



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
161 MARIETTA ST., N.W., SUITE 3100  
ATLANTA, GEORGIA 30303

Report Nos. 50-324/81-13 and 50-325/81-13

Licensee: Carolina Power and Light Company  
411 Fayetteville Street  
Raleigh, NC 27602

Facility Name: Brunswick

Docket Nos. 50-324 and 50-325

License Nos. DPR-62 and DPR-71

Inspection at Brunswick site near Southport, North Carolina

Inspectors: H. L. Whitener 7/17/81  
H. L. Whitener Date Signed

R. C. Butcher 7/21/81  
R. C. Butcher Date Signed

Approved by: P. T. Burnett 7/21/81  
P. T. Burnett, Acting Section Chief Date Signed  
Engineering Inspection Branch  
Engineering and Technical Inspection Division

SUMMARY

Inspected on June 5-11, 1981

Areas Inspected

This routine announced inspection involved 146 inspector-hours on site in the areas of containment integrated leak rate testing for Unit 1 and follow-up on outstanding items for Units 1 and 2.

Results

Of the two areas inspected one violation was found in one area (Violation - inadequate CILRT procedure (325/81-13-01) paragraph 6.i)).

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## DETAILS

### 1. Persons Contacted

#### Licensee Employees

C. Dietz, Plant Manager  
\*W. Tucker, Manager, Technical Support  
M. Hill, Manager, Maintenance  
\*S. Bohanan, Regulatory Compliance Specialist  
\*G. Bishop, Project Engineer  
\*E. Bishop, Engineering Supervisor  
\*J. Boone, Project Engineer  
J. Ponder, Engineer  
H. Westermarck, Engineer  
\*G. Oliver, E&RC Manager

#### Other Organizations

##### EBASCO Services, Inc

\*J. Bruff, Senior Engineer  
M. Tagliamonce, Principal Engineer  
E. Franklin, Principal Engineer

##### United Engineers and Constructors

J. Ashenden, Engineer

##### NRC Resident Inspector

\*D. Johnson, Senior Resident Inspector  
L. Garner, Resident Inspector

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on June 11, 1981, with those persons indicated in Paragraph 1 above. The licensee asked for further clarification of certain Appendix J requirements. The inspectors reviewed the NRC positions on venting and draining of systems, add-on leakage values for local leak rate tests and the factors considered in identifying a failed test. Following discussions with the IE Headquarters leak rate specialist, the licensee was later informed by telephone that the NRC positions were correct as presented by the inspectors during the exit interview.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. One new unresolved item identified during this inspection is discussed in paragraph 6.e.

5. Containment Integrated Leak Rate Test (CILRT)

The inspectors reviewed the test activity to determine that the CILRT was performed in accordance with the Brunswick Integrated Primary Containment Leak Rate Test procedure, Appendix J to 10 CFR 50 and ANSI N45.5. The inspection was aided by the resident inspector. Selected sampling of the licensee's activities which were inspected included:

- a. The CILRT procedure was reviewed for conformance to NRC requirements.
- b. Test performance was observed to determine the test was conducted in conformance to test procedure prerequisites were completed, special equipment installed, appropriate data were recorded and analyzed.
- c. Calibration records were reviewed to ensure test equipment was properly calibrated prior to use.
- d. A preliminary review of leakage rate results was performed to evaluate the licensee's analysis of test data.
- e. Valve lineups for selected penetrations were reviewed for correct valve line up per the CILRT procedure.

6. General Observations and Findings

The inspectors observed the licensee activities and reviewed the test procedure and presented the following observations and findings to the licensee prior to the test or at the exit interview, as noted. It should be noted that the NRC positions presented to the licensee at the exit interview were confirmed by telephone review with IE/HQ following the inspectors return to Region II.

- a. The inspectors reviewed the test procedure prior to the test and notified the licensee that the valve lineups were inadequate to ensure proper venting and draining of systems to satisfy Appendix J to 10 CFR 50. The inspectors reviewed valve lineups for selected penetrations in detail and for all penetrations in general with the licensee to ensure

comprehension of Appendix J requirements. In the exit interview the licensee was notified that the test procedure still provided for incorrect valve alignments. The following examples were noted:

- (1) Nitrogen supply to the TIP system - A manual valve was shut which prevented proper venting of the containment isolation valve.
- (2) Containment atmosphere monitoring (CAM) system - Two valves on penetration X-54E that do not automatically shut on an isolation signal were shut. This prevented the upstream valves, that automatically shut on an isolation signal, from being subjected to containment pressure as required by Appendix J.
- (3) Reactor building closed cooling water (RBCCW) - The RBCCW system is not fully qualified to seismic class 1 for portions of the system inside containment. The RBCCW system was not vented and drained as required by Appendix J.

