



UNITED STATES  
ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS  
REGION II - SUITE 818  
230 PEACHTREE STREET, NORTHWEST  
ATLANTA, GEORGIA 30303

TELEPHONE: 404/526-4503

RO Inspection Report No. 50-270/73-17

Licensee: Duke Power Company  
Power Building  
422 South Church Street  
Charlotte, North Carolina 28201

Facility Name: Oconee Unit 2  
Docket No.: 50-270  
License No.: DPR-47  
Category: B2

Location: Seneca, South Carolina

Type of License: B&W, PWR, 2568 Mw(t)

Type of Inspection: Routine, Unannounced

Dates of Inspection: November 27-30, 1973  
December 3-7, 1973

Dates of Previous Inspection: September 13-14, 1973  
October 3, 1973  
October 23-26, 1973

Principal Inspector: F. Jape, Reactor Inspector  
Facilities Test and Startup Branch

Accompanying Inspector: K. W. Whitt, Reactor Inspector  
Facilities Test and Startup Branch

Other Accompanying Inspector: C. E. Murphy, Chief  
Facilities Test and Startup Branch

R. B. Sullivan, Reactor Inspector  
Facilities Test and Startup Branch

7911270 607

Principal Inspector: Francis Jape  
F. Jape, Reactor Inspector  
Facilities Test and Startup Branch

12-27-73  
Date

Reviewed by: Charles J. Jape  
C. E. Murphy, Chief  
Facilities Test and Startup Branch

12/27/73  
Date

## SUMMARY OF FINDINGS

I. Enforcement ActionA. Violations

1. The following apparent violations are considered to be Category II severity:

- a. Reactor Building Spray Valves

On November 6, 1973, the electrical breakers for motor operated valves 2BS-1 and 2BS-2 in the reactor building spray system were found open and tagged out. The disabling of these valves, one of which is in each loop of the reactor building spray system is a violation of Technical Specification 3.3.1.

This occurrence was reported to RO:II on November 7, 1973, and Abnormal Occurrence report No. AO-270/73-1 dated November 16, 1973, has been issued by Duke Power Company. (Details II, paragraph 2)

- b. The following are three examples of failure to follow procedures which violates Criterion V of Appendix B to 10 CFR 50.

- (1) Failure to Clear White Tags

One item of a check list in TP/2/B/600/1A, "Post Fuel Loading Hot Functional Test," requires a review of the white tag log and the clearing of any item in the log that affects plant startup. This item was signed off as having been completed on October 29, 1973. On November 16, 1973, the electrical breakers for 2BS-1 and 2BS-2 were found open and tagged-out with white tags. (Details II, paragraph 3.a)

- (2) Disabling of Valves (2BS-1 and 2BS-2)

Section 8.2 of the reactor building spray system performance test procedure states that only 2BS-1 or 2BS-2 be disabled at the same time. Both 2BS-1 in loop A and 2BS-2 in loop B were disabled throughout the performance of the reactor building spray system test of loop B on October 26, 1973. (Details II, paragraph 3.b)

(3) Failure to Perform Procedure Steps

Two steps in TP/O/A/204/7, "Reactor Building Spray System Performance Test", were not physically performed, but the steps in the procedure were signed-off as verification that the action had been completed. (Details II, paragraph 3c).

c. Reactor Protective System Pressure-Temperature Setpoints

On November 13, 1973, the licensee found that the reactor protective temperature channel for Oconee Unit 2 had been calibrated incorrectly which caused the minimum variable low reactor coolant system pressure trip settings to be outside and in violation of the limit specified in Table 2.3.1B of the technical specification.

This event was reported to RO:II on November 14, 1973, and Abnormal Occurrence report No. AO-270/73-2, dated November 23, 1973, has been issued by Duke Power Company. (Details II, paragraph 4)

d. Reactor Coolant System Heatup Limitations

During zero power physics testing on November 14, 1973, the upper pressurization limit defined by technical specification 3.1.2.3 was exceeded. Reactor coolant pressure was increased near the end of the 1600-2400 shift, and at approximately 0030 hours on November 15, 1973, the out-of-specification condition was discovered. Operation outside technical specification limits continued for approximately two hours.

