



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

Report Nos. 50-269/81-10, 50-270/81-10, and 50-287/81-10

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

Inspectors: J. Bryant for 6/19/81  
 F. Jape Date Signed

J. Bryant for 6/19/81  
 W. Orders Date Signed

J. Bryant for 6/19/81  
 D. Myers Date Signed

Approved by: J. Bryant 6/19/81  
 J. Bryant, Section Chief, Division of Resident  
 Reactor Project Inspection Date Signed

SUMMARY

Inspection on May 10 - June 10, 1981

Areas Inspected

This routine inspection involved 379 resident inspector-hours on site in the areas of operational safety, surveillance testing, maintenance activities, incident review, containment purge, spent fuel pool rerack, refueling preparations, LER review, and TMI action items.

Results

Of the nine areas inspected, no items of noncompliance or deviations were identified in eight areas; one item of noncompliance was found in one area (Violation: Oconee Unit 3 was operated from construction hydro until May 1981 with 3CS-124 relief valve defeated unbeknown to the licensee and contrary to the requirement of 10 CFR 50 Appendix B, Criterion V para. 8).

8108040627 810723  
 PDR ADDCK 05000269  
 Q PDR

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*J. E. Smith, Station Manager
- \*J. M. Davis, Superintendent of Maintenance
- \*J. N. Pope, Superintendent of Operations
- \*T. E. Cribbe, Licensing Engineer
- \*H. R. Lowery, Acting Superintendent of Operation

Other licensee employees contacted included 10 operating shift supervisors, three I&E supervisors, three unit coordinators, four I&E technicians, six maintenance foremen, eight maintenance craftsmen, 20 licensed operators, 10 non-licensed operators, five performance technicians, three I&E support engineers, and two office personnel.

### 2. Exit Interview

The inspection scope and findings were summarized on June 10, 1981 with those persons indicated in Paragraph 1 above. The licensee acknowledged the inspection findings without significant comment. The item of noncompliance was discussed and licensee management concurred with the finding.

### 3. Licensee Action on Previous Inspection Findings

(Open) Unresolved Item (269, 270, 287/81-07-03) RPS Instrument Inaccuracies. The licensee has received plant specific evaluations for Oconee from B&W. The licensee has expressed dissatisfaction with the mechanism by which the analysis of string errors was performed. Duke considers the errors as calculated, though conservative, are excessively large. However, Duke is using the disputed analysis as a basis of instrument setpoint and technical specification changes. The changes are expected to be complete by July 30, 1981. This item remains open pending review of the T.S. and setpoint changes.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

### 5. Plant Operations

The inspector reviewed plant operations throughout the report period, May 10 - June 10, 1981 to verify conformance with regulatory requirements, technical specifications and administrative controls. Control room logs, shift supervisors logs, shift turnover records and equipment removal and restoration records for the three units were continually perused. Interviews were conducted with plant operations, maintenance, chemistry, health physics, and performance personnel on day and night shifts.

Activities within the control rooms were monitored during all shifts and at shift changes. Actions and/or activities observed were conducted as prescribed in the Station Directives. The complement of licensed personnel on each shift met or exceeded the minimum required by technical specifications. Operators were responsive to plant annunciator alarms and appeared to be cognizant of plant conditions.

Plant tours were taken throughout the reporting period on a continual basis. The areas toured include but are not limited to the following:

- Turbine Building
- 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, Units 1, 2, and 3 Penetrations Rooms

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

Oconee units one and two operated at virtually full power throughout the reporting period with no major difficulties.

Unit three operated until May 19 at virtually full licensed power. On that date, it was discovered that the component drain header reactor building penetration was breached. The unit was resultantly shutdown for approximately 24 hours for repair. Details of the incident are embodied elsewhere in this report. Following completion of maintenance and related testing, the unit was restarted and operated throughout the remainder of the reporting period at full power.

Within the areas inspected, one violation was identified, as discussed in paragraph 8.

#### 6. Surveillance Testing

The surveillance tests detailed below were analyzed and/or witnessed by the inspector to ascertain procedural and performance adequacy.

The completed test procedures examined were analyzed for embodiment of the necessary test prerequisites, preparations, instructions, acceptance criteria and sufficiency of technical content.

The selected tests witnessed were examined to ascertain that current written approved procedures were available and in use, that test equipment in use was calibrated, that test prerequisites were met, system restoration was completed and test results were adequate.

