



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

Report Nos. 50-325/86-01 and 50-324/86-01

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: January 1 - 31, 1986

Inspectors:		3/5/86 Date Signed
For	W. H. Ruland	
		3/5/86 Date Signed
	L. W. Garner	
Approved By:		3/5/86 Date Signed
	P. E. Fredrickson, Section Chief Division of Reactor Projects	

SUMMARY

Scope: This routine safety inspection involved 214 inspector-hours on site in the areas of maintenance observation, surveillance observation, operational safety verification, in-office Licensee Event Report (LER) review, plant modifications, local public document room visit, refueling, and safety relief valve failures.

Results: Within the areas inspected, an additional example of violation 2 from Inspection Report 325/85-40 was identified -- failure to accomplish activities affecting quality in accordance with drawings (paragraph 6).

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

P. Howe, Vice President - Brunswick Nuclear Project
C. Dietz, General Manager - Brunswick Nuclear Project
T. Wyllie, Manager - Engineering and Construction
J. Holder, Manager - Outages
E. Bishop, Manager - Operations
L. Jones, Director - QA/QC
R. Helme, Director - Onsite Nuclear Safety - BSEP
J. Chase, Assistant to General Manager
J. O'Sullivan, Manager - Maintenance
G. Cheatham, Manager - Environmental & Radiation Control
K. Enzor, Director - Regulatory Compliance
B. Hinkley, Manager - Technical Support
A. Hegler, Superintendent - Operations
J. Wilcox, Principal Engineer - Operations
W. Hogle, Engineering Supervisor
W. Tucker, Engineering Supervisor
B. Wilson, Engineering Supervisor
R. Creech, I&C/Electrical Maintenance Supervisor (Unit 2)
R. Warden, I&C/Electrical Maintenance Supervisor (Unit 1)
W. Dorman, Supervisor - QA
W. Hatcher, Supervisor - Security
R. Kitchen, Mechanical Maintenance Supervisor (Unit 2)
R. Poulk, Senior Regulatory Specialist

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 February 5, 1986 with the general manager. An additional example of violation 2 from Inspection Report 325/85-40 was discussed in detail (paragraph 6). 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; Quality Control 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.

The inspectors observed/reviewed portions of the following maintenance activities:

WR&A 85AHUC1	HFA Relay Replacement 2-B21C-K11K
WR&A 86-ACWI1	Replace C71-EPA452, RPS Power Supply Breaker, With A New Circuit Breaker.
WR&A 85-AKQR1	Calibrate Area Radiation Monitor
MI-16-35C	Replacement of General Electric HFA Relays Bolt Replacement on Unit 2 Safety Related Switchgear Automatic Depressurization System Timer Replacement

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:

OI-03.1	Periodic Testing and Control Operator Daily Surveillance Report - Unit 1.
OI-03.2	Periodic Testing and Control Operator Daily Surveillance Report - Unit 2.

OI-03.3 Auxiliary Operator Daily Surveillance Report.
PT-16.2 Primary Containment Volumetric Average Temperature.
OMST-DG24M Emergency Bus Degraded Voltage Channel Functional Test.
1MST-PCIS27M PCIS High Main Steam Line Flow Trip Unit Channel A2
 Calibration.
1MST-RPS21SA RPS Electrical Protection Assembly Channel Calibration.

No violations or deviations were identified.

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 Specifications Limiting Conditions for Operations. Direct observations were conducted of control room panels, instrumentation and recorder traces important to safety to verify operability and that parameters were within Technical Specification limits. The inspectors verified the status of selected control room annunciators.

Operability of a selected Engineered Safety Features (ESF) train was verified by insuring that: each accessible valve in the flow path was in its correct position; each power supply and breaker were aligned for components that must activate upon initiation signal; removal of power from those ESF motor-operated valves, as 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, instrument calibration and observation of work activities.

The inspectors verified that: the security organization was properly manned and 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 and effective compensatory measures were employed when required.

