



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

Report Nos: 50-269/87-44, 50-270/87-44, 50-287/87-44

Licensee: Duke Power Company
 422 South Church Street
 Charlotte, N.C. 28242

Facility Name: Oconee Nuclear Station

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

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

Inspection Conducted: October 20, - November 20, 1987

Inspectors:	<i>J. C. Bryant</i>	12/2/87
	J. C. Bryant	Date Signed
	<i>P. H. Skinner</i>	12/2/87
	P. H. Skinner	Date Signed
	<i>L. D. Went</i>	12/2/87
	L. D. Went	Date Signed
Approved by:	<i>T.A. Peebles</i>	12/3/87
	T.A. Peebles, Section Chief Division of Reactor Projects	Date Signed

SUMMARY

Scope: This routine, announced inspection involved resident inspection on-site in the areas of operations, surveillance, maintenance, engineered safety features lineups, followup of events, Unit 1 shutdown work in progress, and participation in and observation of the annual drill.

Results: Of the seven areas inspected, one violation was identified. Violation (270/87-44-01), Failure to document actions.

REPORT DETAILS

1. Licensee Employees Contacted

- *M.S. Tuckman, Station Manager
- T.B. Owen, Maintenance Superintendent
- R.L. Sweigart, Operations Superintendent
- L.V. Wilkie, Superintendent Integrated Scheduling
- J.M. Davis, Technical Services Superintendent
- C.L. Harlin, Compliance Engineer
- *F.E. Owens, Assistant Engineer, Compliance

Other licensee employees contacted included technicians, operators, mechanics, security force members, and staff engineers.

Resident Inspectors:

- *J.C. Bryant
- *P.H. Skinner
- *L.D. Wert

*Attended exit interview.

2. Exit Interview

The inspection scope and findings were summarized on November 23, 1987, with those persons indicated in paragraph 1 above.

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

3. Licensee Action on Previous Enforcement Matters

- a. (Closed) Violation (from SSFI inspection), Adequate Procedures Were Not Available to Control Maintenance on Safety Related Motor Operated Valves. This violation was also addressed in Unresolved Item 86-16-02, which was closed in Report No. 50-269,270,287/87-38. The licensees' response has been received and corrective action described in Report No. 87-38. This item is closed.
- b. (Closed) Violation (from SSFI inspection), Drawings Did Not Specify Proper End Gap for Keowee Batteries. This violation was also addressed in Unresolved Item 86-16-13 which is closed in this report. It is also addressed in Report No. 50-269,270,287/86-20. The licensees' response has been reviewed and corrective action is described in the referenced reports. This item is closed.

- c. (Closed) Violation 50-287/87-16-01: Failure to Maintain Two High Pressure Injection Paths Operable When the RCS Was Above 350 degrees F. Licensee corrective actions have been reviewed and found acceptable.
- d. (Closed) Violation 50-287/87-16-02: Failure to Maintain Two Independent Reactor Building Cooling Units Operable When the RCS Was Above 250 degrees F. Licensee corrective actions have been reviewed and found acceptable.
- e. (Closed) Violation 50-269,270,287/87-32-01: Failure to Provide Storage Access Controls. The licensee has provided locked wire gates in order to provide positive access control and also to maintain adequate ventilation when needed. Licensee corrective actions have been reviewed and found acceptable.

4. Unresolved Items

No unresolved items were identified during this inspection.

5. Plant Operations

The inspectors reviewed plant operations throughout the reporting period to verify conformance with regulatory requirements, technical specifications (TS), and administrative controls. Control room logs, shift turnover records, some Unit 1 Block Tagout Log and Outage Shift Reports, and equipment removal and restoration records were reviewed routinely. Interviews were conducted with plant operations, maintenance, chemistry, health physics and performance personnel.

Activities within the control rooms were monitored on an almost daily basis. Inspections were conducted on day and night shifts, and on weekends. Some inspections were made during shift change in order to evaluate shift turnover performance. Actions observed were conducted as required by Operations Management Procedure 2-1, Duties And Responsibilities Of Reactor Operators And Senior Reactor Operators. The complement of licensed personnel on each shift inspected met or exceeded the requirements of TS. Operators were responsive to plant annunciator alarms and were cognizant of plant conditions.

