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

Region I

Report No. 50-277/80-21
50-278/80-15

Docket No. 50-277
50-278

License No. DPR-44
DPR-56 Priority -- Category C

Licensee: Philadelphia Electric Company

2301 Market Street

Philadelphia, Pennsylvania 19101

Facility Name: Peach Bottom Atomic Power Station

Inspection at: Delta, Pennsylvania

Inspection conducted: June 30, 1980 - July 3, 1980

Inspectors: W A Rekito — 7/22/80
W. A. Rekito, Reactor Inspector — date signed

J. F. Wiggins — 7/22/80
J. F. Wiggins, Reactor Inspector — date signed

_____ — _____
date signed

Approved by: D. L. Caphton — 7/22/80
D. L. Caphton, Chief, Nuclear Support Section No. 1, Reactor Operations and Nuclear Support Branch — date signed

Inspection Summary:
Inspection on June 30, 1980 to July 3, 1980 (Combined Report No. 50-277/80-21 and 50-278/80-15)
Areas Inspected: Routine, unannounced inspection of the containment integrated leak rate test procedure (Unit 2 only); containment leak rate test activities; surveillance of pipe supports and restraints, and licensee action on previous inspection findings. The inspection involved 62 inspector-hours (Unit 2-50 hours, Unit 3-12 hours) onsite by two regional based inspectors.
Results: No items of noncompliance were identified.

Region I Form 12
(Rev. April 77)

DETAILS

1. Persons Contacted

*C. Mengers, EP QA Site Supervisor
J. Mitman, Test Engineer
*S. Roberts, Results Engineer
*S. Spitko, Site QA Engineer
*W. Ullrich, Station Superintendent
T. Wasong, Test Engineer

NRC Personnel

C. Cowgill, Resident Reactor Inspector
J. Wiggins, Reactor Inspector

The inspector also talked with and interviewed other licensee personnel during the inspection including members of the technical and maintenance staffs.

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (277/78-03-08; 277/79-19-01; 278/79-21-01): Failure to meet inservice testing requirements for safety related pumps. The inspector reviewed revised surveillance test procedures for pumps and valve operability. From this review the inspector determined that identified corrective actions were completed and the licensee's inservice testing program is in conformance with Section XI of ASME Boiler and Pressure Vessel Code. These items are considered closed.

(Closed) Unresolved Item (277/78-03-02): The licensee has revised procedure ST 6.7, "Core Spray "B" Pump, Valve, Flow, Cooler Operability", to measure and evaluate pump differential pressure in accordance with ASME Section XI requirements. This item is resolved.

(Closed) Unresolved Item (277/78-03-06); Surveillance test acceptance criteria for valve stroke times. The inspector reviewed revised surveillance test procedures and determined that valve stroke time measurements met the requirements of ASME Section XI and the licensee's inservice testing program relief request no. 5.5.5. This item is considered resolved.

(Closed) Unresolved Item (277/79-20-04; 278/79-22-05): The licensee has revised procedure ST 6.10, "HPSW Pump and Valve Operability and Flow Rate Test". The inspector verified that the revised procedure does meet test requirements of ASME Section XI and the licensee's inservice testing program description. This item is considered resolved.

(Closed) Unresolved Item (277/78-02-04): Two snubbers in degraded condition. The inspector reviewed Maintenance Request Forms No. 3-65-M81 and No. 3-65-M82 dated 1/26/78 which documented repair of the identified deficient snubber attachments. This item is considered resolved.

(Closed) Unresolved Items (277/79-22-02; 278/79-24-02): Hydraulic Snubber Functional Test Procedure Acceptance Criteria. The licensee has revised procedure M.65.4, "Hydraulic Snubber Testing" to specify; (1) the average of the lockup and bleed rate data points plus each individual data point shall meet the acceptance criteria, (2) if the difference between maximum and minimum values exceeds 4 inches per minute for lockup, or 1 inch per minute bleed rate, the snubber shall be inspected and rebuilt. These items are considered resolved.

(Closed) Unresolved Item (278/79-24-03): Review of snubber visual inspection results. The inspector reviewed surveillance records for procedure ST 9.15-2. "Seismic Hydraulic Snubber Inpsection", completed on June 5, 1979 and verified that the procedure had been reviewed and approved by the results engineer prior to the next required TS surveillance. This item is considered resolved.

