

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-353/89-21

Docket No. 50-353

License No. CPPR-107

Category B

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, PA 19101

Facility Name: Limerick Nuclear Generating Station, Unit 2

Inspection At: Limerick, Pennsylvania

Inspection Conducted: May 30 - June 2, 1989

Inspectors: *J. Carrasco*
Joseph E. Carrasco, Reactor Engineer, DRS, EB

6-9-89
date

J. McBrearty
for Robert A. McBrearty, Reactor Engineer, DRS, EB

7/5/89
date

Approved by: *J. Strosnider*
for Jack Strosnider, Chief, DRS, ENG, MPS

7/5/89
date

Inspection Summary: Routine Unannounced Inspection on May 30 - June 2, 1989
(Inspection Report No. 50-353/89-21)

Areas Inspected: An inspection was performed of licensee activities related to NRC Bulletin 79-14 regarding pipe supports and preservice inspection of piping and components. The inspection included review of procedures, program implementation and QA/QC activities in the above areas.

Results: No violations or deviations were identified.

DETAILS

1.0 Persons Contacted

1.1 Philadelphia Electric Company

- * D. A. Dipaolo, Superintendent Unit 2 QA
- * R. L. Payne, Quality Assurance Engineer
- * D. Shaner, Licensing Tech. Writer
- * H. R. Wiegler, Superintendent Startup Ops.
- * D. L. Schmidt, Engineer NED

1.2 Bechtel Power Corporation

- D. P. Graham, Plant Design Engineering Supervisor
- A. Herzog, Engineering Supervisor
- H. Patel, Pipe Support Engineering Group Leader
- W. T. Sullivan, Pipe Support Engineer
- * G. C. Kelly, Quality Assurance
- * W. Ross, PSI Coordinator

1.3 U.S. Nuclear Regulatory Commission

- * T. Kenney, Senior Resident Inspector
- * R. Fuhrmeister, Resident Inspector
- * M. Evans, Resident Inspector

* Denotes those present during the exit meeting held on June 2, 1989.

2.0 Preservice Inspection Data Review

Limerick Unit 2 preservice inspection data were selected for inspection to ascertain that the data complied with the licensee's PSI program and that ASME Section XI and regulatory requirements were met. Data representing the following components were included in the inspection sample:

- ASME Class 1 bolting associated with recirculation system pump 2AP201

Reactor Pressure Vessel Welds (Class 1)

- Weld AA, shell 1 to bottom head circumferential weld
- Weld AC, shell 2 to shell 3 circumferential weld
- Weld AD, shell 3 to shell 4 circumferential weld
- Weld AF, shell 5 to RPV closure flange
- Weld AG, closure head to flange
- Weld BD, shell 2 vertical seam weld

Residual Heat Removal System (18" diameter piping - Class 2)

- Weld GBB-202-2-FW6, 18" x 18" x 18" tee to pipe
- Weld GBB-202-2-FW50, flange to valve PSV-2F055B
- Weld GBB-202-2-2B-SW1, 20" x 18" reducer to 20" elbow
- Weld GBB-202-2-2B-SW4, 18" pipe to 18" x 18" x 14" reducing tee

The RPV welds were ultrasonically examined using manual and automated techniques, and the closure head flange weld was examined with the magnetic particle method. Volumetric examination of the Class 2 RHR welds was not required; the code requirement for surface examination was complied with by the use of the magnetic particle examination method. The recirculation pump Class 1 bolting was examined visually and with the ultrasonic examination method.

Examination results were properly documented and indications were evaluated and dispositioned in compliance with applicable requirements. Supplemental examinations were performed when further information was required to evaluate a reported condition.

2.1 Conclusion

The licensee has complied with code and regulatory requirements regarding preservice inspection. Examination results are clearly documented and the records are readily retrievable.

No violations were identified.

3.0 Licensee Action on Previous Inspection Findings

3.1

(Open) Unresolved Item 50-353/89-04-01, SNT-TC-1A Specific Examination for the Certification of Level III Examiners

The item was in regard to the type of questions comprising the specific examination and whether or not the examination should be a "closed book" examination. At the inspectors' request the licensee and the General Electric Company submitted questions to the SNT-TC-1A Interpretation Panel to clarify the intent of SNT-TC-1A in that regard. The Panel's response to those questions arrived at the site during the course of this inspection. The Interpretation Panel's response stated that the subject exam should be closed book. The response additionally stated that questions covering specifications used by the employer should be included, and that specific examinations that are formulated in such a manner that every question on the examination may be answered directly by reviewing the reference material provided by the employer's Level III examiner with the

examination do not meet the SNT-TC-1A recommendation for a closed book examination. Based on this response, the licensee is considering what action must be taken to assure that the qualification/certification program meets the intent of SNT-TC-1A.

The item will remain open pending completion of the licensee's action and subsequent NRC review.

3.2 (Closed) Construction Deficiency Report Item 89-00-07 Nonconforming Tube Steel in Pipe Anchor (SP-HBC-241-E14-H1)

This item involves incomplete penetration and lack of fusion in a longitudinal seam weld in a structural member for support SP-HBC-241-E14-H1. This support is located 8'-9" south of column line J and 1'-6" west of column line 30.5.

The inspector observed the repaired tube steel. This repair was accomplished by adding a plate 3/8" X 5" X 8 3/16" to the 4" x 9" x 1/4" tube steel to prevent any further separation of the seam weld. The inspector reviewed the latest drawing, No. SP-HBC-241-E14-H1, and verified that it reflects the repair.

The inspector also reviewed quality control inspection record SH06780 which documents the quality assurance inspection of the repair.

Item 89-00-07 is closed.

