

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

REGION I

Report No. 50-322/80-10

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 No. 1

Inspection At: Shoreham, New York

Inspection Conducted: June 17-20, 1980

Inspectors: Lewis Narrow
L. Narrow, Reactor Inspector

7/31/80
date

R. J. Paolino
R. J. Paolino, Reactor Inspector

7-25-80
date

Approved by: R. W. McGaughy
R. W. McGaughy, Chief, Projects Section,
RC&ES Branch

date
8/1/80
date

Inspection Summary: Inspection on June 17-20, 1980 (Report No. 50-322/80-10)

Areas Inspected: Routine, unannounced inspection by two regional based inspectors of the program for installation of instrument systems and equipment; the QC program for painting of the suppression pool; the program for turnover of systems and equipment to start-up; and the status of outstanding items. The inspection involved 48 inspector-hours on site.

Results: Of the three areas inspected, no items of noncompliance were identified in two areas and two items of noncompliance were identified in one area: Failure to conform to the requirements of ANSI-13.1-69 for installation of radiation monitoring sampling lines (Paragraph 3) and failure to meet specification requirements for conduit separation (Paragraph 4).

DETAILS

1. Persons Contacted

Long Island Lighting Company

R. DiRocher, QA Specialist
D. Durand, Operating QA Engineer
*T. F. Gerecke, Engineering QA Manager
T. Gray, Turnover Coordinator
W. Gunther, I&C Engineer
*W. Hunt, Systems Superintendent
*J. M. Kelly, Field QA Manager
T. Koch, QA Engineer
J. McCarthy, Assistant Instrument Supervisor
*W. J. Museler, Construction Manager
E. J. Nicholas, Section Supervisor, Field QA
*E. W. Tesco, Construction Superintendent
J. Vitelli, Construction Supervisor

Stone & Webster Engineering (S&W)

F. Bosch, Site Structural Engineer
*J. Carney, Head of SEO
*R. S. Costa, PQA Manager (Boston)
*J. Hassett, Senior QC Inspector
P. McCarthy, Principal Site Engineer
R. Perra, Chief Inspection Supervisor, FQC
R. Pietila, Senior Field Engineer
R. Satyaprasal, Structural Engineer
*W. C. Taylor, Assistant Superintendent, FQC
D. Walsh, Construction Supervisor

General Electric Company (GE)

*R. Pulsifer, Site Manager

Comstock/Jackson Co.

C. Mineo, Termination Foreman

Courter & Company

J. M. Kozelouzek, QC Supervisor
J. Makris, Administration Supervisor

Other Accompanying Personnel

*A. Sassani, Jr., NRC:IE-RI

*Denotes persons in attendance at the exit interview.

The inspector also interviewed other licensee and contractor personnel during the inspection.

2. Plant Tour

The inspector observed work activities in progress, completed work and construction status in several areas. Work items were examined for obvious defects and for noncompliance with regulatory requirements and licensee commitments. Specific activities and completed work observed by the inspector included installation of pipe supports, cable terminations and routing, slope and routing of instrument lines and housekeeping.

No items of noncompliance were identified.

3. Radiation Monitoring Sampling Lines

The inspector examined work performance, partially completed work and completed work pertaining to safety-related instruments to determine whether the requirements of applicable specifications, work procedures, drawings and instructions have been met.

For this determination the inspector examined the reactor building process radiation monitor sampling lines located at elevation 78'-7".

The inspector verified that the sample lines conform to drawing nos. ISO-K-0823-2 and ISO-K-0824-2. However, the inspector observed that the drawings did not reference nor incorporate the requirements noted in ANSI N13.1-1969 which is referenced in section 11.4.1.1 of the FSAR. The ANSI document identifies methods for obtaining a representative sample through proper design and installation criteria. The ANSI document discusses the effects of right angle bends, elbows, fittings and obstructions which result in particulate losses through impaction when subjected to sudden changes in flow direction and voids in the sample lines which trap particulate matter that can be released at a later date due to line vibrations and result in a high radiation trip and/or plant shutdown. Line slope is also addressed because of the need to keep the particulates in the flow stream so that a representative sample reaches the monitor. This is accomplished by sloping the lines downward from the sample point to the monitor and taking advantage of gravity flow to prevent fallout of heavier particles.

Contrary to the above, the inspector observed that the sample lines installed per drawing nos. ISO-K-0823-2 and ISO-K-0824-2 start at elevation 78'-7" and rise to the monitor location at elevation 96'-0". The sample line intake and exhaust ports are located in the same sampling area (within 3 ft) creating a possible closed sampling loop severely limiting the sampling capability. The inspector also observed several right angle fittings and tee's in the sample lines which can result in particulate losses as noted in the ANSI document. In addition, each socket welded fitting in the sample line uses the 1/16

inch weld pull back, creating an internal circumferential void in the sampling line resulting in entrapped particulates.

