

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

Region I

Report No. 50-352/78-09, 50-353/78-05

Docket No. 50-352, 50-353

License No. CPPR-106, CPPR-107 Priority -- Category A

Licensee: Philadelphia Electric Co.

2301 Market St.

Philadelphia, Pennsylvania 19101

Facility Name: Limerick Generating Station, Units 1 and 2

Inspection at: Limerick, Pennsylvania

Inspection conducted: October 17-19, 1978

Inspectors: J. Mattia

J. Mattia, Reactor Inspector

11/12/78
date signed

A. Cerne

A. Cerne, Reactor Inspector

11/13/78
date signed

W. Bateman for

W. Bateman, Reactor Inspector

11/13/78
date signed

Approved by: R. McGaughy

R. McGaughy, Chief; Projects Section,
RC & ES Branch

11/16/78
date signed

Inspection Summary:

Unit 1 Inspection on October 17-19, 1978 (Report No 50-352/78-09)

Areas Inspected: Routine, unannounced inspection by regional based inspectors of work activities & records for safety-related heating & ventilating system, storage & maintenance of safety-related equipment and safety-related supports and structures. The inspectors also performed a plant tour inspection. The Unit 1 inspection involved 43 inspector-hours onsite by three regional based NRC inspectors.

Results: Of the four areas inspected, no items of noncompliance were identified in one area; three apparent items of noncompliance were identified in three areas (Infractions-failure to follow procedures for storage and maintenance of HPCI & RCIC turbines-paragraph 5; failure to follow procedures for inspection to verify concrete strength prior to support removal-paragraph 3b; failure to follow procedures for reworking a safety-related duct section-paragraph 6.c.).

790205 0085

Unit 2 Inspection on October 17-19, 1978 (Report No. 50-353/78-05)

Areas Inspected: Routine, unannounced inspection by regional based inspectors of work activities and records for safety-related heating and ventilating systems, and safety-related supports and structures. The inspectors also performed a plant tour inspection. The Unit 2 inspection involved 27 inspector-hours onsite by three NRC regional based inspectors.

Results: Of the three areas inspected, no items of noncompliance were identified in two areas; one apparent item of noncompliance was identified in one area (Deficiency - failure to document inspection of requires seismic gap for containment wall and structural steel beam - paragraph 2).

DETAILS

1. Persons Contacted

Philadelphia Electric Co.

- *D. Clohecy, QA Engineer
- *J. Corcoran, Field QA Branch Head
- J. Evans, QA Engineer
- *D. Marascio, QA Engineer
- *R. Sheibley, Construction Engineer
- *H. Walters, QA Manager

Bechtel Power Corp.

- *P. Baldwin, QA Engineer
- *R. Beech, Material Storage Engineer
- *J. Blevins, QA Engineer
- J. Brown, Iron Worker Superintendent
- *L. M. Brown, QC Engineer
- S. Chaudhary, Resident Civil Engineer
- N. Confuortò, Document Review Supervisor
- *T. Fallon, Assistant Project Field QC Engineer
- *H. Foster, Project Field QC Engineer
- *J. Gwin, Project Superintendent
- M. Held, Lead QC Engineer
- *R. Henry, Subcontracts Engineer
- *E. Klossin, Project QA Engineer
- *P. W. Niderostek, Subcontracts Engineer
- M. Norm, QC Engineer
- *W. Schmall, Subcontracts Engineer
- *A. Weedman, Project Field Engineer
- G. Zickefoose, QC Engineer

Schneider Sheet Metal Co.

- R. Lewis, QC Supervisor

*denotes those present at the exit interview.

2. Plant Tour (Units 1 and 2)

The inspectors observed work activities in progress, completed work and plant status in several areas of the plants. The inspectors examined work items for any obvious defects or noncompliance with regulatory requirements.