3.3 (Closed) Unresolved Item 86-20-01 Justification For Allowable Stresses

FSAR table 3.9-21 "Design Loading Combination for Supports for ASME Code Class 1, 2, and 3 Components" gives allowable stresses for emergency and faulted conditions for steel structural members of non-standard catalog supports. However, the stated values are not derived from the original design codes, ANSI B31.1 and B31.7, since these codes do not address increased allowables for emergency and faulted condition.

The inspector reviewed the licensee's report No. 2N-543 which provides the justification for using the increased stress allowables. The supports are designed based on stress performed in accordance with ASME Section III, 1971 Edition (condition A/B, C and D). Where the use of increased allowables for emergency and faulted conditions (C and D) is allowed. Since ANSI B31.1 or B31.7 codes do not address allowables for level C and D, ASME Section III, subsection NC equations were used to develop the allowable stress.

The inspector determined that the licensee's justification presented in report No. 2N-543 is adequate and the allowables for faulted and emergency conditions derived in accordance with Subsection NC of Section III of the ASME Code and presented in the FSAR are more conservative than the Subsection NF and AISC allowable stresses. Item 86-20-01 is closed.

3.4 (Closed) Bulletin 79-14 Seismic Analysis For As-Built Safety Related Piping System

Background - IE Bulletin No. 79-14 was issued on July 2, revised on July 18; and the first supplement was issued on August 15, 1979. The bulletin requested licensees to take certain actions to verify that seismic analyses during the design of the plant actually reflect the as-built condition of the plant. Supplement 2 provided additional guidance with regard to implementation of the bulletin requirements.

Procedure - The inspector reviewed the specification for the as-built reconciliation for the Limerick Generating Station, Unit 2, Number 8031-P-366-2. The purpose of this specification was to provide procedures for the as-built reconciliation of: 1) ASME Section III and seismic category I piping systems, and 2) Non-ASME seismic category II and IIA piping systems.

As-Built Reconciliation is a physical inspection and evaluation of the as-built versus as-analyzed condition of piping and pipe supports (P/S) to assure that the analyses are based on an analytic model that properly reflects the actual configuration of the installation.

The inspector found specification for As-Built Reconciliation (ABR) for Limerick Unit 2 adequate. The above determination was based on the following:

- A well defined purpose and scope including Bechtel Interface with GE (on Main Steam lines A thru D and Recirculation Loops A and B).
- Adequate definition of terms and abbreviations used throughout the specification.
- Clear instructions to process change documents (i.e., FCRs, FCNs) into an issued as-built drawing.
- Adequate Construction Engineering/QC notification of work completion to Project Engineering via Field As-Built Reconciliation (FAR) letter.
- Adequate instructions for final reconciliation via Engineering As-Built Reconciliation (EAR) letter for a given stress calculation.

- Well defined assignments of responsibilities for interdisciplinary interaction.

Implementation - The inspector randomly selected two safety related supports on the RHR system of recirculation loop A and B, and reviewed all the steps of the As-Built Reconciliation (ABR) program. Based on this review, the inspector had the following findings.

- The pipe stress analysis was based on the as-built configuration (reviewed for nodal point 229 corresponding to randomly selected support DCA-204-H2).
- The load generated at this nodal point is 1408 lbs.
- The analysis and design of the pipe support was done for a corresponding load of 1408 lbs. which is reflected on As-Built Drawing DCA-204-H2.
- Results from the pipe stress show that code allowables are satisfied.

The inspector utilized the same engineering approach to check the procedural and analytical steps for support DCA-204-H7 corresponding to pipe stress nodal point 225 and found acceptable results.

Attachment A is a list of the analysis and design documents that were inspected.

Based on the inspection performed, the inspector found no deficiencies in the licensee's 79-14 program or its implementation.

Bulletin 79-00-14 is closed.

3.5 Management Meetings

Licensee management was informed of the scope and purpose of the inspection at the beginning of the inspection. The findings of the inspection were discussed with the licensee representatives during the course of the inspection and presented to the licensee management at the June 2, 1989 exit conference (see paragraph 1 for attendees).

At no time during the inspection was written material provided to the licensee by the inspector. The licensee did not indicate that proprietary information was involved within the scope of this inspection.

Attachment A

All the documents listed below were prepared by Bechtel for PECO.

- 1) Specification for As-Built Reconciliation for the Limerick Generating Station, Unit 2, Philadelphia Electric Company No. 8031-P-366-2, Revision 3, dated December 30, 1988.
- 2) Isometric - Reactor building (drywell) Residual Heat Removal, Unit #2, Drawing Number SK-M-2073, Revision L.
- 3) Pipe stress analysis for Recir. Loop B, Calculation No. 2-10-11, Revision 4 (January 23, 1989), final as-built per FAR #938-3.
- 4) Pipe support Reactor Encl. RHR, Unit #2, Drawing No. DCA-204-H2, Revision 3.
- 5) Microfiche 18240000 SPR-86-14 RO 870119 Reactor Recirculation Loop B.
- 6) Pipe support Design Calculation Hanger No. DCA-204-H2, Revision 3.
- 7) Isometric - Reactor building (drywell) Residual Heat Removal, Unit #2, Drawing No. SK-M-2072, Revision 4.
- 8) Piping Stress Analysis Recirculation Loop A Calculation No. 2-10-10, Revision 6 (February 16, 1989).
- 9) Pipe support Reactor Encl. RHR, Unit #2, Drawing No. DCA-204-H7, Revision 3.
- 10) Microfiche 08031000 SRP-86-13, RO 860527, Reactor Recirculation Loop A.
- 11) Pipe Support Design Calculation Hanger No. DCA-204-H7, Revision 3.