Regulatory Guide 1.21, paragraph 6, states in part, that: "A sample should be representative of the bulk stream or effluent from which it is taken. Provisions should be made to assure that representative samples are obtained from well-mixed streams or volumes by the selection of proper sampling equipment, the proper location of sampling points...sampling procedures.... The general principals for obtaining valid samples...are contained in ANSI N13.1-1969...." For example: Appendix B, Section B5, last paragraph of ANSI N13-1, 1969 states in part, "Elbows in sampling lines should be avoided if at all possible, but when they are required the bend radius of the elbows should be as long as practical.... Appendix A, Section A3.4, last paragraph of ANSI N13.1, 1969 states in part, "...common feature is the avoidance of abrupt changes in flow direction...."

The inspector informed the licensee that the sample line installation is not adequate for providing representative sampling of the containment atmosphere and that this item is in noncompliance with 10 CFR 50 Appendix B, Criterion III which states, in part, that: "Measures shall be established to assure that applicable regulatory requirements and design basis...are correctly translated into specifications, drawings, procedures and instructions...." (50-322/80-10-01)

4. Conduit Separation

The inspector examined cables associated with safety-related instrumentation to determine whether the requirements of applicable specifications, work procedures and instructions have been met.

For this determination, the inspector examined the electrical conduit installation in the reactor building at elevation 63'-0" column C-7 for system 1G33. Items examined were electrical conduit 1CX640RA1 and 1CX640RA4 for temperature element 1E41*TE-056A and 1E41*TE-054A respectively, and 1CX740BA3 and 1CX740BA4 for temperature element 1E41*TE-056B and 1E41*TE-054B respectively.

Section 3.9.3.2 of Specification SH-1-159 states, in part, that: "...as a minimum...redundant conduit shall be separated vertically 5 ft. and horizontally 3 ft.... Where above criteria cannot be met...exception shall be documented by construction...."

EDCR No. 23640A, B and C documents construction request for approval of location, routing and orientation of the temperature elements and conduit. The engineering response documented on EDCR No. 23640C, dated April 22, 1980 allows the dimensional change ± 6 inch for elevation and orientation of the temperature elements provided that electrical separation is maintained.

Section 5.3 of the quality control instruction QCI-FSI-F12.1-08E for Inspection of Raceways states, in part, that: "...separation will be maintained in accordance with...SH1-159..."

The inspector observed that the conduit installation did not meet separation requirements of specification SH-1-159 and EDCR #F-23640.

Documentation and/or tags indicating that the installation was not acceptable were not available. The licensee was informed that this was in non-compliance with 10 CFR 50, Appendix B, Criterion V which states, in part, that: "Activities affecting quality shall be prescribed by documented instructions...and shall be accomplished in accordance with these instructions...." (050-322/80-10-02)

5. Radiation Monitoring Equipment

The inspector reviewed specification SH-1-332.2 for safety-related process radiation monitors to determine whether the equipment specified by the document meets established NRC requirements and licensee commitments noted in Chapters 1, 3, 6, 8 and 17 of the FSAR including codes and standards referenced therein. Regulatory Guide 1.21, paragraph 3, states in part, that: "The type of monitoring selected...depends upon the objective of monitoring program. Effluent monitoring is required to a) demonstrate compliance with Technical Specification and/or 10 CFR Part 20 effluent limits,...."

The inspector observed that sketches 1, 3, 7 and 10 of Specification SH1-332.2 specifies a series type process monitoring system which consists of a particulate, iodine and gaseous monitor in series with the air mover (pump). This arrangement provides a single flow rate (adjustable from 0-10 CFM) through each monitor. However, in order for the monitor to be effective, the flow rate through each monitor should be compatible with the measurement to be made. Published data on monitoring radioactivity in nuclear facilities indicate that particulate monitoring depends on collection of dust particles from large volumes of air (8-10 CFM) and concentrating them onto a small area (filter medium) for detector measurements of radioactivity. Iodine monitoring is accomplished through the use of an activated charcoal cartridge. Low flow (1-2 CFM) is required because of the adsorption characteristic of the charcoal. The gaseous monitor measures radioactivity present in a certain volume of air. To detect sensitivities at MPC levels would require an increase in gaseous activity per volume of air sampled. This can be accomplished by compression of air sample and increased air flow (8-10 CFM).

Appendix B, Section B3, last paragraph of ANSI N13.1-1969 states, in part, "Particle size is of extreme significance. Very small particles are lost to the wall rapidly when gas flow is very low. Velocities must be high enough to avoid appreciable losses by Brownian diffusion.

In addition, the specifications should include as a minimum, the following requirements for each monitor: The specific control isotope, background activity encountered and energy level, minimum detectable concentration, response time based on flow rate and a count rate of 50-100 percent above background.

This item is unresolved pending NRC review of licensee evaluation and corrective action. (050-322/80-10-03)

6. Suppression Pool Painting

The inspector examined inspection reports of suppression pool painting during 1980. The following items requiring clarification or corrective action were noted:

- . Several reports identified spot delaminations of the coating. These items had been reported on N&D Report No. 2882 but have not yet been dispositioned.
- . Daily Painting Inspection Report (DPIR) No. 665 appears to question the requirements for surface preparation of attachment welds to downcomers. However, it is not clear from this report whether surface preparation meets the specification requirements.
- . DPIR No. 642 identifies certain area on twenty-two downcomers which are inaccessible for surface preparation or coating and states that an E&DCR would be prepared. E&DCR No. P-3036 was furnished to the inspector but does not appear to be applicable to these areas.

