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

Region I

Report No. 50-352/80-20
50-353/80-18

Docket No. 50-352/
50-353/

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

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pa. 19101

Facility Name: Limerick Generating Station, Units 1 & 2

Inspection at: Limerick, Pa.

Inspection conducted: November 4 - 28, 1980

Inspectors: [signature]
C.P. Durr, Senior Resident Inspector — 12/12/80 date signed

_____ — _____ date signed

_____ — _____ date signed

Approved by: [signature]
J.C. Mattia, Acting Chief Projects Section, Reactor Construction and Engineering Support Branch — 12/16/80 date signed

Inspection Summary: (Unit No. 1) Inspection on November 4 - 28, 1980 (Report No. 50-352/80-20)

Areas Inspected: A routine inspection by the resident inspector of pipe supports and restraints, pipe welding, storage of safety related equipment and reactor vessel and vessel internals work. The inspection also involved facility tours and review of licensee action on previous inspection findings. The inspection involved 51 inspector-hours.

Results: No items of noncompliance were identified in 5 of the 7 areas inspected. One item of noncompliance was identified in each of 2 areas (pipe restraints - unacceptable weld undercut, para. 5 and pipe welding - unauthorized weld preparation alterations, para. 4).

Region I Form 12
(Rev. April 77)

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(Unit No. 2) Inspection on November 4 - 28, 1980 (Report 50-353/80-18)
Areas Inspected: A routine inspection by the resident inspector consisting of facility tours and review of licensee actions on previous inspection findings. The inspection involved 21 inspector-hours.

Results: No items of noncompliance were identified in the two areas inspected.

DETAILS

1. Persons Contacted

Philadelphia Electric Company

D.T. Clohecy, Quality Assurance Engineer (QAE)
J.M. Corcoran, Field QA Branch Head
D.A. DiPaolo, Q.A.E.
J.J. Fedick, Construction Engineer
D.A. Marascio, Q.A.E.

Bechtel Power Corporation

T. Altum, Lead Welding Engineer
P.J. Alverson, Supervisor, Field Procurement
A. Arch, Assistant Project Field Engineer (APFE)
M.J. Baron, Special Projects Engineer
R.D. Bryan, Assistant to Project Construction Manager
R. Chmielewski, Lead Subcontracts Engineer
B.P. Dragon, Q.A.E.
T.F. Fallon, Assistant Project Field Quality Control Engineer (APFQCE)
H.D. Foster, Project Field Quality Control Engineer (PFQCE)
R.G. French, Field Contracts Administration
M. Greenidge, Area I Superintendent
H.F. Greenwalt, Q.A.E.
M.S. Iyer, Resident Project Engineer
G.C. Kelly, Q.A.E.
E.R. Klossin, Project Q.A.E.
R.A. Leingang, A.P.F.E.
P. Lull, Resident Engineer
J.L. Martin, Lead Site Q.A.E.
W. Tate, Lead Civil Engineer
D.C. Thompson, A.P.F.Q.C.E.
M.G. Tokolics, Q.A.E.
A.G. Weedman, Project Field Engineer
R. Yancy, Lead Subcontracts Engineer
J. Yohn, Civil Staff Engineer (Structural Steel/Embeds)

Peabody Testing

G.A. Spencer, Project Manager

The foregoing is a composite attendance list for the NRC exit interviews held on November 10, 20 and 26, 1980. Other craftsmen, quality control technicians, engineers and supervisors were contacted as the inspection interfaced with their work.

2. Plant Tours (Unit Nos. 1 and 2)

The inspector routinely toured the facility and outlying areas inspecting ongoing work. He observed pipe welding, installed structural steel and equipment supports, electrical and instrumentation, installed equipment and quality control activities.