The selected procedures perused attested conformance with applicable Technical Specifications, they appeared to have received the required administrative review and they apparently were performed within the surveillance frequency prescribed.

<u>Procedure</u>	<u>Title</u>
PT/0/A/610/17	Operability Test of 4160 BKRS
PT/0/A/600/15	CRD Movement
PT/0/A/170/05	Penetration Room Ventilation
PT/0/A/290/05	Secondary Systems Protection
PT/2/A/204/07	Reactor Building Spray Performance Test
PT/2/A/202/11	HPI Performance Test
IP/0/B/D310/12C	RB Isolation and Cooling Channel 5 on Line
IP/0/B/0310/13C	Channel 6 on Line

The inspector employed one or more of the following acceptance criteria for evaluating the above items:

10 CFR  
ANSI N18.7  
Oconee Technical Specifications  
Oconee Station Directives  
Duke Administrative Policy Manual

Within the areas inspected no items of noncompliance or deviations were identified.

#### 7. Maintenance Observations

Maintenance activities were observed, witnessed and reviewed throughout the inspection period to verify that activities were accomplished using approved procedures and the work was done by qualified personnel. Where appropriate, limiting conditions for operation were examined to ensure that the equipment removal and restoration procedure was properly followed. Acceptance criteria for the maintenance activities were as follows:

Station Directives 3.3.1, 3.3.2, 3.3.5, and 3.3.15,  
Administrative Policy Manual, Sections 3.3 and 4.7,

Maintenance Activities observed were as follows:

- a. Repair of CCW-8. Automatic operation of this valve was lost due to failure of the control cables. Compensatory actions and repairs were observed and witnessed by the resident inspectors. Details of this event are contained in licensee event report RO-269/81-08.

- b. Inspecting and testing accessible PSA mechanical snubbers. Snubbers within the penetration rooms, turbine building and auxiliary building were inspected by maintenance craftsmen using MP/O/A/3018/20. The craftsmen were observed performing the work and several men were interviewed to determine if they had been trained to perform this work. The men were found to be knowledgeable and had attended training classes on snubber inspection recently.
- c. Installation of NSM-1357 on Unit 3 steam-driven emergency feedwater pump. This modification provides an additional source of cooling water for the turbine oil cooler and a backup air supply for the main steam supply valves to the turbine. The modification required electrical, mechanical and welding work. The installation was observed during the day and evening shifts. Technical specification limiting conditions for operation were verified as being fulfilled.

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

#### 8. Breach of Containment

On May 7, 1981, while Oconee unit three was operating at 100% power, at 0832 hours, E.S. valve 3CS-6 (refer to figure 1) was observed to be in the intermediate position. Normal, at power, position for this valve is closed. A computer printout reveals that the valve had been in the intermediate position for approximately 5½ hours prior to detection. Valve 3CS-5, the inboard isolation valve in the same line, had previously failed open or in an intermediate position. With the failure of 3CS-6, and 3CS-5, containment integrity was violated.

An auxiliary operator was dispatched to manually close 3CS-6. It was discovered that the valve had a body-to-bonnet leak and could not be closed. Licensee investigation and interim valve repair efforts led to unit shutdown and repair of both 3CS-5 and 3CS-6.

No apparent cause for the failure of either of the two valves was revealed by the licensee's investigation. Speculation at the time suggested possible connection with an ongoing RCS leakage investigation.

The unit was subsequently restarted and operated until May 19, 1981 with no significant difficulties. At approximately 1445 hours on that date, 3CS-6 was again detected in the open position. A computer printout reveals the valve had started open at 1105 and was fully open by 1149.

In an effort to isolate the subject penetration, 3CS-5 was closed. Valve 3CS-7 was already closed as a result of ongoing work on the component drain pump downstream. Subsequent efforts to manually close 3CS-6 were futile. Further investigation efforts resulted in opening a drain valve off the subject line. When the drain valve was opened, 3CS-6 closed. The drain valve was reclosed and within 1½ hours the valve was again full open. A pressure gauge was installed on the line which indicated 450 psig line pressure. Valve 3CS-6 is a 2-inch ITT Grinell Diaphragm Valve with a

Ground air operator, model 3225. The valve is designed to open with air and spring to close. When the line was overpressurized, the spring was overcome, opening the valve.

Licensee personnel determined that 3CS-5 was leaking through, thus breaching containment integrity. Reactor shutdown began at approximately 2028 hours.

