



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

Report Nos.: 50-269/88-18, 50-270/88-18, and 50-287/88-18

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

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

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

Facility Name: Oconee 1, 2, and 3

Inspection Conducted: June 20-24, 1988

Inspector:

*N. E. Economos*  
 N. E. Economos

*7/15/88*  
 Date Signed

Approved by:

*J. J. Blake*  
 J. J. Blake, Section Chief  
 Engineering Branch  
 Division of Reactor Safety

*7/15/88*  
 Date Signed

SUMMARY

Scope: This routine, announced inspection was for the purpose of providing NRC coverage in the absence of both resident inspectors; review of licensee action of inspector identified items including licensee event reports (LERs); inservice testing of pumps and valves; review and evaluate nondestructive examination results from tests scheduled for the upcoming Unit 3 outage.

Results: Of the two areas inspected, the inservice inspection of pumps and valves program produced one area of concern in that the root cause of a recurring valve failure had not been determined and corrected even though its failure resulted in repeated inservice test failures of "1A" motor driven emergency feedwater pump. Following discussion on this subject, the licensee agreed to initiate special testing designed to identify and correct the problem

No violations or deviations were identified.

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## REPORT DETAILS

### 1. Licensee Employees Contacted

J. R. Brackett, Station QA Manager  
S. Champman, Performance Specialist  
\*D. V. Deatherage, Support Operations Engineer  
\*D. M. Hubbard, Performance Engineer  
W. R. Hunt, QA Engineer, Technical Support ISI  
\*F. B. Owens, Compliance Specialist  
M. A. Pruit, Performance Test Supervisor  
\*R. L. Sweigart, Superintendent Operations  
M. S. Tuckman, Station Manager

Other licensee employees contacted during this inspection included construction craftsmen, engineers, technicians, and office personnel.

#### Other Organizations

Babcock and Wilcox (B&W), Special Products Integrated Field Services  
(SPIFS)  
H. W. Stoppelmann, ISI Coordinator/Level II UT Examiner

\*Attended exit interview

### 2. Inservice Testing (ISI) of Pumps and Valves Units 1, 2 and 3 (73756)

The controlling document for testing of pumps and valves is the Oconee Nuclear Station Inservice Inspection Program Revision No. 1. This document delineates performance test requirements contained in Section 4.0.4 of the Oconee Station Technical Specification.

This document defines the components subject to the IST program at Oconee and indicates the various required tests. Also included are references to various documents explaining why some components (pumps, valves) were not considered subject to the program. The ASME Boiler and Pressure Vessel code Section XI 1980 Edition through Winter 1980 Addenda (80W80), has been identified as applicable to this activity.

The inspector reviewed procedures and pertinent quality records, as indicated below, to determine whether inservice testing, regulatory requirements and licensee commitments were being met in the following areas:

a. Responsibilities, Control and Scheduling

The inspector reviewed licensee instructions and procedures and interviewed cognizant licensee personnel to determine that the licensee had assigned responsibilities to persons and organizations for:

- (1) preparation, review, and approval of inservice testing (IST) procedures
- (2) scheduling of IST for normal and increased frequency testing
- (3) performance of testing per approved procedures
- (4) performance of post-maintenance and post-modification IST
- (5) proper certification and calibration of IST instruments
- (6) training for those personnel responsible for implementing IST procedures

Instructions and procedures reviewed by the inspector relative to the above were as follows:

<u>Document No.</u>	<u>Title</u>
PT/1/A/0150/22C	Refueling Valve Functional Test Sect. XI (80W80)
PT/1/A/0150/22A	Operational Valve Functional Test
PT/1/A/0150/22B 4/14/87	Shutdown Valve Functional Test
Performance Manual Section 4.4	Control of Performance Test and Measuring Equipment
4.9	Notifying Operations of Inoperative Equipment
4.14	Performance Section Evaluation of Plant Instrument Calibration
7.0	Training and Personnel Qualifications
3.1	Procedures

<u>Document No.</u> (continued)	<u>Title</u>
3.4	Performance Surveillance Scheduling
3.6	ISI Program Manual Review and Approval Process
1.5	ISI Manual Examination and Repairs

b. IST Procedure Content

The inspector reviewed a sample of the licensee's IST procedures to verify that the procedures specify (except for items addressed by relief requests):

