on previously identified items, evaluated the programmatic aspects of corrective steps, and performed plant inspection-tours. The inspection involved 23 inspector-hours by a Region I construction inspector.
Results: No violations were identified.

DETAILS

1. Person; Contacted

- *T. Arrington, Superintendent of Field Quality Control (S&W)
- L. Britt, Systems Superintendent (L)
- *W. G. Dick, Assistant Superintendent (S&W)
- M. Giannattasio, Asst. Construction Superintendent (L)
- *R. Jaquinto, Head of Site Engineering (S&W)
- *J. McCarthy, Section Supervisor - FQA (L)
- A. Muller, OQA Engineer (L)
- *W. Museler, Manager, Construction and Engineering (L)
- *E. Nicholas, Section Supervisor - FQA (L)
- *T. Rose, QA Engineer (L)
- *J. Smith, Manager, Special Projects (L)
- *D. Terry, Chief Maintenance Engineer (L)

L - Long Island Lighting Company
S&W - Stone and Webster

*J. C. Higgins, Senior Resident Inspector (USNRC)

*denotes attendance at exit meeting on April 28, 1983

The inspector also held discussions with other licensee and contractor personnel during the course of the inspection including telephonic contact with Reactor Controls, Inc. (RCI) corporate engineering personnel.

2. Plant Inspection-Tours

The inspector observed work activities in-progress, completed work, and plant status in several areas of the plant during general inspections of the plant. The inspector examined work for any obvious defects or noncompliance with regulatory requirements or license conditions. Particular note was taken of the presence of quality control evidence such as status tags, inspection records, material identification, nonconforming material identification, and equipment preservation.

Generally the inspector examined and evaluated field conditions for quality workmanship housekeeping consistent with the current construction stage of activity, and evidence of licensee control over the inspection status of in-place plant components.

No violations were identified.

3. Licensee Action on Previously Identified Items

- a. (Closed) Violation (322/83-02-06): Failure to perform proper inspection of cable tray supports. The inspector examined the following S&W documents, specifically evaluating the engineering disposition and clarification to the nonconforming items identified by the NRC.

- Engineering and Design Coordination Report (E&DCR) F-12326T, affecting tray support RB-215.
- Nonconformance and Disposition Reports (N&D) 5510, affecting tray support RB-208; and 5548, affecting tray supports RB-100B and RB-131.

The inspector noted that changes to affected drawings were required and specified.

With regard to the more generic corrective actions, the inspector verified the following program implementation and activities:

- (1) Retraining of Cable Tray Support (CABTRAP) engineers involved in the as-built inspections and analysis.
- (2) Reinspection of fifty cable tray supports to check location and the number of trays.
- (3) Implementation of a three-tier construction inspection program utilizing craft/contractor/construction manager acceptance of each support to defined inspection attributes, prior to release for quality control inspection.
- (4) Planning for a reinspection of all cable tray supports that are not subjected to the three-tier construction inspection program. This reinspection is intended to provide a gross configuration and orientation check.

The inspector discussed the above programs with construction supervisory and QA personnel. The intent of item (4) reinspection was clarified such that engineering personnel checks will assure that the supports will function as designed. The inspector also examined the installed field conditions of two of the supports covered by the item (2) reinspection and found no discrepancies.

Licensee corrective actions to this violation appear to have adequately addressed both the specific and generic NRC concerns. The inspector considers this item closed.

- b. (Closed) Violation (322/83-02-07) and unresolved item (322/83-02-08): Undersized fillet welds for the CRDM hydraulic piping supports and re-analysis of the existing weld configuration. The inspector reviewed a Reactor Controls, Inc. (RCI) Report (SA-1806) documenting the specific cases of undersized fillet welds due to fit-up gaps and providing quantitative analysis that the existing welds are acceptable based upon maximum design line load conditions. This analysis was based upon testing of fillet weld specimens with gaps and considered the actual configuration and length of each field weld (ie: addressing the 83-02-08 concern for any adverse synergistic effects of the existence of gaps with the lack of all-around welds).

The inspector examined the test procedure and results and evaluated the test connection details to verify that they were conservative relative to actual field conditions (eg: gap sizes, gap lengths, and gap orientation to the welds). He confirmed that the test specimens were of similar material, welded to RCI site welding specifications and by qualified site welders and checked that the tests were conducted to criteria (reference: Testing Engineers, Inc. Lab No. E0327) which enveloped worst-case field configurations.

