



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

Report Nos.: 50-269/92-27, 50-270/92-27 and 50-287/92-27

Licensee: Duke Power Company  
 422 South Church Street  
 Charlotte, NC 28242-0001

Docket Nos.: 50-269, 50-270, 50-287, 72-4

License Nos.: DPR-38, DPR-47, DPR-55, SNM-2503

Facility Name: Oconee Nuclear Station

Inspection Conducted: November 1 - November 28, 1992

Inspectors: W. H. Harmon  
 for P. E. Harmon, Senior Resident Inspector

12-14-92  
 Date Signed

for W. H. Harmon  
 B. B. Desai, Resident Inspector

12-14-92  
 Date Signed

for W. H. Harmon  
 W. K. Poertner, Resident Inspector

12-14-92  
 Date Signed

Approved by: G. A. Belisle  
 G. A. Belisle, Section Chief

12/15/92  
 Date Signed

SUMMARY

Scope: This routine, resident inspection was conducted in the areas of plant operations, surveillance testing, maintenance activities, low pressure injection system walkdown, and inspection of open items.

Results: No violations or deviations were identified. However, one Unresolved Item (URI) concerning the acceptability of non-safety power supplies to the Low Pressure Injection (LPI) throttle valves was identified (paragraph 5).

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*H. Barron, Station Manager
- \*S. Benesole, Safety Review
- D. Coyle, Systems Engineering
- \*J. Davis, Safety Assurance Manager
- D. Deatherage, Operations Support Manager
- B. Dolan, Manager, Mechanical/Nuclear Engineering (Design)
- W. Foster, Superintendent, Mechanical Maintenance
- J. Hampton, Vice President, Oconee Site
- O. Kohler, Regulatory Compliance
- C. Little, Superintendent, Instrument and Electrical (I&E)
- M. Patrick, Performance Engineer
- B. Peele, Engineering Manager
- \*S. Perry, Regulatory Compliance
- G. Rothenberger, Work Control Superintendent
- R. Sweigert, Operations Superintendent

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

#### NRC Resident Inspectors

- \*P. Harmon
- \*W. Poertner
- B. Desai

\*Attended exit interview.

### 2. Plant Operations (71707)

#### a. General

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, temporary modification log and equipment removal and restoration records were reviewed routinely. Discussions were conducted with plant operations, maintenance, chemistry, health physics, instrument & electrical (I&E), and performance personnel.

Activities within the control rooms were monitored on an almost daily basis. Inspections were conducted on day and on night shifts, during weekdays and on weekends. Some inspections were made during shift change in order to evaluate shift turnover performance. Actions observed were conducted as required by the licensee's Administrative Procedures. 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:

- Turbine Building
- Auxiliary Building
- CCW Intake Structure
- Independent Spent Fuel Storage Equipment Rooms
- Units 1, 2 and 3 Electrical Equipment Rooms
- Units 1, 2 and 3 Cable Spreading Rooms
- Units 1, 2 and 3 Penetration Rooms
- Units 1, 2 and 3 Spent Fuel Pool Rooms
- Station Yard Zone Within the Protected Area
- Standby Shutdown Facility
- Keowee Hydro Station

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

Within the areas reviewed, licensee activities were satisfactory.

b. Plant Status

Unit 1 operated at power the entire reporting period.

Unit 2 operated at power the entire reporting period.

Unit 3 operated at power the entire reporting period. Unit 3 experienced a turbine runback to approximately 22 percent power on November 11, 1992, due to low stator coolant water flow. The low flow condition occurred during a surveillance test to verify the travel stop position of the flow control valve. The travel stop was loose allowing the valve to shut. The valve was repaired and the unit returned to 100 percent power.

No violations or deviations were identified.

3. Surveillance Testing (61726)

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 reviewed and/or witnessed in whole or in part:

IP/O/A/3000/001 I&C Battery Daily Surveillance  
PT/O/A/0620/16 Keowee Emergency Power Test

Within the areas reviewed, licensee activities were satisfactory. No violations or deviations were identified.

4. Maintenance Activities (62703)

Maintenance activities were observed and/or reviewed during the reporting period to verify that work was performed by qualified personnel and that approved procedures in use adequately described 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.

Maintenance reviewed and/or witnessed in whole or in part:

WR 92048783 Replace 1SV-225.  
WR 92046343 1AS-98 Setting Is Too High.

Within the areas reviewed, licensee activities were satisfactory. No violations or deviations were identified.

