



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

Report Nos. 50-324/81-31 and 50-325/81-31

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 Wilmington, NC

Inspector: C. Julian for  
L. W. Garner, Resident Inspector

12/22/81  
Date Signed

Approved by: C. Julian for  
C. Burger, Section Chief, Division of  
Resident and Reactor Project Inspection

12/22/81  
Date Signed

SUMMARY

Inspection on November 15 - December 15, 1981.

Areas Inspected

The inspection involved 108 resident inspector hours on site in the areas of review of Licensee Event Reports, followup of plant trips and safety system challenges, review of periodic reports, independent inspection, and operational safety verification.

Results

Of the 5 areas inspected, no violations or deviations were identified.

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## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- A. Bishop, Engineering Supervisor
- G. Bishop, Project Engineer
- \*C. Dietz, General Manager, Brunswick
- J. Dimmette, Mechanical Maintenance Supervisor
- E. Enzor, I & C/Electrical Maintenance Supervisor
- M. Hill, Maintenance Manager
- \*R. Morgan, Plant Operations Manager
- \*D. Novotny, Regulatory Specialist
- \*G. Oliver, E & RC Manager
- R. Poulk, Regulatory Specialist
- \*L. Tripp, RC Supervisor
- W. Tucker, Technical and Administrative Manager

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 11, 1981 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. Review of Licensee Event Reports

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.

#### Unit 1

- 1-81-59 (3L) Primary Containment Atmospheric Monitor Oxygen Analyzer, 1-CAC-AT-1263-2, incorrect indications due to moisture buildup.
- 1-81-61 (3L) Primary Containment Atmospheric Monitor Oxygen Analyzer, 1-CAC-AT-1263-2, high Drywell oxygen concentration.

- \*1-81-72 (3L) One-half Group I Isolation and one-half RPS scram signals received due to failed Main Steamline Radiation Monitor, 1-D12-RM-K603D.
- 1-81-77 (3L) Control Rod 34-30 did not have RTGB Position Indication at Position "06", due to defective Rod Position Indication Probe Reed Switch.
- 1-81-78 (3L) Primary Containment Isolation Valve, 1-E11-F037, "Open" Position Indication for Valve not obtained due to binding of Valve Stem.
- 1-81-80 (3L) Airlock interior and exterior doors, PT 2.6.5P, inner airlock door leakage rate exceeded specifications.
- 1-81-81 (3L) Primary Containment Atmospheric Oxygen Analyzer 1-CAC-AT-1259-2, upscale indication of oxygen concentration.

#### Unit 2

- 2-81-101 (3L) Primary Containment Atmospheric Oxygen Analyzer 2-CAC-AT-1259-2, upscale indication of oxygen concentration.
- \*2-81-104 (3L) RHR Pump would not start, due to tripped breaker relay device and declared inoperable.
- \*2-81-108 (3L) Malfunction of Pressure Switches 2-E11-PS-N020A and N020C, due to corrosion from moisture accumulation in instruments.
- \*2-81-109 (3L) HPCI System declared inoperable due to blown HPCI System Isolation Logic Power Supply Fuse.
- 2-81-110 (3L) Primary Containment Atmospheric Hydrogen Analyzer, 2-CAC-AT-1263-1, indicated slight Hydrogen concentration in Drywell due to erratic Span Potentiometer.
- 2-81-116 (3L) Drywell Exhaust Valve, 2-CAC-V23, would not close using Valve Operator Motor.

#### 4. Followup of Plant Transients and Safety System Challenges

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.

- a. On November 15, 1981, at 0040 hours, Unit 1 reactor experienced a turbine stop valve (TSV) closure trip from 65% power. All four bypass valves opened and then shut. The turbine was manually tripped

approximately four minutes after the reactor trip. No engineered safeguard features were required to control the transient.

Investigation revealed that the actuating arm of the number 2 TSV position switch had become loose and slid down the valve stem in such a manner that it had momentarily actuated a position switch. This position switch provides a close demand signal to the other TSV actuators. The other TSV went less than 90% open, thereby initiating a reactor protection system trip. The position switch actuating arm was secured to the valve stem prior to resuming operation.

- b. On November 17, 1981, at 0847 hours, while Unit 1 was subcritical in the startup mode, both core spray pumps injected water into the reactor vessel. Vessel level increased approximately ten inches before the pumps were manually secured. All four diesel generators also started but were not required to power the emergency buses.