The licensee reported this technical violation to RO:II as an abnormal occurrence on November 15, 1973, and Abnormal Occurrence report No. AO-270/73-3, dated November 23, 1973, has been issued by Duke Power Company. (Details II, paragraph 5)

2. An inspection of non-radiological environmental activities, which apply to the station, was conducted. The findings of this effort are reported in RO Inspection report No. 50-269/73-13. Followup will be reported in future inspection reports for Unit 1.

Safety Items

None

II. Licensee Action on Previously Identified Enforcement MattersA. ViolationsVentilation Imbalance Between Turbine Building and Auxiliary Building

Instructions have been provided by the licensee to control the air flow between the turbine building and the auxiliary building. The inspector has verified implementation of these corrective measures and has no further questions on this item. This matter is closed. (Details I, paragraph 2)

B. Safety Items

None

III. New Unresolved Items

None

IV. Status of Previously Reported Unresolved Items73-15/1 Lack of Grease in Tendon Sheaths

The licensee's report entitled, "Corrosion Investigation of Unit 2 Tendons," dated November 12, 1973, has been received and reviewed by the inspector. All concerns related to the absence of grease in the four tendon sheaths have been resolved. This item is closed. (Details I, paragraph 3)

73-8/2 Valve Wall Thickness of Valve 2-RV-67

The licensee has submitted two reports concerning the acceptability of the Electromatic Relief Valve, 2-RV-67. RO:II is currently reviewing these documents and will report our findings on a subsequent inspection.

73-8/1 Body Wall Thickness of Valves 2-51-244 and 2-51-245

Corrective measures have been completed by the licensee. An RO:II inspector will review these measures on a subsequent inspection.

V. Unusual Occurrences

None

VI. Other Significant Findings

Status of Oconee 2

Oconee 2 began electrical generation on December 5, 1973, power ascension testing at 15% power level is continuing. The licensee estimates that Unit 2 will reach 40% power by the second week in December.

VII. Management Interview

The management interview for this inspection was held in two parts. The first part was on November 30, 1973, with J. E. Smith, R. M. Koehler and D. Smith in attendance. The results of the non-radiological environmental inspection were discussed. Details of this part of the inspection are reported in RO Inspection Report 50-269/73-13.

Part two was held on December 7, 1973, with J. W. Hampton, T. L. Cotton and J. W. Cox in attendance.

The following items were discussed:

A. Enforcement Matters

Three technical specification violations and three samples of violations of Criterion V of Appendix B to 10 CFR 50 were discussed. Following is a summary of these discussions.

1. Reactor Building Spray Valves

The inspector stated that he had reviewed the Abnormal Occurrence report AO-270/73-1, the corrective action, and action taken to prevent similar occurrences. The inspector had no further questions on this item. (Details II, paragraph 2)

2. Failure to Clear White Tags

The inspector described his findings concerning an item in a check list requiring clearing of any white tag that would affect startup. The item had been signed off, but white tags were later found on racked out spray valves 2BS-1 and 2BS-2. He stated that this was an example of failure to follow a procedure and an apparent violation of Criterion V of Appendix B to 10 CFR 50. (Details II, paragraph 3a)

3. Disabling of Valves (2BS-1 and 2BS-2)

The inspector stated that both loops of the reactor building spray system had been disabled due to the disabling of 2BS-1 and 2BS-2. This is contrary to the requirements of the reactor building spray system performance test procedure and apparently is a violation of Criterion V of Appendix B to 10 CFR 50. (Details II, paragraph 3b)

4. Failure To Perform Procedure Steps

The inspector explained that two steps of the TP/O/A/204/7 had not been physically performed even though the steps had been signed off. Failure to follow the instructions is an apparent violation of Criterion V of Appendix B to 10 CFR 50. (Details II, paragraph 3c)

5. Reactor Protective System Pressure-Temperature Setpoints

The inspector stated that he had reviewed the corrective action taken regarding the variable low pressure technical specification

violation and that he had no further questions. (Details II, paragraph 4)

