



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-325/87-27 and 50-324/87-27

Licensee: Carolina Power and Light Company
P. O. Box 1551
Raleigh, NC 27602

Docket Nos.: 50-325 and 50-324

License Nos.: DPR-71 and DPR-62

Facility Name: Brunswick 1 and 2

Inspection Conducted: August 10-14, 1987

Inspector: Stephen Jape
S. Tingen

9/9/87

Date Signed

Approved by: H. L. Whittner /for
F. Jape, Chief
Test Programs Section
Division of Reactor Safety

9/10/87

Date Signed

SUMMARY

Scope: This routine, announced inspection was in the areas of core physics testing and follow-up on open items.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

*E. Eckstein, Manager Technical Support
*K. Enzor, Director, Regulatory Compliance
*R. Poulk, Senior Specialist, Regulatory Compliance
M. Pastva, Specialist, Regulatory Compliance
S. Boyce, Project Engineer, Emergency Core Cooling Systems
M. Blinsen, Specialist, ISI, Leak Rate Test Director

NRC Resident Inspectors

W. Ruland, Senior Resident Inspector
L. Garner, Resident Inspector

*Attended exit interview.

2. Exit Interview

The inspection scope and findings were summarized on August 14, 1987, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Core Physics Tests - Units 1 and 2 (61705, 61707)

a. Periodic test, PT-01.9, LPRM/APRM Calibration, was reviewed by the inspector for successful performance in both units. This procedure ensures that the local power range monitor system has been properly calibrated to the local neutron flux and that the average power range monitor system has been properly calibrated to core thermal power which is required by Technical Specification (TS) to be performed once per month of equivalent full power operation.

- b. Periodic Test, PT-14.3.1, In Sequence Critical Shutdown Margin Calculation, was reviewed by the inspector for successful performance in both units. The purpose of this Periodic Test is to calculate and compare to TS requirements the actual shutdown margin of the reactor core during initial startup following a refueling.

No violations or deviations were identified.

6. Follow-up on Previously Identified Items (92700, 92701, 72703)

(Closed) LER 02-85-14: Automatic Depressurization System testing revealed that the K5A timing relays exceeded the TS time tolerance, and setpoint drift of the K5A relays was a primary concern. The relays were replaced and all subsequent test results have been satisfactory. The utility will continue to track Unit 2 future K5A relay calibrations and adjustments to evaluate any set point drift trend. This item is closed.

(Closed) LER 02-85-08, and URI 50-324/85-33-02: During Main Steam Isolation Valve (MSIV) fast closure testing, several Unit 2 MSIVs would not fast close. Subsequent investigation attributed this failure to disc-to-seat material problems of the respective MSIV double acting solenoid valve. The disc-to-seat material was Ethylene Propylene (EP) and failed due to a combination of hydrocarbon contamination, temperature, and internal geometry acting on the EP seating material. The MSIV double acting solenoid valves in Units 1 and 2 have been replaced with new valves utilizing viton disc-to-seat material. Viton is impervious to hydrocarbons but less resistant to radiation than EP, therefore the licensee is periodically replacing a sample of the viton seated valves and evaluating the removed valves for failure analysis to determine valve life. The licensee is tracking this item until a useful valve life has been determined. These items are closed.

(Closed) LER 02-85-11 and IFI 50-324/85-35-01: A reactor scram resulted from an inadvertent MSIV closure. The MSIV closure occurred when deenergizing the MSIV Dual Solenoid Valve AC solenoid for testing purposes. When the AC solenoid was deenergized the MSIV closed because the corresponding DC solenoid had unknowingly failed at a prior time. Due to this failure, the licensee checked the other Units 1 and 2 MSIV Dual Solenoid Valves for AC or DC solenoid failure, three other Unit 2 DC solenoids were discovered to be failed. Subsequent investigation revealed the probable cause of failure to be chloride corrosion of the DC solenoid coil, but the source of chloride corrosion could not be determined. As corrective action, the licensee has replaced all Units 1 and 2 MSIV solenoids with an improved type and installed monitoring circuits that detects a faulty solenoid. Since this corrective action has been implemented no MSIV solenoid failures have occurred. IFI 50-324/85-35-01 also addressed MSIV solenoid disc-to-seat materials problems that has been closed in the previous paragraph. These items are closed.

