



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

Report Nos. 50-325/85-34 and 50-324/85-34

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: October 1-31, 1985

Inspectors:	<u><i>J. S. Mellen</i></u>	<u>11/25/85</u>
FOR	<u>W. H. Ruland</u>	Date Signed
	<u><i>J. S. Mellen</i></u>	<u>11/25/85</u>
FOR	<u>W. Garner</u>	Date Signed
Approved By:	<u><i>P. E. Fredrickson</i></u>	<u>11/25/85</u>
	P. E. Fredrickson, Section Chief	Date Signed
	Division of Reactor Projects	

SUMMARY

Scope: This routine safety inspection involved 117 inspector-hours on site in the areas of maintenance observation, surveillance observation, operational safety verification, ESF System walkdown, Unit 2 MSIV DC coil failures and Unit 1 startup from refueling.

Results: Within the areas inspected, no violations or deviations were identified.

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DETAILS

1. Licensee Employees

P. Howe, Vice President, Brunswick Nuclear Project
C. Dietz, General Manager, Brunswick Nuclear Project
T. Wyllie, Manager, Engineering and Construction
G. Oliver, Manager, Site Planning and Control
J. Holder, Manager, Outages
E. Bishop, Manager, Operations
L. Jones, Director, QA/QC
J. Moyer, Director, Training
M. Jones, Acting Director, Onsite Nuclear Safety, BSEP
J. Chase, Assistant to General Manager
J. O'Sullivan, Manager, Maintenance
G. Cheatham, Manager, Environmental and Radiation Control
K. Enzor, Director, Regulatory Compliance
B. Hinkley, Manager, Technical Support
L. Boyer, Director, Administrative Support
V. Wagoner, Director, IPBS/Long Range Planning
C. Blackmon, Superintendent, Operations
J. Wilcox, Principle Engineer, Operations
W. Hogle, Engineering Supervisor
W. Tucker, Engineering Supervisor
J. Boone, Engineering Supervisor
R. Creech, I&C/Electrical Maintenance Supervisor (Unit 2)
R. Warden, I&C/Electrical Maintenance Supervisor (Unit 1)
W. Dorman, Supervisor, QA
R. Kitchen, Mechanical Maintenance Supervisor (Unit 2)
C. Treubel, Mechanical Maintenance Supervisor (Unit 1)
R. Poulk, Senior NRC Regulatory Specialist
D. Novotny, Senior Regulatory Specialist
W. Murray, Senior Engineer, Nuclear Licensing Unit

Other licensee employees contacted included construction craftsmen, engineers, technicians, operators, office personnel, and security force members.

2. Exit Interview (30703)

The inspection scope and findings were summarized on October 30 and November 6, 1985 with the general manager. The licensee acknowledged the findings without exception. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during the inspection.

3. Followup on Previous Enforcement Matters (92702)

Not inspected.

4. Maintenance Observation (62703)

The inspectors observed maintenance activities and reviewed records to verify that work was conducted in accordance with approved procedures, Technical Specifications, and applicable industry codes and standards. The inspectors also verified that: redundant components were operable; administrative controls were followed; tagouts were adequate; personnel were qualified; correct replacement parts were used; radiological controls were proper; fire protection was adequate; QC hold points were adequate and observed; adequate post-maintenance testing was performed; and independent verification requirements were implemented. The inspectors independently verified that selected equipment was properly returned to service.

Outstanding work requests and authorizations (WR&A) were reviewed to ensure that the licensee gave priority to safety-related maintenance.

No violations or deviations were identified.

5. Surveillance Observation (61726)

The inspectors observed surveillance testing required by Technical Specifications. Through observation and record review, the inspectors verified that: tests conformed to Technical Specification requirements; administrative controls were followed; personnel were qualified; instrumentation was calibrated; and data was accurate and complete. The inspectors independently verified selected test results and proper return to service of equipment.