6. Reactor Coolant System Heatup Limitations

During zero power physics testing on November 4, 1973, the upper pressurization limit defined by technical specification 3.1.2.3 was exceeded. The inspector stated that he had reviewed the incident and found no explanation for remaining outside of the technical specification limit for approximately two hours. Licensee management replied that this had not been considered. The inspector stated that the Safety Review Committee should review the incident and the corrective action taken. Licensee management agreed to reconsider the entire incident including knowingly remaining outside of technical specification limits. Administrative procedures covering action to be taken when limits are exceeded will also be reviewed. (Details II, paragraph 5)

B. Power Ascension Testing

The inspector's findings concerning the power ascension test program were discussed. Comments on several power ascension test procedures were discussed and resolved. (Details I, paragraph 4 and Details II, paragraph 6)

C. Previously Identified Enforcement Matters

The status of the violation regarding lack of operating procedures for control of the auxiliary building and turbine building ventilation systems was reviewed. This item is closed. (Details I, paragraph 2)

D. Status of Unresolved Items

The status of previously reported unresolved items, as described in Section IV of the Summary of Findings, was discussed. (Details I, paragraph 3)



## DETAILS I

Prepared By: Frank Jape 12-26-73  
F. Jape, Reactor Inspector  
Facilities Test and Startup  
Branch  
Date

Dates of Inspection: November 30, 1973  
December 3-7, 1973

Reviewed by: C. E. Murphy 12/27/73  
C. E. Murphy, Chief  
Facilities Test and Startup  
Branch  
Date

1. Individuals Contacted

Duke Power Company

J. E. Smith - Plant Superintendent  
J. W. Hampton - Assistant Superintendent  
R. C. Collins - Performance Engineer  
G. W. Cage - Assistant Operating Engineer  
J. W. Cox - Assistant Plant Engineer  
D. L. Freeze - Principal Field Engineer  
C. B. Aycock - Senior Field Engineer

2. Ventilation Imbalance Between Turbine Building and Auxiliary Building

The actions taken by the licensee to ensure the air flow between the turbine building and the auxiliary building is in the correct direction were verified by the inspector. The actions taken included the following:

- a. A check each shift to determine the direction of flow was instituted on October 25, 1973. Results of this check are recorded in the control room log.
- b. Operating Procedure, 1104/41, "Auxiliary Building Ventilation," was issued on November 7, 1973. The procedure provides instructions and delineates which air handling units are to be in service and in standby status.

- c. A Station Modification Report No. O-9-S was issued on 10/24/73. The ventilation problem is described and engineering assistance is being provided to design appropriate modifications.
- d. The openings in the common wall shared by the turbine building and the auxiliary building have been sealed with grout except for the Unit 3 portion of these buildings. This reduces the problem of reverse air flow.

In addition, OP 1104/41, "Auxiliary Building Ventilation," requires that doors to the auxiliary building be kept closed except for personnel and equipment passage as an additional measure to control air flow.

In summary, it appears that adequate procedures and administrative controls are being implemented to ensure the air flow is in the proper direction. The inspector has no further questions on this previously identified violation.1/

### 3. Containment Building Tendons

The licensee's report entitled "Corrosion Investigation of Unit 2 Tendons," dated November 12, 1973, was reviewed by the inspector. Corrective actions described within the report to correct the previously reported condition<sup>2/</sup> on four tendons were verified by the inspector.

The four tendons discovered without grease have been examined and found in acceptable condition. The acceptance criteria used for this examination was identical to that originally established for the tendons, which is "Wire Rust Grade Inspection," Section 2.3.6.5 of Prescon's Quality Assurance Program, dated 12/1/69.

The four tendon sheaths were filled with corrosion-preventive grease on November 6, 1973. All other tendon sheaths were checked for grease and none were found to be without grease.

This previously identified unresolved item is considered closed.

### 4. Power Escalation Test Program

The licensee's power escalation test program is described in TP 800/23, "Controlling Procedure for Power Escalation Sequence."

