

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

Region I

Report No. 50-352/81-08  
~~50-353/81-06~~

Docket No. 50-352  
50-353

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

Licensee: Philadelphia Electric Company

2301 Market Street

Philadelphia, Pennsylvania 19101

Facility Name: Limerick Generating Station, Unit Nos. 1 and 2

Inspection at: Limerick, Pennsylvania

Inspection conducted: May 1 - 29, 1981

Inspectors: J. P. Durr, Senior Resident Inspector

5/29/81  
date signed

\_\_\_\_\_  
date signed

Approved by: Louis Mallow Jr  
E. C. McCabe, Chief, Reactor  
Projects Section 2B

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date signed  
6/24/81  
date signed

Inspection Summary: (Unit No. 1) Inspection on May 1 - 29, 1981 (Report No. 50-352/81-08)

Areas Inspected: A routine inspection by the resident inspector of piping installation, welding, installation of safety related components, plant tours, and licensee's actions on previous inspection findings. The inspection involved 47 inspector-hours on site.

Results: One item of noncompliance was identified in the five areas inspected (failure to obtain a conditional release for a nonconformance report, para. 4).

(Unit No. 2) Inspection on May 1 - 29, 1981 (Report No. 50-353/81-06) A routine inspection by the resident inspector of piping installation, welding, plant tours, and licensee's actions on previous inspection findings. The inspection involved 15 inspector hours on site.

Results: No items of noncompliance were identified in the 4 areas inspected.

## DETAILS

### 1. Persons Contacted

#### Philadelphia Electric Company

J. M. Corcoran, Field QA Branch Head  
F. J. Coyle, QAE  
J. J. Fedick, Construction Engineer  
D. A. Marascio, QAE  
M. J. McGill, QAE  
R. T. Scott, Senior Engineer  
L. M. Yates, QAE

#### Bechtel Power Corporation

A. Arch, Assistant Project Field Engineer  
B. Chmielewski, Lead Subcontracts Engineer  
H. D. Foster, Project Field QCE  
J. Gray, Piping QC Lead  
J. Greenberg, Subcontracts Engineer  
E. R. Klossin, Project QAE  
J. L. Martin, Lead Site QA Engineer  
D. C. Thompson, Assistant Project Field QCE  
T. Waters, QC Welding Engineer  
A. G. Weedman, Project Field Engineer

The above listed persons attended exit interviews held on May 14 or 29, 1981. Other engineers, craftsmen, quality control technicians or supervisors were contacted as the inspection interfaced with their work.

## 2. Inspector Follow-up of an Allegation

Background: On May 21, 1981, the Senior Resident Inspector received an anonymous telephone call from an individual who identified himself as a workman at the Limerick Generating Station. The workman alleged that anchor bolts were not being properly installed in the "EHC" system. He indicated that they were located on the "pedestal" and were used in 2" diameter and under pipe supports. He stated that, "they didn't meet specification C-64 requirements for thread engagement". In some cases the threads on the stud were flush or below flush with the outside edge of the nut.

Allegation: Pipe hangers in the "EHC" system are not being installed in accordance with specification C-64. The hangers are located just below elevation 269' on the pedestal and are used on pipe 2" in diameter and less.

Investigation: It was determined that the "EHC" system is the electro-hydraulic control system for the main turbine. This system is currently being installed in the Unit No. 1 turbine building at elevation 258', column line 14, on the turbine pedestal.

A visual examination of the pipe supports depicted on drawing SP-STG-1HC-E60.R2 verified that some of the support base plate anchor bolts do not have full thread engagement and some of the nuts are finger tight. The drawing does not have this system rated as "Q-listed" (nuclear safety related) and the PSAR, Section 7.11.4, states that a loss of electrical or hydraulic power to this system would cause the control valves to close.

Because this system is not "Q-listed", it will not be inspected by quality control. However, based on discussions with the responsible engineer, the system is not complete. The anchor bolt installation will have to meet specification C-64 and this will be verified by the field engineer's final "walkdown" inspection.

Conclusions: The allegation was substantiated. Anchor bolts installed on the electro-hydraulic control system pipe support base plates do not have full thread engagement. However, the system is still in the installation phase, it has not had a final engineer's inspection, and it does not provide a nuclear safety function.

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

Periodically during the inspection, tours were made of the Unit Nos. 1 and 2 primary reactor containment, the reactor buildings, the control structure, and surrounding yards and shops. The inspector examined completed work, work in-progress, quality control activities, and equipment storage, handling, and maintenance. He discussed the technical aspects of the work with craftsmen, supervisors, and engineers to assure work was being performed in accordance with requirements.

No items of noncompliance were identified.

### 4. Licensee's Actions on Previous Inspection Findings

(Closed) Unresolved Item (352/76-08-4A)

(Closed) Unresolved Item (352/76-08-4C)

The quality assurance manuals for the VSL Corporation and Reactor Controls, Incorporated did not adequately address training for quality assurance/control personnel and quality audits. These items were closed for Reactor Controls in Report 352/76-09.