Investigation revealed that core flood drain line valves were leaking and that relief valve 3CS-124 was manually "gagged" or blocked closed which resulted in the line pressurization. Of safety significance is the observation that with the low pressure drain header relief valve gagged, leaking high pressure systems drain valves have the potential to overpressurize and damage low pressure system components and piping.

Valve 3CS-124 was removed from the system, adjusted and reinstalled. The core flood drain lines were severed and capped to preclude similar incidents. Valves 3CS-5 and 3CS-6 were successfully tested. The subject line pressure was tested and the system returned to service. At 2320 on May 20, 1981, reactor restart began. The unit operated throughout the remainder of the reporting period with no significant difficulties. A test was performed on units 1 and 2 to determine if 1CS-124 and 2CS-124 were gagged. The test results indicated that a pressure relief path exists on both units which, in effect, precludes the incident detailed herein from occurring. Review of operations and maintenance records failed to provide information as to when 3CS-124 had been gagged.

10 CFR 50 Appendix B, Criterion XIV, Inspection, Test and Operating Status, as implemented by Duke Power Company Topical Report, Duke -1-A, parts 17.1.14 and 17.2.14 requires in part that measures be established to assure the operating status of systems and components of a nuclear power plant. Such measures are contained in procedure CP-209, Construction Hydro. The discovery in May 1981 that 3CS-124 was manually blocked and rendered inoperable indicates a failure to follow procedure. The failure to follow procedure and return the system to operational status is a violation of 10 CFR 50, App. B, Criterion V. (287/81-10-01)

#### 9. Reactor Building Purging During Operation

DPC has responded to the NRC letter of 11-29-78 and the 10-23-79 NRC Generic letter presenting the Staff's interim position on containment purging and venting at power. DPC responses of 12-19-79 and 5-20-80 detailed the manner in which the functional requirements of the Staff's interim position were to be met. NRC to DPC letter dated 11-5-80 accepted the licensee's commitments to the above responses and requested that the commitments remain in effect pending completion of the Staff long term review of the purging issue.

Inspectors have verified by direct inspection and review of documents that the licensee has performed the modifications and are meeting the commitments specified in their responses. Verification of DPC conformance to the interim position is detailed below: (Item numbers refer to the 10-23-79 Staff Interim Position).

Item 1 stated that whenever containment integrity is required, purging and venting should be limited to as low as reasonably achievable. DPC addressed the purging requirements in response to the NRC position of 1-5-78, 9-25-79, 12-19-79 and 5-20-80. Duke committed that purging would be minimized to the extent possible consistent with operational requirements, Technical Specifications and with the goal of maintaining personnel exposure as low as reasonably achievable. Through review of reactor building purge logs and routine review of normal operations, the inspectors have confirmed that the licensee appears to be minimizing purging as specified.

Item 2a requires that purge and vent isolation valves remain closed, or on an interim basis, partially open until they can be proved operable under the most severe design-basis-accident flow condition.

In the 5-20-80 letter to the NRC, DPC documented that the purge valve manufacturer, Henry Pratt Company, has confirmed that the purge isolation valves will close if they are opened no more than 65° (90° being full open). In order to assure that these valves are not opened beyond 65°, the purge system was modified. The inspectors have confirmed through direct observation of work and review of Nuclear Station Modification (NSM) 1534 that the licensee has installed travel stops on the required valves in the reactor building purge system. The modification was completed for the 3 Oconee Units on 3-2-81.

Item 2b requires an independent, uninhibited actuation signal to initiate valve closure to be available. (See also IE report 269, 270, 287/80-17, 12, 11) DPC stated design of the purge system continually maintains an automatic trip signal to the purge valves. The inspector verified this through review of ES logic diagrams.

#### 10. Reracking Unit 1/2 Spent Fuel Pool

Installation of the new Oconee spent fuel racks was performed between January and April, 1981. (See also IE Report 269, 270, 287/81-02 paragraph 14). Inspectors monitored activities periodically to ensure procedural compliance and proper QA and Health Physics interactions. The inspectors also reviewed the licensee's program for confirming that neutron absorbing material was installed in the rack modules as specified in the SER. This program was two phase: an onsite visual verification that Boraflex poison material was present; and a QA verification by document review that vendor certification of material composition was adequate. The inspectors verified the program by accompanying site personnel during receipt inspection of new racks and independently verified the presence of poison material in several rack modules. Then using the inspected rack serial number, inspectors reviewed associated documentation to verify traceability of the poison material. Vendor fabrication documents were also reviewed for the traced batch of the poison material to ensure that the chemical content of proportions of B<sub>4</sub>C in the material could be verified. The inspectors had no question in the area of material traceability and content.