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1/ RO Inspection Report No. 50-270/73-14, Details I, paragraph 2.

2/ RO Inspection Report No. 50-270/73-15, Details III, paragraph 2.

The inspector reviewed this procedure and compared it with the FSAR, Technical Specifications, the AEC's Guide for the Planning of Initial Startup Programs, and other applicable documentation.

The inspectors findings and comments are summarized below;

- a. The acceptance criteria stated in TP 800/23 is in agreement with the FSAR.
- b. One of the required tests listed in TP 800/23 is TP 800/19, "Rod Worth at Power," but the TP 800/19 is not included in the computer listing of Unit 2 tests.

The licensee indicated that the computer listing is in error and TP 800/19 will be performed and will be added to the computer listing.

- c. Enclosure 13.2 in TP 800/23 summarizes the testing sequence. In this enclosure, TP 800/08, "ICS Tuning at Power," is shown as being performed at 5 and 15% power. Shouldn't ICS tuning be done at 40, 75 and 100% power also?

The licensee agreed that ICS tuning is to be done at the higher power levels. The work is accomplished in conjunction with other testing.

- d. In TP 800/23, under acceptance Criterion 11.2.2, it is stated that DNB margins will be evaluated and recorded in Enclosure 13.5. Enclosure 13.5 is included in the test procedure but is never referred to in the test steps given in Section 12.0. What mechanism will be used to ensure that these data will not be overlooked while performing TP 800/23?

The licensee stated that a change to the procedure would be issued to add a step in Section 12 to require completion of Enclosure 13.5 at appropriate power levels.

With the above commitments and findings, the inspector had no further questions on the testing program.

#### 5. Overpressurization of Unit 2 Quencer Tank

During hot functional testing, on August 15, 1973, Unit 2 Quench tank was overpressurized due to failure of 2RC-66, Power Actuated Pressurizer Relief Valve, to open and 2RC-4 Pressurizer Power Actuated Relief Block Valve, to close. The rupture disc on the quench tank relieved allowing release of steam which resulted in severe burns to an assistant shift supervisor.<sup>1/</sup> The employee was taken to the hospital for treatment.

The two valves failed to operate due to a wiring fault which has been corrected. A test has been conducted, TP 230/10A, "Test of Power Relief Block Valve," to verify the operation of 2RC-4 following repairs and under full flow conditions. The test met the acceptance criteria.

Procedures used to check-out 2RC-66 and 2RC-4, have been revised to more adequately test their operability before the quench tank operational test is performed.

The incident has been reviewed by the Station Review Committee on September 18, 1973.

The inspector had no further questions on this incident.

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<sup>1/</sup> This injury was previously reported in RO Inspection Report 50-270/73-10, Section VI, Other Significant Findings, Item B.

DETAILS II

Prepared by:

Frank Jape for  
K. W. Whitt, Reactor Inspector  
Facilities Test and Startup Branch

12-27-73  
Date

Dates of Inspection: December 3-7, 1973

Reviewed by:

Montell J. A.  
C. E. Murphy, Chief  
Facilities Test and Startup Branch

12/27/73  
Date

1. Individuals Contacted

J. E. Smith - Plant Superintendent  
J. W. Hampton - Assistant Plant Superintendent  
R. M. Koehler - Technical Support Engineer  
D. J. Rains - Assistant Plant Engineer  
J. W. Cox - Assistant Plant Engineer  
R. J. Brackett - Junior Engineer  
R. C. Collins - Performance Engineer  
C. L. Thames - Health Physics Supervisor  
G. A. Ridgeway - Shift Supervisor