During this plant tour the inspectors noted that the Unit 2 containment concrete at approximately elevation 236' had been chipped out to permit the installation of a structural steel beam. Further investigation revealed that this work had been authorized by Field Change Request (FCR) C-1933F with the intent to provide seismic separation clearance between the concrete and the beam and with the condition that the chipping not exceed a maximum depth of 4".

Reinspection of the area, during this inspection, indicated that the clearance between the concrete and beam was at one point no greater than 3/4". This conflicted with Bechtel drawings C-128, Revision 8 and C-137, Revision 9 whose seismic clearance requirements below and above the area of interest were 1 1/2" and 2" respectively. The licensee later indicated that 3/4" clearance did not constitute proper seismic separation under current standards.

Upon request by the inspector, the licensee could produce neither a record of any QC inspection of the work authorized by FCR C-1933F, nor any documentation of the inadequate seismic clearance. Interviews with Bechtel QC engineers indicated that while an inspection of the work had been conducted, the chipping had been categorized as "minor repair" and no record of such inspection was documented.

Bechtel Job Rule 8031-JR-C-2, Revision 14, requires in paragraph 3.4 that, "The Project Field Quality Control Engineer is responsible for surveillance and documentation of excavation to assure compliance with the referenced criteria and this instruction." The failure to document QC surveillance of the chipping excavation or any record of the inadequate seismic clearance is considered to be an item of noncompliance. (353/78-05-01)

3. Fuel Pool Girder Beams (Post-Tensioning) - Material Records and Work Preparation (Units 1 and 2)

- a. The inspector reviewed the updated VSL (post-tensioning subcontractor) QA and installation procedures and examined current VSL drawings to determine the completeness of the specification for such items as location of parts, clearances, tensioning sequence, anchoring forces and material grades. He also reviewed the available quality records for the tendon prestressing steel material.

The above items were evaluated against criteria established in the following documents:

- Limerick Generating Station Units 1 and 2 PSAR, Appendix D.
- Bechtel Specification 8031-C-57.

- ACI 301-66 and 318-71.
- ASTM A416-74 and E328-72.
- AWS A5.18-69 and the Welding Handbook, Sixth Edition, Chapter 94.

The inspector examined the following documents relative to the above:

- VSL Quality Assurance Program for the VSL Post-Tensioning System, September 27, 1978.
- VSL Post-Tensioning Systems Procedures Manual for Fabrication and Installation of VSL E5-55 Post-Tension System, November 1, 1977.
- VSL Corp. "Stress Relaxation Tests of Prestressing Steel," Revision 1.
- Bechtel Subcontractor (VSL) Drawing Nos. 8031-C-57-1-3, 2-4, 3-8, 4-5, 5-1, 6-1, 7-1, and 8-1.
- VSL Corp. Purchase Order 15249 for E-70S-6 welding wire.

No items of noncompliance were identified.

- b. The inspector also examined the status of the shoring for the Unit 1 fuel pool girder beams to determine if current contract requirements were being followed. Bechtel Drawing 8031-C-637, Revision 7, entitled "Construction Guidelines" requires in Section 3.5.2.7 for the removal of temporary supports that, "The posts at or near column lines 14.1, 15.5, and 21.5, shall be removed after the girder concrete is placed up to a minimum of elevation 326'-0", and reaches a compressive strength of 5,000 psi, but before lift 3 of the girders is placed."

The inspector was able to verify that the above technical requirement had been satisfied through visual inspection and an examination and comparison of the concrete cylinder break records (cylinder nos. 2611 thru 2617) attached to QCIR C-1226-RW-ST-13-3 with unofficial construction logs indicating shoring removal dates.

However, when the inspector requested to see the record of QC inspection of this technical requirement, he was told by the licensee that it was not considered to be part of quality control inspection criteria.