5. Low Pressure Injection System Walkdown (71710)

The inspectors performed a system walkdown on the accessible portions of the Unit 2 Low Pressure Injection (LPI) system. The LPI system is normally aligned to the borated water storage tank (BWST) and automatically initiates on an engineered safeguards signal when reactor coolant pressure equals 550 psig or reactor building pressure reaches 3 psig. The LPI system is manually aligned from the control room to take a suction on the emergency sump when the inventory from the BWST is depleted. The LPI system consists of two 100 percent capacity trains. Each train consists of an LPI pump, LPI cooler, and associated valves and piping. The system also contains a third pump that is normally isolated that can be aligned to either LPI train.

During a unit shutdown, the LPI system is aligned in the decay heat removal mode of operation. In the decay heat removal alignment, the LPI system is aligned to the RCS loop 2A hot leg through the decay heat removal drop line when RCS temperature is less than 250 degrees F and pressure is less than 320 psig. The Unit 2 LPI system must be aligned in switchover during the initial cooldown phase using the LPI system. Switchover consists of aligning the LPI system to direct the reactor coolant through the 2B LPI cooler to the suction of the A or C LPI pump then to the B LPI cooler outlet to the core flood nozzles back into the reactor vessel. This alignment is necessary because the Unit 2 LPI

coolers have a design pressure rating of 350 psig and the combination of RCS pressure and LPI pump discharge pressure would exceed this design pressure when the LPI system is first placed in service for decay heat removal. When RCS pressure is reduced to less than 125 psig the LPI system is aligned in the normal decay heat removal alignment and the 2A LPI cooler can be placed in service to remove decay heat.

During the review of procedure OP/2/A/1104/04, Low Pressure Injection System, the inspectors determined that several valves were not included on the valve checklist. The valves in question were valves that interfaced with other systems or vent and drain valves downstream of normally shut isolation valves not in the normal system flowpaths. The inspectors discussed this item with operations personnel and they agreed to review the valve checklist to determine if the valves should be included on the LPI valve checklist or if the valves were included on other valve checklists.

The Reactor Building Spray pumps and the Low Pressure Injection pumps at Oconee share the same sources of suction water during accident conditions. These sources are the Borated Water Storage Tank and the Reactor Building Emergency Sump.

During a Loss of Coolant Accident (LOCA), both sets of pumps initially take a suction off the Borated Water Storage Tank (BWST) and are aligned to the emergency sump by the operators in the control room as the inventory in the BWST is depleted. In order to prevent damage to the Building Spray pumps, due to inadequate NPSH when the pumps are aligned to the emergency sump, the Building Spray flow must be throttled to 1000 gpm and the Low pressure injection flow must be throttled to 3000 gpm in accordance with Emergency Procedures. The licensee has stated that pump runout is not a concern with the LPI pumps; however, the licensee does not have an official calculation to support this conclusion. Throttling of the Low pressure injection system flow is accomplished by valves LP-12 and LP-14. These valves are the LPI cooler outlet throttle valves.

During the walkdown of the LPI system, the inspectors identified that valves 2LP-12 and 2LP-14 are powered from the same non-safety related motor control center. The inspectors discussed this item with the licensee. The licensee's position is that the valves are not required to be powered from a safety related power supply and that an operator could manually throttle the valves prior to aligning the LPI pumps to the emergency sump, if power was not available to the valves.

The inspectors believe that the ability to throttle the valves from the control room is a requirement for operability of the Building Spray system and that the valves are required to be powered from a safety related power supply. Swapover to the emergency sump could occur in approximately 30 minutes after a design basis large break LOCA. Even if LPI flow could be throttled locally, prior to swapover to the emergency sump, the ability to throttle LPI flow locally after swapover may not be achievable due to elevated radiation levels in the LPI cooler room.

This issue was discussed between NRR and Region II personnel and this item has been referred to NRR for further review to determine the following:

1. Are common power supplies for the Unit 2 LPI throttle valves acceptable?
2. Are Non-IE power supplies to the LPI throttle valves acceptable?
3. Is manual throttling of LPI flow acceptable given the potential time constraints and the importance of throttling LPI flow to maintain NPSH to the reactor building spray pumps?

The resolution of the acceptability of the present configuration of the LPI throttle valves is identified as Unresolved Item 269,270,287/92-27-01: Non-Safety Related Power Supplies To The LPI Cooler Throttle Valves.