The inspectors witnessed/reviewed portions of the following test activities:

1-PT-15.4	Secondary Containment Integrity Test
2-PT-25.2P	Seismic Monitoring System Channel Check
OI-3	Periodic Testing and Daily Surveillance Report
GP-01	Pre-Startup Checklist
1-PT-7.1.9-1	Core Spray Simulated Automatic Actuation and Logic Functional Test
PT-14.3.1	In Sequence Critical Shutdown Margin Calculation
PT-35.2.2	Fire Hydrant Inspection and Operability Test

a. Main Steam Line (MSL) Radiation Monitors

Unit 2 ended the report period on October 31, 1985, operating at 90% power with C MSL isolated and with the normal full power pressure and temperature. The licensee confirmed in a PNSC meeting that a problem existed with the current Unit 2 Main Steam Line (MSL) radiation monitor

calibration points. Technical Specification 2.2, Limiting Safety System Settings, table 2.2.1-1, item 6, requires the trip setpoint of the MSL radiation monitors to be "3X full power background." The allowable value given for the table was "3.5X full power background." The licensee noted the following differences in the MSL radiation monitor current readings:

	FULL POWER READING WITH 4 STEAM-	90% READING WITH 3 STEAM-	100% EXTRA- POLATED VALUE WITH 3 STEAM-
MONITOR	LINES	LINES	LINES
A	70	60	66.7
B	57	34	37.8
C	80	70	77.8
D	60	52	57.8

Readings are in mr/hr

The readings changed because the C main steamline was isolated. The four main steamline radiation monitors are located just above the two feedwater lines, which are above the four steamlines in the main steam tunnel. Radiation monitor B was most affected by the loss of radioactive steam flow through steamline C.

Monitor B's trip setpoint was the only setpoint not within the allowable value of 3.5X using the 100% extrapolated three steamline value and the four steamline setpoint. The licensee decided to re-calibrate the B monitor and change the setpoint since the setpoint requirements with three steamlines were unclear. The licensee adjusted the setpoint of monitor B on October 31, 1985.

No violations or deviations were identified.

b. Core Spray System Logic Functional Test

The plant safety committee confirmed on October 29, that both core spray systems and both trains of the Low Pressure Coolant Injection (LPCI) mode of RHR were rendered inoperable during performance of the core spray system logic functional test. The test was performed every 18 months during refueling outages in operational conditions 4 or 5. In order to simulate a high pressure condition for the test, the licensee had lifted leads to both low pressure permissive relays. This prevented opening the core spray and LPCI injection valves. The test

has been run in this manner probably since September 1976. The licensee discovered the problem when the test was being modified to test only one core spray loop at a time. The licensee had agreed to provide to the inspectors information concerning the plant condition under which the test, PT-7.1.9, was performed for the previous three years. The inspectors continue to review the event.

No violations or deviations were identified at this time.

6. Operational Safety Verification (71707)

The inspectors verified conformance with regulatory requirements by direct observations of activities, facility tours, discussions with personnel, reviewing of records and independent verification of safety system status.

The inspectors verified that control room manning requirements of 10 CFR 50.54 and the technical specifications were met. Control room, shift supervisor, clearance and jumper/bypass logs were reviewed to obtain information concerning operating trends and out of service safety systems to ensure that there were no conflicts with Technical Specification Limiting Conditions for Operation. The inspectors verified system operability and that plant parameters were within Technical Specification limits through direct observations of control room panels, instrumentation and recorder traces. The inspectors observed shift turnovers to verify that continuity of system status was maintained. The inspectors verified the status of selected control room annunciators.

Operability of a selected ESF train was verified by insuring that: each accessible valve in the flow path was in its correct position; each power supply and breaker, including control room fuses, were aligned properly for components that must activate upon initiation signal; removal of power from those ESF motor-operated valves, so identified by Technical Specifications, was completed; there was no leakage of major components; there was proper lubrication and cooling water available; and a condition did not exist which might prevent fulfillment of the system's functional requirements. Instrumentation essential to system actuation or performance was verified operable by observing on-scale indication and proper instrument valve lineup, if accessible.

The inspectors verified that the licensee's health physics policies/procedures were followed. This included a review of area surveys, radiation work permits, posting, and instrument calibration.

The inspectors verified that: the security organization was properly manned and that security personnel were capable of performing their assigned functions; persons and packages were checked prior to entry into the protected area (PA); vehicles were properly authorized, searched and escorted within the PA; persons within the PA displayed photo identification badges; personnel in vital areas were authorized; effective compensatory measures were employed when required; and security's response to threats or alarms was adequate.