Plant tours were taken throughout the reporting period on a routine basis. The areas toured included the following:

- Unit 1 Reactor Building
- Turbine Building
- Units 1, and 3 Penetration Rooms
- Auxiliary Building
- Units 1, 2, and 3 Electrical Equipment Rooms
- Units 1, 2, and 3 Cable Spreading Rooms
- Station Yard Zone within the Protected Area
- Standby Shutdown Facility
- Condenser Circulating Water Intake Area

During the plant tours, ongoing activities, housekeeping, security, equipment status, and radiation control practices were observed.

Unit 1 remained in an outage status until November 12, when the outage was completed and the unit returned to service.

Unit 2 operated at 85% power, limited by "B" steam generator levels, throughout the report period.

Unit 3 operated at 100% power throughout the report period.

No violations or deviations were identified.

6. Surveillance Testing

Surveillance tests were reviewed by the inspectors to verify procedural and performance adequacy. The completed tests reviewed were examined for necessary test prerequisites, instructions, acceptance criteria, technical content, authorization to begin work, data collection, independent verification where required, handling of deficiencies noted, and review of completed work. The tests witnessed, in whole or in part, were inspected to determine that approved procedures were available, test equipment was calibrated, prerequisites were met, tests were conducted according to procedure, test results were acceptable and systems restoration was completed.

Surveillances witnessed in whole or in part:

IP/1/A/200/42	RVLIS Calibration (Unit 1)
IP/2/A/305/3B	RPS "B" Online Testing (Unit 2)
PT/1/A/0610/01J	Load Shed Test (Unit 1)
PT/1/A/1103/15	Reactivity Balance Procedure (Unit 1 Heatup)
PT/2/A/0251/10	Auxiliary Service Water Pump Performance Test
PT/0/A/0160/04	Containment Hydrogen Control System Piping Flow Test (Performed on Unit 1)
OP/1/A/1104/01	Core Flood System Operation (Test of Check Valves)

Completed Surveillance Procedures Reviewed:

PT/1/A/0150/06	Mechanical Penetration Leak Rate Test
PT/1/A/0160/06	Reactor Building Cooling Units Heat Exchanger Performance Test
IP/0/A/3001/11	Testing of Limitorque and Rotork Operators Using MOVATS
PT/1/A/115/08	Reactor Building Containment Isolation and Verification

One violation was identified and is discussed in paragraph 12.

7. Maintenance Activities

Maintenance activities were observed and/or reviewed during the reporting period to verify that the work was performed by qualified personnel and that approved procedures in use adequately described all work that was not within the skill of the trade. Activities, procedures and work requests were examined to verify proper authorization to begin work, provisions for fire, cleanliness and exposure control, proper return of equipment to service, and that limiting conditions for operation were met. Some attention was given to scaffolding, rigging, and other general work safety practices due to the extensive work ongoing with the Unit 1 outage.

Maintenance witnessed in whole or in part:

WR 53295E	Refurbish Limitorque Operator on 1 LP 8
WR 53576F	Refurbish Limitorque Operator on 1 HP 417
WR 53298	Refurbish Limitorque Operator on 1 LP 15
WR 54005F	Jumper Cell 29 on Battery 2CA

No violations or deviations were identified.

8. Resident Inspector Safeguards Inspection

In the course of the monthly activities, the resident inspectors included a review of the licensee's physical security program. The performance of various shifts of the security force was observed in the conduct of daily activities which included; protected and vital areas access controls, searching of personnel, packages and vehicles, badge issuance and retrieval, escorting of visitors, patrols and compensatory posts. In addition, the resident inspectors observed protected area lighting and protected and vital areas barrier integrity, and verified interfaces between the security organization and operations or maintenance.

No violations or deviations were identified.

9. Unit 1 End of Cycle 10 Refueling Outage

The Unit 1 refueling outage was completed on November 12, 1987. Some of the major work performed during this period was chemical cleaning of steam generators, refueling, installing dams in the steam generator (SG) primary side cold legs, low pressure injection and reactor building cooler cleaning, plugging and repair of SG tubes, eddy current testing of SG tubes, overhaul of one low pressure turbine, replacement of the main transformer, and copper cleaning of the main generator. Prior to the chemical cleaning of the steam generators, power was reduced to approximately 87% with steam generator levels at 90 - 92%. Subsequent to the chemical cleaning with power at 100%, levels are now 52% and 56%.

