UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report Nos.: 50-325/83-41 and 50-324/83-41

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

Docket Nos.: 50-325 and 50-324

License Nos.: DPR-71 and DPR-62

Facility Name: Brunswick 1 and 2

Inspection at Brunswick site near Southport, North Carolina

Inspectors: RK Hardin for 1/9/84
D. O. Myers, Senior Resident Inspector Date Signed

RK Hardin for 1/9/84
L. W. Garner, Resident Inspector Date Signed

Approved by: _____
Paul R. Bemis, Chief Date Signed
Project Section 1C, Division of Project
and Resident Programs

SUMMARY

Inspection on November 15 - December 15, 1983

Areas Inspected

This routine safety inspection involved 192 inspector-hours on site in the areas of surveillance, maintenance, operational safety verification, ESF System walkdown, in-office licensee event reports review, independent inspection, plant transients, onsite review committees, RPS functional testing, post-refueling startup activities.

Results

Of the areas inspected, two violations were identified in two areas. (Inadequate procedure, paragraph 9; failure to follow procedure, paragraph 7.)

REPORT DETAILS

1. Persons Contacted

Licensee Employees

A. Bishop, Manager - Technical Support
J. Boone, Engineering Supervisor
L. Boyer, Director - Administrative Support
T. Brown, I&C/Electrical Maintenance Supervisor (Unit 1)
G. Campbell, Mechanical Maintenance Supervisor (Unit 2)
J. Chase, Manager - Operations
*G. Cheatham, Manager - Environmental & Radiation Control
J. Cook, Senior Specialist - Environmental & Radiation Control
*R. Creech, I&C/Electrical Maintenance Supervisor (Unit 2)
C. Dietz, General Manager - Brunswick Nuclear Project
J. Dimmette, Manager - Maintenance
W. Dorman, QA - Supervisor
*K. Enzor, Director - Regulatory Compliance
W. Hatcher, Security Specialist
*M. Hill, Manager - Administrative & Technical Support
*P. Howe, Vice President - Brunswick Nuclear Project
*L. Jones, Director - QA/QC
D. Novotny, Senior Regulatory Specialist
G. Oliver, Assistant to General manager
R. Poulk, Senior NRC Regulatory Specialist
C. Treubel, Mechanical Maintenance Supervisor (Unit 1)
L. Tripp, Radiation Control Supervisor
V. Wagoner, Director - Planning and Scheduling
J. Wilcox, Principle Engineer - Operations

Other licensee employees contacted included technicians, operators and engineering staff personnel.

*Attended exit interview.

2. Exit Interview

The inspection scope and findings were summarized on December 20, 1983, with those persons indicated in paragraph 1 above. Meetings were also held with senior facility management periodically during the course of this inspection to discuss the inspection scope and findings.

3. Licensee Action on Previous Enforcement Matters

(Closed) (50-325, 50-324/83-39-01) - Resolution of QASR-83-109. The inspector reviewed the licensee's response to the above Quality Assurance Surveillance Report with supplements and found the contents to be satisfactory as was the timeliness. Briefly, the response discusses management directives for establishment of tracking systems of regulatory

and other commitments by the manager of each of the plant's sub-groups. Supplements specifically detailed acceptable methods and implementation dates. Inspectors will continue to follow the effectiveness of the system through the routine program.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Review of Licensee Event Reports (92700)

The below listed Licensee Event Reports (LER's) were reviewed to determine if the information provided met NRC reporting requirements. The determination included adequacy of event description and corrective action taken or planned, existence of potential generic problems and the relative safety significance of each event. Additional in-plant reviews and discussions with plant personnel, as appropriate, were conducted for those reports indicated by an asterisk. These reports are considered closed.

UNIT 1

1-83-41 (3L) & Supplement	Control Rod 38-19, following maintenance on the drive mechanism housing flange, would not recouple to its mechanism and, in accordance with technical specifications, it was fully inserted and its directional control valves electrically disarmed.