The inspectors also observed plant housekeeping controls, verified position of certain containment isolation valves, checked a clearance, and verified the operability of onsite and offsite emergency power sources.

No violations or deviations were identified.

7. ESF System Walkdown (71710)

The inspectors verified the operability of the High Pressure Coolant Injection System. A detailed walkdown was performed on the system. The system operating procedure and description were reviewed and compared on a selected basis to the as-built system and the system drawings.

No violations or deviations were identified.

8. Unit 2 MSIV DC Coil Failures (93702)

On October 15, 1985, at 8:11 a.m., Unit 2 received an Average Power Range Monitor (APRM) Fixed Neutron Flux High scram from 100% power. Reactor water level and pressure were controlled after the event by the feedwater control and the turbine bypass systems. Reactor pressure reached 1017 psig. Reactor water level remained above all the low low water level instrument setpoints. All safety systems functioned as designed.

Prior to the transient, Technical Specification required surveillance procedure, PT-1.1.12P, Main Steamline Radiation Channel Alignment and Functional Test, was being performed. When the inboard Main Steamline Isolation Valve (MSIV) AC powered solenoid valves were de-energized per PT-1.1.12P, the inboard A line MSIV (F022A) closed. The resulting pressure spike and void collapse caused reactor power to exceed the 120% fixed neutron flux trip setpoint. Investigation by the licensee revealed that the DC powered solenoid valve on F022A had an open coil. With both solenoids de-energized, F022A had closed as designed. The DC solenoid was replaced and the unit was returned to service on October 18, 1985. Further evaluation is continuing. Document review indicates the solenoid valves were all received onsite in 1982 and most likely were manufactured with coils from the same batch. Followup of the licensee's evaluations will be performed as part of a previous Unresolved Item on MSIV's (324/85-33-02).

Prior to startup, the licensee installed resistors in series with the MSIV DC coils on Unit 2. Monitoring of the voltage drop across the resistors revealed, on October 20, 1985, that the outboard MSIV on C steamline (F028C) had an open circuit to the DC coil. The licensee reduced power to 60% and closed both C steamline MSIV's. On October 25, 1985, General Electric provided analysis that operation at 100% power with three steamlines is acceptable if certain steamline pressures and differential pressures were not exceeded.

Review of the cause and generic applicability of the open DC solenoid coil is continuing. The failed coil is from ASCO solenoid valve model NP-8323A36V. The solenoid valve was installed earlier this month as corrective action for the September, 1985 scram. All eight MSIV's had their solenoid valves replaced with the NP-8323A36V model because of the concern over sticking or plugging of the exhaust ports with ethylene propylene seat material. (See Inspection Report 85-33.) Three other NP-8323A36V ASCO solenoids were found with an open DC coil. The licensee found one mechanically damaged coil in stores. Two more open coils were found during pre-service testing earlier this month. The licensee sent one coil to ASCO for evaluation. ASCO found an open circuit near where the coil wires attach to the external leads. ASCO believes corrosion from an unknown agent caused the open. Harris Energy Center has found chlorides near the open wires. Harris continues their investigation.

No violations or deviations were identified.

9. Unit 1 Startup from Refueling (71711)

The inspectors reviewed the licensee's administrative controls for startup to verify that procedures were in place to properly return systems to service. Walkdowns of the High Pressure Coolant Injection (HPCI) System and the batteries were conducted to verify return to service.

The inspector witnessed portions of the reactor startup. The inspectors verified that: the control rod withdrawal sequence was approved; the startup was conducted using approved procedures, and that activities were conducted in accordance with Technical Specifications.

The licensee found a drywell pressure instrument isolated on October 30, 1985 with Unit 1 in condition 4. Instrument E11-PT-N011A-1 was found isolated during a pre-startup channel check of the unit's instruments. Apparently a problem existed with a field revision to a plant modification that affected the instrument. N011A-1 is required operable for conditions 1, 2 and 3; therefore, no Technical Specification violation occurred. The inspectors will follow the licensee's action regarding corrective actions to preclude recurrence.

No violations or deviations were identified at this time.