U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-277/87-32; 50-278/87-32

Docket No. 50-277; 50-278

License No. DPR-44; DPR-56

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19106

Facility Name: Peach Bottom Atomic Power Station, Units 2 and 3

Inspection At: Delta, Pennsylvania

Inspection Conducted: November 2 - 6, 1987

Inspectors: Harold I. Gregg — December 23, 1987
H. I. Gregg, Senior Reactor Engineer — date

for Harold I. Gregg — 1/21/88
E. J. Sullivan, Chief, Inservice Testing Assessment Section — date

NRC Contract Personnel: H. C. Rockhold,
EG&G Idaho, Inc.

L. J. Privady — 12/23/87
L. J. Privady, Reactor Engineer — date

Approved by: [signature] — 1/21/88
P. K. Eapen, Chief, Special Test Programs Section — date

Inspection Summary: Inspection on November 2-6, 1987 (Combined Report Nos. 50-277/87-32 and 50-278/87-32)

Areas Inspected: Inspection of licensee's implementation of Inservice Testing (IST) activities to assess adequacy and to verify adherence to regulatory requirements and licensee commitments. Inspection included organization review, discussions with cognizant personnel, review of documentation, test witnessing, and observation of components.

Results: Two violations (improper document control and failure to implement ASME Code Section XI) were identified. Several other problem areas were identified as unresolved items or weaknesses.

CONTENTS

Peach Bottom 2 and 3 IST Inspection

DETAILS

1.0 Summary

Table 1 provides a summary of the inspection findings. These include weaknesses in test procedures and test result acceptance criteria, several unresolved items and nonconformances with 10 CFR 50 Appendix B and ASME Section XI Code. Notwithstanding these findings, the licensees IST program was assessed as adequate with no indications that safety significant problems having occurred due to any of the IST program findings. The licensee was receptive to correcting the concerns identified by the NRC during this inspection.

During the inspection, specific problem findings were divided into the three following categories.

1) Weakness - when the IST implementation was carried out but there was some difficulty in determining details.

2) Unresolved item - when the IST implementation was not in accordance with requirements but the issue requires further evaluation.

3) Violation - when the IST implementation was not in accordance with clear requirements.

TABLE 1 - SUMMARY OF FINDINGS

Problem Type and Designation		Description	Paragraph
	Violations		
1.	50-277/87-32-01(a) and 50-278/87-32-01(a)	Non conformance to 10 CFR 50 Appendix B. IST program maintained uncontrolled	3.0
	50-278/87-32-01(b)	Non conformance to 10 CFR 50 Appendix B and licensee's procedure. Failure to record information and signature	9.1.1
2.	50-277/87-32-02(a) and 50-278/87-32/02(a)	Nonconformance to ASME Section XI pump action range requirements	8.1.3
	50-277/87-32-02(b) and 50-278/87-32-02(b)	Nonconformance to ASME Section XI pump bearing temperature requirements	8.3.2

TABLE 1 - SUMMARY OF FINDINGS (Cont'd.)

	Problem Type and Designation	Description	Paragraph
	Unresolved Items		
1.	50-277/87-32-03 and 50-278/87-32-03	Lack of procedural verification of check valve back flow	8.1.2
2.	50-277/87-32-04 and 50-278/87-32-04	Deficiency in satisfying full stroke requirements	8.2
3.	50-277/87-32-05 and 50-278/87-32-05	Lack of full flow/full stroke of torus suction check valve	8.4.1
4.	50-277/87-32-06 and 50-278/87-32-06	Contradictory Inoperability statement	8.5
5.	50-277/87-32-07 and 50-278/87-32-07	Void in-leakage rate and corrective action for containment isolation valves	9.2
6.	50-277/87-32-08 and 50-278/87-32-08	Inability to full stroke testable check valves	10.0
7.	50-277/87-32-09 and 50-278/87-32-09	HPSW pump packing problem and crosstie valve repair	12.0
	Weaknesses		
1.		Lack of Identification of valve position	5.1.1
2.		Lack of capability to verify test schedule adherence by component	7.0
3.		Lack of specifying corrective actions and inoperability	8.1.1
4.		Confusion with dual stroke time limits	8.3.1
5.		Delay in correcting procedure	8.4.2
6.		Inability to verify proper post maintenance test	9.1.2
7.		Limited QA/QC overview of IST	13.0

2.0 IST Inspection Purpose and Scope

This special team inspection was conducted to review and assess the licensee's Inservice Testing (IST) activities and to verify adherence to regulatory requirements and licensee's commitments. The inspection effort included organization review, discussions with cognizant personnel, review of documentation, witnessing testing, and observations of components.

