



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N.W. SUITE 1217
ATLANTA, GEORGIA 30303

Report Nos.: 50-269/77-27, 50-270/77-27 and 50-287/77-27

Docket Nos.: 50-269; 50-270 and 50-287

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

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

Facility Name: Oconee Units 1, 2 and 3

Inspection at: Oconee Site, Seneca, South Carolina

Inspection conducted: October 25-28 and November 2-4, 1977

Inspectors: P. T. Burnett
H. L. Whitener

Reviewed by: *R. D. Martin*
R. D. Martin, Chief
Nuclear Support Section No. 1
Reactor Operations and Nuclear Support Branch

12/12/77
Date

Inspection Summary

Inspection on October 25-28 and November 2-4, 1977 (Report Nos. 50-269/77-27, 50-270/77-27 and 50-287/77-27)

Areas Inspected: Routine, unannounced inspection of post-refueling activities and startup testing of Units 1 and 2, refueling of Unit 3 and testing and surveillance of hydraulic suppressors. The inspection involved 64 inspector-hours on site by two NRC inspectors.

Results: In the areas inspected, no items of noncompliance were identified.

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DETAILS I

Prepared by:

P. T. Burnett

P. T. Burnett, Reactor Inspector
Nuclear Support Section No. 1
Reactor Operations and Nuclear
Support Branch

9 Dec 77
Date

Dates of Inspection: October 25-28 and
November 2-4, 1977

Reviewed by:

R. D. Martin

R. D. Martin, Chief
Nuclear Support Section
Reactor Operations and Nuclear
Support Branch

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1. Persons Contacted

#J. E. Smith, Station Manager
#J. N. Pope Superintendent of Operations
#O. S. Brannam, Superintendent of Maintenance
#R. M. Koehler, Superintendent of Technical Services
*T. S. Barr, Performance Engineer
#R. J. Brackett, Station Senior QA Engineer
#*R. T. Bond, Technical Services Engineer
#*D. C. Dukes, QA Audit Supervisor
*W. M. Harris, Operating Engineer
*W. R. Campbell, Reactor Engineer
*T. T. McIntosh, Director of Administrative Services
*R. C. Adams, Instrument and Control Engineer
*D. C. Smith, Station Chemist
*G. McAnich, Junior Engineer

*Present at exit interview October 28, 1977

#Present at exit interview November 4, 1977

2. Licensee Action on Previous Inspection Findings

The inspector reviewed the licensee's response to Item A of the Notice of Violation that accompanied the inspection report 50-269/77-19 for Unit 1 and the procedural changes made as part of the corrective action for that infraction and in response to commitments made during the inspection. Revision of procedure TT/1 and 2/A/120/01, "Oconee 1 and 2 Post Irradiation Examination Control Procedure," to require that fuel assembly rotation be performed by the use of the jib crane rather than by the line scan tester was found to be both appropriate and timely. The licensee's response to Item B of that Notice of Violation was also found acceptable, and these items were closed.

3. Unresolved Items

None

4. Exit Interviews

The inspector met with the persons indicated in paragraph 1 on October 28 and November 4, 1977 to discuss the scope and findings of the inspection. In the course of the meeting on October 28, the licensee made a commitment to revise the RPS calibration procedure, IP/305/3A, B, C and D, by November 15, 1977. This was in response to the inspector's observation that the hand-inserted, approved changes to the procedure had made some of the numerical parameters difficult to read. The inspector closed the items addressed in the Notice of Violation that was part of Inspection Report 77-19. In both exit interviews, the details and scope of inspection, as addressed in the following paragraphs, were discussed with the licensee.

5. Unit 1

a. Recovery of Systems

Recovery of Unit 1 systems from the refueling outage was audited. Records confirmed that all control rod drop times were within Technical Specification limits. The drop time data were a part of IP/O/A/330/3A. A leak test at elevated pressure, 2285 psig, was performed on October 13, 1977. That the test was performed successfully was confirmed by review of the shift supervisor's log.

Review of procedure IP/O/A/305/3A, 3B, 3C, 3D, confirmed that the reactor protection system was properly checked out and adjusted prior to restart of the reactor. The inspector noted that many approved changes to the procedure had been inserted by hand, which made many of the data for input to the system difficult to interpret. These set points are important to the proper operation of reactor protective system. The inspector sought and received from the licensee a commitment to a prompt, typewritten revision of that procedure.