Bechtel QCI 8031-C-1.40 for the post-placement inspection of concrete indicates in paragraph 2.2d that, in cases where the forms support the concrete, the review of cylinder test reports prior to form removal is a valid quality control inspection item. Bechtel QCIR C-1226-RW-ST-13-4 for the post-placement inspection of the fuel pool girder concrete to elevation 326' indicated with a "N/A" comment next to paragraph 2.2d that no QC inspection had been conducted as to the technical requirements of the shoring removal. This failure to follow Quality Control instructions relative to the inspection of an applicable technical requirement is considered to be an item of noncompliance. (352/78-09-01)

- c. Additionally, the licensee's treatment of other technical requirements of Bechtel Drawing C-637, as to their status as valid quality control inspection criteria is questionable. The possible existence of other documents containing valid technical requirements, but similarly labeled as "Guidelines" and their treatment in terms of QC inspection criteria is also unknown. These questions remain unresolved pending a review by the licensee to determine if QC had neglected to inspect other areas where valid technical requirements have been erroneously viewed by Quality Control as only "guidelines." (352/78-09-02)

4. Reactor Building Structural Steel - Review of Quality Records
(Unit 2)

The inspector examined the quality records associated with three structural steel beams (Mark Nos. 16B2, 16B4 and 17B5) erected into position at the refueling floor, elevation 352', and previously inspected in-place (Report No. 353/78-04). The Bechtel Document Review Supervisor was interviewed to determine whether the structural steel beam material was traceable to its applicable heat or heats and to evaluate the on-site system for identifying and checking such traceability.

The following documents were examined:

- QCIRs C41A-AC-SF2243 and SF2305.
- Statements of Conformance for P.O. No. 8031-C41A-AC, tags: 16B2, 16B4, and 17B5.

The above items and records were evaluated against criteria listed in Bechtel Specification 8031-C41A, Revision 6.

No items of noncompliance were identified.

5. Safety Related Components - Observation of Work and Work Activities

The inspector interviewed cognizant licensee personnel, reviewed documentation, and visually inspected in-place storage areas. The inspection addressed the jobsite routine for specifying equipment storage conditions and assigning, implementing, and documenting protective maintenance activities. The particular items investigated were the HPCI and RCIC turbines for Unit 1.

The following documents were reviewed:

- Job Rule 8031-JR-G-7, Revision 14, Job Rule for Storage Maintenance of Installed Equipment.
- General Electric Document No. 22A2724, Revision 3.
- Terry Turbine procedure SP-11, Three Year Extended Storage of Terry Wheel Turbines for Reactor Applications.
- Maintenance Action Cards for Unit 1 HPCI and RCIC Turbines.
- Maintenance Logs for HPCI and RCIC Turbines.

The Maintenance Logs are a record of the maintenance activities which are required to be performed. They do not record actual performance of those maintenance activities. The inspection showed that the Maintenance Logs adequately reflected the vendor requirements for protective maintenance activities. Additionally, it was noted that Maintenance Action Cards, which are developed from the maintenance logs, consistently documented performance of all but one protective maintenance activity.

The inspector noted that the Maintenance Log for the HPCI and RCIC turbines specified "Inside Unheated Controlled" storage in lieu of "Inside Heated" as specified in GE document No. 22A2724, Revision 3. There was no evidence of Project Field Engineer approval for this discrepancy. The lack of Project Field Engineer approval of the modified storage condition is a violation of paragraph 5 of Job Rule 8031-JR-G-7, Revision 14. One protective maintenance activity (quarterly check on condition of humidity indicator cards on HPCI turbine), though specified to be performed on the Maintenance Log, had been erroneously deleted from the computerized maintenance and inspection program. This situation resulted in there being no documentary evidence of performance of this activity since the end of 1977.

Corrective action was completed on the above items prior to completion of this inspection. Project Field Engineer approval was obtained in writing to store the HPCI and RCIC turbines "Inside

Unheated Controlled" and the one erroneously deleted protective maintenance activity was reinstated into the computerized maintenance and inspection program. No further response concerning these items is required.