2. Reactor Building Spray Valves

On November 6, 1973, a member of the plant quality assurance group found the electrical breakers for motor operated valve 2 BS-1 and 2 BS-2 in the reactor building spray system open and tagged out with the valves closed. The breakers had been opened and tagged on October 1, 1973, to prevent initiation of the spray system during hot functional testing. They had been tagged a second time on October 5, 1973, for engineered safeguards testing. When the breakers were found open, the reactor coolant pressure was 500 psig and the temperature was 250°F. Disabling of the valves in both loops violates Technical Specification 3.3.1, which requires one reactor building spray pump and its associated spray nozzle header to be available when reactor coolant pressure is 350 psig or greater or when reactor coolant temperature is 250°F or greater. Regulatory Operations, Region II, was informed of this technical specification violation on November 7, 1973, and Abnormal Occurrence Report AO-270/73-1 was submitted to the Directorate of Licensing on November 16, 1973. During this inspection, the abnormal occurrence, the corrective action, and the action taken to prevent similar occurrences

were reviewed. The inspector has no further questions on this matter.

### 3. Procedures Violations

Three examples of apparent failure to perform activities according to instructions in procedures were noted which violates Criterion V of Appendix B to 10 CFR 50.

#### a. Failure To Clear White Tags

Enclosure 7.4 of TP/2/B/600/1A, "Post Fuel Loading Hot Functional Test," requires that the white tag log be reviewed and any items which affect plant startup be cleared. The step requiring this action was signed off as having been completed on October 29, 1973. On November 6, 1973, the electrical breakers for valves 2 BS-1 and 2 BS-2 were found open with two white tags affixed to each. The corrective action and actions taken to prevent similar occurrences were reviewed during this inspection. The inspector has no further questions.

#### b. Disabling of Valves (2 BS-1 and 2 BS-2)

The reactor building spray system performance test (PT/O/A/204/7) was performed on loop B of the reactor building spray system on October 26, 1973. Section 8.2 of the test procedure states that only one valve (2 BS-1 or 2 BS-2) may be disabled at a time. However, it was learned on November 6, 1973, that both valves had been disabled and tagged out since October 1, 1973. This condition was not noted or corrected during the test.

#### c. Failure To Perform Procedure Steps

Step 12.11 of PT/O/A/204/7, "Reactor Building Spray System Performance Test," provides instructions to rack out the motor control breaker for BS-2 on MCC-1XS2 and white tag BS-2 and its control switch shut. Step 12.19 provides instructions to remove the white tags and rack in the motor control breaker for BS-2 on MCC-1XS2. Both of these steps were signed off as verification that the actions had been performed. The white tag log does not indicate that any white tags were applied to or removed from the breaker or valve during the test. According to the log, the breakers were racked out on October 1, 1973, and remained in this condition until November 6, 1973. It appears that these procedure steps were signed without actually performing the actions required.

#### 4. Reactor Protective System Pressure - Temperature Setpoints

On November 13, 1973, the licensee determined that the minimum variable low reactor coolant system pressure trip setting had been incorrectly set as a result of calibrating the reactor temperature channel for Unit 2 using the pressure temperature function generator specified for use for Unit 1. This resulted in a violation of the requirements of table 2.3-1B of the Technical Specifications. Regulatory Operations, Region II, was informed of this incident on November 14, 1973, and Abnormal Occurrence Report No. AO-270/73-2 was transmitted to the Directorate of Licensing on November 23, 1973. The abnormal occurrence report, the corrective action, and actions taken to prevent recurrence have been reviewed. The inspector has no further questions.

#### 5. Reactor Coolant System Heatup Limitations

At 0030 hours on November 15, 1973, the licensee determined that Technical Specification 3.1.2.2 was being violated. This Technical Specification defines the pressure temperature relation for the reactor coolant system boundary. The upper pressurization limit for the existing temperature was exceeded. Upon learning of the out-of-specification conditions, the operating supervisor was notified, and the decision was made to hold the pressure at the existing level and to increase the temperature until the proper temperature pressure relationship was obtained and operation was within technical specification requirements. Regulatory Operations, Region II, was notified on November 15, 1973, and Abnormal Occurrence Report AO-270/73-3 was transmitted to the Directorate of Licensing on November 23, 1973. The abnormal occurrence report, the corrective action, and action taken to prevent the occurrence of similar incidents has been reviewed. The corrective action taken to restore operations within technical specifications required approximately two hours. The pressure could have been reduced to restore operations within technical specification limits in a few minutes. An explanation of the reasoning and justification for remaining out-of-limits for the longer period required to raise the temperature was not presented in the abnormal occurrence report nor the station incident report. Further, the minutes of the Station Review Committee meeting in which this incident was evaluated indicate that this matter of knowingly remaining out-of-limits was not considered by the committee. This matter should be considered, and justification for remaining out-of-limits or action taken or to be taken to prevent similar action in the future should be provided to the Commission. This item will remain open until the necessary additional information is received and reviewed.

