

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-277/89-25
50-278/89-25

Docket Nos. 50-277
50-278

License Nos. DPR-44
DPR-56

Licensee: Philadelphia Electric Company
Correspondence Control Desk
P. O. Box 7520
Philadelphia, Pennsylvania 19101

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

Inspection At: Delta, Pennsylvania

Inspection Conducted: November 27 to December 1, 1989

Inspectors:

Jack Strosnider
for R. A. McBrearty, Reactor Engineer, Materials
and Processes Section, EB, DRS

12/29/89

date

Approved by:

Jack Strosnider
J. R. Strosnider, Chief, Materials and
Processes Section, EB, DRS

12/29/89

date

Inspection Summary: Inspection on November 27 to December 1, 1989
(Report No. 50-277/89-25 and 50-278/89-25)

Areas Inspected: A routine, unannounced inspection was conducted of licensee actions on previous inspection findings and activities associated with the Unit 3 recirculation system piping thermal expansion test. In addition, the results of the water chemistry program and licensee actions regarding selection and control of component materials to minimize personnel exposure to radiation were reviewed.

Results: No violations were identified.

DETAILS

1.0 Persons Contacted

Philadelphia Electric Company

- * J. Austin, Installation Superintendent
- * J. Cotton, Superintendent - Operations
- * T. Cribbe, Regulatory Engineer
- * G. Daebeler, Superintendent Technical
- * J. Franz, Plant Manager
- * M. Logue, NDE Services
- * D. LeQuia, Superintendent - Plant Services
- * K. McGuigan, Regulatory - T.A.
- * A. Odell, Senior Chemist
- * J. Pratt, Manager Quality Assurance
- * J. Rovanske, Nuclear Quality Assurance - Auditor
- * M. Sattler, Maintenance Engineer Supervisor
- * C. Schwartz, Shift Manager
- * J. Stanley, Engineer - Maintenance Services
- * J. Wilson, Outage Superintendent

General Electric Company

P. Kissinger, Lead Engineer

U. S. Nuclear Regulatory Commission

- * J. Lyash, Senior Resident Inspector
- * L. Myers, Resident Inspector
- * R. Urban, Resident Inspector

*Denotes those present at the exit meeting.

2.0 Licensee Action on Previous Inspection Findings (92701)

(Closed) Unresolved Item (50-278/88-14-01): Missing Ultrasonic Calibration Records.

The weld data package for elbow to pipe weld 10-IB-16, spool piece 3-10-30A-5, did not contain the ultrasonic calibration records associated with the preservice examination of the subject weld. The missing records were obtained and inserted in the data package, however, there was a concern that other data packages were not complete.

The licensee's investigation found that all of the PSI data packages were complete, and the inspector's review of 30 data packages confirmed that ultrasonic calibration records were included in each package along with all other required information.

Based on the above, this item is closed.

(Closed) Unresolved item (50-277 50-278/88-14-02): NDE inspector qualification.

Radiography Interpreters (Level II) performing contractor surveillance at Peach Bottom did not meet the SNT-TC-1A minimum requirements for training or experience to qualify to interpret and evaluate results with respect to applicable ASME code, standards, and specifications; although PECO procedure MA-16, Revision 6 permitted them to perform these functions. Additionally, certification records of ASME Section XI visual inspectors for VT-1, -2, -3 and -4 did not reflect the ANSI N45.2.6 - 1978 experience requirements.

The inspector determined that procedure MA-16 was revised to identify and limit the functions that radiography interpreters can properly perform based on their level of training and experience. In addition, the MA-16 procedure was revised to incorporate the ANSI N45.2.6 experience requirements for the licensee's VT-1, -2, -3 and -4 visual inspectors, and the individual records were updated to show that the requirements were complied with. The aforementioned procedural changes are documented in Revision 7 of MA-16.

Based on the above, this item is closed.

3.0 Recirculation System Testing - Unit 3 (72701)

The Unit 3 recirculation system piping was replaced as a result of the detection of intergranular stress corrosion cracking in the original piping. Prior to placing the system in service various examinations and tests are required to be performed including tests to verify that the piping responds as predicted, within safe stress limits for thermal expansion and vibration. The piping replacement was governed by ASME Section III, 1980 Edition with Winter 1981 Addenda.

General Electric Company was contracted by the licensee to perform the thermal expansion and vibration tests on the piping system. The tests were performed using General Electric Specification No. 23A1907AF, Revision 0 which provides thermal expansion and vibration limits applying to the piping system at Peach Bottom Unit 3. The specification defines Level 1 and Level 2 limits and identifies the following actions which must be taken if the limits are violated.

- Level 1 Limits - "Level 1" is that specified level of pipe motion which, if exceeded, makes a test hold or termination mandatory. If a Level 1 limit is exceeded, the plant shall be placed in a satisfactory hold condition and the responsible piping design engineer shall be advised.

- Level 2 Limits - "Level 2" is that specified level of pipe motion which, if exceeded, requires that the responsible piping design engineer be advised. If a Level 2 limit is not satisfied, plant operating and start-up testing plans will not necessarily be altered. Investigation of the measurements and of the criteria and calculations used to generate the pipe motion limits should be initiated. An acceptable resolution must be reached by all appropriate and involved parties, including the responsible piping design engineer of the affected piping system. Depending upon the nature of such a resolution, the applicable tests may or may not have to be repeated.