SP-11, as indicated by its title, is a storage procedure limited to three years duration. The HPCI and RCIC turbines have been in storage per the requirements of SP-11 since 1972. The inspector found no evidence documenting action taken by site personnel to sanction the continued use of SP-11 past 1975. This condition violated Section D.4.9.1 of Appendix D of the PSAR in that no valid storage procedure exists for the turbines. The licensee stated that similar conditions exist for other Q-listed equipment. He indicated that he would investigate this condition and stated that, based on the outcome of his investigation any action taken would be generic in nature.

One of the requirements of SP-11 is to ensure that all electrical items are wrapped, with desiccant inside the wrapping. The inspector found one electrical connector and its associated sensor and at least two electrical switches mounted on the HPCI turbine that were either not wrapped or the wrapping was severely torn. This situation violates Section D.6.1.2 of Appendix D of the PSAR in that quality control requirements for the storage of components were not effectively implemented. The items above represent four examples of one item of noncompliance relative to Criterion V of Appendix B of 10 CFR 50. (352/78-09-03.)

6. Safety Related Heating, Ventilating and Air Conditioning (HVAC) Systems (Units 1 and 2)

- a. The inspector examined the following documents relative to installation of seismic class I HVAC systems for the control enclosure, reactor enclosures I & II, and diesel generator enclosure for compliance with SAR commitments and regulatory requirements:
- Bechtel Subcontract 8031-M-128.
 - Bechtel Technical Specification 8031-M-68A Revision 1.
 - Schneider Sheet Metal (HVAC Subcontractor) Design Document Control Procedure OP-1 Revision 0.
 - Schneider Sheet Metal Repair and Rework Procedure WP-5 Revision 0.
 - Schneider Sheet Metal Receipt Inspection Procedure QAI-4 Revision 0.

- Schneider Sheet Metal Site Inspection Procedure QAI-3 Revision 3.

No items of noncompliance were identified.

- b. The inspector examined the following records to determine compliance to the criteria established in the above documents:

- Receiving Inspection Report #29.
- Receiving Inspection Report #32.
- Verified that following design drawings used in Field were the current Revision:

- M-1090-1-SSM Revision 0.
- M-1090-2-SSM Revision 0.
- M-1041-2-SSM Revision 4.
- M-1082-1-SSM Revision 0.
- M-1043-2-SMM Revision 4.

- QC Records dated October 9, 1978, for Installation of Wall Anchors per Design Drawing C-1367 Revision 3 Detail 1.
- Welder Qualifications.
- Nonconformance and Disposition Report (N&D) #31.

No items of noncompliance were identified.

- c. The inspector observed completed and ongoing work in reactor and control enclosures to verify compliance with criteria established in the above documents. In area 8 (elevation 304') of the Unit 1 control enclosure, the inspector examined the rework of a seismic class I duct section (DWG 1057-1 piece No. 72) for a fire protection damper. This duct section was not constructed in accordance with the design drawing. The welder had already removed the incorrect welded flange and was in the process of installing the correct flange. The inspector noted that a N&D had not been issued for this nonconforming duct section. The inspector informed the licensee that this was contrary to Schneider Sheet Metal QA Manual Procedure Section 15.3.1 and Appendix B Criterion XV. Immediate corrective action was taken and Schneider Sheet Metal issued N&D #35 to cover this nonconforming condition. (352/78-09-04)

7. Reactor Building Crane Repair

The inspector held discussions with various Bechtel personnel on status of repairs to Reactor Building Crane manufactured by the Harnischfeger Corporation. To date, twelve nonconformance reports (3286, 3287, 3308, 3323, 3335, 3341, 3346, 3347, 3348, 3349, and 3350) have been issued for the crane. The inspector reviewed the first six NCR's issued on the crane and also inspected some of the repairs (grinding & welding) performed to date.

No items of noncompliance were identified.

8. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. One unresolved item disclosed during this inspection is discussed in paragraph 3.c.

9. Exit Interview

The inspector met with the licensee representatives denoted in paragraph 1 at the conclusion of the inspection on October 19, 1978. The inspector summarized the purpose and the scope of the inspection and the findings.