During the reracking, an incident occurred that concerned the adequacy of separation between the new spent fuel rack modules. The licensee notified the NRC on May 7, 1981 of the incident. The rack modules were installed with a smaller rack-to-rack separation gap than had been previously considered, based upon design drawings of the pool as-built dimensions. A review by Westinghouse, the manufacturer of the new racks, determined that installation of the racks with 0.75 inch rather than 0.80 inch separation between modules would be sufficient to preclude rack-to-rack interaction during a design seismic event. Although the rack-to-rack spacing was questionable during the incident, the rack module to pool wall spacing was always sufficient to prevent rack-to-rack impact during an earthquake. Additionally, the licensee subsequently shifted the modules to a clear rack-to-rack spacing of 0.80 inch for an additional margin of safety.

Of the areas inspected no violations were identified.

#### 11. Preparation for Refueling

Inspectors have reviewed the procedures and operations associated with the receipt and storage of new fuel assemblies for the unit one refueling outage scheduled in July, 1981.

On May 20, 1981 the inspector performed direct inspections of six new fuel shipping containers. The inspection revealed that all motion and tamper devices were intact and that the containers as received were pressurized to within procedural limits. Container posting met 49 CFR 173.33 I&J requirements. Inspectors observed the uprighting of assemblies and the installation of burnable poison rods prior to storage in the unit 1-2 spent fuel pool. Compliance with the controlling procedure OP/O/A/1503/04. New Fuel Assembly Inspection and Storage was verified.

In preparation for this, the 15th refueling at the Oconee site, inspectors reviewed recent changes to the following procedures for technical adequacy. ANSI N18.7 was used as a guide for procedure content:

OP/O/A/1503/01 Preparation for Refueling  
 OP/O/A/1503/03 NEW CRA, APSRA, BPRA Receipt Inspection and Storage  
 OP/O/A/1502/07 Refueling Procedure

OP/O/A/1506/03 Multi-function Mast Check-out and Operating Procedure.

Inspectors confirmed that proposed core reload Technical Specification changes for Unit Cycle 7 have been submitted to NRR for review.

Of the areas inspected no violations were identified.

#### 12. Review of Licensee Event Reports

The inspector performed a review of licensee events reports listed below to verify that the report details met licensee requirements, identified the cause of the event, described corrective actions appropriate for the



identified cause, adequately assessed the event, and addressed any generic implications. In addition, the inspector examined selected operating and maintenance logs, records, and internal incident investigation reports. Personnel were interviewed to verify that the report accurately reflected the circumstances of the event, that the corrective action had been taken or responsibility assigned to assure completion and that the event was reviewed by the licensee as stipulated in the Technical Specifications.

269/81-01 Rev. 1, Steady State Tilt Limit Exceeded  
 269/81-02, DID Inverter Input Fuse Blown  
 269/81-03, IDID Inverter D.C. Input Fuse Blown  
 269/81-05, Leaking LPI Check Valve  
 269/81-06, Both RCS Subcooling Monitors Inoperable  
 269/80-40, 1A-OTSG Primary to Secondary Leak

270/81-02, Electrical Penetrations EMV-2 Failed to Hold SF6 Gas  
 270/81-03, High Bearing Temperature on RBCV 2C  
 270/81-04, MDEFWP Inoperable Due to Motor Arcing  
 270/81-05, Apparent Corrosion Wastage of RCP Closure Studs  
 270/81-06, Failure to PR-8 to Open During Testing  
 270/81-07, Portions of EPS Inoperable  
 270/81-09, 2B RBCV Inlet Valve Inoperable  
 270/80-25, HPI Pump Inoperable

287/81-01, Polar Crane Operated Over Fuel Transfer Canal With RC Head Removed  
 287/81-02, Apparent Corrosion Wastage of RCP Closure Studs  
 287/81-03, Over-Pressurization of B OTSG Secondary Side  
 287/81-08, Breach of Fire Barrier - TB and Ventilation and Equipment Room  
 287/80-14, Deficiencies in Monthly Fire Hose Station Inspection  
 287/80-15, BWST Level Motor Ch B Inoperable  
 287/80-18, TDEFW Pump Oil Sump Empty

### 13. TMI Action Item Followup

The following TMI task action items were reviewed in order to determine the adequacy of licensee response:

ITEM I.A.I.3 Shift Manning Inspection efforts reveal that in a December 15, 1980 letter in response to a Staff letter of October 31, 1981, the licensee documented the status of efforts to implement NUREG-0737. In that letter the licensee stated administrative procedures in the form of a Station Directive and a Management Procedure had been implemented thus fulfilling the requirements of NUREG-0737 item 1.A.1.3, part 1.