During the performance of the thermal expansion test a Level 1 violation was identified at sensor RA-9Z while the piping was at 350°F. The final test temperature was intended to be 526°F. General Electric personnel issued Field Deviation Disposition Request (FDDR) No. HE-3-0544, Revision 0 on November 21, 1989 to document the violation and the test results at the intermediate temperature. The FDDR was transmitted to the responsible General Electric Piping Design Engineer at San Jose, California, who evaluated the data and provided an accept as-is disposition with justification for the disposition on November 21, 1989. Upon receipt of the disposition at Peach Bottom the test was resumed until completion at the rated reactor temperature of 526°F.

Upon completion of the test at 526°F, the data identified three Level 1 violations and 19 Level 2 violations. The violations were documented on FDDR No. HE-3-0545, Revision 0 on November 30, 1989 and immediately submitted to the G.E. Piping Design Engineer at San Jose for disposition prior to performing further tests on the system. The licensee issued Nonconformance Report No. P89986 on the same date to document the problem. The proposed disposition of the NCR was to have the GE San Jose responsible piping design engineer for Peach Bottom to provide a resolution per the FDDR process. The evaluation by G.E. San Jose was performed upon receipt of the information from Peach Bottom and dispositioned as "acceptable as is." The dispositioned FDDR was returned to Peach Bottom on November 30, 1989, the date of issue.

Justification of the disposition decision stated that "No safety, reliability and pressure integrity problems are created by accepting the above violations. The plant can continue operation."

General Electric Specification 23A1907AF, Rev. 0, Design Input Document for Mod. #1536, Recirculation, RHR and RWCU System Piping Replacement Engineering Work Letter for Mod. #1536, FDDR No. HE-3-0544, FDDR No. HE-3-0545, and NCR No. P89986 were selected for inspection to ascertain that applicable requirements were complied with and that the nonconforming test results were properly documented and dispositioned.

The inspector determined that the test results were properly documented and evaluated, the FDDR's were dispositioned in a timely manner by the appropriate piping design engineer, and the dispositions were technically justified. The NCR closeout was being processed by the licensee but was not completed at the time the inspector left the site.

Conclusions

Test technicians and other personnel involved with the recirculation system piping thermal expansion tests exhibited a good understanding of specification requirements and the processing of results which exceeded specification limits. The evaluation and disposition of nonconforming results was quickly provided by the responsible piping design engineer, and all provisions of the applicable specification were complied with.

No violations were identified.

4.0 Water Chemistry (84750)

Water Chemistry data were reviewed as part of this inspection. The methods of collecting and verifying the accuracy of these data were not included in the scope of this inspection.

The inspector reviewed the primary water chemistry data for the period of January 1989 through September 1989 and discussed these data with responsible individuals in the licensee's chemistry department. Unit 3 was shutdown during this period. Unit 2 was shutdown from January 1989 through April 1989 and was operational for the rest of the period.

Document No. CH-10 "Chemistry Goals" identifies that the licensee follows the EPRI/BWR Owners Group Water Chemistry Guidelines to the greatest extent possible based on plant design. The facilities' Technical Specifications place limits on conductivity and chloride concentration. In addition to chloride concentration and conductivity, the licensee controls and tracks the concentration of various other reactor water constituents including sulfates, silica copper, iron, and zinc, and also the water pH value.

The monthly averages of conductivity of the Unit 2 reactor water during the operating period reviewed ranged from 0.08 μmho to 0.28 $\mu\text{mho/cm}$ which is within the guideline limit of 0.3 $\mu\text{mho/cm}$ and the T.S. limit of 5.0 $\mu\text{mho/cm}$. The monthly averages for chloride concentration in the reactor coolant during the reviewed period ranged from 4.0 parts per billion (ppb) to 7.0 ppb which was within the guideline of less than 20 ppb, and well within the the T.S. limit of 0.2 parts per million. A few instances when the limits were exceeded were attributed to reactor shutdown, and in one case, to condenser tube leaks. The inspector confirmed that the values were brought to acceptable levels within a short period of time.

The sample tap where water samples are collected for analysis is located at the reactor water inlet to the demineralizer. Conductivity and chloride concentration are measured on a daily basis from grab samples, and conductivity is also monitored in the control room.

Conclusions

The licensee is operating the plant equipment to obtain the optimum results for water chemistry. The few instances when chemistry limits were exceeded were due to unit shutdowns and not to abnormal operating conditions except for one case during the reviewed period when condenser tube leaks caused a rise in conductivity and chloride concentration which was quickly returned to acceptable levels.

5.0 Occupational Exposure (83750)

The licensee's program for selecting and controlling component materials to minimize personnel exposure to radiation includes the following:

1. Recirculation system replacement piping was electropolished prior to its installation.
2. A number of valves in the plant contain stellite valve seats. The licensee's foreign material exclusion program addresses the concern regarding stellite migration into the reactor vessel as a result of valve repair and maintenance. In conjunction with that program the licensee is following industry developments regarding materials with the properties of stellite but without the cobalt content.

In addition to the above actions which are currently in place, the licensee is evaluating the following options.

3. The use of zinc injection as a means of controlling cobalt plate-out in piping systems is being considered. A zinc injection pilot program is scheduled to be initiated at the licensee's Limerick facility and, if successful, will be installed at Peach Bottom.
4. The licensee is investigating the feasibility of replacing all control blade pins and rollers at Peach Bottom with non-stellite materials. Components are currently replaced on an as-needed basis.

6.0 Exit Meeting

The inspector met with licensee representatives, denoted in paragraph 1, at the conclusion of the inspection on December 1, 1989. The inspector summarized the scope and findings of the inspection.

At no time during the inspection was written material provided by the inspector to the licensee. The licensee did not indicate that proprietary information was involved within the scope of this inspection.