UNIT 2

2-22-22 (3L) & Supplement	The following function of "A" Tip Guide Tube Primary Containment Isolation Ball Valve became inoperable when the TIP machine probe would not fully retract from the core.
*2-83-37 (3L) & Supplement	RHR Division II Suppression Pool Cooling Valve, 2-E11-F024B, could not be opened, rendering the subsystem inoperable due to the valve antirotation device setscrew having loosened and the device shifted.

No violations or deviations were identified.

6. Operational Safety Verification (71707)

The inspector verified conformance with regulatory requirements throughout the reporting period by direct observations of activities, tours of facilities, discussions with personnel, reviewing of records and independent

verification of safety system status. The following determinations were made:

-- Technical Specifications. Through log review and direct observation during tours, the inspector verified compliance with selected Technical Specifications Limiting Conditions for Operation.

-- By observation during the inspection period, the inspector verified the control room manning requirements of 10 CFR 50.54(k) and the Technical Specifications were being met. In addition, the inspector observed shift turnovers to verify that continuity of system status was maintained. The inspector periodically questioned shift personnel relative to their awareness of plant conditions.

-- Control room annunciators. Selected lit annunciators were discussed with control room operators to verify that the reasons for them were understood and corrective actions, if required, was being taken.

-- Monitoring instrumentation. The inspector verified that selected instruments were functional and demonstrated parameters within Technical Specification limits.

-- Safeguard system maintenance and surveillance. The inspector verified by direct observation and review of records that selected maintenance and surveillance activities on Safeguard systems were conducted by qualified personnel with approved procedures, acceptance criteria were met and redundant components were available for service as required by Technical Specifications. One violation was found in the area (see paragraph 9).

-- Valve and breaker positions. The inspector verified that selected valves and breakers were in the position or condition required by Technical Specifications for the applicable plant mode. This verification included control board indication and field observation (Safeguard Systems).

-- Fluid leaks. No fluid leaks were observed which has not been identified by station personnel and for which corrective action has not been initiated, as necessary.

-- Plant housekeeping conditions. Observations relative to plant housekeeping identified no unsatisfactory conditions.

-- Radioactive releases. The inspector verified that selected liquid and gaseous releases were made in conformance with 10 CFR 20 Appendix B and Technical Specification requirements.

-- Radiation Controls. The inspector verified by observation that control point procedures and posting requirements were being followed. The inspector identified no failure to properly post radiation and high radiation areas.

-- Security. During the course of these inspections, observations relative to protected and vital area security were made, including access controls, boundary integrity, search, escort, and badging.

No violations or deviations were identified.

7. Surveillance Testing (61726, 71711)

The surveillance tests detailed below were analyzed and/or witnessed by the inspector to ascertain procedural and performance adequacy.

The completed test procedures examined were analyzed for embodiment of the necessary test prerequisites, preparations, instructions, acceptance criteria and sufficiency of technical content.

The selected tests witnessed were examined to ascertain that current, written approved procedures were available and in use, that test equipment in use was calibrated, that test prerequisites were met, system restoration was completed and test results were adequate.

The selected procedures perused attested conformance with applicable Technical Specifications, they appeared to have received the required administrative review and they apparently were performed within the surveillance frequency prescribed.

PROCEDURE	TITLE
PT-55.8 PC	Remote Shutdown RHR System Flow Calibration
PT-70	SJAE Off-Gas Radiation Monitor Channel Calibration
PT-09.2	HPCI System Operability Test
PT-14.3.1	In Sequence Critical Shutdown Margin Calculation
PT-14-3.2	Reactor Anomaly Check
PT-01.9E	Axial Alignment of Traversing Incore Probses
PT-14.2.1	Single Rod Scram Insertion Times Test

The inspector employed one or more of the following acceptance criteria for evaluating the above items:

10 CFR
ANSI N18.7
Technical Specifications

During the surveillance inspection, the following item was identified:

On November 29, 1983, the inspector observed the improper completion of step VII.B of PT-70, SJAE OFF-GAS RADIATION MONITOR CHANNEL CALIBRATION. The step requires, "I&C must determine and verify the monitor high-high trip point". Two I&C (Instrument and Control) technicians, who were requested to perform this step, had not performed this task or similar one within the last year. When they could not immediately determine from their procedure what the setpoint should be, they elected to make an educated guess instead of stopping and consulting their supervisor. As a result, they performed some actions to verify their educated guess, 100,000 mr/hr., as correct and signed step VII.B off as being satisfactorily completed. However, when the inspector attempted to verify the educated guess as being the correct set point, he was told by an E&RC (Environmental and Radiation Control) technician that the set point should be 2,000 mr/hr. Further review by the licensee, revealed the desired set point was 16,000 mr/hr. and that the radiation monitor was actually set at 16,000 mr/hr. Hence, the set point verification by the two I&C technicians was determined to have been incorrect and thus their sign-off of step VII.B was improper. The root causes of the improper sign-off can be attributed to unfamiliarity with the equipment and applicable procedures and, more importantly, to the failure of the individuals to consult a knowledgeable individual when in doubt about what to do. The improper sign-off of step VII.B is a violation of Technical Specification 6.8.1, which requires procedures to be implemented, (325/83-41-01).

The incorrect value (2,000 mr/hr.) given to the inspector by the E&RC technician apparently resulted from an internal miscommunication. The value given was for the similar monitor on Unit 2, not for the requested monitor on Unit 1. This was also compounded by the fact that no readily convenient method exists for the E&RC technicians to look up radiation monitor set points. The licensee is evaluating the need for a convenient method and will implement such as deemed necessary. This is an inspector followup item (324/83-41-01 and 325/83-41-02).

8. RPS Logic Functional Testing (61726)

The onsite nuclear safety gorup identified and notified the plant in a November 10, 1983, memo (Helme to Dietz), of significant concerns associated with reactor protection system logic and channel functional testing. The basic concerns were: (1) Manual bypassing of unrelated channel instrument trips during surveillance testing to prevent inadvertent scrams; (2) Manually bypassing logic channels or system components without direct and obvious notification of operations personnel; (3) Combination of logic system functional tests did not provide overlap between test to ensure all components in a system were adequately tested.

Inspector review and involvement in the subsequent investigation by the plant, revealed the following:

Item 1) Although a poor practice, bypassing appears to have been performed within plant Technical Specification (T.S.) Limiting Conditions for Operations (LCO), i.e., bypassed system removed from service less than 2 hours and other systems available to meet the redundancy requirement of T.S. 3.3.

Item 2) The inspectors found that existing notification was meeting the letter of requirements but was poor when examined in detail. Plant Senior Reactor Operators (SRO's) were required to "decode" numerous contact and relay numbers in order to determine equipment made inoperable by the use of jumpers contained in procedures. Existing notification consisted of requiring a shift foreman's signature prior to performance of a surveillance test.

Item 3) Inspectors reviewed existing functional tests and determined that testing did include all components of a logic system; however, the technique with which one component at the interface between two of the involved surveillance procedures were tested, was questionable. The inspectors notified Instrument and Control Branch of NRR for clarification. NRR response indicated that the technique used by the licensee to test the subject component was not meeting the full intent of Safety Guide 1.30. (Specifically, the issue at hand involves the RPS scram logic. A logic train basically consists of a number of contacts in series to form a scram channel that, when any one contact is opened, it will de-energize a scram relay causing a chain of events which leads to a 1/2 scram. Subsequent signals in one of two channels in the other RPS subsystem will cause a reactor trip. The licensee was testing RPS logic using two overlapping tests. One test would verify operability of the subsystem from sensor output up to and including contacts in the RPS scram logic channel, however, so that an actual 1/2 scram would be prevented, "jumpers" were used to bridge the tested contacts and ensure continuity to the scram relays. The system was designed to allow testing of a logic train without jumpers but the licensee chose to supply a larger margin to reactor trips after a number of test induced scrams occurred during early operations. The second test of the evolution, consisted of removing the power supply fuse to the logic train and verifying that, when the scram relay was de-energized, the 1/2 scram occurs. In combination, the tests did not show that, when a particular contact in the scram logic opened, the scram relay was de-energized and a 1/2 scram occurred.) Upon knowledge of the questionable practices, the site Quality Assurance group in concert with ONS, initiated non-conformance reports (NCR) S-83-093 and S-83-092 to address the ONS concerns.