The outage was originally scheduled for 65 days, but due to a generator balance problem and a hydrogen seal leak, the outage was extended an additional six days. As of November 15, the unit was returned to 100% power.

10. Inspection of Open Items

The following Licensee Event Reports and other open items are being closed based on review of licensee reports, inspection, or record review, as appropriate, and discussions with licensee personnel.

(Open) Deviation 269/86-20-02: Discrepancy Between FSAR and Installed Seismic Instrumentation. Replacement of instrumentation was not completed as scheduled during the just completed refueling shutdown. The work performed is described in Report No. 50-269/87-41.

(Closed) Unresolved Item (269,270,287/85-02-01): Leak Rate Acceptance Criteria for Individual Containment Isolation Valves. A review of this subject has determined that the licensee has changed PT/1,2,3/A/0150/06, Mechanical Penetration Leak Rate Test, to provide evaluation criteria for large leaks, trending information, documentation of leakage evaluation and management review of any failed component. The resident inspector discussed the licensee's procedure with region based personnel and, based on this discussion, the questions were addressed and no additional questions were identified. Based on this discussion and review, this item is closed.

(Closed) IFI 50-269,270,287/87-35-01: Clarification of Liquid Penetrant Procedure. The clarifications identified in this item were made to DPC procedure NDE-35, Liquid Penetrant Examination, in a revision dated October 20, 1987. This revision was discussed with regional based inspectors and based on that discussion, this item is closed.

(Closed) LER 50-287/87-03: Failure to Sample Isolated Gaseous Waste Tank Due to Personnel Error. Corrective actions have been examined and found to be satisfactory.

11. Safety System Functional Inspection Report

Items left open on the referenced inspection report (50-269,270,287/86-16) were reviewed to determine current status, as follows:

- a. (Closed) URI 86-16-04 (Item 3.2.3): Undesignated and Uncontrolled Valves in Backup Nitrogen System.

The SSFI inspectors found that some valves in the backup nitrogen system for valves MS 87, FDW 315 and FDW 316 were undesignated and uncontrolled. The licensee agreed that some of the valves were not

designated or identified by number since the nitrogen system was considered to be a backup to the air system which had its own backup air system. Drawings of the system with identified valves are now being prepared.

An SSFI team member stated that a valve had been removed from the system between May 21 and June 2, 1987, and that there was no record of the removal. Licensee personnel acknowledged that there was no record of removal but stated, also, that no one acknowledged having removed a valve. Those familiar with the system also stated that, to their knowledge, there had never been a valve in the position described by the inspector. There does not appear to be any point in pursuing this issue further. This item is closed.

- b. (Closed) URI 50-269,270,287/86-16-05 (Item 3.2.4): Procedural Weaknesses Regarding the EFW System. The inspectors have reviewed the licensee's response, EP/*/1800/01, "Emergency Operating Procedure" and other referenced procedures with the following observations.

- Items:
- (1) The inspectors concur with the response in that unnecessary or upon the first indication of a major steam line rupture is not desirable.
 - (2) The inspectors reviewed OP/2/A/1106/06 Enclosure 3.11, Operational Guidelines for Correcting High EFDW Flow. If FDW 315 or 316 fail open, operators are instructed to secure the TDEFWP, close the discharge valve on the affected MDEFWP (FDW 372 or 382) or trip the affected MDEFWP. The operator is then instructed to have FDW 315 or 316 manually throttled and then to reopen FDW 372 or 382 or restart the MDEFWP.
 - (3) Reviewed OEE-16, "Starting Recommendations - 4000 Volt Motors" and verified guidance on MDEFWP's is included.
 - (4) OP/2/A/1106/06, Enclosure 3.4, Step 2.8 contains the statement that MDEFWP suction must be established before the hotwell level is decreased beyond 60 inches, but once started it can pump the hotwell down to about 12 inches.

The inspectors concur with the licensee's actions and conclusions.

This item is closed.