3.0 Organization

The IST program is a part of the Inservice Inspection (ISI) Program. The licensee's second ten year IST program for Pumps and Valves was developed by the Philadelphia Electric Company's maintenance division and submitted to the NRC in 1984 through the licensee's licensing organization. Copies of this ten year IST program have been distributed to different Site organizations. However, these copies are not maintained as controlled documents. Changes are made locally by the users without formal review or approval. Criterion VI of 10 CFR 50 Appendix B and the licensee's Quality assurance program require measures to assure that documents such as the IST program which affect quality, including changes, are reviewed for adequacy, approved for release by authorized personnel and distributed to and used at the location where the prescribed activity is performed. Not having measures to establish and maintain the IST program as a controlled document is a violation. At the time of this inspection, the licensee had just completed a corporate reorganization and the responsibility for establishing and maintaining the IST program was not clearly defined. The effectiveness of maintaining the IST program as a controlled document under the new organization will be reviewed during a future NRC inspection.

The primary responsibility for implementing the IST program for pumps & valves at the time of this inspection was with the project engineering group under the cognizance of the Technical Engineer. The Project Group IST Lead Engineer (a graduate engineer with five years of experience) has responsibility for the implementation of the program and reports to the Technical Engineer. This individual has taken a special training program for ISI engineers, participates in Industry Conferences on IST, and has also completed the licensee's technical Staff and management training including extensive plant system training. This IST Lead Engineer is supported by a full time contractor employee with an associate degree and 14 years of industry experience. Both individuals were observed to be knowledgeable in the ASME Section XI testing requirements and Nuclear System performance requirements.

The valves in the IST program that have implications for Local Leak rate testing under 10 CFR 50 Appendix J are tested under the cognizance of engineers in the Performance Section. The pumps and valves under the licensee's Technical Specifications are tested by licensed operators under

the cognizance of operations engineers. A detailed review of the test program and, selected records, and test observations by the inspector indicated that the personnel involved in the IST testing, conducted the tests in a professional manner and were attentive to safety and procedural requirements.

Findings

The implementation of the IST program is adequate as evidenced by the level of knowledge of the lead engineers directly involved in the program. However, management oversight of the program is required to assure continued support to the IST program implementation under the new site organization and to maintain the IST program as a controlled document.

The licensee has adequate staff and management attention to implement the IST program without any noticeable significant safety problems or back log. The effectiveness of the IST program implementation under the new site organization will be reviewed during a future NRC inspection.

The licensee's failure to maintain the IST program as a controlled document is a violation of 10 CFR 50 Appendix B document control requirements. (50-277/87-32-01(a) and 50-278/87-32-01(a)

4.0 Plant Tour

The inspectors toured several areas, for the most part in Unit 3, and made observations of safety related components that are in the IST program. During the tour, component information was collected and specific observations were made with the intent of reviewing the procedures, test results and problems associated with some of these particular components. The areas toured and some observed component information are described in the following paragraphs.

- "B" Core Spray Pump Room - Elevation 91.6' in the Reactor Building. Pump manufacturer - Bingham. Pump discharge check valve - 12"-300# Crane swing check No. 3-14-10B.

- HPCI Room - Elevation 88' in the Radwaste Building. HPCI pump manufacturer - Byron Jackson. The booster pump 30P033 and high pressure (HP) pump 30P038 are coupled together. The HP pump is rated at 5000 gpm. Valves on the pump suction line observed at this location were: the 16" - 150# Walworth motor operated gate valve No. 3-23R-17, the 16" - 150# Atwood and Morrill check valve No. 3-23R-32, and the Crosby relief valve No. 30P33.