The inspectors reviewed the plant's reponse and other corrective actions regarding the above NCR's in a November 18, 1983, meeting with plant management. Corrective actions included immediate change in philosophy on the use of jumpers, as evidenced through procedure changes, development and satisfactory performance of a special test to verify operability of all RPS

systems, detailed review of periodic tests by operations and maintenance personnel prior to performance to verify effects of jumpers on system operability. The inspectors determined that the licensee's actions regarding this discovery were prompt and sufficient to ensure that logic systems were properly tested and meeting NRC interpretations of requirements.

No violations or deviations were identified.

9. Followup of Plant Transients and Safety System Challenges (93702)

During the period of this report, a followup on plant transients and safety system challenges was conducted to determine the cause; ensure that safety systems and components functioned as required; corrective actions were adequate; and the plant was maintained in a safe condition.

On November 26, 1983 at 1001 hours, Unit 1 reactor experienced an inoperable IRM scram from approximately 8% of full power. No engineered safeguard features were required to automatically initiate. The inoperable IRM scram resulted from changing the mode switch from "Run" to "Shutdown" with IRM A and D inoperable without having their tripped signal bypassed from the control room. IRM A and D had been placed in this configuration to meet technical specification requirements of their companion APRM's. However, just prior to the event the reactor power was being reduced to allow entry into the upper section of the drywell to look for leaks. Drywell floor drain leakage had increased over 2 gpm in four hours. The leakage was determined to be originating from stem leakoff connections into the equipment drain tank. Apparently, the hot water and steam caused malfunctioning of the level switches which allowed the equipment drain tank to overflow into the floor drains.

As corrective action to prevent repeat of the unanticipated scram, the licensee has revised procedure GP-01 to include a verification that the IRM's are properly in service. Failure to have the verification included in GP-01 is a violation of Technical Specification 6.8.1 (325/83-41-03), which requires procedures to be established. In licensee's response dated June 24, 1983 to violation 4 of report 83-03, GP-01 was revised to assure adequate procedural controls for going from shutdown to refuel mode. Since corrective action for the violation could reasonably be expected to have identified conditions required between other mode changes, the present violation does not qualify as a licensee identified violation. It was observed that OP-9, Neutron Monitoring System Operating Procedure, contains this precaution; however, GP-1 failed to refer to operator to use OP-9 in conjunction with GP-1.

10. Maintenance Observations (62703)

Maintenance activities were observed and reviewed thrughout the inspection period to verify that activities were accomplished using approved procedures or the activity was within the skill of the trade and that the work was done by qualified personnel. Where appropriate, limiting conditions for

operation were examined to ensure that, while equipment was removed from service, the Technical Specification requirements were satisfied. Also, work activities, procedures, and work requests were reviewed to ensure adequate fire, cleanliness and radiation protection precautions were observed, and that equipment was tested and properly returned to service. Acceptance criteria used for this review were as follows:

Maintenance Procedure
Technical Specifications

Outstanding work requests that were initiated by the operations group for Units 1 and 2 were reviewed to determine that the licensee is giving priority to safety-related maintenance and not allowing a backlog of work items to permit a degradation of system performance.

No violations or deviations were identified.

11. Onsite Review Committees (40700)

The inspectors attended the regular monthly Plant Nuclear Safety Committee (PNSC) Meeting and several special PNSC meetings conducted during the inspection period.

The inspectors verified the following items:

-- Meetings were conducted in accordance with Technical Specification requirements regarding quorum, membership, review process, frequency and personnel qualifications;

-- Meeting minutes were reviewed to confirm that decisions/recommendations were reflected and follow-up of corrective actions were completed.

No violations or deviations were identified.