During the observation of main steam line pipe welding activities, the inspector examined a nearby rigid strut main steam line support, EBB-102-H15. He noted that the structural beam supporting the rigid strut had copes and welding undercut which do not meet AISC and AWS codes. This beam and similar beams are located in the Turbine Building which is not a seismic category I structure. However, the main steam line is seismic category I at this location. The PSAR acknowledges that the Turbine Building is not seismically designed and that the main steam line and its supports will be attached to this structure. The facility "Q-List", which designates equipment important to safety, implies that the subject beams are safety related and that the boundary of the "Q-List" is the weld attaching the beam to the building steel. These beams are not currently designated as "Q-Listed". This matter is considered unresolved pending determination that these beams are part of the pipe support and "Q-Listed". (80-20-04)

3. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (352/77-12-01 and 353/77-12-01)

(Open) Unresolved Item (352/77-12-02)
Nonconforming field welds (77-12-01) and shop welds (77-12-02) on the RHR heat exchanger supports. Reference IE Report 352/78-05.

The licensee responded to the item of noncompliance on the field welds by:

a. Re-inspecting all field welds.

b. Re-inspecting a sample of welds previously accepted by the quality control inspectors involved.

c. Holding training classes for quality control welding inspectors.

The inspector reviewed Nonconformance Reports Nos. 2970, 2971, 2972 and 2973 which documented the re-inspection of the RHR heat exchanger supports and the disposition of those identified as unacceptable. He reviewed the Field Inspection Reports Nos. C63-24, 40, 41, 42, 43, 46 and 47 which document the sample re-inspection of the quality control inspectors

involved. He also reviewed the Bechtel Interoffice Memorandum, dated November 15, 1977, titled, "Training and Orientation Class", which discusses the additional training provided.

In addition to the discrepant field welds, noncomforming conditions were observed in the shop welds of these supports. The supports were re-inspected and the results documented and dispositioned on Nonconformance Reports Nos. 2967, 2968, 2969 and 2974. A review of these Nonconformance Reports disclosed that all deficient conditions were dispositioned "use as is", welding arc strikes were treated as excess material buildup, and lack of weld penetration was assumed to be "undersized" welds.

A re-inspection of the RHR supports by the NRC was made to verify that the conditions identified on NCR's 2967 through 2974 accurately represent the welding defects. The inspection consisted of visual and dimensional examinations of selected attributes on Drawing C-196, Revision 8, RHR Heat Exchanger Support. No unrecorded welding deficiencies were observed.

It was noted that pipe support GBB-103-H12 is attached to the RHR support structure, 1AE205, at elevation 203, area 15. This is not documented on Drawing C-196, but is depicted on the pipe hanger drawing. An attempt was made to verify that the RHR support structural engineer had approved the attachment as specified by Specification 8031-P-401, paragraph 4.4.4. The record of this approval does not appear to be available on site.

The items of noncompliance (352/77-12-01 and 353/77-12-01) are considered closed. The unresolved item (352/77-12-02) remains open pending resolution of the following:

-- NRC review of the acceptability of the NCR disposition to "use as is" the observed defects.

-- Licensee review of the NCR disposition to treat lack of weld penetration as "undersize" and arc strikes as "excess metal buildup".

-- Verification of the approval to attach pipe support GBB-103-H12 to the RHR support structure.

4. Reactor Coolant Pressure Boundary and Other Safety Related Pipe Welding (Unit No. 1)

Welding activities were observed for the below listed pipe joints and verified to comply with selected portions of the ASMEIII Code, the Bechtel Quality Assurance Manual - ASME Section III, Division I, and regulatory requirements except as noted.

Weld Joint	System	Nuclear Class	Status*
ECC-106-1/1-FW62	Reactor Water Cleanup	III	F&I
EBB-106-1/8-FW4	Main Steam By-pass	II	F&I
GBC-101-14-W058	Main Steam Relief	III	F
HCB-107-1/2-FW61	Liquid Rad Waste	II	F&R
BWR-PD-1REC-1/4 WA3	Reactor Recirculation	I	I

* F-Fit-up; I-Intermediate weld passes; R-Root pass

During the observation of welding activities on weld joint BWR-PD-1REC-1/4 WA3, the inspector noted that the weld groove preparation on the pipe elbow was being ground approximately 3/16" into the base material and around the circumference approximately 49". Further investigation disclosed that no written authorization existed for this alteration to the weld groove. General Electric Specification 22A2284, Revision 2, "Field Erection of Reactor Recirculation Piping", paragraph 4.7.1. Piping Butt Joint End Preparation, requires that, "...Existing piping butt joint end preparation shall not be remachined, filed, ground or otherwise changed without prior approval of General Electric". The failure to perform welding activities in accordance with applicable specifications is an item of noncompliance with 10CFR50, Appendix B, Criterion IX (352/80-20-01).