- RCIC Room - Elevation 88' in the Radwaste Building. RCIC pump manufacturer - Bingham. The pump is rated 600 gpm.

- HCU South Bank - Scram discharge valves in the reactor building at elevation 135'. The air acting valves 126 and 127 and the check valves 114, 115 and 138 were observed.

- SLC Pump Area - in the reactor building at elevation 195'. The two SLC pumps, Nos. 3AP040 and 3BP040 are positive displacement pumps rated at 50 gpm and are manufactured by Union Pump Company. The two No. 14 squib valves, the two in series check valves Nos. 16 and 17 and the two relief valves were observed. Some boron crystals were evident on the adjusting screw of the relief valves.

- Service Water Building, Unit 3

  - HP Service Water - The 4 model 13FXH Verti-line pumps are manufactured by Layne and Bower pump company and are rated at 4500 gpm at 700 ft. hydraulic head. The inspector noted that two of these pumps were removed for repair and that these pumps would be good candidates for further review during the inspection.

  - ESW - There is a single pump (for each unit). It is rated at 8000 gpm at 96 ft. hydraulic head and is also manufactured by Layne and Bower pump company and is a Verti-line model.

Findings

The areas toured were generally clean. No violations were identified.

5.0 IST Program Overview

Information obtained during the inspection regarding the licensee's IST program submittal is outlined below.

- Licensee is implementing the second ten year interval program.

- The second ten year interval start date is July 5, 1984 for Unit 2 and December 12, 1984 for Unit 3.

- The program commits to ASME Section XI, 1980 Edition through Winter 1981 Addenda.

- The second ten year interval program for both units was submitted to NRC on 5/24/84.

- Revision 1 for both units was submitted to NRC on 6/28/84.
- The current program is being reviewed by NRR.
- An SER has not been written for the second ten year interval program (An SER dated 3/30/84 was issued for the first ten year program.)

5.1 IST Program Comments

5.1.1 During the inspector's overview of the IST program the inspector determined that the program does not indicate the position or positions required for safety-related functioning of any of the valves. Therefore, it was not possible to conclude whether this has been identified for each valve and whether the procedures call for appropriate valve testing.

Findings

The lack of identification of the safety related valve position (open, closed, or both) in the program listing is considered a weakness.

5.1.2 NRR has reviewed the licensee's 2nd ten year program and has requested additional information (RAI) from the licensee. A meeting between NRR and the licensee will be held when the RAI response is received.

Findings

- The discussions of the forthcoming meeting between NRR and the licensee will be beneficial in resolving IST issues.

6.0 Administrative Procedures for Surveillance Testing

Several of the licensee's administrative procedures pertaining to surveillance testing were reviewed. At this plant the Inservice Testing (IST) is folded into the Technical Specification (TS) surveillance testing activity. Specific procedures reviewed and the inspector assessments are described in the following paragraphs.

6.1 Procedure A-40, Rev 19 Surveillance Testing System

This procedure defines the surveillance test program required by TS and ASME Section XI

The inspector verified that responsibilities are defined for the administration, scheduling, performing, documenting, and reviewing the tests. The inspector's review also verified there were provisions

for cognizant supervisory engineering review of the completed tests, specific sign-off requirements, and further actions including shift supervisory notification in the case of an unsatisfactory test. It was noted that in the case of an unsatisfactory test a maintenance request form (MRF) must be initiated for corrective action.

Additionally, there is PORC overview, and disposition for testing that can't be performed prior to the test's grace period expiration.

6.2 Procedure A-47, Rev. 8, Generation of Surveillance Tests

This procedure describes the responsibilities for writing, reviewing, and approving the surveillance test and outlines the content and format of the procedure.

The inspector verified that there are requirements for cognizant engineering review and approval, PORC review and approval and ultimately there is plant management approval. The inspector also verified that the procedure contains appropriate notification of supervisory personnel for testing which can affect plant operations, requirements for test equipment are defined, and the procedure steps include requirements for acceptance criteria. It was also noted that surveillance tests are controlled copy documents.