- (1) valid test criteria for the components being tested
- (2) evaluations of imposing and removing increased frequency testing requirements
- (3) pump vibration test data analysis and acceptance criteria justification, including location of vibration measurement
- (4) requirements that pump tests be conducted at reference conditions, including reference speed
- (5) compliance of test instruments to 10 CFR 50 and ASME Code requirements
- (6) requirements that testing of Category B, C and D valves include:
  - performance of positive testing of Category C check valves whose safety function is to open and close (i.e., full stroke verification in both directions and individual quantitative leak rate testing where applicable)
  - observation of remote position indicators, at least once every two years to verify that valve operation is accurately indicated
  - indication that valve stroke times are commensurate with the capabilities of the valve tested

The procedures reviewed by the inspector relative to the above were as follows:

<u>Procedure No.</u>	<u>Title</u>
PT/1/A/0202/11	High Pressure Injection System Performance Test
PT/1/A/0204/07	Reactor Building Performance Test

<u>Procedure No.</u> (continued)	<u>Title</u>
PT/1/A/0600/13	Motor Driven Emergency Feedwater Pump Performance Test
PT/0/A/0150/22H	Hydrogen Analyzer Valve Functional Test

## c. IST Records

The inspector reviewed completed procedure records for IST of the following components to verify conformance with procedural requirements and to verify proper evaluation in accordance with the requirements of ASME Section XI:

<u>Component</u>	<u>Dates</u>
High Pressure Injection Pump	5/12/88; 1/14/88; 10/31/87; 7/14/87
Reactor Building Spray Pump	4/7/88; 1/11/88; 11/2/87; 7/9/87; 4/8/87; 4/15/87
Motor Driven Emergency Feedwater	6/2/88; 4/25/88; 1/19-21/88; 11/1/87; 7/23/87; 7/21/87; 4/22/87
Valve 1HP-24	6/15/88 to 5/12/87
Valve ILP-15	6/7/88 to 5/12/87
Valve ILP-9	3/4/88 to 5/12/87
Valve ILPSW-4	6/9/88 to 5/11/87
Valve IFDW-107	6/7/88 to 5/11/87
Valve IFDW-108	6/7/88 to 5/11/87
Valve 1HP-27	6/9/88 to 5/12/87

## d. IST Performance

At the time of this inspection, the licensee was making preparations for a post maintenance leak rate test and valve functional test on the Unit 1 Reactor Building Hydrogen Sampling System Train "B". This work efforts came about when a calibration check, produced span mode readings that were about 25% below the acceptable range. The problem was identified as a faulty regulator which was changed under Work Request WR#50817H. Following replacement, the analyzer was tested successfully using procedure IP/0/A/253/5B Rev. 14. "Calibration of the Reactor Building Hydrogen Sampling System Train "B". The replacement regulator was identified by QA Tag No. 49718. It was

procured under DPC purchase order PO #P33419-76 to specification MCS-1210.04-00-0024. Quality records reviewed included certificate of conformance, receipt inspection report and QA certification for pneumatic and functional test. Post-maintenance tests witnessed by the inspector included, valve functional test PT/O/A/0150/22H, leak rate tests PT/O/A/0150/31 and PT/1/A/0150/06.

Within these areas, the inspector noted that the licensee has been experiencing a significant problem with Unit 1 valve 1LPSW-516. This valve is located in the low pressure service water supply line to "1A" motor driven emergency feedwater pump (MDEFWP). By document review and through discussions with cognizant personnel the inspector ascertained that this valve has been failing and continues to fail, i.e., four of the last six quarterly tests failed because the valve did not open automatically from a pump-start signal. Failure of the valve to open prevents cooling water flow to the pump bearing, and renders the pump inoperable which can result in a seven day LCO. To investigate the problem, the licensee has issued several work requests including WRs #03755FC, 10/17/86; #91632C 01/20/87 - seven day LCO issued; #91968C, 09/10/87 and #12796C, 01/10/88. Also on January 19, 1988, following pump failure, the licensee issued problem investigation report (PIR) S/N 1-088-0015 dated January 19, 1988. While discussing this problem, the cognizant licensee representative stated that they have tried to determine the cause of failure by investigating the instrument, electrical and mechanical areas of the valve without success. The proposed corrective action in the aforementioned PIR was to monitor the breaker, solenoid valve, and LPSW-516 in order to help identify the exact cause of the problem.