The inspector noted that the licensee has made a significant change in his pipe welding inspection program in that certain inspections are no longer "Hold Point". The quality control verification of purge gas, cleanliness, tack welds, and alignment are no longer performed on a 100% basis. This change is reflected in Bechtel Quality Assurance Manual - ASME Section III, Division 1, WD-1, paragraph 7.4. A note permits the Lead Welding Quality Control Engineer to determine if these attributes are checked on a "surveillance" or "inspection" basis. In this case, inspection meaning a hold point beyond which work may not proceed and surveillance meaning work may proceed without the check being made. The surveillances are made at the option of the inspector.

A sample of 100 document packages for completed welds disclosed the following:

Sample Size	100
Hold Point Inspections	64
Surveillances Specified	36
Surveillances Performed	2
Approximate Population	1000

Other than the instructions described in the BQAM-ASME III , no other criteria are prescribed for performing this sampling type inspection. This item is considered unresolved pending review by the NRC. (80-20-02)

5. Safety Related Pipe Supports and Restraints (Unit No 1)

The feedwater and main steam pipe restraints lo[illegible]mmediately outside primary containment were selected for visual ex[illegible]nation. The examination was made to verify compliance with selected portions of "Specification for Furnishing, Detailing, Fabrication and Delivery of Miscellaneous Embed Steel and Class I Non-embed Steel", C-43; "Acceptance Criteria for Welded Structures", G-20; and Drawings C-835, Revision 12 and C-836, Revision 5.

The examination consisted of verification of the configuration, correct structural members, and weld visual inspections. Ten areas of weld undercut were identified on the feedwater restraint depicted on Drawing C-836. These areas of undercut exceeded 1/32" in depth. Further, the terminations of the welds securing the 1/2" stiffener plates to the beam webs have laps and notches. The termination areas described were originally copes with radii, but with the addition of the stiffener plate welds, there is now a question as to the acceptability of the copes. The Specification C-43 directs that welding inspection be performed in accordance with Specification G-20. Specification G-20, paragraph 4.1.6.1 states, in part, "...undercut not exceeding 1/32" may be accepted...". The failure to satisfy the weld undercut acceptance criteria is an item of noncompliance with 10CFR50, Appendix B, Criterion IX (80-20-03).

6. Safety-Related Components (Unit No. 1)

The emergency diesel generators, 1AG501 through 1DG501, and the safeguard load center transformers, 10X201 through 10X204, were selected for review of storage requirements, review of storage records, and in place storage conditions. The review and inspection verified compliance with selected portions of Job Rule G-7, "In-storage Maintenance and In-place Maintenance of Installed Equipment", and regulatory requirements. No items of noncompliance were identified.

7. Reactor Vessel and Internals (Unit No. 1)

The inspector examined the weld joint fit-up of the Low Pressure Coolant Injection safe end to thermal sleeve 17A225. He also reviewed the welding procedure No. LRI-79-1-7D, Revision 1 to verify that the welding heat inputs do not exceed the recommended 50,000 Joules.

The informational liquid penetrant examination was observed on the safe end to nozzle weld 17A135. The applicable procedure, No. 18XA9404, "Liquid Penetrant Examination Color Contrast - Solvent Removable", was reviewed and discussed with the NDE technician.

A tour of the vessel interior was made to examine work in progress on the incore probe housing installation. The inspector discussed welding practices with the craftsmen and the methods used to determine the weld size of the combination groove/fillet weld attaching the housings to the vessel wall. He confirmed that arc strike shields are being used to protect the vessel cladding.

No items of noncompliance were identified.

8. 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 disclosed during this inspection are discussed in paragraphs 2 and 4.

9. Exit Interviews

Periodically, during the course of the inspection, meetings were held with the licensee's representatives to discuss the inspection scope and findings. Those persons in attendance at these meetings are designated in paragraph 1.