Since all other pipe support welding installation at Shoreham is accomplished to AWS criteria, for which the site procedures directly dictate increases in the fillet leg size to account for gaps, this issue is confined only to the CRDM piping supports (ASME, Section III, NF components). Also since these specific welds were 100% reinspected, tested to criteria enveloping worst-case conditions, and evaluated with regard to actual configurations, the acceptability of the existing welds with regard to design allowable loadings is no longer in question.

The inspector verified that the final as-built drawings for these supports identify the actual weld configurations. He has no further questions on this issue and considers both items closed.

- c. (Open) Violation (322/83-02-09): Pipe support installations in variance with design details. The inspector reviewed the corrective actions taken with regard to the bolt torque in excess of design requirements, applied to pipe support E11-SPA-109. Only one other support (E11-PSA-055) has "finger-tight" bolts specified as a design requirement. For both of the affected supports, S&W redesign (Drawing 8F-19-7) specifies the

installation of high-strength bolts with the bolt shank sticking out 1/8" beyond the grip of the connected material. Thus, over-tightening is no longer a concern since the joints will fulfill their design function as slip joints, regardless of the torque applied.

The inspector examined documentation of the required rework for both supports, confirmed Field QC inspection of this rework, and noted that the bolt replacement for E11-SPA-109 had also received NRC resident inspection. This item is closed.

The inspector also reviewed the status of corrective action on the pipe supports identified to be lacking full bearing between the pipe lugs and support clamps, as required by E&DCR F-1748S. S&W reinspection has identified 37 pipe supports to which this deviant condition applies. The two supports originally identified by the NRC are documented on a Lilco Deficiency Report (LDR) 1067, which is currently open. This LDR is being tracked on the Master Punch List, and all 37 supports are documented on a S&W Quality Control Inspection Report. The A/E has not yet provided disposition to the specific LDR or response as to the acceptability of the generic condition in question.

The inspector discussed with licensee personnel the possibility of tracking this item thru the Power Ascension phase, by requiring S&W engineering to procedurally monitor the acceptability of bearing during the full range of thermal conditions. Pending acceptable engineering disposition to this issue, to include either further rework or procedurally required monitoring in the future, this lug/clamp bearing item remains open.

- d. (Closed) Violation (322/83-02-10): Indeterminate cold set status of spring hangers. The inspector reviewed and evaluated the current program for tracking the cold set status of spring hangers. He noted the following:
- Cold set of each spring hanger is uniquely tracked to completion with an attribute on Construction Instruction Program (CIP) form 6.2
 - Additional tracking is provided by a Reverification Program, documenting correct spring can settings by system and area and referencing removal of the open item from the Master Punch List (MPL)
 - The MPL continues to track verification of cold set by system. Removal of the item from the MPL occurs only after all spring hangers within that system have had their cold setting reverified.

The inspector also noted that the closure of MPL items continues to be documented on forms that require signatory awareness and concurrence by personnel from the responsible contractor, construction manager, field quality control, start-up, quality assurance, and the plant staff. The construction inspection and turnover programs both appear to adequately track the cold set status of spring hangers. These programs, with increased

licensee awareness and assignment of responsibility, provide the necessary assurance to address NRC concerns in this area and this item is now considered closed.

- e. (Closed) Violation (322/83-02-11): Failure to notify FQC of rework on accepted items. The inspector reviewed the disposition to Nonconformance and Disposition Report (N&D) 5578 documenting the removal of the trolley beam welds to MSR-030 and the magnetic particle examination of the affected MSR surface area. Final QC inspection of this rework documents restoration of the MSR to its original and satisfactory condition.

With regard to the more general concern about rework of items without reinspection, the inspector noted that a proceduralized Rework Control Program (reference QC-15.4) is in existence. This program requires documented notification to Field Quality Control (FQC) prior to commencement of any rework and documented re-inspection of the reworked area. Additional correspondence (eg: S&W letters, memos, and interoffice instruction forms) indicate that construction supervisory personnel have been made aware of the requirement to notify FQC prior to modification of any QA Category I structural steel platforms and members.