(Open) Unresolved Item (277/79-22-01): Two snubbers found near their fully extended and retracted positions. The inspector reviewed a subsequent inspection record which revealed that the two snubbers were within the procedural acceptance criteria of one half inch from end of travel. However, an engineering evaluation was performed for possible pipe stress of these and other snubbers following the March 1980 inspection. The licensee advised the inspector that the two identified snubbers were found to be acceptable. This item is considered resolved.

(Closed) Unresolved Item (277/76-46-01): Reverse direction containment local leakage rate tests. The item required the licensee to demonstrate the conservatism of testing some valves with a differential pressure direction opposite to that which would be experienced during a Design Basis Accident. The licensee performed a valve seating force comparison analysis to insure that the normal force between the seat and disc generated by stem action alone was greater, by a factor of ten (10), than the force exerted by test differential pressure on the eleven (11) affected valves. Of the eleven, all except four (4) met the 10/1 criteria. A request has been forwarded to the NRC to reverse leak test these four (4) valves. This item is resolved.

(Closed) Unresolved Item (277/76-46-04): The proposed future Containment Integrated Leak Rate Test schedule was submitted to the NRC. This item is considered resolved.

(Open) Infraction (278/77-28-01): Instrument calibration corrections were not applied to the temperature, pressure, and vapor pressure data as required by paragraph III.A.3(c) of Appendix J to 10 CFR 50 for the 1977 CILRT for Unit 3. The licensee's representative reiterated a commitment to include instrument calibration corrections in future CILRT's. The Unit 2 CILRT procedure does not address the issue and the licensee's representative was not able to ascertain the status of the Bechtel computer program regarding incorporation of the requirement. This item will remain open pending final review of the Unit 2 CILRT procedure and a review of test performance.

(Closed) Infraction (278/77-28-03): The Local Leak Rate Test (LLRT) log for Type B tests has been established. A review of the Type B test log indicated no LLRT periods exceeding the two year limit. This item is considered to be closed.

(Closed) Infraction (278/77-28-04): The LLRT log for Type C tests has been established. A review of the Type C test log indicated no LLRT periods exceeding two years. This item is considered to be closed.

(Open) Unresolved Item (278/77-28-05): During the 77-28 inspection, a review of the LLRT records for Type B and C testing identified a disagreement between the testing interval reported in the technical summary report and the interval as determined by actual test records for penetrations N-231 A and B. An amended version of the Unit 3 technical summary report for the 1977 test was not available on site to assure that the proper corrections were made.

(Open) Unresolved Item (278/77-28-07): The 77-28 inspection identified the inaccurate reporting of MSIV 80B leakage in the 1977 Unit 3 technical summary report. An amended version to the technical summary report was not available on site for review.

(Closed) Unresolved Item (278/79-24-05): During the 79-24 inspection three unresolved areas were identified during a review of MSIV LLRT procedures. The resolution of these areas follows:

(1) ST 30.021 had inconsistent leakage measurement time requirements. ST 30.021 Rev. 5, dated 3/28/80 stipulated a 15 minute measurement time throughout the procedure.

(2) ST 30.021 dictated the use of a rotometer correction factor which was not understood by all personnel. ST 30.021 Rev. 5 clarified the use of this correction factor.

(3) ST 30.022 allowed a pressure decay test on the volume between the inboard and outboard MSIV's with the reactor vessel pressurized to test pressure permitting a possible inleakage to the test volume. ST 30.022 Rev. 2 dated 2/4/80 contained a note prohibiting the use of the pressure decay test with the reactor vessel pressurized.

3. Containment Integrated Leak Rate Test (CILRT)

a. Documents Reviewed

-- Procedure ST 12.5, Revision 1, dated 6/17/80, "Integrated Leak Rate Test".

-- Peach Bottom Technical Specification Section 4.7, Containment Systems.

-- Dwg No. M-351, Revision 15, Nuclear Boiler.

-- Dwg No. M-320, Revision 10, Compressed Air.

-- Dwg No. M-333, Revision 12, Instrument Air and Nitrogen Supply.

-- Dwg No. M-308, Revision 16, Feedwater and Feed Pumps.

-- Dwg No. M-359, Revision 16, Reactor Core Isolation Cooling.

-- Dwg No. M-327, Revision 20, Chilled Water-Drywell Cooling System.

