U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-277/85-26

Docket No. 50-277

License No. DPR-44

Licensee: Philadelphia Electric Company

2301 Market Street

Philadelphia, Pennsylvania 19101

Facility Name: Peach Bottom Atomic Power Station, Unit 2

Inspection At: Delta, Pennsylvania

Inspection Conducted: July 8 - 12 and 14 - 17, 1985

Inspector: N. Blumberg, Lead Reactor Engineer — 8/8/85 date

Approved by: J. Johnson, Chief, Operational Programs Section, Operations Branch, DRS — 8/9/85 date

Inspection Summary: Inspection on July 8 - 12 and 14 - 17, 1985 (Report No. 50-277/85-26)

Areas Inspected: Routine, unannounced inspection of licensee action on previous inspection findings, modification acceptance tests, post refueling acceptance tests, routine surveillance tests, test performance witnessing, completed test data, licensee action on switch failure in the Core Spray System, and QA/QC interfaces. The inspection involved 74 hours onsite by one region based inspector.

Results: No violations were identified.

DETAILS

1. Persons Contacted

Licensee and Contractors

B. Clark	Peach Bottom Unit 2 Major Outage Recovery Effort (M.O.R.E.) Project Manager
J. Clupp	Instrument and Control (I&C) Engineer
J. Dawson	Results Engineer
*R. Fleischmann	Station Manager
A. Fulrio	Technical Engineer
J. McElwain	Quality Control (QC) Engineer
D. McGinnis	Reactor Engineer (PECO)
D. Moon	Startup Test Coordinator - General Electric (GE)
D. Morgan	Lead Startup Engineer
*D.Smith	Superintendent of Operations
S. Spitco	Administrative Engineer
A. Trapuzzoto	Quality Assurance (QA) Auditor
H. Upton	Startup Test Coordinator (GE)
A. Wasong	Project Results Engineer
D. Wheeler	Reactor Engineer - Site
*J. T. Wilson	QA Site Supervisor

USNRC

*T. Johnson	Senior Resident Inspector
H. Williams	Resident Inspector

The inspector also held discussions with other licensee personnel including reactor operators and shift supervisors.

* Denotes those persons attending the exit interview.

2. Licensee Action On Previous Inspection Findings

(Closed) Unresolved Item (277/82-15-01): Traversing Incore Probe (TIP) traces and other data maintained on recorder charts associated with Reactor Engineering (RE) or I&C surveillance procedures were not being properly identified or dated. The inspector reviewed a sampling of RE and I&C surveillance tests and observed that these tests had been revised to include requirements to identify and date the recorder charts. The TIP traces, CRD tests, and other recorder chart data observed by the inspector during this inspection were being properly identified. Based on the above, this item is closed.

(Closed) Inspector Follow Item (277/82-15-02): The licensee had replaced its use of a GE computer and computer code for computing backup core limits evaluation (BUCLE) with an inhouse method using a SIMULATE code; and also stated that the application of SIMULATE for BUCLE would be sent to NRC-NRR for evaluation. The licensee provided to the inspector a copy of an inhouse (PECO) memorandum dated November 15, 1982 which documented contacts between NRR and PECO concerning use of the SIMULATE code. This memorandum stated that the SIMULATE code used for such a limited application such as BUCLE did not require formal NRC review or approval. PECO was further advised that if inhouse codes such as SIMULATE were employed for the broader application of [illegible]d, design and licensing activities, NRC review of such applications would be required. In addition, the licensee performed a 10 CFR 50.59 review to confirm that use of the SIMULATE code for BUCLE under steady state conditions did not constitute an unreviewed safety question. The inspector determined this review to be acceptable. Based on the above this item is closed.

(Open) Unresolved Item (277/84-23-01, 278/84-18-01): This item identified that there were no clear procedural controls other than normal scheduled surveillances, to utilize the Containment Air Sampling System to perform gaseous, particulate and/or iodine analyses from different sampling points in the drywell, when the Containment Sump Flow Detection System was inoperable; or when the flow detection system identified increasing leakages. Discussions with licensee representatives indicated that they did not feel that the Drywell Air Sampling System provided any useful leak detection information. The licensee unsuccessfully attempted to get this system removed from the Technical Specifications (T.S.). The previous T.S. placed the Containment Drywell (D.W.) Sump collection and the air sampling system on an equivalent basis, one as a backup for the other, and allowed seven days of power operation with one or the other inoperable. The current T.S. still allows seven days of operation if the D.W. Air Sampling System is inoperable but only 24 hours of operation with the D.W. sump collection system inoperable. The licensee stated that they only depended on D.W. Sump collection for leakage detection.