6.3 Procedure A-7, Rev. 23, Shift Operations

The inspection reviewed this procedure to verify there were shift supervisor actions that correlated with provisions of Procedure A-43. The inspector verified that Procedure A-7 defines shift supervisor reporting requirements for component inoperability. The inspector also determined that shift supervisory action also included notification to higher level plant management.

Findings

The administrative procedures discussed in the three above paragraphs were found to be acceptable.

7.0 Verification of Valve Test Schedule Adherence

The inspector determined that the licensee's Surveillance Test (ST) program is basically a TS surveillance originated system and ASME Section XI Inservice Tests are folded into the ST program. Control of the test schedule is performed by the plant ST Coordinator. (the same person is the coordinator for Units 2 and 3).

The inspector also determined that the ST program is system oriented and not component oriented. Most STs are for a specific system test

(Example-ST 6.5, HPCI Pump, Valve, Flow and Unit Cooler Test) and includes the tests for the pump and many valves in that specific system. For a small number of valves, there is a specific ST that applies to one specific valve (Example-ST 6.5B, Torus Suction Check Valve). Also, some STs are written for a monthly test as required by TS and a separate ST is written for a quarterly test as required by IST. In other cases the monthly ST is used to satisfy both the TS and IST requirements.

Verification of test schedule adherence by component cannot be readily done since the components are within the system oriented program. To determine when tests were performed the ST for that system has to be reviewed to see what valves are included. Then the results for the individual valves can be extracted from the test data results.

The tracking system does not cross reference by component. This could lead to occasions where a component test is missed. The licensee's personnel do know their system oriented program and in the inspectors review of ST 6.11 RCIC components and ST 6.5 HPCI components the IST schedule adherence was met. (The inspector noted that the ANII does maintain a manual system to track component testing.)

Findings

Difficulty to verify test schedule adherence on a component basis is considered a weakness.

8.0 Review of Test Procedures

A representative sample of surveillance test procedures were reviewed. The review details and the inspector's findings and assessment of the findings are discussed in the following paragraphs.

8.1 HPSW Procedure ST 6.10-2 and 3

8.1.1 This procedure requires that valve stroke times be recorded. Limiting stroke times are specified for each valve. If the limiting stroke time for any valve is exceeded, the test results are considered unsatisfactory and indicated as such on the ST cover sheet. However, the ST does not specify the corrective actions that should be taken or when the valve must be declared inoperable in accordance with IWV-3417.

Findings

Lack of specifying corrective actions and declaration of inoperability is considered a weakness.

8.1.2 ST 6.10-2 and 3 require the full stroke opening of the HPSW discharge check valves 502 A, B, C, and D. However, these valves also have a safety-related function to prevent back-flow from the other pumps. ST 6.10-2 and 3 do not contain any

explicit provisions to verify that backflow through the pump discharge valves will not occur.

Findings

Lack of procedural requirements to verify the check valve closure capability is unresolved pending licensee's further evaluation, procedural corrective actions, and NRC review of the licensee's actions regarding this issue (50-277/87-32-03 and 50-278/87-32-03)

8.1.3 ST 6.10-3 contains criteria for pump parameters that are in the acceptable, alert, and actions ranges. This criteria is in the form of windows that permit simultaneous plus or minus deviation of pressure and flow from the reference values. However, the window developed by the licensee is not in conformance with the ASME Section XI Code. IWP-3100 requires that the system resistance be varied until either the measured pressure or flow rate equals the corresponding reference value. The ranges in table IWP-3100-2 are then applied to the other parameters.

The licensee's method accepts alert and action ranges outside the code allowed limits.

Findings

Non conformance to ASME Section XI code requirements is considered a violation (50-277/87-32-02(a) and 50/278/87-32-02(a)).

