



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N.W. SUITE 1217
ATLANTA, GEORGIA 30303

Report No. 50-269/77-14; 50-270/77-14; 50-287/77-14

Docket No. 50-269, 50-270, 50-287

License No. DPR-38, DPR-47, DPR-55

Licensee: Duke Power Company
422 S. Church Street
Charlotte, North Carolina 28242

Facility Name: Oconee Units 1, 2 and 3

Inspection at: Oconee Site, Seneca, South Carolina

Inspection conducted: July 7-8, 1977

Inspector: Carl E. Alderson

Reviewed by: Richard C. Lewis for
Richard C. Lewis, Chief
Reactor Projects Section No. 2

7/26/77
Date

Inspection Summary

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Inspection on July 7-8, 1977 (Report No. 50-269/77-14; 50-270/77-14; 50-287/77-14)

Areas Inspected: Special, unannounced inspection to followup on information received by Region II office regarding actions taken by the licensee against two licensed reactor operators and oscillations observed in nuclear power instruments. The inspection involved sixteen inspector-hours on site by one NRC inspector.

Results: No items of noncompliance were identified in the two areas inspected.

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DETAILS I

Prepared by:

PK Hardin for
Carl E. Alderson, Reactor Inspector
Nuclear Support Section
Reactor Operations and Nuclear
Support Branch

7/26/77
Date

Dates of Inspection: July 7-8, 1977

Reviewed by:

PK Hardin for
Richard C. Lewis, Chief
Reactor Projects Section No. 2
Reactor Operations and Nuclear
Support Branch

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1. Persons Contacted

Duke Power Company

J. E. Smith, Station Manager
J. Hampton, Director of Administrative Services
N. Pope, Superintendent of Operations
O. Bradham, Superintendent of Maintenance
R. Adams, Maintenance Engineer (I&E)
T. Barr, Performance Engineer
B. Johns, Shift Supervisor
Two reactor operators

2. Licensee Action on Previous Inspection Findings

Not within the scope of this inspection.

3. Unresolved Items

None identified.

4. Exit Interview

The inspector met with the Operations Superintendent at the conclusion of the inspection on July 8, 1977, to discuss the information obtained regarding the events and circumstances which resulted in licensee action against two licensed reactor operators. (paragraph 5)

5. Operator Performance

The licensee notified Region II personnel that disciplinary action had been taken against two licensed reactor operators; one received three days suspension without pay and the other a written letter of reprimand. The inspector interviewed the Superintendent of Operations and the two operators involved and reviewed appropriate logs to ascertain the circumstances and events which lead to the disciplinary action. The inspector determined the following:

- a. A periodic test of the Unit 3 reactor coolant pump motor cooling water valves was performed on June 19, 1977. At the conclusion of the test, two Low Pressure Service Water (LPSW) valves were left closed, even though the procedure step was signed off that called for verification that all valves had been returned to their normal position. The two valves left closed were the containment isolation valves in the inlet and return lines for LPSW to all four reactor coolant pump motors. This was apparently caused by a combination of inadequate training of the performance technician performing the test and inadequate control by the licensed operator.
- b. As Unit 3 startup was in progress and control rod drive venting was being accomplished each reactor coolant pump (RCP) was operated individually for five minutes as required by the procedure, and then one pump, 3B1, was placed in operation. The reactor coolant pump operating procedure required verification that the inlet and return valves for that pump were open; however, the procedure did not require verification that the containment isolation valves were open and the pump was being operated without cooling water to the motor.
- c. Computer logs indicate that a block of four or five high temperature alarms associated with the RCP motor were received at one time and acknowledged after the pump had been running for approximately twenty-five minutes. In explaining how the alarms were acknowledged with no corrective action being taken, the operator stated that a control panel alarm had been activating intermittently and that he must have pushed the computer alarm button instead of the panel alarm acknowledge button, thereby deactivating the computer alarm without being aware of its existence.

- d. The alarms discussed above were received approximately ten minutes before a shift change commenced; however, additional high temperature alarms associated with the running RCP motor were received at approximately five to ten minute intervals for the next fifty minutes. These alarms were also acknowledged without corrective action being taken. The two operators involved could not provide any reason beyond that stated in paragraph c. above in explaining why the alarm were acknowledged without further response.
- e. Approximately one hour after the initial alarms were received, a Utility Operator called the control room from the Unit 3 reactor building and informed the reactor operator that smoke was coming from the "B" cubicle. The reactor operator suspecting an oil fire immediately shutdown the 3B1 RCP and started an RCP in the "A" loop. A high temperature alarm associated with the "A" RCP was subsequently received and the operator then realized that the problem was common to both RCP's. He then noted that the LPSW containment isolation valves were closed and realized that the pump motors had overheated due to lack of cooling water.
- f. The 3B1 RCP motor was thoroughly inspected by the licensee and no damage was noted. The licensee also performed an investigation of the matter and based on the investigation, the reactor operator involved in the events described in a. through d. above was suspended and the reactor operator involved in the events described in d. and e. received a written reprimand.
- g. The licensee also determined that weaknesses existed in the RCP operating procedure and the periodic test for the LPSW valves. Both of these procedures were revised to include more specific instructions regarding the containment isolation valves. Additionally, a memo was issued to the operating staff which requires that a computer alarm summary be printed out at the beginning of each shift and that each alarm be initialed by the supervisor.

The inspector discussed with each of the operators involved the requirements established by 10 CFR 55 and conditions of their license and their responsibility to adhere to procedures. The inspector also described the various enforcement options available to the NRC with regard to licensed reactor operators and stated that this information would be brought to the attention of the Operator Licensing Branch (NRR).

6. Power Level Oscillations

Region II personnel were notified by Operator Licensing Branch personnel involved in administering reactor operator examinations that oscillations were observed in the Unit 3 nuclear power range instrumentation. When the inspector arrived onsite on July 7, 1977, the licensee was in the process of shutting down Unit 3 due to an out-of-specification chloride concentration. The inspector witnessed the shutdown from approximately eighty-five to fifty percent power and observed that power oscillations of 3-6 percent of full power occurred over this entire range. The inspector also noted that oscillations also occurred above the eight-five percent power level but the amplitude of the oscillations were less than one percent peak-to-peak. Discussions with licensee representatives indicated that the increased oscillation have been that observed on Unit 3 since April 1977. Previously oscillations were observed between approximately 50-60 percent of full power with a magnitude of 1-2 percent.

- a. The licensee stated that the reactor supplier, Babcock and Wilcox (B&W) had predicted such behavior in a topical report on the once-through steam generator and that the actual frequency of oscillation was 0.25 Hz and was in agreement with the predicted value. The licensee attributed the oscillations to instability in relative water levels between the feedwater heating and tube nest regions of the steam generator.
- b. The licensee has contracted with B&W to study the problem and determine appropriate corrective action. Some testing had been accomplished; however, a formal documented test procedure was not prepared and the log of test activities conducted to date was not available at the site.
- d. The licensee stated that the final control elements (i.e., control rods, feedwater valves and pumps, and turbine control valves) were not responding to the oscillations due to the time constants involved.
- e. The licensee has not performed an evaluation of the effects of the pressure and temperature oscillations on plant equipment and was unaware of any such evaluation being performed by B&W.

The inspector stated that the licensee's efforts to identify the cause of the oscillations and subsequent corrective actions would be reviewed during future inspections.