

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-278/86-02

Docket No. 50-278

License No. DPR-56

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, PA 19101

Facility Name: Peach Bottom, Unit 3

Inspection At: Delta, Pennsylvania

Inspection Conducted: January 17-23, 1986

Inspectors: *S. Kucharski* *2/26/86*
S. Kucharski, Resident Inspector date
J. Golla *2/26/86*
J. Golla, Reactor Engineer date
Approved by: *C. Anderson* *2/26/86*
C. Anderson, Chief, date
Plant Systems Section, EB, DRS

Inspection Summary:
Inspection on January 17-23, 1986 (Inspection Report No. 50-278/86-02)

Areas Inspected: Routine announced inspection of procedure review, test witnessing, and result evaluation of Integrated Leak Rate Test (ILRT) activities, review of unresolved items and tours of the facility. The inspection involved 67 hours onsite by two region-based inspectors.

Results: No violations or deviations were identified.

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DETAILS

1.0 Persons Contacted

1.1 Philadelphia Electric Company (PECO)

*C. J. Campbell, Test Engineer, Project Group
*A. Fulvio, Technical Engineer
*D. Smith, Superintendent, Operations
*A. J. Wasong, Results Engineer, Project Group

1.2 General Physics

*C. Kooistra, Engineer
*E. Levinson, Engineer

1.3 Nuclear Regulatory Commission

T. Johnson, Senior Resident Inspector

*Denotes those present at exit meeting held on January 23, 1986.

2.0 Licensee Action on Previous NRC Findings

2.1 (Closed) Violation (50-278/85-32-01) Performance of the fuel reconstitution effort without proper Quality Control as required in station procedures.

The inspector reviewed the response of the licensee informing the NRC of the corrective and preventive actions taken to prevent this occurring in the future and found it to be acceptable. This item is closed.

2.2 (Closed) Violation (50-278/85-32-02) Failure to follow approved procedures.

The licensee failed to follow approved procedures on two occasions during the fuel reconstitution effort. The first occasion had to do with differentiating between a recipient bundle and a donor bundle for the QC inspection. The procedure has been revised to clarify the intent of step V-2 for donor bundles. The second occasion dealt with personnel not taking the proper precaution in control areas. The licensee reinstructed all those concerned to comply with HP procedures. This item is closed.

2.3 (Closed) Follow-up Item (50-278/85-32-03) Review of Safety Evaluation of Fuel reconstruction.

The inspector reviewed the Safety Evaluation performed by General Electric for the fuel reconstitution effort titled "PB-3-Reload 6, Cycle 7-Safety Evaluation" October 1, 1985. This evaluation verified through calculational methods that there were no safety concerns as a result of the pin swapping of the gadolinium pins. This item is closed.

- 2.4 (Closed) Unresolved Item (50-278/85-10-01) Licensee not performing Type B & C Testing Results Comparison to 0.6LA at time of shutdown
The inspector reviewed the method in which the licensee keeps records of the running totals for the "As Found" and "As Left" condition of Type B and C leakage testing. All the information for the chronological condition of each penetration is available and accessible. This item is closed.
- 2.5 (Closed) Unresolved Item (50-278/83-11-04) Testing of Valves which perform a Pressure Isolation Function
The inspector reviewed the licensee's evaluation of certain pressure isolation valves as requested, and is now in agreement with their reclassification. It also has been noted that the table in question (I.5.2) of the FSAR has been removed. This item is closed.

3.0 Containment Integrated Leak Rate Test - Unit 3

3.1 Documents Reviewed

- ILRT Valve Line ups
- Section 4.7 of the Technical Specification
- Section 5.2.5.1 of the FSAR
- ST 12.5-1, Integrated Leak Rate Test, Revision 6, January 15, 1986
- Instrumentation Selection Guide Calculation
- Containment Volume Fraction Calculation
- CILRT Instrumentation Calibration
- CILRT Sequence of Events Log
- Test Results
- Selected Piping and Instrument Drawings
- DMC 1.0, Integrated Leak Rate Testing Revision 0, May 1985
- DMC 1.6, ILRT-Attachment, Revision 0, May 1985
- ECCS Operability Requirement for ILRT.

3.2 Scope of Review

The inspector reviewed the test procedure and related documents for technical adequacy and to determine compliance with the regulatory requirements of Appendix J to 10 CFR 50, Technical Specifications, and applicable industry standards. The inspector witnessed a large portion of the CILRT and subsequent verification test. The inspector also performed independent measurements and calculations of the test results.

3.3 Procedure Review

The inspector reviewed the CILRT procedure along with the documents listed in paragraph 3.1 for technical adequacy and to ascertain compliance with requirements of Technical Specifications and 10 CFR 50, Appendix J.

On a random sampling basis, the inspector reviewed the procedure line up of valves in the procedures for piping penetrations. This review was to ensure that systems were properly vented and drained to expose the containment isolation valves to containment atmosphere and the test differential pressure with no artificial boundaries. The licensee pointed out to the inspector that the valve line up was changed somewhat because of leakages discovered. During the performance of an ILRT, the RHR configuration has one RHR pump in operation in the shutdown cooling mode and the others lined up for the LPCI mode. This means that containment valves that are normally isolated during a DBA are open during the ILRT. With these valves open and the RHR lined up for LPCI, valves that are not isolation valves had to be isolated so that the vessel would not drain into the suppression pool during the test. This would significantly affect the calculation of the containment leak rate. While lining up the systems to begin the test it was discovered that these valves had gross leakage. Therefore to perform the test the LPCI injection valves had to be closed. As stated before since this is not a normal valve line up for a DBA this was acceptable. This valve line up is acceptable only for the performance of this test. No unacceptable conditions were identified.