8.2 ESW Procedure ST 6.3

The flow test under ST 6.3 is a partial flow test. Exercising of the discharge check valves 515A and B is by flow and the procedure requires that valve opening be verified by observing the balance arm on the side of the check valve. This test does not verify full stroke exercising of check valve 515 A and B as required by ASME Section XI, IWV-3522. In addition, the IST program listed in the reference section of this report indicates that these two valves are mechanically exercised. This is inconsistent with the exercising under flow called for in the procedure.

Findings

The deficiency in satisfying the ASME Section XI full stroke requirement and the inconsistency between the licensee's program commitment to mechanically full stroke and the procedure is considered an unresolved item pending licensee's further evaluation and corrective actions and NRCs review (Unresolved item 50-277/87-32-04 and 50-278/87-32-04).

8.3 HPCI Procedure ST 6.5, Rev. 42

8.3.1 Review of surveillance procedure ST-6.5, rev. 42, identified two stroke time limits for valves MO-4(5)-245. A Technical Specification limit of 15 seconds and IST limit of 19 seconds indicated that the IST limit will never be a controlling value since exceeding the Technical Specification limit would require corrective action. Identification of an IST limit higher than the Technical Specification limit is inappropriate.

Findings

Two stroke time limits for the same valve are confusing, this is considered a procedural weakness. The licensee acknowledged the inspector's concerns and committed to review and corrections relating to acceptance criteria in this and other procedures by March 31, 1988.

8.3.2 This surveillance procedure also provides for the inservice testing of the HPCI pump and includes data pages to be filled out during the tests. ASME Section XI, IWP-3500(b) requires that when bearing temperatures are taken (annually), the "temperatures shall be considered stable when three successive readings taken at 10 minute intervals do not vary by more than 3 percent". The data pages provided in the procedure do not specify this requirement or provide the space for recording these minimum of 3 readings. Also, acceptance criteria for bearing temperature is not specified.

Findings

Non adherence to ASME Section XI requirement is considered a violation (50-277/87-32-02(b) and 50-278/87-32-02(b)).

8.4 HPCI Torus Suction Check Valve ST 6.5 B, Rev. 5

8.4.1 Review of surveillance procedure ST-6.5B, rev. 5, which includes steps for exercising the HPCI pump suction check valve from the torus, VV-23-61, specifically states in step 14 that "full flow may not be possible through MO-31", the flowpath established for exercising VV-23-61, indicating that a full-flow/full-stroke exercise of this check valve is not performed by this test. ASME Section XI, IWV-3522 requires full stroke exercising but the licensee's IST program does not include a relief request for not full-stroke exercising this check valve.

Findings

This item is unresolved pending the licensee's evaluation, and forthcoming meeting with NRR, and NRC review of the licensee's disposition of this matter (50-277/87-32-05 and 50-278/87-32-05).

8.4.2 During the inspector's review of the ST-6.5B, rev. 4, test performed in March, 1986, a note was made on the procedure that step 11 included a typographical error by referencing valve MO-23-21 twice rather than MO-23-21 once and MO-23-31 once. This typographical error still exists in revision 5.

Findings

The delay in correcting procedure is considered a weakness.

8.5 RHR Procedure ST 6.9F, Rev. 8

Review of surveillance procedure ST-6.9F, rev. 8, data sheet specifically states that exceeding the IST stroke time criteria does not result in a valve being inoperable. This is contrary to ASME Section XI, IWV-3417(b) which requires that corrective action be initiated immediately, and if the condition is not or cannot be corrected within 24 hours, the valve shall be declared inoperative.

Findings

This item is unresolved pending the licensee's review and corrections to this procedure (which the licensee stated was in process), and NRCs review of the licensee's corrective action (50-277/87-32-06 and 50-278/87-32-06).

9.0 Test Results

The inspector reviewed the actual test results of several of the ST procedures discussed in paragraph 8.0.. Specific test results reviewed and findings of the test results are described in the following paragraphs.