The Station Directive referred to, S.D. 3.1.33, Rules of Practice, part 6 requires that Operators be normally scheduled to work eight (8) hours per day. If overtime is required, Operators will not be scheduled for more than 12 hours per day or 120 hours in a two-week period. Deviation from this policy must have the approval of the Superintendent of Operations.

Neglected in the above is the requirement that the overtime of other plant staff personnel who perform safety-related functions (e.g. health physicist, I&C technicians and key maintenance personnel) be administratively limited as well as that of operators. Further, Duke Power Company Steam Production Department Management Procedure Number 8901-0008-ONS-1 which was implemented July 1, 1980 stipulates that as a guideline, no Oconee Nuclear Station employee will normally be required to work more than 120 hours in any two week payroll period. Extensions of the work period beyond this guideline will be authorized only by the appropriate Station Superintendent. Notification will be made to the Station Manager.

Having examined the licensee's administrative procedures which restrict overtime worked by plant staff who perform safety-related functions, we conclude that through diligent implementation of said procedures the intent of limiting overtime will be achieved.

#### Item I.C.5 Procedures for Feedback of Operating Experience to Plant Staff

Oconee Nuclear Station Directive 4.2.7 was originally implemented in June, 1980 and subsequently revised in January, 1981. This directive describes the functions of the Safety Review Engineer (SRE) at Oconee, pursuant to the requirements of NUREG-0660 Section I.C.5. for Operation Experience Assessment.

The function of the SRE is to identify generic and Oconee specific deficiencies relating to nuclear safety, review operating experience information coming to the station from external sources for applicability and distributing said information to appropriate station personnel for review and action.

Operating experience information channels include the onsite Technical Review Committee, the Institute of Nuclear Power Operations, the Nuclear Safety Analysis Center, the Nuclear Regulatory Commission and other utilities.

The SRE screens the incoming information for applicability and routes the information to applicable personnel.

Station Directive 4.2.7 is the only administrative procedure which deals directly with the subject of operating experience feedback. Scrutiny of that directive reveals that the organizational responsibilities for review of operating experience are not clearly identified as required by I.C.5. of NUREG-0737 nor does the directive address the administrative and technical review which may be necessary in order to translate recommendations made by the SRE into procedure changes and/or operating orders. Neither does the directive address the requirement of providing a periodic internal audit to assure that the feedback program is functioning.

It is further required that each utility carry out an operating experience assessment function which will involve utility personnel having collective competence in all areas. The program as implemented at Oconee employees one

engineer in this capacity. It is through this one engineer that all incoming operations experience information passes and is screened. This leads to the question as to his ability to adequately assess all the incoming information. The program as delineated in the directive allows the SRE to appoint a designee to perform his functions but does not stipulate the qualifications for such a designee.

In conclusion, the program of operating experience feedback, as implemented by Station Directive 4.2.7 at Oconee, provides the basic vehicle through which the intent of the requirements previously stated may be met. Further attention, however, needs to be devoted toward fulfilling the requirements which have been found to be inadequately addressed as have been identified herein. This topic will remain open pending licensee response. (Open Item 50-269/81-10-01)

Item I.C.6. Guidance on Procedures for Verifying Correct Performance of Operating Activities

The licensee responded to item I.C.6. in a December 15, 1980 letter to NRR committing themselves to be in conformance to the above position by January 1, 1981.

The inspector employed Station Directive 4.2.5 "Procedure for Implementing Independent Verification Requirement and ANSI N18.7 as guidance for reviewing the double verification practices at Oconee for verifying correct performance of Operating Activities.

The inspectors review on a daily basis the Removal and Restoration Procedure, OP/O/a/1102/06, the administrative mechanism through which station equipment is removed from service. Additionally, during monthly reviews of station surveillance and maintenance activities and procedures, the presence of double verification is constantly surveyed. In these areas inspected, the incorporation of double verification appears to be adequate.