Investigation revealed that equipment failure coupled with personnel error was responsible. While ground hunting, one circuit supplying the topez inverter for the new analog ECCS logic cabinets was de-energized. Upon re-energizing the circuit, the supply fuse blew. Personnel performing the activity failed to verify the circuit was indeed energized and that the control room annunciator had cleared, as instructed by the shift foreman. The redundant circuit supplying power to the other topez inverter was then de-energized. Total loss of power to the analog circuits has been shown to cause initiation of one or more of the following safeguard systems; core spray, low pressure coolant injection mode of the residual heat removal system, high pressure coolant injection, reactor core isolation coolant system and the diesel generators. Any analog circuit which trips on a decreasing input signal can be effected in a similar manner. Similar events have been previously discussed in I&E inspection reports 81-20 and 81-24.

Prior to the November 17, 1981 event, the licensee had taken the following actions.

- The circuit supplying power to the two topez inverters was separated such that one circuit supplies one inverter and a redundant circuit supplies the other.
- Administrative changes were made to the ground hunting and battery maintenance procedures to reduce the probability of occurrence.

To prevent recurrence, the latest event has been reviewed by the appropriate members of the licensee staff. The inspector considers no further action is warranted at this time. Inspector Followup Item 325/81-20-01 is now closed.

The inspector has no further questions relative to these events at this time.

## 5. Review of Periodic Reports

The inspector reviewed the following Licensee Report.

- Brunswick Steam Electric Plant, Units Nos. 1 and 2, Monthly Operation Report for October 1981.

The inspector verified that the information reported by the licensee is technically adequate and satisfies applicable reporting requirements established in 10 CFR 50, and Technical Specifications.

The inspector has no further questions in this area at this time. No violations were identified.

## 6. Independent Inspection

Current licensee practice is to maintain both controlled and uncontrolled drawings in the control room. The controlled drawings are on aperture cards and thus require use of a viewer. Uncontrolled drawings of select systems are full size prints. The licensee has committed by December 31, 1981, to either replace the uncontrolled full size drawings with controlled ones, or discard them entirely. This is an Inspector Followup Item 324, 325/81-31-01. No violations were identified.

## 7. Operational Safety Verification

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 action, 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.
- Major components. The inspector verified through visual inspection of selected major components that no general condition exists which might prevent fulfillment of their functional requirements.
- 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 had not been identified by station personnel and for which corrective action had 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.

On December 9, 1981, the inspector observed a licensee employee monitoring himself on the control room hand and foot monitor. The instrument indicated that one foot was contaminated. An attempt to use a nearby RM-14, with a HP-210 probe was not successful because the instrument had a low battery. No shoe covers or gloves were available at this station. The individual had to go to the loading dock frisking station to obtain shoe covers. A check at the other hand and foot monitor in the control room and the two frisking stations in the Radwaste Building also reveal no gloves or shoe covers. The RM-14 battery has been replaced. The licensee has committed to evaluate the need to have gloves and shoe covers at frisking stations for use in event of contamination and implement procedures, as necessary, by January 15, 1982. This is an Inspector Followup Item (50-324, 325/81-31-02).

On December 11, 1981, an inspection of select frisking stations revealed the following:

- (1) RM-14, No. 2841, in north Radwaste. The undisturbed monitor was fluctuating between 140 and 300 cpm. Turning the probe in various directions resulted in readings between 200 and 480 cpm. The instrument did not alarm. RC&T procedure 209, requires the alarm point to be set at 400 cpm. The licensee removed the monitor from service for repair.
- (2) RM-14, No. 3769, in south radwaste. The undisturbed monitor was fluctuating between 100 and 200 cpm. Turning the probe in various directions resulted in readings between 100 and 360 cpm.
- (3) RM-14, No. 2856, at loading dock. The undisturbed monitor was fluctuating between 120 and 280 cpm. Turning the probe in various directions resulted in readings between 120 and 380 cpm. The monitor alarmed at 300 cpm.
- (4) RM-14, No. 652, at loading dock. The undisturbed monitor was fluctuating between 100 and 220 cpm. Turning the probe in various directions resulted in readings of 100 cpm and full scale indication of 500 cpm. Monitor alarmed at 300 cpm.

The licensee is adding additional shielding around these frisking stations. New frisking booths are being constructed at the loading dock and the breezeway exits. These should be completed by March 1, 1982. This is an Inspector Followup Item (50-324, 325/81-31-04).

On December 11, 1981, a review of RC&T procedures and general employee training lesson plan module GN011N Revision 4, revealed that they had not as yet been revised to reflect a commitment made by the licensee as described in a letter from B. J. Furr of CP&L to James P. O'Reilly of Region II dated September 4, 1981. In part, the letter states, "Immediately after leaving a contaminated area, a worker is required to perform a whole body frisk...." Current procedures require frisking, but do not specify whole body frisking. The training instructor who presents the general employee training material, states that he lectures that a whole body frisk is required after removal of Anti-C's. The course also includes a demonstration of a whole body frisk. The licensee is evaluating the commitment and its implementation. The evaluation should be complete by February 15, 1982. This is an Inspector Followup Item (50-324, 325/81-31-05).

- 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 violation was identified.