As a final note of caution, the licensee was reminded that the inspectors accomplished a thorough review of only a portion of their valve lineup and from the findings, a complete review by the licensee, including all associated non-containment vent or block valves, would be necessary to ensure compliance to Appendix J requirements. The licensee stated at the exit interview that these matters would be addressed in a revision of the procedure.

- b. The inspectors reviewed the calibration records for the CILRT. The inspectors found no post-test calibration requirements and requested the licensee perform a post-test survey to adequately assure the post-test accuracy of the test equipment. This is necessary since some of the equipment may not be used/calibrated for an extended time period following the test. The licensee concurred in the need for post test verification and committed to develop a post test calibration verification program. This is inspector followup item (50-325/81-13-03).
- c. The inspectors found that the test procedure did not provide for isolating and venting a potential source of air leakage into containment as required by Appendix J. The instrument air line into containment had a single manual isolation valve outside containment with no provisions for venting. Prior to the test the licensee shut the isolation valve and installed a flow meter inside containment to verify no inleaking. The flow meter indicated no in leakage. The inspectors requested that Brunswick address the problem of not complying with the requirements of Appendix J by letter to NRR. The licensee agreed to address this problem.

- d. The inspectors found no provisions in the test procedure for adding certain type 'C' leak test results onto the final integrated leak rate. Type 'C' leakage results should be added for those systems which are isolated or not vented and drained as required by Appendix J. Appendix J provides that systems that are required to remain in service to provide for safe shutdown may have their containment isolation valve type 'C' test results added to the CILRT leak rate. Examples of the systems not vented or drained are:

- (1) Feedwater
- (2) HPCI (high pressure coolant injection)
- (3) RCIC (reactor core isolation cooling)
- (4) RWCU (reactor water cleanup)
- (5) Core Spray
- (6) RBCCW (reactor building closed cooling water)

The licensee will address this matter in a revision of the CILRT procedure or in a letter to NRR requesting exemption from venting and draining requirements.

- e. At the time of the exit interview the CILRT leak rate was approximately 1.2 percent per 24 hours. The Brunswick allowable leak-rate limit is 0.375 percent per 24 hours. The source of the excessive leakage had yet to be identified. The licensee took exception to the inspectors definition of when the CILRT started. Subsequently, it was confirmed by telephone conversation with IE/HQ that Appendix J defines the start of the test as the time the final containment inspection is completed. After the defined start of the test no repairs or adjustments may be accomplished without quantifying the as found/as left leak rates so the containment can be tested in as close to the "as is" condition as practical.

The licensee subsequently identified the source of excessive leakage, isolated the leak path through the CAC system and then successfully measured the leakage rate. The issue of initial test failure is an unresolved item pending NRC review of the licensee's final CILRT report. (50-325/81-13-02)

- f. During the preparations for and during the CILRT, the licensee was told by the inspectors that the procedure should list all systems that should be vented and drained but are required to remain operational for safe shutdown. In addition, any system isolation valves that cannot be vented and drained as required by Appendix J for maintenance considerations should also be identified in the procedure. Any systems and/or isolation valves not tested during the CILRT due to maintenance should be limited to those which are unavailable due to lack of repair parts or extended rework required.

- g. The inspectors noted that the test procedure did not specify how or where to vent various systems. The inspectors visually observed that the containment air monitors had loosened connections to provide a vent path. The TIP nitrogen supply line had a loosened connection to provide a vent path. In neither case did the procedure define what connection should be loosened nor specify the restoration of the loosened connections.
- h. The test directors maintained a test log which was in the test control room. Procedure changes and test problems were documented in the log.
- i. Due to the number of items that did not meet Appendix J requirements, the inspectors reiterated at the exit interview the necessity for Brunswick to identify those systems and/or components that can not be tested per Appendix J and either request a Technical Specification exemption or commit to a date for compliance. Such a submittal should be on a timely basis prior to the next scheduled CILRI.

Failure to have adequate procedures which would ensure that the test requirements of Appendix J are met was identified as a violation (50-325/81-13-01) at the exit interview.

7. IE Bulletin 81-01

The inspector reviewed the licensee's response to IEB 81-01, Surveillance of Mechanical Snubbers. There are no mechanical snubbers installed in Brunswick Unit 1 or Unit 2. Therefore, no action is required of the licensee and this matter is closed for both Unit 1 and Unit 2.