(Closed) LER 02-86-05: Local Leak Rate Testing (LLRT) of Unit 2 primary containment revealed a non-quantifiable leakage rate for three single valve penetrations and one double valve penetration. The valves were repaired and the local leak rate tested satisfactorily. The inspector asked the licensee if there was any program to identify LLRT valve failure trends. Presently, there is no such program, but one is being developed that will soon be implemented. This item is closed.

(Closed) IEB 86-02: This bulletin requested that licensees determine whether Series 102 or 103 differential pressure switches supplied by SOR Incorporated are installed in electrical equipment important to safety. In response, the licensee has stated that SOR Series 102 and 103 differential pressure switches are not installed in any Unit 1 or 2 systems important to safety applications as defined in 10 CFR 50.49(b). This item is closed for both units.

(Closed) IEB 80-25: Target Rock (TR) Safety Relief Valves (SRVs) failed to operate in response to manual demand and at a later unrelated time opened spuriously during power operations at Boston Edison Company's Pilgrim Nuclear Power Station. These malfunctions identified several TR SRV problems. The first was that during fabrication, the excessive use of Loc-tite would cause the solenoid plunger to stick to the bonnet, thus preventing pneumatic pressure from entering the pneumatic operator. When this bulletin was issued the licensee was purchasing two-stage TR SRVs to replace the currently installed three-stage TR SRVs. Prior to installation of the new TR SRVs into Units 1 and 2 the action taken specified by this bulletin was taken to ensure that excessive Loc-tite was not present, and subsequently, Brunswick has not experienced any SRVs failing to respond to manual demand until very recently. LER 01-87-20, dated July 15, 1987, documents that several SRVs failed to open when given a manual open signal. This recent LER is being tracked by the Test Program Section. The second deficiency identified by the Pilgrim 1 SRV malfunctions was excessive pressure in the pneumatic supply system to the SRV pneumatic operator which resulted in an SRV spuriously opening. Licensees with TR SRVs were required to analyze their respective pneumatic supply to the SRVs for overpressure possibilities, install overpressure protection if required, and install high and low pneumatic supply pressure alarms in the control room. Brunswick analysis of Units 1 and 2 SRV pneumatic supplies determined that there was adequate protection to prevent overpressure and no modifications were necessary. Both units already had low pressure alarms and since SRVs were being installed that were not as sensitive to an overpressure condition in the pneumatic supply, the licensee determined that a high pressure alarm was not required. Brunswick Units 1 and 2 have not experienced any spurious SRV opening since installation of the two-stage TR SRVs. This item is closed for both units.

(Closed) IFI 50-325,324/85-31-01: During LLRT, the licensee tested valves E11-F015A, E11-F015B, E21-F005A and E21-F005B in the Loss of Coolant Accident (LOCA) reverse direction without previous NRR approval. Since this finding the licensee has changed the applicable procedures to leak rate check these values in the LOCA direction. The inspector verified this by reviewing the applicable procedures. These items are closed.

(Closed) IFI 50-324/86-17-01 and 50-325/86-16-01: Establishment of a periodic test to perform and document control rod coupling checks prior to criticality following a refueling outage. The licensee has issued Periodic Test, PT-14.1, Control Rod Coupling Check and Control Rod Drive (CRD) Testing, which is required to be performed prior to criticality after completing core alterations that could have effected CRD coupling integrity. The inspector reviewed this procedure and verified that it was performed prior to the recent Unit 1 post refueling initial criticality. These items are closed.

(Closed) IEB 86-03: The inspector reviewed the licensee's response to IEB 86-03, Potential Failure of Multiple Emergency Core Cooling System (ECCS) Pumps Due to Single Failure of Air-Operated Valve in Minimum Flow Recirculation Line. The licensee determined that the problem described by this bulletin did not apply because of the design of these recirculation lines at this facility. Licensee action on this bulletin is considered to be complete. This item is closed for both units.