A partial draft procedure had been prepared providing more specific procedures for use of the D.W. radiation monitors associated with the Air Sampling System. This procedure is incomplete and did not specify any criteria for associating radiation data with possible D.W. leakage detection. The Station Superintendent stated that this item and the above procedure had a very low priority and it may be some time before the procedure is issued. The inspector verified that the licensee is currently in compliance with T.S. surveillance requirements for the D.W. air sampling system. This item remains open.

(Open) Inspector Follow Item (277/84-23-02, 278/84-18-02): The licensee was to provide a correlation between a 3° opening of a drywell to suppression chamber vacuum breaker specified in the T.S., and a one inch hole, the acceptance criterion of NUREG 0800. As result of a meeting with the NRC staff on February 6, 1985, the licensee has written a draft T.S. change which will delete the current T.S. provision for continuous operation with one drywell to suppression chamber vacuum breaker in the position between "fully closed" and "3 degrees open" and will require initiation of the bypass area leakage test within 8 hours of detection of a "not fully seated" position indication to assure that no bypass larger than, or equivalent to, a one inch diameter hole exists between the drywell and the suppression chamber.

This change has been written but has not yet been reviewed by the Plant Operation Review Committee (PORC). This item remains open pending licensee submittal of the T.S. change and NRC approval of the change.

3. Outage Startup Testing

3.1 General

The licensee has completed an extended major outage which included replacement of recirculation piping and refueling. Because of the extensive nature of the modifications a series of modification acceptance tests (MAT's) were developed to prove the adequacy of replaced piping. NRC Inspection 50-277/85-15 provided NRC review of outage activities and preoperational MAT's.

During this inspection, a review was performed of test procedures and actual tests conducted during system operations. Test procedures reviewed and witnessed were operational MAT's, T.S. surveillance tests, station routine tests, and post refueling acceptance tests. The inspection included procedure review, test witnessing and completed test data review. Tests were reviewed for conformance to Technical Specifications and ANSI N18.7, 1972, "Administrative Controls for Nuclear Power Plants.

3.2 Test Procedure Review

A sampling of test procedures performed or scheduled to be performed during this inspection were reviewed to ensure that the following criteria were met:

-- Procedures were properly approved;

-- Proper formats were in use;

-- Prerequisites and precautions were included;

-- Procedures were technically adequate and met T.S. requirements;

-- Test performance could be properly documented;

-- Systems were restored to normal following the test;

-- Personnel performing the tests were identified; and

-- Test objectives were met

Test procedures reviewed during this inspection are listed in attachment A.

3.3 Test Performance Witnessing

The inspector witnessed the performance of all or selected portions of the tests listed in Attachment B to verify proper implementation of the procedures. These tests were observed in progress for the following:

-- Adherence to procedural requirements;

-- Adequacy of the test to achieve the desired result;

-- Conformance to T.S.;

-- Assurance that acceptance criteria were met and that tests were satisfactorily completed;

-- Procedure changes were obtained when required;

-- Personnel performing the tests were knowledgeable of the test; and

-- Independent verification of test results (See paragraph 3.4)

3.4 Independent Measurements, Calculations, and Verifications

While witnessing tests, the inspector performed the following independent verifications of test results. Verifications were based on independent observation of installed plant instrumentation.

-- During actuation of steam relief valves per ST 10.4, the inspector independently verified, on a sampling basis, steam relief valve actuation by observing open valve indication, closure of turbine bypass valves, changes in reactor level and pressure, relief valve downstream temperature, and activation of the sonic probe alarm.

-- During the performance of ST6.5, HPCI quick start test, the inspector verified that the pump reached proper flow and pressure in the correct time frame. During the operational hydrostatic test of the HPCI discharge piping, the proper test pressure and test duration were also verified.