## 6. Power Ascension Testing

### a. Test Program

The tests that the licensee plans to conduct during the power ascension test program were compared with the power ascension test requirements of AEC Guide for The Planning of Initial Start-up Programs. Two comments were discussed with licensee representatives and satisfactorily resolved as follows:

#### 1. Effluents and Effluent Monitoring Systems

Comment: The controlling procedure for power escalation sequence does not include verification of effluent monitor calibration by laboratory analysis of samples.

Licensee Response: Calibration of the monitors that are common to Units 1 and 2 is presently being verified by laboratory analysis of samples from Unit 1 effluents. The calibration of the gaseous waste monitors in the Unit 2 waste gas system which are not common with Unit 1 will be verified during the Unit 2 power ascension test program.

#### 2. Loss of Offsite Power

Comment: The controlling procedures for power ascension sequence does not include a test for loss of offsite power.

Licensee Response: A loss of offsite power test was performed for Unit 1 which verified that offsite power could be isolated from the plant (Units 1 and 2) and that the Keowee Hydro units would start and supply power to the auxiliary system. To isolate offsite power from the system, 230KV PCB's 8, 12, 15, 17, 20, 21, 23, 24, and 26 were verified open. These are the exact same breakers that would be tested during a Unit 2 test. It has been demonstrated that offsite power can be isolated from the plant and that the Hydro units will start and supply emergency power to the plant. The only other verification required by the test is that the unit will continue to feed its auxiliary systems through the unit transformer. This will be verified for Unit 2 by TP/2/B/800/13, "Unit Loss of Electrical Load." It is felt that the required testing has been performed already or will be performed during the Unit 2 power ascension test program.

The inspector agrees with the conclusions drawn by the licensee.



b. Procedure Review

Five individual power ascension test procedures were reviewed and discussed with members of the licensee site staff. The specific comments were as follows:

1. TP/2/A/800/24, "Power Imbalance Detector Correlation"

Comment 1: Signoff spaces have not been provided for prerequisites, required unit status and initial conditions.

Licensee Response: The spaces have been added in most cases. Where spaces may not have been added, signoff will be required in the margin of the applicable sections.

Comment 2: How can group seven rods maintain criticality if they are completely inserted as specified by section 12.1.1, 12.1.2, and others throughout the procedure?

Licensee Response: Some of the rod configuration notation appears to be in error. Changes will be made as necessary.

Comment 3: Sections 12.2.3.12, 12.2.4.4 and others contain the statement, "See Section 11.2." What is the significant of this statement? If the acceptance criteria of section 11.2 must be met before proceeding with the test, this should be clearly stated.

Licensee Response: Appropriate changes will be made to require verification of acceptance criteria.

2. TP/2/A/800/29, "Unit Load Transient Test"

No comments.

3. TP/2/A/800/13, "Unit Loss of Electrical Load"

No comments.

4. TP/2/A/800/31, "Pseudo Control Rod Ejection Test"

Comment: When is the asymmetric rod jumper to be installed? Prerequisite 8.8 requires the jumper to be installed, but it is not clear when the jumper is to be installed. Instructions should be provided for installing the jumper.

Licensee Response: It has been determined that the jumper is not necessary and all references to it are being removed from the procedure.

5. TP/2/A/800/33, "Dropped Control Rod Test"

No comments.

Duke Power Company  
Oconee 2

DEC 28 1973

RO Inspection Report No. 50-270/73-17

cc w/encl:  
H. D. Thornburg, RO  
RO:HQ (5)  
DR Central Files  
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