9.1 HPSW ST 6.10-3

9.1.1 The HPSW ST 6.10-3 test records from 6/19/87 and 7/17/87 indicated that the A pump differential pressure and flow from both of these tests were 255 psi and 4700 gpm. The A pump reference differential pressure and flow values are 276 psi and 4574 gpm. The June and July test results fell in the alert range. ST 6.10-3 requires that the Additional Action section of the test records cover sheet be filled out when test results fall in the alert range. The Additional Action section of the June and July ST 6.10-3 records were not filled in for the IST in the Alert range. (Also, the action section was not signed on the June 19, 1987 test record.) It could not be verified through official records that corrective action had been taken as required by IWP-3230.

Findings

Absence of recording alert range information is considered a violation of 10 CFR 50 Appendix B documentation requirement and the licensee's procedure requirements (50-278/87-32-01(b)).

9.1.2 ST 6.10-3 was performed on 6/19/87. The records indicated that maintenance request forms (MRF) were submitted as a result of this test. The MRFs required repair of the 502 A and B discharge check which had to be closed with an external stroking arm for successful testing. The closed out MRF for the 502 A valve indicated that the valve was repaired and that post-maintenance testing was performed on 8/21/87 by pump start and stop. The system engineer indicated that the post-maintenance test he performed included full stroke opening and verification of disk backseating. However, it could not be verified through official records that the testing verified the proper functioning of the valve in both the fully open and fully closed positions. This procedure is not appropriate for post maintenance testing as it does not require backflow testing explicitly.

Findings

The inability to verify proper post maintenance valve functional testing from the MRF is considered a weakness in record keeping. Improved procedure requirement would be useful in resolving this type problem.

9.2 Leak Testing for Containment Isolation Valves

The inspector reviewed the leak rate testing records for containment isolation valves at penetration N-9A, N-214, and 52F. These records appeared to indicate that the requirements of Section XI, IWV-3426 and 3427, for the establishment of leak rate and trending criteria and corrective action, are not met. The SER for the first ten year interval inservice testing program specifically denied relief from these Code requirements. This apparent violation of Section XI was discussed with a licensee representative who stated that criteria do exist. However, the criteria could not be located before the inspection exit meeting.

Findings

This item is unresolved pending further information from the licensee. The licensee has stated that the LLRT program was in process of being changed which will require further NRC review. (50-277/87-32-07 and 50-278/87-32-07)

10.0 Review of Vendor Information

The inspector reviewed the vendor instruction manuals, valve detail drawings, and purchase specifications of the testable check valves

manufactured by Atwood & Morrill and Rockwell. These check valves are utilized in the injection flowpaths for core spray, RHR, HPCI, and RCIC system. The IST program identifies these valves as being full-stroke exercised by utilizing the test operator on the valve. The Atwood & Morrill design does appear to perform a full-stroke of the valve disk, however, the Rockwell design appears to only stroke the valve 30 degr of disk swing. This does not satisfy the full-stroke requirement of Section XI, IWV-3522(b) for the testable check valves of the Rockwell design (core spray injection checks).

Findings

This item is unresolved pending the licensee's evaluation and disposition and NRC's review of the licensee's action (50-277/87-32-08 and 50-278/98-32-08).

11.0 Post Maintenance and Post Modification Testing

The inspector reviewed the documentation concerning the post modification testing that was performed as a result of Modification #1117, Replacement of Main Steam Drain Valves M074 & 77. The inspector determined that the new valves and associated piping welds received an operational hydrostatic test and that seat leakage tests were satisfactorily completed prior to startup per ST 20.029 for Unit 2 and ST 30.029 for Unit 3. The licensee's modification acceptance test documents recorded these satisfactory results which provided a final turnover of the modification to operations.

Findings

The inspector considered this post modification testing to be acceptable.

12.0 High Pressure Service Water (HPSW) Pump Test Witnessing

Due to the inspector's plant tour observation that two of these pumps were out for repair a HPSW pump test (ST 6.10-3) was requested and was performed. The test was witnessed by the inspector. The test was performed from the control room and prior to its start the instrument accuracy was verified to meet ASME Section XI, IWP-4110.

The test of pump 3C was started and early in the procedure (at step 8), the pump could not provide the required flow of 4500 gpm. Step 8 requires a discharge minimum flow of 4500 gpm and a minimum discharge pressure of 233 psig. The discharge pressure was 235 but the flow was only 4400-4450 gpm and the test was stopped as unsatisfactory.