- c. (Closed) URI 50-269,270,287/86-16-07 (Item 3.3.2): Testing of Check Valves MS 83 and MS 85. The licensee's response of October 1, 1986, states that testing of these check valves in the backflow direction is not required by ASME Section 11 and that the testing program is in full

compliance with ASME Section 11. The SSFI team's concern for proper operation of these valves was based, in part, on concern for proper operation of the related motor operated valves (MOV's) due to the described inadequacies of maintenance of the MOV's. The MOV refurbishment program which should alleviate those concerns is described in Report No. 269,270,287/87-38.

Due to the SSFI team's concerns, during the Unit 3 refueling shutdown in early 1987, valves MS 83 and MS 85 were inspected. This work is described in report No. 50-269,270,287/87-04. Since these 6 inch valves are not flanged, it was necessary to cut them out of the lines for examination. The valves were found to be completely operational with no threatening defects detected, although there was some steam scoring of the valve seats and discs. The valves were examined by liquid penetrant, the seats were lapped and new discs installed. The resident inspectors witnessed portions of this work.

The reference report stated that MS 83 and MS 85 would also be examined on Units 1 and 2. However, due to the as found conditions of Unit 3 MS 83 and MS 85, the difficulty in removing and replacing the valves, and the need for obtaining Code relief on testing the steam line after the valves were replaced, the licensee has cancelled plans for Units 1 and 2 valves.

The licensee is considering other options but has made no commitments, nor are any required. This item is closed.

- d. (Closed) URI 50-269,270,287/86-16-08 (Item 3.3.3): Testing of Check Valves 2C-568 and 3C-568. The licensee response to this item was provided in the letter of December 16, 1986. The referenced valves had not been tested due to the potential for severe damage to the motor driven emergency feedwater pumps prior to extension of pump suction piping in the hotwells. The modifications have now been completed, as verified by the inspectors. The residents also reviewed tests TT/1/A/0600/01,02, and 03, Motor Driven Emergency Feedwater Pump Refueling Test. The flowpath utilized tested performance of the referenced check valves following installation of NSM 12493 on Units 1, 2 and 3. This item is closed.
- e. (Closed) URI 50-269,270,287/86-16-09 (Item 3.3.5): Post-Modification and Periodic Testing for Nitrogen Systems. Procedure IP/O/A/275/5W for valves FDW 315 and FDW 316; IP/O/B/270/IT for valves MS-126 and MS-129; and IP/O/B/2705E for valve MS-87 were changed to include functional verification on every refueling shutdown hereafter for each unit and standing work requests to accomplish this have been incorporated into the system. The procedures require functional verification that these valves will perform correctly on the nitrogen system with instrument air completely isolated. The procedures also require independent verification of proper lineup upon completion of testing. These tests have been satisfactorily performed on all three units. This item is closed.

- f. (Closed) URI 50-269,270,287/86-16-10 (Item 3.3.6): Testing of the Standby Shutdown Facility. The licensee's response of 10/1/86 states that a problem was found with calibrations which, when corrected, showed the system to be operable despite low pressure service water (LPSW) problems. A resident inspector followup in November 1986 noted that problems with LPSW flow through HVAC units were continuing despite maintenance efforts to correct the situation. HVAC performance was again inspected in June of 1987. With an ambient temperature of 90 degrees F, inside temperatures were well below the required action temperature of 78 degrees F.

LPSW flow is controlled by a device used to sense the refrigerant condensing pressure in the Carrier condenser. After considerable work to determine the cause of inadequate LPSW flow, maintenance found the apparent cause to be the pressure sensor and LPSW valve positioning unit. The control systems have now been rebuilt, resulting in considerably improved performance. This item is closed.

- g. (Closed) URI 50-269,270,287/86-16-11 (Item 3.3.7): Auxiliary Service Water (ASW) Pump Testing. The licensee's response of October 1, 1986, describes how the ASW system would be called upon for decay heat removal only after the loss of six other systems. It states also that in January and March 1978 NRC granted a ten year relief permitting routine testing of the ASW pump without measuring suction pressure, discharge pressure, or flow. Another letter of March 25, 1982, grants relief, specifically, from the requirements to measure flow and pressure based on the fact that the ASW pump would be called upon only after concurrent loss of the main feedwater system, the auxiliary feedwater system and the decay heat removal system.