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

During a control room tour on January 3, 1986, the inspector determined that one of the two Emergency Core Cooling System (ECCS) Division II logic power supplies was abnormally hot. The problem was determined to be a faulty fan motor. The topaz inverter fan was replaced under work request 86-AA111 and the device returned to service that same day. On January 5, 1986, the inspector observed that one of the four mounting screws for this device was not installed. Subsequent discussions with maintenance supervision revealed that personnel involved with the repair had noted the missing screw and had forgotten to initiate action to have it installed. Drawing on page 2-4 of FP-70287, revision 0, shows 4 mounting screws to be used on the front panel. The bolt did not provide structural support to the inverter.

On January 5, 1986, inspection of instrument rack fasteners in the Unit 1 reactor building revealed the following problems:

- a. ECCS actuation instrument transmitter B21-PT-N021A, reactor steam dome pressure (Technical Specification table 3.3.3-1 item 1.b), had 2 out of 4 mounting frame to instrument rack bolts not installed.
- b. Remote shutdown monitoring instrument transmitter B21-LT-3331, reactor vessel water level (Technical Specification table 3.3.5.2-1 item 2), had 1 out of 4 mounting frame to instrument rack bolts not installed.
- c. Reactor level feedwater control transmitter C32-LT-N004B had 1 out of 4 mounting frame to instrument rack bolts missing.
- d. Annunciator "Pri Contain Hi/Lo Press" transmitter C71-PS-N004, had 1 out of 4 mounting frame to instrument rack bolts missing.

On January 6, 1986, a walk through of Unit 1 with a system engineer revealed the following additional items:

- e. Safety related instrument rack H21-P005-004 had junction boxes to instrument rack fasteners (1/4" machine screws) with incomplete thread engagement.
- f. Pipe clamp for SW-103-SS-123 had incomplete thread engagement at both ends of stud.

- g. Core plate differential pressure gauge E21-N004A had one mounting bolt missing.
- h. Instrument rack H21-P018 and H21-P021, structural steel was corroded.
- i. Snubber E11-5SS402 baseplate and anchor bolts were corroded.

Items a. and b. above are a violation of 10 CFR 50, Appendix B, Criterion V, which requires activities affecting quality be accomplished using drawings. Drawing FP-70251 sheet 2, requires B21-PT-N021A to be installed with four bolts. Drawing FP-70252 sheet 2, requires B21-LT-3331 to be installed with four bolts. This violation is identified as an additional example of violation 2 in Inspection Report No. 325/85-40. This item is example "c" of violation number 2 in the NOV issued with Inspection Report 325/85-40. The requirement is repeated from the NOV for clarity.

- 2. 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures and Drawings, as implemented by the licensee's accepted Quality Assurance program (FSAR chapter 17.2.5), requires that activities affecting quality shall be prescribed and accomplished using documented procedures and drawings. FSAR Section 17.2.5 requires that procedures contain prerequisites, precautions, acceptance criteria and checklists.

- c. Contrary to the above, activities affecting quality were not accomplished using drawings in that ECCS actuation transmitter B21-PT-N021A and remote shutdown monitoring transmitter B21-LT-3331 were found on January 5, 1986 to be installed with less than the number of bolts shown on drawings FP-70251 and FP-70252 respectively.

Part of the system engineer's task is to identify such conditions as described above. This was made a commitment in the licensee's response to a violation dated October 25, 1985. Maintenance personnel have also been tasked with identifying loose/missing bolts. These activities have generated a number of items to be repaired or have already been repaired. Several items found by the inspector already had a work request issued. However, no information was supplied to the inspector to indicate that the specific items listed above had been identified. The licensee has written a work request for these items. Completion of the associated work request will be an Inspector Followup Item: Minor Fastener Problems (325/86-01-01). Operations personnel, including the shift technical adviser, conducted a review of some instrument racks on January 4 and 5, and reported approximately 30 additional items. About one half of the items had already been identified.

Excluding the missing bolts on the control rod drive hydraulic units (the subject of a violation issued in Inspection Report No. 324/85-22), none of the fastener problems have affected the operability of any system. Some of the conditions have existed since original construction, more than 10 years ago, and some have occurred as a result of modification and/or maintenance

activities, e. g., the inspector had verified that B21-PT-N021A had been properly installed after initial installation in 1981. The inspectors' observations and conclusions in this area are as follows:

- a. The licensee's program for identification and correction of deficiencies needs further improvement since conditions have existed for some time without being detected. Most of the items discovered were identified from the floor without donning anti-contamination clothing.
- b. Management oversight of maintenance and modification workmanship needs improvement to help prevent future problems from developing.