The inspector checked a sample of such notifications; examined certain field attachments to platforms 6,13,14, and 23 to verify that FQC inspection had been provided, as required; and noted that a tagging system for finally accepted platforms had been initiated as another measure to preclude further work on such structural steel without further FQC notification and re-inspection.

The present program of controls for rework and re-inspection of safety-related items appears adequate if the applicable procedures are correctly followed. The licensee has taken corrective steps to assure that these procedures are properly implemented and the program works. The inspector has no further questions on this issue. This item is closed.

- f. (Open) Violation (322/83-02-14): Failure by Operational Quality Assurance (OQA) personnel to conduct an adequate inspection. The inspector reviewed the Lilco Deficiency Report (LDR) 1021 documenting the observed nonconforming conditions on diesel generator turbocharger support installation, E&DCR F-37646E which will be revised to correctly represent the acceptable design changes, and Repair/Rework Request R43-703 directing the replacement of the questionable A-490 bolts. Neither the Repair/Rework Request nor the LDR has yet been closed. Additionally, the review of training records for OQA personnel to confirm inspector qualification in accordance with ANSI N45.2.6 is still in progress.

The inspector did confirm that the construction QA/QC inspection programs are structured, from both a procedural and training standpoint, to provide assurance that the observed deficiencies in the turbocharger support installation would have been identified by Construction QA, had they been assigned the inspection responsibility. Discussions with FQC and QA personnel, coupled with a review of training and inspection records,

indicated that the identified problems are not generic to work under construction QA purview.

Since the corrective actions required by the OQA organization are not yet complete and the required rework itself has not been finalized, this item remains open pending further inspection and verification by the NRC in the future.

4. Quality Accountability Program

a. Field Quality Assurance (FQA) Verification

The inspector reviewed and discussed with FQA personnel, the QAI-18.2.3 program, outlining verification of final-accepted large bore hangers, small bore hangers, cable tray supports, and structural steel. The inspector also reviewed and evaluated a sample of Lilco Corrective Action Requests (CAR) resulting from FQA verification. He determined that the noted deficiencies were generally of a minor nature, none of which appeared to compromise the function of the re-inspected support.

The inspector examined the installed condition of some cable tray supports (in conjunction with closing the open item of paragraph 3a), discussing inspection criteria with the responsible FQA engineer. Two large bore & two small bore pipe supports were also field inspected and selected bolting, welding, and pipe clamp details were followed-up with S&W engineering personnel. During both these field inspections and the further review of the Lilco meeting notes, documenting FQA verification results analysis, the inspector noted evidence of detailed inspection criteria, trend analysis, and quantitative and qualitative evaluations of the inspection findings.

The conduct of the FQA Verification Program, to date, appears to meet the intent of the guidelines and commitments established to provide assurances that FQC finally accepted items meet acceptable standards.

b. Construction Accountability

The inspector discussed with the Construction Superintendent directly responsible for overseeing the Quality Accountability Program, those aspects of the program which appear to have greatest impact upon improving the FQC reject rate. Included are the assignment of responsibility for and tracking of rejected items directly to the craft field supervisors; trending of DCOs and N&Ds by the generic cause to which the deficiency can be attributed; additional trending of field findings requiring rework; management emphasis upon a properly implemented construction inspection program, prior to FQC turnover; and management attention to the analysis of statistical data compiled for electrical tray supports, large and small bore pipe supports, and structural steel.

The inspector noted that the FQC reject rate for items requiring actual rework has dropped to an order of approximately 25% of the previous reject rate. Discussions with both FQA and FQC personnel indicate improved

construction responsiveness to QC findings. The inspector also determined, in reviewing the items closed in paragraph 3, that the FQC identification system for tracing component status, whether turned-over or not, is improved.

Management attention to the need for construction accountability of items turned-over to FQC is evident and has been effective in providing an atmosphere whereby quality control is employed to assure, rather than dictate, quality. The Quality Accountability Reports generated in support of this program provide a good basis for both quantitative management analysis and the decision making necessary to continued quality construction.

The inspector has no further questions regarding the implementation of the Quality Accountability and FQA Verification Programs. No violations were identified.

5. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on April 28, 1983 to summarize the scope and findings of the inspection. The NRC Senior Resident Inspector was present at this meeting.