The inspector reviewed the data for the post refueling approach to criticality on October 14, 1977. In reviewing the log maintained by the reactor operator and the log maintained by the test engineer, the inspector noted that there were anomalous variations between pressurizer and reactor-coolant-system boron concentrations during the dilution to criticality. These differences were discussed with both operations and chemistry personnel. The source of the differences was not

identified. All agreed however that the logged numbers were not reasonable in all cases. The situation was that starting with nearly identical boron concentrations in the pressurizer and reactor coolant systems and with constant dilution of the RCS and continuous spraying down of the pressurizer, the pressurizer boron concentration was occasionally logged as being significantly less than the reactor coolant system. However, the dilution water had to first pass through the core, according to the piping layout, and become well mixed before being used for spraying down the pressurizer. Obviously, the pressurizer boron concentration could not be less than the concentration in the RCS. This unquestioning logging of data in conflict with reasonable expectation was discussed at some length by the inspector. There was no Technical Specification that applied to or was violated by this situation; however, the inspector stated that he viewed it as an undesirable occurrence.

b. Zero Power Physics Tests

The inspector reviewed the zero power physics tests to measure critical boron concentrations, moderator temperature coefficients and control rod worths.

All of these tests were completed successfully with the exception of the ejected rod worth test. The measured worth of the rod was less than the predicted worth by a difference greater than the acceptance criterion. Measurements of symmetric rods showed an asymmetry in measured rod worths.

c. Power Escalation

As power was escalated to the level at which meaningful power distribution measurements could be made, those measurements confirmed the existence of a radial tilt in power distribution. The Commission, both NRR and Region II, was notified by telephone. Upon arriving onsite, the inspector was brought up-to-date on activities performed and planned to identify the cause of the power tilt. During the remainder of the inspection power was held at 40% to complete physics testing at that level.

6. Unit 2

The inspector reviewed OP/2/A/1102/01, "Controlling Procedure for Unit Startup in partial confirmation that the reactor system was properly put back in service following the refueling outage. Also, reviewed were procedures IP/O/A/305/3A,B,C,D, "RPS On-Line Check".

The inspector also reviewed TT/2/A/711/02, "Oconee 2, Cycle 3, Zero Power Physics Test". All zero power physics tests were successfully completed and met the numerical acceptance criteria calculated by the licensee. The tests reviewed were the same as those identified for Unit 1, paragraph 5 b above.

7. Unit 3

The inspector reviewed the refueling activities of Unit 3 both in the containment building and in the Unit 3 control room. In the containment building he observed the proper operation of all fuel handling equipment that had been checked out and authorized for use. Two pieces of this equipment, one upender and the auxiliary fuel bridge, had not been successfully checked out and hence were not in use. This unavailability of equipment required some on-the-spot changes to the refueling procedure but all were of the sort authorized within the procedure for performance without further review.

The inspector reviewed OP/O/A/1503/1, "Preparation for Refueling" and confirmed that the preparatory activities check out with the exceptions noted above had been successfully completed. The inspector also reviewed OP/O/A/1502/07, "Unit 3, Cycle 3 Refueling" and confirmed that the procedure was up-to-date with the progress obtained thus far and that the special surveillances sections such as statistical verification of adequate source range monitors, coolant temperatures and boron concentrations and valve checklists were being kept up-to-date.

DETAILS II

Prepared by:

H. L. Whitener for
H. L. Whitener, Reactor Inspector
Nuclear Support Section No. 1
Reactor Operations and Nuclear
Support Branch

12/12/77
Date

Dates of Inspection: November 2-4, 1977

Reviewed by:

R. D. Martin
R. D. Martin, Chief
Nuclear Support Section No. 1
Reactor Operations and Nuclear
Support Branch

12/12/77
Date

1. Persons Contacted

- *J. E. Smith, Station Manager
- *O. S. Bradham, Maintenance Superintendent
- *R. T. Bond, Engineer, Technical Services
- B. W. Carney, Engineer, Maintenance

*denotes those present at the Exit Interview.

2. Licensee Action on Previous Inspection Findings

This area was not in the scope of this inspection.

3. Unresolved Items

None

4. Exit Interview

An exit interview was held with Mr. J. E. Smith and members of his staff (delineated in paragraph 1) on November 4, 1977. The inspector identified the areas inspected and discussed the inspection findings as delineated in paragraph 5 of this detail.