3.4 CILRT Instrumentation

The inspector reviewed the calibration records for the resistance temperature detectors (RTD's), dew point instruments, precision pressure detectors, and verification test flow meters. Their calibrations were found to meet applicable accuracy requirements, and were traceable to the National Bureau of Standards. The inspector also verified that the instrument system satisfied the Instrument Selection Guide (ISG) calculation. The inspector observed the operation of the data collection during the test. The procedure was as follows: the technician would record the data on a fifteen minute interval and relay this information to the computer personnel who would manually enter the information into the computer. On an hourly basis the data would be verified to eliminate any errors. No unacceptable conditions were identified.

3.5 CILRT Chronology

January 21, 1986

- 0047 - Commenced Pressurization of Containment, two compressors in operation.
- 0100 - 2nd set of data recorded. Data was taken on an hourly basis during pressurization.

- 0300 - Containment pressure was 28.00 psia - started leak search. Personnel were instructed on how to search for leaks and not to adjust or repair any leaks found.
- 1035 - Removed Dew cell point 5 (Torus) from calculation due to erratic readings.
- 1110 - Containment pressurization was temporarily halted due to Reactor vessel temperature dropping. Adjusted Drywell chiller loading to increase Drywell temperature.
- 1300 - Combination of the chilled water temperature increase and reactor water temperature increase resulted in an increase of drywell dew point readings and a slight increase in containment pressure. Still holding to confirm Reactor pressure vessel temperature has stabilized.
- 1445 - Restarted pressurization.
- 1535 - Stopped pressurization at 64.1 psia. Began stabilization period, and also started recording data at 15 minute intervals.
- 2145 - Temperature stabilization criteria met. Commenced ILRT.

January 22, 1986

- 0545 - ILRT Completed.
- 0615 - Established verification flow of 4.35 SCFM.
- 0715 - Stabilization period for verification test completed. 4 hour verification started.
- 1135 - Verification test completed.
- 1520 - Depressurization started.

3.6 Test Performance and Control

The CILRT was performed as delineated by the procedure and appropriate administrative guidelines were followed. Test personnel exhibited logical and technically sound approaches to leak searches. One problem was discovered after the test by the licensee. A sample sink root valve was found to be misaligned (closed instead of the test condition, open). The sample sink root valve was tagged and double verified to be open as part of the test preparation, but some time during the test, or after the test the valve was manipulated.

The licensee performed a local leak test on the penetration on July 25, 1985 and the leakage was 10 SCCM. The licensee will perform another leak test on the penetration and add the results to the ILRT. This could be cited as a severity violation but since it meets the 5 test requirements of 10CFR2 Appendix C Section V.A, a violation will not be written. That is:

- (1) it was identified by the licensee
- (2) it fits in severity level IV or V
- (3) it was reported by the licensee
- (4) it will be compensated for in the final test result and measures will be taken to prevent a future occurrence.
- (5) it was not an occurrence that could reasonably be expected to have been prevented by the licensee's corrective action from a previous violation.

The inspector had no further questions at this time.

3.7 Test Results Reviewed

The licensee evaluated the test results for the 8 hour period between 2145 on January 21, 1986 and 0545 on January 22, 1986. The measured leak rate was 0.0623 wt. % per day with a 95% upper confidence limit (UCL) of 0.0709 wt. % per day. The inspector performed an independent calculation of the test results using the raw data from the test to estimate the accuracy of the licensee's leak rate calculations. The results were as follows:

	Lam(Mass Pt.)	UCL(Mass Pt.)
Peach Bottom 3	0.0623 wt. %/day	0.0709 wt. %/day
NRC	0.0624 wt. %/day	0.0735 wt. %/day

The inspector concluded that the licensee's calculations were appropriately performed and accurate. Final computation of the total integrated leak rate is dependent upon the addition of local leakage values of penetration not included in the test, and of water level corrections. The above value with the additions will reflect the "as left" condition. The licensee in their final report will have to reflect the leakage rate in the "as found" condition based on the "as found" LLRT for each penetration.

The CILRT was followed by a successful superimposed leak verification test. The licensee imposed a leak of 4.35 SCFM on the existing leak. The measured verification test leak was 0.5748 wt. % per day at the upper 95% confidence limit. The test result was within the acceptance criteria band ($0.4336 \leq L \text{ composite} \leq 0.6836$) wt. %/day. The inspector also verified this result by independent calculation.

The containment was then depressurized to 16.4 psia followed by depressurization of the torus to atmospheric pressure for performance of the low pressure drywell bypass test. A successful bypass test was performed with a resulting equivalent bypass area of 0.021 in². The acceptance criterion is 0.785 in² or smaller. No unacceptable conditions were identified.

4.0 Facility Tours

The inspector made several tours of various areas of the site to observe test activities, other work in progress and general housekeeping. No unacceptable conditions were identified.

5.0 Independent Calculations

The inspector performed independent calculations of the test results of this CILRT and the subsequent verification test. Details are included in section 3.7 of this report.

6.0 QA/QC Involvement

During the performance of the CILRT, the inspector verified QC involvement in test monitoring, and determined that the QC personnel were knowledgeable of their responsibilities, how to perform their duties and how to report their findings. No unacceptable conditions were identified.

7.0 Exit Meeting

A meeting was held on January 23, 1986 to discuss the scope and findings of the inspection as delineated in this report (See Section 1.0 for attendees). At no time during this inspection was written information provided to the licensee.