



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

Report Nos.: 50-413/86-10 and 50-414/86-13

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

Docket Nos.: 50-413 and 50-414

License Nos.: NPF-35 and NPF-48

Facility Name: Catawba 1 and 2

Inspection Conducted: February 10 - 13 and 26 - 28, 1986

Inspectors:

P. T. Burnett
P. T. Burnett

3/27/86
Date Signed

J. L. Mathis
J. L. Mathis

3/26/86
Date Signed

Accompanying Personnel: A. R. Long

Approved by:

Frank Jape
F. Jape, Section Chief
Engineering Branch
Division of Reactor Safety

3/27/86
Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 84 inspector-hours on site inspecting in the areas of review of startup test procedures, witnessing initial fuel load (Unit 2), and review of surveillance tests.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. W. Hampton, Station Manager
- *H. B. Barron, Superintendent of Operations
- *W. F. Beaver, Performance Engineer
- *W. H. Bradley, QA Supervisor
- S. Brown, Reactor Engineer
- *B. F. Caldwell, Superintendent, Station Services
- #*J. W. Cox, Superintendent, Technical Services
- M. Hawes, Associate Engineer - Reactor
- #*C. L. Hartzell, Compliance Engineer
- *P. G. Le Roy, Licensing Engineer
- #J. H. Knuti, Operating Engineer
- #W. R. McCollum, Superintendent of Scheduling
- C. E. Muse, Operating Engineer
- *D. M. Robinson, Reactor Engineer
- #*F. P. Schiffley, Compliance Engineer
- *G. Smith, Superintendent of Maintenance

Other licensee employees included four shift supervisors, eight reactor operators, and six office personnel.

NRC Resident Inspectors

- #*P. H. Skinner, Senior Resident Inspector
- #*P. K. VanDoorn, Senior Resident Inspector

*Attended exit interview on February 13, 1986.

#Attended exit interview on February 28, 1986.

2. Exit Interview

The inspection scope and findings were summarized on February 13 and 28, 1986, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

Inspector Followup Item (IFI) 414/86-13-01, Assure Rod Swap Measurements have been approved for Initial tests prior to use.

Proprietary material was reviewed by the inspectors during this inspection, but is not included in this report.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

No unresolved items were identified during this inspection.

5. Startup Test Program Procedure Review - Unit 2 (72400, 72564, 72570, 72572)

The following test and surveillance procedures to be used in the Unit 2 startup test program were reviewed for conformance to FSAR commitments and anticipated technical specification requirements.

- a. TP/2/A/2600/07, Rod Drop Time Testing,
- b. IP/0/A/3220/01, Full Length Rod Cluster Control Assembly Drop Timing IRE System,
- c. TP/2/A/2100/02, Controlling Procedure for Zero Power Physics Testing,

This procedure provides the testing sequence for the following zero power test procedures, which were reviewed in concert:

- (1) PT/2/A/4150/12A, Isothermal Temperature Coefficient of Reactivity Measurement,
- (2) PT/2/A/4150/10, Boron Endpoint Measurement,
- (3) PT/2/A/4150/05, Core Power Distribution (at 3% Power),
- (4) PT/2/A/4150/11A, Control Rod Worth Measurement by Boration/Dilution,
- (5) PT/2/A/4150/11B, Control Rod Worth Measurement by Rod Swap,

This procedure does not reflect the test method described in Chapter 14 of the FSAR. The licensee has submitted a proposed change to the FSAR to authorize the new method, but it has yet to be approved. This item will be followed as IFI 414/86-13-01: Assure rod swap measurements have been approved for initial tests prior to use.

- d. TP/2/A/2650/01, Initial Fuel Loading,
- e. TP/2/A/2150/04, Doppler Only Power Coefficient Measurement (to be performed at 50% and 90% rated thermal power),
- f. PT/2/A/4150/19, 1/M Approach to Criticality.

Following discussions with licensee personnel, the inspector had no further questions regarding these procedures.

6. Controlling Procedure for Unit Startup - Unit 2

OP/2/A/6100/01, Controlling Procedure for Unit Startup, was reviewed to compare its requirements for determining reactor protection system channel operability with those of proposed technical specification table 3.3-1. All items of the table are addressed in the procedure with appropriate instrument procedures (IPs) identified for the surveillance tests except for item 6, Source Range Neutron Flux. The Senior Resident Inspector is following up this issue to assure that the safety functions of the source range nuclear instruments are tested prior to leaving mode 6.

