



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

Report Nos. 50-269/79-29, 50-270/79-27, and 50-287/79-29

Licensee: Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

Facility Name: Oconee Nuclear Station

Docket Nos. 50-269, 50-270, and 50-287

License Nos. DPR-38, DPR-47, and DPR-55

Inspection at Oconee site near Seneca, South Carolina

Inspector: *P. T. Burnett* 11-28-79
P. T. Burnett Date Signed

Approved by: *R. D. Martin for* 11/25/79
R. D. Martin, Section Chief, RONS Branch Date Signed

SUMMARY

Inspection on October 25 to November 2, 1979

Areas Inspected

This routine, announced inspection involved 58 inspector-hours onsite. The areas inspected included: witness and review of initial cycle 5 operation of unit 3; witness and review of zero-power physics tests on unit 3; observation of control room operation for units 1 and 2; observation of initial power operation, scram and recovery from scram of unit 3.

Results

No items of noncompliance or deviations were identified in the four (4) areas inspected.

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DETAILS

1. Persons Contacted

Licensee Employees

- *J. E. Smith, Station Manager
- *J. N. Pope, Superintendent of Operations
- *R. T. Bond, Licensing and Projects Engineer
- *R. J. Brackett, Senior QA Engineer
- *J. J. Sevic, Biologist
- *T. S. Barr, Performance Engineer
- T. D. Curtis, Reactor Engineer
- T. E. Cribbe, Assistant Engineer, Reactor
- B. C. Moore, Operating Engineer

Other licensee employees contacted during this inspection included 2 shift supervisors, 4 assistant shift supervisors, 8 operators and 6 technical support personnel.

NRC Inspectors

- F. Jape, Resident Inspector
- *T. A. MacArthur, Inspector

*Attended exit interview.

2. Exit Interview

The inspection scope and findings were summarized on November 2, 1979, with those persons indicated in Paragraph 1 above. The inspection findings were acknowledged without significant comment.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

No unresolved items were identified.

5. Unit 3 Cycle 5 Operations

a. Preparatory Activities

The inspector witnessed the control rod drop time test under hot conditions, and confirmed that the computer recorded times were acceptable and met the requirements of technical specification 4.7.1. Review of the operator's log confirmed that the following tests had

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been successfully completed prior to the rod drops: (1) PT/O/A/200/46, "RCS Leak Test" and (2) PT/O/A/290/02, "Main Steam Stop Valve Closure Time Test".

The inspector observed the checkout of the source range instrumentation by the users, and during a quiet period was able to independently verify from a 25-sample chi-square test for each channel that the channels were performing properly.

b. Initial Criticality

The inspector observed initial criticality for unit 3 cycle 5. Starting from an initial configuration of control rod groups 1 through 6 withdrawn to their upper limits, group 7 withdrawn to 85% and the part length rods withdrawn to 37.5% and a boron concentration in the primary coolant of 1680 parts per million boron, a feed and bleed mode of operation of the primary coolant was initiated to deborate to criticality. Before reaching criticality the feed and bleed operation was halted and normal makeup and letdown initiated to assure uniform mixing of the boron in the reactor coolant system. Ultimately, additional withdrawal of group 7 rods was required to obtain criticality. An all-rods-out critical configuration was obtained for comparison with predicted values. The measured all-rods-out critical-boron concentration was 1428 parts per million boron. Initially, the licensee had predicted a value of 1351 parts per million boron which was later revised, after the test, to 1375 parts per million boron based on less exposure in cycle 4 than had originally been used in the calculation. In either case, the result was within the licensee's imposed acceptance criterion of plus or minus 100 parts per million boron.

In the course of the lengthy dilution to criticality operation, the inspector witnessed the collection and analysis of a reactor coolant sample for boron concentration determination. The boron sampling lines were kept continuously purged, and samples were taken every 30 minutes. Both the collection and analysis of the samples seemed to be straight forward.

c. Zero Power Physics Tests

Immediately after obtaining criticality the licensee confirmed adequate overlap of source-range and intermediate-range nuclear instruments. This test and part of the test to determine sensible heat, the upper limit for zero-power physics tests, were observed by the inspector.

The calibration of the reactivity computer was not observed or witnessed by the inspector, but the data were reviewed, and subsequent uses of the reactivity computer, as in control rod calibrations, were spot-checked to confirm that the range of use of the reactimeter was within the calibrated range. No deviations from that range were observed.

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The inspector observed the measurement of ejected control rod worth and part of the confirmation of core symmetry by rod swap.

Data from the isothermal temperature coefficient measurement and from control rod calibrations were spot-checked and no deficiencies were observed.

d. Power Escalation

The inspector witnessed part of the power escalation to 15% of rated power, including calibration of the nuclear instruments at a nominal 8% thermal power, and initial operation at an indicated 15% thermal power. Shortly after this plateau was reached, the unit scrambled from a protective turbine trip. Inspector observed the scram and recovery from it, and observed that the activities of the operators in the control room during that period were well coordinated and properly responsive. Approximately four (4) minutes after the scram, all reactor parameters were stable and the operators were able to devote their attention to determining the initiating cause of the scram.

Following the scram, the inspector independently determined the estimated critical position using curves and data available in the control room. The results were compared with the prediction prepared by the operating staff. The small differences in the predictions were ascribed to differences in reading curves. Both predictions were acceptably close, less than 1% k/k, to the actual critical configuration.

The inspector commented to licensee management that some editorial and typographical changes were required in the procedure and table 4.a. and that the period of validity of the estimate should be entered on table 4.a.

6. Unit 1 and 2 Operation

Several times over the extended period of this inspection, the inspector toured the unit 1 and 2 control room, in different shifts, at varying times. On all occasions he found the unit operators attentive to their unit.

Discussions with the operators indicated that they were aware of the existence and significance of the few alarm panels that were lighted on their respective units. No significant alarms were observed to be activated in the course of these control room tours.

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