-- During the performance of ST 6.11, RCIC pump test, the inspector verified that the RCIC pump reached proper flow and pressure in the correct time frame. During the operational hydrostatic test of the RCIC discharge piping, the proper test pressure and test duration were also verified.

-- The inspector independently verified licensee calculations for determination of shutdown margin and eigenfunction

3.5 Review of Completed Test Procedures

The inspector reviewed a selected sample of tests which were completed during this inspection to verify that test procedures were properly completed, test results were reviewed as required, data test results were acceptable, and that corrective action was taken when necessary. The test procedures reviewed were for plant surveillance and routine tests. As of the completion of this inspection, MAT's were still in progress. Some data of MAT's in progress were reviewed; however, in many cases this data was incomplete and acceptance criteria had not yet been met. Final test results reviewed are listed in Attachment C.

3.6 Findings

No violations or other deficiencies were observed.

4. Licensee Investigations of High Resistance in Switch Contacts in Safety Related Systems

During performance of a Modification Acceptance Test (M.A.T.) on the Core Spray System logic, certain contacts did not pick up after a test switch was returned to normal. This would cause the system logic to sense that the system was in test and prevent Core Spray Pump start. The test switch involved was determined to have a high resistance restricting current flow through the switch. The date of this was not determined during this inspection; however, plant engineering staff was informed of the problem on June 28, 1985. The switch involved is a CR-2940 which is a very common switch used throughout the plant.

The licensee was concerned that similar problems may exist in other switches in safety related systems. Logic diagrams for the HPCI, RCIC, Core Spray, RHR, and ADS systems were reviewed as these switches were energized to actuate. PCIS and RPS were not reviewed as these switches are denergized to actuate. A switch failure will give a 1/2 scram.

Approximately 60 switches were identified. Each switch was tested for functionality and for resistance. Approximately 17 switches had high resistance up to several thousand ohms. High resistance was considered anything greater than zero ohms. In spite of the high resistance, each switch tested worked properly. All switches were cleaned and resistance readings were significantly reduced. Other switches of this type were not considered to be a problem as functional tests would normally determine operability of a switch.

As of this inspection the licensee had not finalized all safety reviews. A report is being written for PORC review and the Independent Safety Evaluation Group has been informed. No generic issues have been considered; and the need for any maintenance of Unit 3 switches has not been determined at this time.

It appears to date that the licensee has taken appropriate action concerning this switch problem. There appears to be no significant impact on safety or system operability.

5. Quality Assurance/Quality Control Interfaces

5.1 Quality Assurance(QA)

The QA section at Peach Bottom works directly for Corporate QA and has a strict audit function onsite. The inspector held discussions with QA personnel and reviewed audit plans and audit checklists concerning major outage recovery and post-refueling startup for Unit 2.

Based on this review, the inspector determined that there has been significant audit activity concerning testing of modifications following the Unit 2 outage and startup testing. This audit was still ongoing for activities in progress as of the dates of the inspection. The Audit Team consisted of two QA auditors and a QC engineer working for the team part time. The current audit is covering the following areas:

-- Startup Modification Acceptance Tests;

-- Post refueling tests;

-- T.S. Compliance;

-- Operational Verification;

-- System walkdowns;

-- Adherence to procedures;

-- Operator training in new modifications;

-- Procedure and drawing updates; and

-- Valve lineups

The audit started in May of 1985 and is still in progress. The audit checklist was extensive. Based on the above observation, QA involvement with ongoing activities appears to be acceptable.

5.2 Quality Control (QC)

Discussions with a QC engineer indicated that most of the QC involvement with major outage activities was prior to plant startup. QC inspectors assisted the Major Outage Recovery Effort (M.O.R.E.) Team by performing independent walkdowns and verification of newly installed modifications. Other items witnessed by QC inspectors included verification of valve lineups, system flushes, preoperational MAT's, and valve stroking. One QC engineer participated in the initial stages of the QA audit discussed in paragraph 5.1 above. The inspector reviewed a sample of five QC inspection reports concerning QC coverage of M.O.R.E. activity. Based on the above reviews QC coverages appears to be acceptable.