This item is unresolved pending further review by an NRC inspector. (050-322/80-10-04)

7. Construction Turnover Program

The inspector reviewed the program which had been established for turn-over of equipment and systems from construction to start-up, discussed the program with representatives of the licensee, and examined selected turn-over documents.

The following procedures and instructions were examined:

- . LILCO Startup Manual, Rev. 10, Section 6, "Construction Phase"
- . Construction Site Instructions CS 15.2, "Construction Turnover Program"
- . FQC Procedure QC-15.1 "System Release"
- . QC-15.4, "Rework Control Program", Change 2

The inspector examined the Master Punch List Status Report dated June 4, 1980 and Turnover Packages for the following systems:

- . G-33-B Reactor Water Clean-Up System (portion which has been hydrotested)
- . X-60 Diesel Generator Room Ventilation System

The inspector discussed details of turnover control with the licensee representatives including changes during and after turnover, Working Punch List and Master Punch List reviews and acceptance criteria for turnover at pipe hangers.

No items of noncompliance were identified.

8. Electrical/Instrumentation QA Personnel

The inspector requested information regarding number of quality control inspectors engaged in inspection of electrical/instrumentation versus craftsman. The licensee data indicates an inspector/craftsman ratio of approximately 1:6. Six additional quality control inspectors were listed as new hires within the past six months. The inspector reviewed qualification records for the six new employees verifying that five of the six had been properly classified based on experience and training. There was some question as to the classification of the sixth new employee who was classified as a level 1 inspector. The licensee stated additional training is being given to assure compliance with level 1 requirements.

This item is unresolved pending review by an NRC inspector of the man's final qualifications. (050-322 or 80-10-05)

9. Review of Nonroutine Events Reported by the Licensee

By letter dated November 8, 1978, the licensee had reported, as a significant deficiency in accordance with 10 CFR 50.55(e), identification of undersized fillet welds on schedule 160 small bore socket weld fittings. Correction of this deficiency had been reviewed during inspection 50-322/80-08.

The inspector examined Courter QA Procedure QAP-10.5 "Fillet Socket Weld Inspection" dated May 30, 1978; and the lecture plan and attendance records of training concerning this procedure which was conducted during the weeks of November 27 and December 4, 1978.

The inspector had no further questions concerning this item.

10. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (79-24-02): Use of ER 308 filler metal for welding of dissimilar metals. The inspector examined the following documents:

- . Memorandum from Courter to LILCO dated February 29, 1980 stating that all isometrics and component checklist logs had been checked and compared to identify all dissimilar metal welds. Review of the weld packages had disclosed one additional discrepancies; 1M50*CW3-99 weld.
- . N&D Report No. 1370 which identified the two nonconforming welds and which was dispositioned by cutting out the welds. QC Inspection Report recorded witnessing of identification and removal of the welds.
- . Component Checklists 1G33*W09-3-1 Weld E and Weld F (dissimilar metal) and 1M50*CW3-3-99 Weld D and Weld E (dissimilar metal)
- . Attendance report and records of training session to re-instruct responsible personnel in requirements of weld material control and adherence to weld procedures.

The inspector had no further questions concerning this item.

(Closed) Unresolved Item (80-08-01): Experience of QA inspectors prior to certification. The inspector reviewed records of the inspections performed by the men whose prior experience had been questioned and observed that they had accompanied other qualified inspectors and that they were considered to be in training during this period. Courter supervisory personnel stated that they had reviewed personnel records and identified one other man whose prior experience did not support his certification initially. He had also been subject to an initial training period. The inspector observed that a Courter internal memorandum dated June 18, 1980 provided that in the future personnel would be subject to a proficiency evaluation prior to certification as Level I or Level II QC inspectors. The inspector had no further questions concerning this item.

(Closed) Noncompliance (79-12-01): This item pertains to the installation of safety-related control panels without approved engineering drawings. The inspector interviewed cognizant structural engineering design personnel, reviewed engineering documentation addressing the adequacy of the modified installation and personnel training to prevent recurrence of installation without approved engineering drawings.

The inspector had no further questions concerning this item.

(Closed) Unresolved Item (79-12-02): Adequacy of toggle bolts. The inspector reviewed the engineering design calculations (C-27) and the Federal Specification Sheet FF-B-588C for toggle bolts used in determining adequacy of toggle bolts for mounting metal enclosures. The data submitted for review was determined to be acceptable.

This item is resolved.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, or items of noncompliance. Unresolved items identified during the inspection are discussed in Paragraphs 5, 6, and 8.

12. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on June 20, 1980. In addition, the NRC Resident Inspector, Mr. J. C. Higgins attended the meeting. The inspector summarized the scope and finding of the inspection.