The licensee has requested the relief be extended for an additional ten year period. A response has not yet been received. Based on the low probability of use of this pump and the fact that the licensee, at the time of the inspection and currently is operating within NRC regulations, this item is closed. Should the relief not be granted, action will be required of the licensee.

- h. (Closed) URI 50-269,270,287/86-16-12 (Item 3.3.8): Surveillance Testing of Batteries. Instrument Procedure (IP)/O/A/3000/5 for the 230KV switchyard batteries and IP/O/A/3000/3 for instrument and control batteries annual discharge test have been modified to use the load profile provided in the Technical Specifications. Procedure IP/O/A/400/11 for Keowee batteries is presently being rewritten to incorporate the load profile given in the Tech Specs. This rewrite will be completed prior to the next load test of the Keowee batteries. This item is closed.
- i. (Closed) URI 50-269,270,287/86-16-13: Seismic Design and Installation of Safety Related Equipment.

- Part (1) This item concerned a violation due to omission of spacer material from installed Keowee battery rack end gaps. The physical discrepancy was corrected by the licensee on the day it was identified by the SSFI team. The cause of the discrepant condition is described in Report No. 50-269, 270,287/86-20. Corrected drawings which would have the violation had been received at the site, but the change requiring the spacer material was not noted. The inspectors have reviewed the licensee's corrective action to improve communications between Design Engineering and the Oconee site. These improvements should preclude further events of the nature. This item is closed.
- Part (2) The SSFI team could not find information to confirm seismic acceptability of the interstep connection between end cells of the Keowee instrument and control (I&C) batteries. The licensee reviewed the existing seismic qualification data for the I&C batteries and determined that the interstep connection was included in the seismic test of the batteries. This item is closed.
- j. (Closed) URI 50-269,270,287/86-16-14, (Item 3.4.3): Runout Protection for EFW Pumps. This item is also the subject of a violation cited in the referenced report. Since the unresolved item will be resolved when the violation is resolved, this item will be closed to avoid having two open items on the same subject.
- k. (Closed) URI 50-269,270,287/86-16-16, (Item 3.4.6): Backup Nitrogen Supply Systems. The nitrogen supply for each unit has been modified to add a second bottle and regulator in the system. Design calculations have been made to determine the amount needed to maintain a constant two hour supply: which confirmed the need to be one bottle (2 cu.ft.) at 2000 psig or two bottles at 1000 psig. Bottles are delivered at 2400 psig. Procedural changes have been made to require changeout of any bottle when pressure decreases below 1000 psig. This assures that a two hour supply is always at hand. This item is closed.
- l. (Closed) URI 50-269,270,287/86-16-23, (Item 3.4.14): Temporary Lead Shielding. The licensee's response of December 16, 1986, describes actions taken which revised procedural requirements and documentation. It also addresses the causes of excessive lead blankets identified by the SSFI team. Corrective actions appear to be adequate. This item is closed.
- m. (Closed) Item 3.2.2(2) Atmospheric Steam Dump Valves. Though not listed as an Unresolved Item, the SSFI team expressed concern about the reactor operators' ability to operate the atmospheric steam dump

valves. This concern is expressed in the SSFI report in items 2.1.1(2) and 3.2.2(2). The licensee's response of October 1, 1986, to Item 2.1.1(2) describes the station modification to the atmospheric dump valves then in progress but not yet physically installed on Units 1 and 3.

The modification has now been completed on all three units. The modification installed a pressure equalizing line bypassing the first isolation valve and a flow control valve bypassing the second isolation valve. Operators testing the new valves have reported them to be very easy to operate. Performance personnel have developed a stroke test procedure which has been added to periodic test requirements for testing during refueling outages. Operations has developed procedures for testing at full pressure during refueling outages. This item is closed.

12. Correct Component Verification

During the inspection period the inspectors observed two instances in which the correct component verification required by Station Directive 3.2.1, Work Requests, to be performed and documented on all work requests had not been properly documented.