6. Management Meetings

Licensee management was informed of the scope and purpose of the inspection at an entrance interview conducted on July 8, 1985. The findings of the inspection were periodically discussed with licensee representatives during the course of the inspection. An exit interview was conducted on July 17, 1985 (see paragraph 1 for attendees) at which time the findings of the inspection were presented.

At no time during this inspection was written material provided to the licensee by the inspector.

ATTACHMENT A

Test Procedures Reviewed

RE-27, Peach Bottom 2 and 3 Core Power Symmetry and TIP Reproducibility Test, Revision 9, June 28, 1985

RT 10.3, TIP Machine Alignment Verification, Revision 2, January 4, 1983

RT 13.11, Checkout of the NSSS Computer Calculation of Core Thermal Power, Revision 0, November 1, 1983

RT 15.7, Feedwater Controller Stability Test, Revision 1, July 16, 1985

ST 3.3.2, Calibration of the Average Power Range Monitoring (APRM) System, Revision 8, December 21, 1981

ST 3.3.2, Calibration of the Average Power Range Monitoring (APRM) System, Revision 8, December 28, 1981

ST 3.4.1, LPRM Gain Adjustment, Revision 19, July 13, 1984

ST 3.7.2, Reactor Anomalies - Unit 2, Revision 21, July 2, 1985

ST 3.9, Critical Eigenvalue Comparison, Revision 4, November 17, 1983

ST 10.7, CRD Scram Insertion Timing, "Full In" and "Full Out" Position Indication Check, and Rod Coupling Integrity Check For All 185 Control Rods, Revision 11, May 22, 1985

ST 10.13, CRD Scram Insertion Timing of Selected Control Rods, Revision 2, May 22, 1985

ST 13.30.1, Unit 2 Core Flow Calibration Verification, Revision 3, February 19, 1985

MAT 1278 PB-2-55, Recirculation Controller Stability Testing at 100% Reactor Power, Revision 0, May 28, 1985

MAT 1278 PB-2-59, 75% Load Line Verification and Jet Pump Baseline Data, Revision 0, July 16, 1985

MAT 1278 PB-2-60, 100% Load Line Verification and Jet Pump Baseline Data, Revision 0, July 16, 1985

MAT 1278 PB-2-62, Jet Pump Calibration - 100% CTP, Revision 0, June 27, 1985

MAT 1278 PB-2-63, Recirculation Pump Trips at 100% CTP, Revision 0, May 28, 1985

MAT 1278 PB-2-66, Recirculation System Calibration Search, Revision 0, June 11, 1985

MAT 1278 PB-2-67, 35% CTP - Process Temperatures, Revision 0, June 26, 1985

MAT 1278 PB-2-68, Recirculation Pump Trips - Process Temperatures, Revision 0, June 27, 1985

ATTACHMENT B

Tests Witnessed

ST 6.5, HPCI Pump, Valve, Flow & Cooler, Revision 35, June 28, 1985. Witnessed operability test at 1000 psi performed on July 10, 1985.

ST 6.11, RCIC Pump, Valve, Flow & Cooler, Revision 28, May 17, 1985. Witnessed test performed on July 11, 1985.

ST 10.4, Relief Valve Manual Actuation, Revision 14, January 4, 1985. Witnessed operability test of Main Steam Relief and ADS valves on July 9, 1985.

ATTACHMENT C

Completed Tests Reviewed

ST 3.8.2, Shutdown Margin (Unit 2-Cycle 7), Revision 4, July 3, 1985. Data reviewed for test performed July 6, 1985.

ST 3.9, Critical Eigenvalue Comparison, Revision 4, November 17, 1983. Data reviewed for calculation performed on July 6, 1985.

ST 10.2, RCIC Flow Rate at 150 PSIG Steam Pressure, Revision 6, January 16, 1985. Reviewed data for test performed on July 9, 1985.

ST 10.4, Relief Valve Manual Activation, Revision 14, January 4, 1985. Data reviewed for test performed July 9, 1985.

ST 10.7, CRD Scram Insertion Timing, "Full In", and "Full Out" Position Indication Check, and Rod Coupling Integrity Check for all 185 Control Rods, Revision 11, May 22, 1985. Data reviewed for test performed July 6, 1985.