5. Pipe and Component Support and Restraint Systems

The inspector reviewed the licensee's surveillance program to determine that an inspection program for safety-related piping and component support and restraint systems had been established and implemented which incorporates and meets the requirements of the Technical Specifications. This inspection included review of program and related procedures for completeness and technical adequacy, examination of selected installed dynamic and fixed supports and restraints, and review of completed surveillance records. The inspection findings are discussed below.

a. Hydraulic Suppressor Surveillance Program

The inspector reviewed the licensee's Administrative Policy Manual (APM) and Station Directives (SD) as follows:

APM, Section 3.2.2 Periodic Testing
APM, Section 3.3.3.1 Maintenance Procedures
APM, Section 4.2 Administrative Control of Station
Permanent Procedures
SD 3.3.6 Preventive Maintenance and Periodic Test

Discrepancies identified were reviewed with the licensee as follows:

- (1) The test schedule for visual inspection of hydraulic suppressors is not included in the computerized periodic test schedule as required by Station Directive 3.3.6. The licensee is studying ways to modify the computer program to identify periodic tests with variable inspection frequencies. In the interim, schedule responsibility for hydraulic suppressors is assigned to planning engineers who review the schedule weekly.
- (2) Item 10 of Technical Specification Table 4.1-2 requires visual inspection of hydraulic suppressors on an annual frequency. This is inconsistent with the variable frequency stated in Technical Specification 4.18. The licensee will submit a request for a Technical Specification change to delete Item 10 of Table 4.1-2 by January 1, 1978.

No additional discrepancies were identified and the inspector concluded that the licensee has established a program for surveillance of hydraulic suppressors consistent with the requirements of Technical Specification 4.18 and the quality assurance program.

b. Hydraulic Suppressor Surveillance Procedures

The inspector reviewed hydraulic suppressor surveillance and repair procedures for completeness and technical adequacy. Procedures reviewed were as follows:

MP/0/A/3000/12, Functional Testing of Hydraulic Suppressors

*MP.3.A/3000/12, Inspection of Inaccessible Hydraulic
Suppressors on Unit 3

*MP/3/A/3000/12B, Inspection of Accessible Hydraulic
Suppressors on Unit 3

MP/O/A/3000/24, Removal, Reinstallation and Repair of
Structural Connections Hydraulic Suppressors

MP/O/A/3000/26, Repair and Functional Test of Hydraulic
Suppressor (Miller Cylinder Design)

MP/O/A/300/27, Repair and Functional Test of Hydraulic
Suppressor (Tomkins-Johnson Cylinder Design)

MP/O/A/3000/28, Repair and Functional Test of Hydraulic
Suppressor (Lynair Cylinder Design)

MP/O/A/3000/29, Calibration of Suppressor Test Machine

MP/O/A/3000/30, Repair of Snubber Valve and Function
Test of Hydraulic Suppressor

MP/O/A/3000/34, Inoperative Suppressors Records

*Procedures for Units 1 and 2 essentially identical
except for suppressor identification.

The above procedures address the major aspects of the surveillance program but need more specific instructions on items to be examined during visual inspections and more information documented relative to the "as found-as left" condition of suppressors. The licensee will add a checklist to the visual inspection procedures and will re-evaluate procedure data sheets. The inspector had no further questions in this area.

c. Review of Test Results

The inspector reviewed hydraulic suppressor test results for the most recent visual inspection and functional tests performed on Unit 3, functional tests for Unit 2, and scheduling of visual inspections for each unit. Results of the recent visual inspection and functional testing on Unit 3 indicated no inoperable snubbers. Unit 3 is currently on a 12 month inspection interval. The inspector had no further questions in this area.

d. Inspection of Installed Restraints and Supports

The inspector, accompanied by licensee personnel, toured the Unit 3 reactor building and the turbine and auxiliary buildings of Units 1 and 2 to perform a direct inspection of hydraulic

suppressors and fixed supports. Restraints and supports from selected portions of the main steam lines, pressurizer relief lines, emergency feedwater lines and core injection lines were inspected for conditions such as the following:

- evidence of deterioration or corrosion
- loose or damaged fittings and mechanical components
- application of lubricants as appropriate
- open bleed/vent holes
- locked or frozen suppressors
- evidence of leaks and loss of fluid level
- adequate piston stroke

The inspection findings were reviewed with licensee management as follows:

- (1) Units 1 and 2: No significant problems identified.
- (2) Unit 3:
 - (a) Pressurizer relief piping suppressor (Mark No. 3-57-0-2481A-H20) clevis pin fastener was missing.
 - (b) I-beam supporting the above suppressor appeared to be at a slight angle to the vertical.
 - (c) Fixed support on emergency feedwater line (EFW-01, Side A) had a bad ball joint and loose nut on clevis pin.
 - (d) Loose reservoir brackets were found on most of the suppressors inspected.

Licensee management stated that the mechanical problems will be corrected and the support beam position will be verified correct before Unit 3 startup. The suppressor (Mark No. 3-57-0-24-81A-H20) will be added to the inspection findings of the next Unit 3 visual inspection. The inspector had no further questions in this area.