On October 16, 1987, Instrument and Electrical Technicians replaced a component in the Control Rod Drive Group Five Regulated Power Supply (Unit 2) and failed to document component verification until the job was nearly completed. Although the inspector observing the work did not note a deliberate completion of this verification, the technicians stated that they had made the verification earlier but failed to sign the work request documenting their actions. Although this is a violation of the licensee's directives, the maintenance was not directly safety related and was not specifically cited by the inspectors.

On October 29, 1987, Instrument and Electrical technicians restarted Procedure IP/2/A/305/3B, Reactor Protection System Channel "B" Calibration and Functional Test, after a delay from October 27, 1987, without documenting correct component verification. The technicians stated that they had made the verification but failed to document their actions.

The inspectors consider that the verifications were made but not properly documented. Particularly at this three unit station, this verification and its documentation enhance safety by helping to ensure that workers are on the correct unit, system or component before work is commenced. The latter example involved safety related testing. Failure to document completion of the verification is a violation. (Violation 270/87-44-01, Failure to document actions).

13. NUREG 0737: II.F.2 Instrumentation for Detection of Inadequate Core Cooling

On November 4, 1987, the licensee contacted the resident inspector to discuss operability of the reactor vessel level indicating system (RVLIS) portion of the inadequate core cooling (ICC) instrumentation system. The licensee stated that after extensive effort by their personnel, assisted by a Westinghouse representative, the RVLIS system could not be calibrated due to instrumentation reliability and design. Since this system is not addressed by Technical Specifications at this time and all other sections of ICC were functioning properly, the licensee's intent was to declare RVLIS out of service and continue their recovery from the outage. A review by the resident inspectors verified that the RVLIS system has not yet been incorporated into the emergency procedures, thus the system would not be utilized for emergency or normal operations. This problem was discussed between regional management and the resident inspector. Since DPC had previously notified the NRC, in a letter dated July 2, 1987, that RVLIS was installed, calibrated, and performs in accordance with the design expectations, the licensee will be notifying the NRC that the system is not functioning as previously discussed and will address actions that will be taken to correct this system.

14. Confirmatory Order Concerning Reactor Building and Decay Heat Removal Coolers

Problems caused by fouling of reactor building cooling units (RBCU) and low pressure injection (LPI or decay heat removal) coolers and lake water temperatures have been a subject in several reports in 1987, including Report Nos. 50-269, 270, 287/87-13, 17, 25, 29 and 30. NRC Confirmatory Orders of April 10, 1987 and August 6, 1987, placed restrictions of Operation on Oconee Unit 1. The orders required that Unit 1 not be operated at any power level after cycle 10 until LPI and RBCU coolers had been cleaned and tested and had been approved for full power operation by Region II.

The licensee cleaned and tested the coolers during the EOC 10 refueling shutdown. The licensee determined that Unit 1 could be safely operated at power levels up to 100% with Lake Keowee water at temperatures up to 85 degrees F. Region II personnel witnessed cleaning and testing and reviewed the findings. On November 5, 1987, Region II lifted the restrictions imposed by the Confirmatory Order.

Original calculations on operability had considered water temperatures of 75 degrees; however, it was determined subsequently that lake temperatures have reached temperatures of almost 82 degrees F. The recent testing and calculations determined that the plant can operate safely at the higher temperatures.

15. Degradation of Emergency Power Switching Logic for Units 2 and 3

On October 28, the licensee reported that a violation of Technical Specification (TS) 3.7.2(b) had occurred. The licensee had removed the Standby Bus, which is an alternate source of power during certain

postulated emergencies, from service in order to perform testing. This process included the removal of various control power fuses and opening of feeders circuit breakers associated with the Emergency Power Switching Logic (EPSL) as prerequisites to the test.

While the plant was in this lineup, a roving watchstander on Unit 2 noted that an EPSL panel did not have its required configuration and reported this to the Shift Supervisor (SS). Upon investigation the SS identified that the system was in a degraded condition. He took immediate actions to secure the test and return the EPSL system to an operable status.

The licensee reported this occurrence in accordance with TS 3.7.9 in a letter dated November 2, 1987, and will submit a Licensee Event Report upon completion of a more detailed investigation of this incident. The safety evaluation conducted by the licensee indicated there was no significance with respect to its effect on the health and safety of the public. The resident inspectors are monitoring the licensee's efforts and will review in detail the results of the licensee's investigation.