The VSL Corporation was contracted to move the reactor pressure vessel from its on-site fabrication silo, down the access road and into the reactor building. This was successfully accomplished on or about October 1976. The subcontractor has since demobilized and left the site. The subject quality assurance manual is no longer available for verification of changes. The NRC findings were only meaningful before the vessel was moved and no longer present a threat to the public or the equipment. There is limited evidence available to show that the licensee took steps to address the NRC findings, although not enough to conclusively resolve the issue.

This matter is closed.

(Open) Unresolved Item (352/77-12-02, 353/77-12-02)

Review of welding defects on the RHR Heat Exchangers. During the reinspection of the RHR Heat Exchangers by the NRC, pipe support GBB-103-H12 was observed to be attached to the RHR heat exchanger support. The licensee requested verification of the acceptability of this attachment (QAFRN-228). The architect-engineer has verified its acceptability. This aspect of the unresolved item is closed.

The item remains open pending:

- 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".

(Closed) Unresolved Item (352/78-03-01)

The heating, ventilation, and air conditioning (HVAC) subcontractor did not have an inventory control procedure. Subsequent to the NRC finding, the specification 8031-M-68A was revised to delete the requirement to have an inventory control procedure in the Quality Assurance Program Manual. The subcontractor does have a Project Procedure, PPM 3.7, which covers inventory control but does not address the segregation and control of safety related material.

The inspector examined Project Procedure, PPM 5.2, and verified that nonconforming materials are controlled and segregated upon receipt. He also verified, through discussions with the procurement agent, that materials used in non-safety related installations are procured to safety related quality, thus, eliminating the need for a dual system.

This item is resolved.

(Closed) Infraction (352/79-12-04)

Incorrect pipe support pin material. (References: IE Reports Nos. 352/81-01 and 81-02). The NRC performed a series of material hardness tests to confirm the acceptability of the licensee's sampling inspections. The licensee has completed his sampling inspections and closed the applicable Nonconformance Report No. 4098. Based on the NRC's tests and the licensee's inspections, this item is closed.

(Closed) Infraction (352/80-02-05)

Unauthorized repair of pipe support base plate bolt holes. The licensee's response to the noncompliance committed to the following:

- Replace the identified base plate by September 1, 1980.
- Reinstruct the installer regarding site procedures.
- Revise specification P-319 to permit plug welding as a repair procedure.

The inspector verified that specification P-319, paragraph 4.5.3(e) was added to permit plug welding of misaligned anchor bolt holes in support base plates. In the attempt to verify that the base plate had been replaced, he reviewed the licensee's Finding Report N-181 and the Nonconformance Report (NCR) No. 3979. The licensee had closed Finding Report N-181 as completed; however, the NCR was still being held open by the responsible engineer.

The NCR was originally dispositioned to "use as is" the base plate, rather than replace it. The NCR was subsequently redispotioned to replace it. In a conversation with the engineer, it was disclosed that the engineer wanted to again have the NCR dispositioned "use as is". The field engineer believed that the plate had not been replaced and felt that it could be used. The inspector noted that the licensee had committed to replacing the base plate by September 1, 1980, in his correspondence to the NRC and that field engineering and quality control believed the plate had not been changed.

Further inspection disclosed that a Field Change Request (FCR) had been issued to plug weld the anchor studs to the base plate because they were too short for nuts. This FCR was approved on March 3, 1981, and implemented some time after approval. If there is an open NCR against equipment, a "conditional release" must be issued to allow work to be performed. The inspector verified that a "conditional release" had not been issued for the implementation of the FCR.

The modification performed under FCR M-7240F, plug welding of the anchor bolts, without a "conditional release" represents a dual breakdown in the NCR control system. First, field engineering should have been aware of the NCR against the base plate and requested a "conditional release". Second, welding quality control should have refused to authorize the issue of welding materials when the "Filler Metal Withdrawal Authorization" was submitted. The failure to obtain a "conditional release" for NCR No. 3979 to perform work under FCR M-7240F is contrary to the Bechtel Quality Assurance Manual, Section IV, Number 7, paragraph 3.1.g and Project Special Provision Notice G-3.1, paragraph 3.3 and an item of noncompliance. (352/81-08-01)

Further inspection revealed that the base plate had been replaced by the field construction forces. This was established by an interview with the responsible general foreman and markings on the plate.

The noncompliance 352/80-02-05 is closed.

(Closed) Noncompliance (352/80-21-02)

Improper welding on containment electrical penetrations (Reference: 352/81-01). The licensee's response to the noncompliance committed to the following:

- The Conax Corporation, manufacturer of the electrical penetration, will reinspect the seals to assure they have not been damaged on penetration 10 JX 101B.
- Job Rule G-16 was revised to provide a procedure to assure welding engineering is aware of special vendor requirements.
- A special welding instruction will be issued to control further welding on the penetrations.
- QCI E-6.6 was revised to direct the electrical quality control engineer to review the WR-5 forms to assure welding has been properly monitored.