Prior to stopping the pump, AC to BC header crosstie valve (MO-3344) leakage was indicated by control room indication of flow through the "3B" RHR heat exchanger. Also, prior to stopping the pump the inspector went to the service water building to observe the running pump. Service water

was spraying from the packing box of this recently repaired pump. The cognizant engineer said the prior leakage was far worse. The inspector also observed some leakage at the "3D" pump packing gland, which indicated that the motor operated crosstie valve MO-3344 and the "3D" pump discharge check valve were leaking through. However, the pressure gage between the crosstie valve and the "3D" discharge check valve did not indicate pressure.

Because of the unsatisfactory test MRF 8709754 was written to determine the problem cause and corrective action. The inspector determined that the MO-3344 leakage had not been quantified previously. The control room operator was aware of this valve leakage by his acknowledgement that MO-3344 was a known "leaker". MRF 8407631 was originated on December 9, 1984, to effect repairs on MO-3344 but this could not be accomplished until the core was offloaded. The inspector noted that under the current plant conditions with the 3A and 3C pumps out of service a safety concern might be present if the core were loaded and the MO-3344 leakage was significant to cause flow through the operational RHR heat exchanger to be less than the required 4500 gpm. A retest of the 3C pump was accomplished later in the day to resolve MRF 8709754 and this retest confirmed that the problem was due to valve leakage and wasn't a 3C pump deficiency. Also, it quantified the MO-3344 leakage to be 250 gpm. This test was performed by temporarily closing several normally open valves to the 3B and 3D RHR heat exchangers and also closing the 3D pump discharge valve. With this temporary valve alignment 3C pump flow and ΔP were determined to be 4700 gpm and 270 psi, respectively.

Findings

There appears to be a generic packing problem associated with these pumps that requires correction and the licensee is actively involved in developing a packing fix. While the crosstie valve is not an IST valve, it does affect the IST system and component performance and testing, therefore, this valve requires repair. The licensee (plant manager) committed to repair MO-3344 at the exit meeting while the core is off-loaded prior to restart. This item is unresolved pending licensee's actions on the packing problem and the crosstie valve repair. (50-277/87-32-09 and 50-278/87-32-09).

13.0 QA/QC Interface

The inspector reviewed QA Audit No. AP 86-106 IST of December 10, 1986, titled PBAPS ISI Program.

- Audit No. AP 86-106 ISI, was primarily an ISI audit which combined functional testing, NDE and visual inspection.

The inspector's review of this audit focused on IST related findings. It was noted by the inspector that out of the 19 acceptable findings only the first two related to IST program implementation. These findings were primarily general administrative overview. There were three unacceptable findings and these were also administrative in nature and related to qualification of visual inspection examiners, maintenance personnel qualification and NDE work experience certification.

The audit did not contain any findings related to technical issues of completed tests or any concerns of procedure acceptance criteria, or not meeting ASME Section XI criteria that were identified during this inspection. In discussions with cognizant QA personnel, the inspector also determined there was no consideration given to the IST program being a controlled document that was also identified during this inspection.

The inspector discussed the conduct of the audit with the lead auditor and determined that his technical strengths were in NDE and that another auditor from the corporate office performed the audit of the IST activities. Although this auditor had operational experience, it was gained at the licensee's fossil plants. The audits were not detailed enough to assess the effectiveness of the IST program and did not appear to have the IST expertise to determine adherence to ASME Section XI requirements.

Also the inspector discussed with the Site QC Supervisor the extent of QC involvement in IST activities. The QC organization performs Surveillances of various site activities in the form of detailed monitoring checklists (DMCs). These DMCs provide a list of attributes/check items against which the QC inspector verifies compliance. DMC 1.1, 1.2 and 1.4 involve local leak rate testing of valves which are in the IST program. However, November, 1985, was the last time for the performance for any of these DMCs. This indicates that the licensee allocated its QC Surveillance Manpower to activities other than IST.