7. Reactor Coolant System Leakrate Measurements (61728)

Using information from the Unit One Data Book (OP/1/A/6700/01), curves 7.27, 7.36, and 7.52, and station drawings, CNM 1201.01-67, CNM 1201.01-66, and 1188E03, the inspectors prepared and entered into the data base the unit-specific data required by RCSLK9, the micro-computer program for independent measurement of reactor coolant system (RCS) leakage measurement. Both the slope and geometric method of calculating volumes of horizontal tanks are supported.

Subsequently, RCSLK9 was used to confirm the results of the licensee's recent calculations of RCS leakage using data from the Unit 1 plant computer output.

PT/1/A/4150/01B, NC Manual Leakage Measurement, and a description of the computer reactor coolant leakage calculations were reviewed. These procedures and the comparison calculations will be discussed at a future inspection when the appropriate licensee personnel are available.

8. Initial Fuel Load Witnessing (72524)

a. Fuel Loading

The inspectors witnessed initial fuel loading at the Catawba, Unit 2 facility. Initial fuel loading for Unit 2 started February 25, 1986, in accordance with procedure TP/2/A/2650/01 (Revision 6), Initial Fuel Loading. TP/2/A/2650/01 established the conditions under which installation of the initial core was to be accomplished and specified the sequence of events which constituted the initial core loading program. Fuel loading was witnessed from the control room, refueling floor and spent fuel pool to verify that technical specifications requirements, license conditions and NRC requirements were met. The inspectors' observations included the following:

1. Direct communication was established between the control room and the refueling floor.
2. Shift turnovers conformed with administrative procedures.
3. Controls limited personnel access to the refueling floor.

4. Confirmation that boron concentration was being verified by proper sampling and analysis, at the required frequency.
5. Verification that both audible and visual indication of count rate existed in the control room.
6. Verification that an inverse count rate ratio (ICRR) was determined and plotted as a function of the total number of assemblies loaded.
7. Verification that the status board in the control room was maintained current and periodically reviewed by the reactor engineer.

b. Procedure Review

The inspectors reviewed procedures related to initial fuel loading at Catawba, Unit 2 facility. The procedures were analyzed for embodiment of the necessary test prerequisites, preparations, instructions, acceptance criteria, and technical content. Procedures reviewed included the following:

TP/2/A/2650/01 (Rev. 6), Initial Fuel Loading

CP/O/A/8100/16, Chemistry Procedure

CP/0/A/8800/05, Specification Limits

PT/2/A/4550/02C, Unborated Water Source Isolation

PT/2/A/4200/02C, Refueling Containment Integrity Verification - Part 1

PT/2/A/4200/02E, Refueling Containment Integrity Verification - Part 3

PT/2/A/4550/01B, Reactor Building and Fuel Transfer Refueling

Component Test

PT/2/A/4550/01C, Refueling Communication Test

9. At-Power Moderator Temperature Coefficient of Reactivity Measurement (61708)

PT/1/A/4150/12B, Isothermal Temperature Coefficient of Reactivity Measurement (EOL), was written to perform the surveillance test required by Technical Specification 3/4.1.1.3. Review of the procedure confirmed that it was technically adequate to measure the isothermal temperature coefficient at power. The procedure is similar to those in use at other facilities, in that reactivity change is determined from the change in boron concentration. No use is made of a reactivity computer, which, in its inability to account for doppler feedback, is not reliable for at-power measurements.

The inspector witnessed an attempt to perform the measurement. The attempt failed because boron samples were not saved for re-analysis as required by the procedure. The licensee then decided to use the results of an earlier attempt, during which the control rods were inadvertently moved a few steps. A procedure change to permit use of those data is in process at the end of the inspection. The revised procedure and test results will be reviewed during a future inspection of the facility.

10. Followup of Inspector Identified Items (92701)

(Closed) 413/85-46-01: Documentation of computer program RPECALIB. The licensee has modified the program to echo check the input data and to provide an output for easy comparison of raw and fitted data to provide a qualitative assessment of the goodness of fit.

(Closed) 414/85-51-02: Controlling procedure for precritical tests. The licensee has implemented a computerized scheduling program to control and sequence the entire startup testing program, thus obviating the need for the controlling procedure.