-- Dwg No. M-362, Revision 19, Core Spray Cooling System.

b. Scope

The inspector reviewed procedure ST 12.5. "Integrated Leak Rate Test", for technical adequacy and compliance with 10 CFR 50, Appendix J, ANSI 45.5, and Peach Bottom Technical Specifications. The inspector also discussed various aspects of the CILRT with the licensee's representatives including current NRC positions concerning leak rate testing and the licensee's plans for the 1980 CILRT.

With the exception of the items noted below and in paragraph 2, the inspector found no items of noncompliance and had no further questions in this area.

c. Acceptance Criteria

The procedure ST 12.5 does not specify what method of data analysis to be used for determining test results. Reference is made to the Bechtel Power Corporation's Topical Report BN-TOP-1, "Testing Criteria for ILRT of Primary Containment Structures for Nuclear Power Plants", which provides analysis using both mass point and total time methods. Because of inherent bias in the total time method of data analysis, the inspector informed the licensee's representative that the NRC will evaluate the success of the test using the mass point method. Additionally, the procedure had no provisions for corrective adjustments to the measured leak rate for systems in operation, for systems not properly vented, or for changes in the test volume (containment free air volume) during the test.

In summary:

Lmp @ 95% VLC + K $\leq$ 0.75 L_a, where

Lmp @ 95% VCL is the mass point leakage at the 95% upper confidence level,

L_a is the maximum allowable leakage at the test pressure of 49.1 psig, and

K is a conservative correction factor including

-- Type C additions for systems in operation.

-- Type C additions for systems not properly vented.

-- Corrections for sump, reactor vessel and torus level increases.

Since the procedure acceptance criteria does not correspond to the above, this item is unresolved and is designated Item No. (277/80-21 01).

d. System Lineups

The procedure requires that twelve drywell pressure transmitters (PS 5-12 A-D, PS 100 A-D, PS 101 A-D) be manually isolated and vented. Since these instruments are normally in service and would remain in service post-accident, they should be included as part of the test boundary. The licensee's representative agreed with this position.

The procedure provides vent paths for feedwater penetrations 9A and 9B through drain lines to the clean radwaste system. The valve lineup sheet identifies two 1 inch MK 111 valves in each of these drain lines but the inspector noted that Dwg No. M351 showed three valves. The licensee representative acknowledged the error and stated that all three valves would be open to avoid creating an artificial leakage barrier.

The above items are considered unresolved pending appropriate revisions of the procedure and are designated Item No. (277/80-21-02).

e. Chilled Water System - Drywell Cooling

The Chilled Water System supplies cooling water to the drywell fan coolers and the test procedure requires it to be in-service during the test to regulate the drywell temperature. This system is a closed loop both inside and outside the containment with single remote-manual operated containment isolation valves. Since it is not designed to engineered safety feature criteria, it can be postulated that the piping would rupture during a design basis earthquake. The inspector noted that, as such, this system should be vented and drained during the CILRT. The inspector also noted that the system containment isolation valves (MO 2200 A and B, MO 2201 A and B) were not Type C tested in accordance with 10 CFR 50 Appendix J as part of the local leak rate test program.

The inspector questioned the licensee regarding the classification of this system for conformance to Appendix J. The licensee was unable to satisfy the inspector's concern prior to the exit interview but committed to resolving the matter before the upcoming CILRT. This item is unresolved pending review of licensee's justification and is designated Item No. (277/80-21-03).

f. Leakage Repairs

The inspector noted that the test procedure did not contain any precautions against repairing identified leaks and discussed with the licensee's representative the provisions of Paragraph III.A.1.(a) of Appendix J regarding leakage repairs. The inspector explained the NRC position that, if during the CILRT potentially excessive leakage paths are identified, the leak may be isolated and the CILRT restarted provided:

(1) The leak path is locally testable and is in fact tested both before and after repair;

(2) The pre-repair leakage is added to the CILRT results to obtain as found leakage; and

(3) The post-repair leakage is added to the CILRT results to obtain the as left leakage.

The inspector further noted that such repairs must be carefully controlled during the test to avoid invalidating test results. The licensee's representative acknowledged these comments.

g. Test Failure

Paragraph III.A.6.(b) of Appendix J states that if two consecutive periodic Type A tests fail to meet the acceptance criteria then an accelerated testing schedule shall be implemented. The inspector noted that the initial attempt of the 1976 Type A test at Peach Bottom Unit 2 failed to meet the acceptance criteria and that the test scheduled for this outage constituted the second consecutive periodic test per Appendix J. The licensee's representative acknowledged this comment.