Findings

QA overview of IST is limited and is considered a weakness.

14.0 Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. Unresolved item are discussed in paragraphs 8.1.2, 8.2, 8.4.1, 8.5, 9.2, 10.0, and 12.0 of this report.

15.0 Persons Contacted

Peach Bottom Atomic Power Station (PBAPS)

A. Cipola, Project Group Engineer
*J. Cotton, Superintendent Operations
*A. Fulvio, Technical Engineer
M. Kelly, Project Group IST Lead Engineer
*J. McElwain, QC Supervisor
*D. Smith, Plant Manager
*J. Rovansek, QA Engineer
R. Turner, ISI Maintenance
D. Wheeler, Project Group Leader
*J. Wilson, QA Supervisor
R. Wright, Systems Group Engineer

United States Nuclear Regulatory Commission (USNRC)

*T. Johnson, Senior Resident Inspector
*L. Myers, Resident Inspector
*R. Urban, Resident Inspector

*Denotes those present at exit meeting

16.0 Reference Documents

The documents used to assess the licensee's adherence to IST requirements included:

- 10 CFR 50.55 a(g) Inservice Inspection Requirements
- 10 CFR 50 Appendix B Quality Assurance Criteria
- ASME Code Section XI IST Subsections IWP and IWV, 1980 Edition through Winter 1981 Addenda
- Peach Bottom 2 and 3 Second Ten Year Interval IST Submittal, 6/28/84
- Request for Additional Information and IST Review Meeting, 10/22/87 letter from R. E. Martin (NRC) to E. Bauer (PECO).
- Safety Evaluation Report dated March 30, 1984 on Peach Bottom 2 and 3 First Ten Year Interval IST Program
- I&E Manual Inspection Procedure 73756, Inservice Inspection of Pumps and Valves, 3/16/87

- Licensee's Administrative Procedures

  A-43, Rev. 19, Surveillance Testing Systems, 5/28/87
  A-47, Rev. 8, Procedure for Generation of Surveillance Tests, 5/28/87
  A-7, Rev. 23, Shift Operations, 4/10/87

- Licensee's Surveillance Test (ST) Procedures

  ST-6.3 (Rev. 13), Emergency Service Water Pump, Valve, Flow Cooler, 7/7/87.

  ST 6.10-2 (Rev. 7) of 2/12/87 and 6.10-3 (Rev. 9) of 1/14/87 High Pressure Service Water Pump and Valve Operability and Flow Rate Test

  ST-6.5 (Rev. 42), HPCI Pump, Valve, Flow, Cooler, 2/27/87

  ST-6.5B (Rev. 5), HPCI Torus Section Check Valve Operability, 3/6/87

  ST-6.9F (Rev. 8), RHR B Pump, Valve, Flow and Unit Cooler Functional Flow Test, 4/16/87

  ST-6.18 (Rev. 5), ISI Normally Closed Valve Testing, 3/20/87

  ST-6.11, (Rev. 31), RCIC Pump, Valve, Flow, Cooler, 2/6/87

- Licensee's Test Records

  ST 6.10-3 Records dated 2/20/87, 2/5/87, 3/21/87, 4/20/87, 5/22/87, 6/19/87, 7/17/87, 8/22/87, and 10/17/87.

- Licensee's Piping and Instrument Drawing, P&IDs M-315, M-361 and M-362

- Licensee's Maintenance Request Forms 8704749, 8704750, and 8705361

- Vender Information

  Technical Manual for Emergency Service Water Pumps.
  Rockwell Manufacturing Co. drawing PD-420657 for tilting disk check valves and the associated vendor instruction manuals.

  Atwood and Morrill testable check valve information.

- Licensee's QA Audits AP 86-106 ISI, 12/10/86 and AP 86-109, 12/8/86

17.0 Exit Meeting

The inspector met with the licensee's representative (identified in paragraph 15.0) at the conclusion of the inspection on November 6, 1987, to summarize the findings of this inspection. The NRC Resident Inspectors, were also in attendance.

During this inspection, the inspector did not provide any written material to the licensee.