6. Inspection of Open Items (92700) (92701) (92702)

The following open items were reviewed using licensee reports, inspection, record review, and discussions with licensee personnel, as appropriate:

- a. (Closed) Violation 50-269,270,287/88-13-05: Failure to Document the Basis for 10 CFR 50.59 Determination.

The licensee denied the violation in response dated September 2, 1988. In a letter dated December 7, 1988, the NRC requested the licensee to resubmit the response to the violation. The licensee resubmitted the response admitting the violation in a letter dated January 31, 1989. The inspectors reviewed the licensee's corrective actions pertaining to the violation in NRC Inspection Report Nos. 50-269,270,287/89-09 dated April 12, 1989, and determined that the corrective actions were not completed.

The inspector reviewed the upgraded valve replacement by Exempt Change process that was completed on March 29, 1989. Corrective actions are complete and are adequate.

- b. (Closed) Violation 50-269,270,287/90-17-02: Failure to Follow Procedures Resulting in Violation of TS 3.5.1.1.

The licensee responded to this violation by a letter dated July 27, 1990. The inspector reviewed the I&E training package required to be read by all supervisors/crews. All signoffs indicating receipt of training were completed by September 5, 1990. The corrective actions are considered adequate.

- c. (Closed) Violation 50-270/90-33-01: Failure to maintain the emergency feedwater system in accordance with OP/2/A/1106.

The Licensee responded to this violation by a letter dated January 9, 1991. The inspectors reviewed the corrective actions identified.

- d. (Open) URI 269,270,287/90-30-01: Clarification of T.S. 3.3.1

This Unresolved Item involves the clarification of TS 3.3.1, which stipulates the number of HPI pumps required to be operable when single failure criteria are considered. The licensee expects to submit a revised TS after receipt of an analysis from Babcock and Wilcox, (B&W). The target date for this submittal is June, 1993. This item will remain open until the TS is submitted.

- e. (Open) URI 269,270,287/90-30-02: Clarification of T.S. 3.4.1.a

This Unresolved Item involves the licensee's plans to clarify TS 3.4.1.a. In its present form, the TS requires that three Emergency Feedwater (EFW) pumps and associated circuitry be operable prior to exceeding 250 degrees. The licensee's procedures and practices allow escalation above 250 degrees with the EFW pumps in Manual control, and operator action to start the pumps is acceptable. The inspectors believe that TS requires the pumps to be in Automatic, which obviates the need for operator action. In the TS's present form, as interpreted by the licensee, EFW can be left in Manual control for an indefinite period of time. The licensee presently plans to resubmit TS 3.4.1.a by mid-year 1993. This item will remain open until the TS is submitted.

- f. (Open) IFI 269,270,287/90-30-03: Review IST Criteria for pump Testing.

This Inspector Followup Item involves apparent differences between the licensee's Inservice Test (IST) criteria for pump testing and the standing Section XI of the ASME Code. At the present time, the licensee is awaiting review and approval by the NRC of their current IST program submitted on May 27, 1992. That review is expected to be complete in early 1993. This item will remain open until the program is reviewed and approved by the NRC.

- g. (Open) IFI 50-269,270,287/90-34-02: Long Term Resolution of RBCU Fouling.

The licensee intends to submit a TS change to implement surveillance requirements to monitor RBCU performance. This item will remain open until the TS change is submitted.

- h. (Open) Licensee Event Report (LER) 50-269/90-04: Unanticipated System Interaction During Undervoltage Condition In The 230KV

### Switchyard Results In Failure to Comply With Technical Specifications.

The LER was issued on April 30, 1990. The inspectors reviewed the licensee's planned corrective actions. The corrective action included a Technical Specification revision to clarify the effect of degraded voltage and the use of the external grid protection system. This item will remain open pending completion of all corrective actions.

- i. (Open) Licensee Event Report (LER) 50-269/90-14: Equipment Malfunction and Management Deficiency Result in TS Violations on Core Flood Tanks.

The LER associated with the Core Flood tanks was issued on October 8, 1990. The inspector reviewed the licensee's planned corrective actions. The modification of the level instruments on the Unit 1 Core Flood tanks is currently scheduled to be performed during the next refueling outage beginning December 1992. Pending the modification, this LER remains open.

### 6. Exit Interview (30703)

The inspection scope and findings were summarized on December 4, 1992, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection.

#### Item Number

#### Description/Reference Paragraph

269,270,287/92-27-01

Unresolved Item - Non-Safety Related Power Supplies To The LPI Cooler Throttle Valves (Paragraph 5)