4. Local Leak Rate Testing (LLRT)

a. Documents Reviewed in Addition to Those in Paragraph 3.a.

-- Procedure ST 30.021, Revision 5, dated 3/28/80, Inboard MSIV LLRT.

-- Procedure SS 30.022, Revision 1, dated 2/4/80, Outboard MSIV LLRT.

-- Unit 2 Type B and C LLRT logs for 1979 and 1980.

-- Unit 3 Type B&C LLRT logs for 1979 and 1980.

b. Scope

The inspector reviewed the LLRT procedures and records listed above for technical adequacy and compliance with 10 CFR 50 Appendix J, ANS 45.4, and Peach Bottom Technical Specifications.

The inspector also discussed the status of the current Unit 2 LLRT program with the licensee's representative. Approximately 80% of the tests had been completed. No discrepancies were identified from the record review and the inspector had no further questions in this area.

c. MSIV LLRT Witness (Unit 2)

On June 30, 1980 the inspector witnessed the conduct of the Type C LLRT performed on MSIV AO 86C. The inspector observed installation and operation of the test equipment, radiological protective measures taken during the test, and verified that the test was performed in accordance with the approved procedure ST 20.022. The inspector also reviewed the test instrument calibration data and noted that the test engineer appeared to be adequately trained and knowledgeable of the procedural requirements. No discrepancies were identified and the inspector had no further questions in this area.

5. Surveillance of Pipe Support and Restraint Systems

a. Documents Reviewed

The inspector reviewed the following procedures and records relating to pipe support and restraint surveillances for compliance with regulatory requirements.

-- Procedure M 65.1, Revision 1, 4/11/80, "Hydraulic Snubber Overhaul".

-- Procedure M 65.4, Revision 3, 5/14/80, "Hydraulic Snubber Testing".

-- Procedure ST 9.15-., Revision 5, 9/4/79, "Seismic Hydraulic Snubber Inspection Unit 2 Only", with inspection records completed 3/24/80.

-- Procedure ST 13.31, Revision 2, 9/20/79, "Hydraulic Snubber Functional Test", with test records completed 3/31/80.

The inspector noted that the Unit 2 1980 surveillance program resulted in no snubbers being found inoperable and the licensee continues to be on an 18 month visual inspection interval per TS requirements.

With the exception of the item below, the inspector identified no unacceptable conditions.

(1) During the surveillance record review the inspector recognized that hydraulic snubbers which were found to have empty oil reservoirs during the visual inspection were functionally tested to determine operability. The inspector questioned the licensee's representative about administrative controls established to assure this practice is carried out properly. The licensee's representative satisfied the inspector's concern by revising procedure ST 9.15-1 to include instructions for determining operability by performing functional tests.

b. Snubber Calibration Witness

On July 1, 1980 the inspector observed a machinist functionally test and re-adjust two hydraulic snubbers. The work was performed in accordance with Revision 3 of procedure M-65.4, which changed the required lockup rate for approximately 15 snubbers from 15 inches per minute to 9 inches per minute. While observing the activity, the inspector verified that the test stand instrumentation was properly calibrated and noted that the machinist appeared to be adequately trained and knowledgeable of snubber performance. The inspector identified no unacceptable conditions and had no further questions in this area.

c. Observations

The inspector toured areas of the Reactor Building including the MSIV room to observe the general condition of snubbers and pipe supports. Some specific items examined were:

-- proper accumulator hydraulic fluid level;

-- snubber piston position at correct setting;

-- components were not in a "lock up", or "frozen" position;

-- no visible signs of fluid leaks;

-- no observable deterioration or corrosion;

-- lubricants were applied where required;

-- spring hanger indicators were at the appropriate "hot" or "cold" setting.

The inspector identified no unacceptable conditions during these tours.

6. Unresolved Items

Items about which more information is required to determine acceptability are considered unresolved. Paragraphs 2 and 3.

7. Exit Interview

The inspector met with licensee representatives (see Detail 1 for attendees) at the conclusion of the inspection on July 3, 1980. The inspector summarized the scope and findings of the inspection at that time. With regard to the three unresolved items, the Station Superintendent stated that the resolution would be completed prior to performing the CILRT.