In conclusion the inspector expressed concern over the inability to determine the cause of this significant problem which in essence negates the reliability of pump "1A" and puts the plant in a precarious condition if pump "1B" becomes inoperable for any reason during plant operation. Following these discussions, the licensee agreed to develop new methods/approaches to test the valve in a concerted effort to identify the problem. In order to followup on this problem, Inspector Followup Item (IFI), was identified: 269/88-18-01 Failure of 1LPSW-516 to Open On Automatic Pump-start Signal.

Within the areas inspected, no violations or deviations were identified.

### 3. Inservice Inspection Data Review And Evaluation (73755) (Unit 3)

The inspector reviewed the ISI records of selected components indicated below, to determine whether the records were consistent with regulatory requirements and licensee procedures. The applicable code for Unit 3 is the ASME Boiler and Pressure Vessel Code Section XI, 1980 Edition with Addenda through Winter (1980). Unit 3 is entering the second period of the second ten year inservice inspection interval.

<u>Item Number</u>	<u>Component</u>	<u>Size</u>
C05.011.015	Pump Flange to Ell	0.25" x 12" dia.
C05.011.055	Valve to Reducer	0.25" B" dia.
C05.011.056	Valve to Reducer	0.25" x 8" dia.
C05.011.057	Pipe to Reducer	0.25" x 10" dia.
C05.011.058	Pipe to Pipe	0.25" x 10" dia.
C05.011.272	Pipe to Valve	0.28" x 6.

These test records were reviewed to ascertain whether they contained or provided reference to:

- Examination results and data sheets.
- Examination equipment data.
- Calibration data sheets.
- Examination evaluation data.
- Records on extent of examination,
- Records of deviation from program and procedures including justification for deviation, if applicable.
- Records on disposition of findings.
- Re-examination data after repair work, as applicable.
- Identification of NDE material such as penetrant, penetrant cleaner, couplant, films, tapes, etc.

Within the areas inspected, no violations or deviations were identified.

4. Inspector Followup And Unresolved Items (92701)(Units 1-3)

(Closed) IFI 269, 270, 287/86-09-01, Cracks in Low Pressure Turbine Blades. General Electric issued a Technical Information letter indicating that the cracking in the dove-tail pins was due to stress corrosion. Details of GE's investigation were contained in a report submitted to the licensee which is on file.

5. Licensee Action On Nonroutine Events (92700)(Unit 1)

(Closed) LER 269/87-12 Technical Specification (TS) Violation Due to an Exceeded Inservice Inspection Interval Resulting from a Quality Assurance Deficiency.

To correct the reported TS violation and prevent its recurrence the license has taken the following actions:

- verify that the most recent ISI inspection of all three Oconee Units reactor coolant pump (RCP) flywheels were within the time schedule specified by Section XI of the ASME code;
- verify the results of the most recent RCP flywheels inspections on all three units;

- review QA's records to find out how many times Specification 4.2.3 was violated;
- implement, in the QA Inspection Manual a program to ensure that no fewer than three individuals review a change/addition to the Inservice Inspection Plan. This was implemented in April 1981;
- draft a Technical Specification interpretation for Specification 4.2.3 that will reflect ASME Section XI Paragraph IWB;
- revise all three Oconee Inservice Inspection plans to ensure the RCP flywheels are inspected every three years plus one year to coincide with planned outages.

6. Followup On Items Of Noncompliance (92702) (Units 1-3)

(Closed) Violation 269, 270, 287/87-30-01, No Procedures to Monitor Low Pressure Service Water Inlet Temperature for Compliance with FSAR Limit.

The licensee's letters of response dated October 30 and November 9, 1987, have been reviewed and determined acceptable by the Region II staff. The inspector held discussions with the Cognizant Performance Engineer and examined the corrective actions as stated in the letters of response. The inspector concluded that the licensee had determined the full extent of the subject noncompliance, performed the necessary follow-up actions to correct the present conditions and developed the necessary corrective actions to preclude recurrence of this problem. The corrective actions identified in the letters of response have been implemented.

7. Exit Interview

The inspection scope and finding were summarized on June 24, 1988, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were not received from the licensee. The following new item was identified during this inspection:

(Open) IFI 269/88-17-01, Determine Reasons for Valve 1LPSW-516 to Repeatedly Fail Code Required Inservice Tests.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.