The inspector verified that the above listed commitments had been implemented and completed. In addition, he monitored the welding activities for two additional penetrations (Reference: IE Report 50-352/81-04, para. 4, and 81-05, para. 5).

This item is closed.

#### 5. Observation of Welding Activities

Reactor coolant pressure boundary (ASME III, Class I) and other safety related pipe welds (ASME III, Class II and III) were selected for document review and observation of welding activities. The document reviews verified the welder's qualifications, proper welding procedures were employed, required nondestructive tests specified, appropriate quality control inspection points specified and signed off, and proper preheat and postweld heat treatments were required. The observation of welding consists of, where applicable, examination of the cleanliness, fitup, and alignment of the parts; proper welding equipment; purge and cover gas flow rates; electrodes and filler materials; appearance of the weld deposit; evidence of quality control activities; and proper documentation. The following welds were examined:

<u>WELD NO.</u>	<u>CLASS</u>	<u>SYSTEM</u>	<u>STATUS</u>
DBB-104-1FW1	II		Final cover and root ID
SP-GCC-E28	III	Diesel Air	Final
GBC-201-12/1 FW52	III	Main Steam	Root and intermediate passes

The observation of SP-GCC-E28, which is a small bore, socket welded system, consisted of visual and dimensional measurements to assure compliance with ASME III code requirements. The inspector also examined the design drawing change practices for small bore pipe. Design drawings are issued for small pipe with the understanding that interferences may exist which will be field corrected by the engineers. The engineer will "red line" the design drawing in the field, thus allowing construction to proceed. The "red line" drawing will ultimately be processed as a design change when the system is complete. The "red lining" appears to be adequately controlled to satisfy final design aspects. However, where a controlled drawing is "red lined", a copy is produced for informational purposes for quality control. These copies are, in some cases, not being marked as "reference" or "information only". This item is unresolved pending further review by the NRC or additional controls by the licensee (352/81-08-02).

The inspector noted that an In-Process Rework Notice No. W-873 had been issued describing linear indications on the Inconel safe end material for weld joint DCA-318-1/9 FW-1. This is the reactor vessel nozzle safe end to pipe weld in the low pressure coolant injection system. The report describes indications which exceed 1/8" in length. The licensee had previously identified these linear indications while welding the safe end to nozzle welds, except that they did not, at that time, exceed 3/32" in length. These were dispositioned by General Electric Company on Field Deviation Disposition Request No. HH1-379 which cited the ASME III Code, Section NB-5130 as the applicable criteria for acceptance. This paragraph of the code allows linear indications up to 3/16" in length for materials 2" and greater in thickness. This does not appear to be the appropriate section of the code to be used for acceptance. The material thickness in question is only .687" (minimum wall) thick. The ASME III Code, Section NB-2500, appears to be the appropriate criteria for disposition of base material indications. Section NB-2546 rejects linear indications greater than 1/8" in length for materials 5/8" to 2" in thickness. This item is unresolved pending NRC review. (352/81-08-03)

In IE Report 50-352/81-06 the inspector observed activities to correct misalignment of the feedwater pipe closure spools. The misalignment was corrected by control thermal movements of the pipe, rigid restraint into position, and a stress relief of the restrained area. The inspector reviewed the thermal stress relief temperature charts for the following pipe spools:

DLA-107-1	PA 5B
DLA-107-1	PA 4B
DLA-108-1	PA 4B
DLA-107-1	PA 03



The review verified compliance with the ASME III Code requirements.

No items of noncompliance were identified.

#### 6. Observation of Piping Installation

The reactor recirculation "B" loop piping is essentially installed. The inspector performed a visual examination of the internal surfaces of the pipe from the recirculation pump discharge valve, through the ring header to the jet pump risers. He examined the pipe for cleanliness, root weld appearance, and verified purge dams were removed.

The quality documentation for components in pipe spools DCA-104-3-2 and GBC-201-12-1 was selected for review. The documentation for pipe, heat number 27186, for DCA-104-3-2 and the fittings, heat numbers OAJT and OCJAB, for GBC-201-12-1 was examined. The review verified compliance with selected portions of the ASME III Code, Specification P-300, and regulatory requirements. The review consisted of verification of chemical and physical properties, receipt inspections, nondestructive tests, and legibility of documents.

No items of noncompliance were identified.

#### 7. Safety Related Components

The emergency diesel generator fuel oil storage tanks and the starting air receiver were selected for observation of work and quality documentation review, respectively. The inspector observed the laying of the foundation, the placement of the sand fill base, location and placement of tanks, and the tie-down of the tanks. He verified that portions of these activities were carried out in accordance with drawings C-1063 and C-1064.

The inspector reviewed the quality documentation for the air receiver tank 1D2T585 and verified that it satisfied selected portions of specification M-71 and ASME III Code, Class III requirements.

No items of noncompliance were identified.

#### 8. Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are noncompliances, deviations, or acceptable. Unresolved items are discussed in paragraph 5.

#### 9. Exit Interviews

On May 14 and 29, 1981, exit interviews were held with members of the licensee's staff listed in paragraph 1. The inspector discussed the inspection scope and findings.