No deviations or additional violations were identified.

7. In Office Review of Licensee Event Reports (90712)

The listed Licensee Event Reports (LER's) were reviewed to verify that the information provided met NRC reporting requirements. The verification included adequacy of event description and corrective action taken or planned, existence of potential generic problems and the relative safety significance of the event. The following reports are considered closed:

Unit 1

85-065, Auto-Start of Control Building Emergency Air Filtration System 2A Due to Fire Alarms.

Unit 2

85-013, Auto-Isolation of Reactor Water Cleanup System Inlet Outboard Isolation Valve.

No violations or deviations were identified.

8. Plant Modifications (37700)

The inspectors reviewed selected plant modifications to verify that: post-modification testing was adequate, drawing revisions were requested and that the plant operations staff was trained on the modification. The inspectors noted that the requirement in ENP-3, Plant Modifications, for training prior to operability of the modification was not clear. The licensee agreed to clarify the wording in ENP-3. Portions of the following modifications were reviewed/observed:

PM 78-218A	HPCI/RCIC Drain Pot Level Switch Replacement.
PM 79-152A	4160 Volt Reactor Recirculating Pump Trip Breakers.
PM 79-231J	RHR 1A Pump Room Cooler Piping Replacement.

PM 82-041 Unit 1 RHR Steam Condensing Steam Supply Valves,
F052A and F052B, Replacement.

PM 82-042 Same as PM 82-041 except for Unit 2.

The inspector verified that the wiring in Unit 2 panel XU-82 for PM 80-134, Rev. 8, Dedicated H2 Control, was installed using approved drawings and instructions.

No violations or deviations were identified.

9. Local Public Document Room (LPDR) Visit (94703)

The inspectors verified that the LPDR, located in the Brunswick County Library, continues to receive Brunswick related documents and associated reference material. The librarian reported that, in addition to students, about a dozen people a year, use the LPDR.

The inspectors had no further questions.

10. Refueling (60710)

On January 26, 1986, the licensee commenced removal of fuel from the vessel to the spent fuel pool. Defueling was completed on February 2, 1986. The inspector verified that plant procedure GP-07, Preparations for Core Alterations, contained the appropriate Technical Specification verifications (Technical Specification 4.9.1, 4.9.3, 4.9.4, 4.9.5, 4.9.8 and 4.9.10.1). The inspector verified that the refueling daily surveillance log was initiated and maintained during defueling activities. Refueling is scheduled to start March 22, 1986.

No violations or deviations were identified.

11. Unit 2 Safety Relief Valve (SRV) Failures (92700)

The Unit 2 SRVs showed pilot disc-to-seat bonding when tested at Wylie Labs. On January 7, 1986, the licensee notified the inspectors that 6 Target Rock two stage SRVs failed to open during diagnostic testing. The pilot valve disks failed to lift with 200 psig of nitrogen under the disc and the manual actuator diaphragm pressurized. With the disc not stuck, the pilot disc should have opened at 5 psig, the initial nitrogen pressure of the test stand. Four other SRV pilot valves showed some indication of bonding by opening at nitrogen pressures of 11, 11, 48, and 82 psig. One SRV pilot valve opened at 5 psig, indicating no disc-to-seat bond.

The licensee conducted the diagnostic test as part of the BWR Owner's Group generic solution to the Target Rock SRV setpoint drift problems. Two separate problems were identified: high friction in the labyrinth seal; and corrosion induced disc-to-seat bonding. The diagnostic test was performed to differentiate between the two problems. If a SRV setpoint drifted when

steam tested and the nitrogen test was satisfactory, a labyrinth seal problem would be indicated.

General Electric performed several computer analyses at the licensee's request to evaluate the impact of the SRV failures on continued operation of Unit 1. Preliminary results indicate that the peak pressure reached during a main steam isolation valve closure without position trip was just below the ASME vessel upset limit of 1375 psig. The results varied somewhat depending on the assumptions used for SRV settings and capacities. The inspectors will document the assumptions and results in a future inspection report when the licensee completes their final review of the data. Additional information is contained in Inspection Report 324/86-03 and Unit 2 LER 86-01.

No violations or deviations were identified.