



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

Report Nos. 50-327/80-45 and 50-328/80-24

Licensee: Tennessee Valley Authority
Chattanooga, TN

Docket Nos. 50-327 and 50-328

Facility Name: Sequoyah, Units 1 and 2

License Nos. DPR-77 and CPPR-73

Inspection at Sequoyah Nuclear Plant

Inspector: *T. J. Donat*
T. J. Donat

2/5/81
Date Signed

Approved by: *H. D. Dance*
H. D. Dance, Section Chief, RONS Branch

2/6/81
Date Signed

SUMMARY

Inspection dates: November 25 to December 2, 1980

Areas Inspected

This routine inspection involved 60 resident inspector-hours onsite in the areas of Power Ascension Test Witnessing, Licensee Special Report Review, Monitoring of Operations, and Review of Unit 2 Preparational Test Procedures.

Results

Of the four areas inspected, no violations or deviations were identified.

8108130 201

DETAILS

1. Persons Contacted

Licensee Employees

J. M. Ballentine, Plant Superintendent
*W. T. Cottle, Compliance Supervisor
J. Doty, Maintenance Supervisor
W. Kinsey, Results Supervisor
R. Fortenberry, Reactor Engineer
J. McGriff, I&E Supervisor
S. Maher, Test Engineer
M. Halley, Unit 1 Startup Test Supervisor

Other licensee employees contacted included numerous technicians, operators, security force members, and office personnel.

NRC Resident Inspector

*S. Butler

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on December 2, 1980, with those persons indicated in paragraph 1 above. The findings were clear in all areas inspected.

3. License Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Startup Test Witnessing

The inspector witnessed performance of portions of the following startup tests:

W-10.2	Steam Generator Water Level Control Test
SU-8.1	Power Coefficient Measurement at 75% Power
SU-8.5.1	Plant State Baseline Data Measurement
SU-8.5.4	Overtemperature - Delta T Setpoint and Overpower - Delta T Setpoint Calibration
SU-10.2	Steam Generator Moisture Carryover Test

The inspector independently verified where possible the test procedure's prerequisites and initial plant condition. Where this was not possible, he verified that the test director had signed the procedure indicating that he had verified the condition or had submitted a procedure change to delete the requirement.

The inspector had several comments on the conduct of these tests. The first item concerned the Steam Generator Level response as measured during test procedure W-10.2. In the first portion of the test, dummy signals are injected for either the level setpoint or for the steam flow signal and the response of the level control system for 5% changes in these signals was measured. The amount of overshoot and the settling time were adjusted until they met the acceptance criteria. Then the dummy signals were removed, the system reconnected for normal operation and a five percent change in Steam Generator Level manually introduced. The systems' response to this change was much slower than before and exceeded the allowed settling time of the procedure. The test director and his supervisor contacted the cognizant design engineer and proceeded with the test. Two and a half days later the Preoperational Test Program Manager decided that a formal deficiency should be written so that a formal written evaluation of the Steam Generator level control system would be performed by Engineering Design and, if need be, by the NSSS vendor. The inspector indicated action should have been taken earlier.

The inspector noted that core performance related tests performed at 30% and 50% of rated thermal power had not been evaluated even though the plant had been at 75% power for several days and had experienced a four day shutdown following a reactor trip on November 23. The problem appears to be related to the lack of trained engineers to both conduct the test, evaluate the results and man the STA position in the control room.

The last area concerned conduct of test procedure SU-10.2. The inspector monitored the control room preparations for conducting the test, the injection of the sodium tracer into the feedwater piping, and the sampling of the feedwater heater discharge. The inspector noted that the test director and his assistant had briefed the operations staff on the procedures and had made numerous procedure prerequisite changes. The inspector observed the licensee's health physics personnel making surveys of the sodium tracer injection area during injection sequence and that the reactor engineer was directing the operations using the master copy of the test procedure. The last portion of the test monitored was the obtaining of the feedwater system samples by the chemistry department. The inspector accompanied the chemistry and health physics technician while they sampled the feedwater system and noted that area radiation measurements were made, and swipes of the sample bottles were obtained and checked before the samples were transported back to the laboratory. The inspector was not advised of the licensee's discovery of a valve lineup error until the following day which resulted in the sodium tracer being discharged directly to the turbine building sump. This incident followup is documented in the Resident Inspector's report for the period.

6. Review of Licensee Special Report on Inverter Failure

The inspector, at the request of IE Headquarters, obtained copies of the schematics for the Solid State Controls Static Inverter whose operation resulted in an ECCS actuation on November 22nd. The inspector reviewed the schematics prior to their being forwarded to IE Headquarters. The cause of the ECCS actuation was a four cycle voltage pulse on the vital instrument bus caused by the inverter cycling back and forth between its own internal clock and the vital bus for the reference source of its output frequency. The licensee performed the following items in order to preclude the ECCS actuation from recurring:

- a. The vital bus supply to the frequency control circuit was removed thereby requiring that the output frequency follow the internal clock. The external reference can be reconnected by closing a switch whenever the inverter output needs to be synchronized to the bus in preparation for removing the inverter from service;
- b. The plant procedures were modified to ensure that the external clock synch was connected only when removing an inverter from service, and that prior to an operator connecting the external reference, a check of all of the bistable status lights is performed to ensure that an inadvertent actuation will not be received;
- c. New inverters have been located which have a lower sensitivity to rapid changes in frequency between the internal clock and the line frequency; and
- d. Procedures EOI-0 and EOI-5 were changed in the areas of SI reset and Master Relay reset.

The inspector verified that: (1) the switches for the vital bus references to each inverter were open and tagged; (2) the plant procedures for inverter operation were changed to require the bus signal to the frequency control circuit to be used only when removing the inverter or restoring it to service, and; (3) Procedures EOI-0 and EOI-5 were modified in the areas of SI and Master Relay reset. The inspector had no further questions.

7. Review of Plant Operations

The inspector performed daily tours of the plant control room, auxiliary building, and service building. During these tours the inspector observed the licensee's conduct of operations. Specific areas were:

- Control Room Activities: The inspector observed shift relief activities for operators and the shift engineer. The shift engineer's and operator's logs were reviewed as well as the equipment log. The status of equipment and annunciators tagged as out of service was reviewed.

- Auxiliary Building: The inspector accompanied auxiliary operators while they toured the auxiliary building. The inspector also reviewed the waste process panel operators log and data sheets.

The inspector had no comments on the operations he observed.

8. Review of Unit #2 Construction Procedures

The inspector reviewed a copy of the Construction Procedure, "Chemical Cleaning Procedure for Acid Cleaning of Unit 2 Steam Generators" and provided the following comments for licensee resolution.

- a. Recording in the log on a shift basis the status of any leaks in the chemical cleaning system.
- b. Change the protective equipment requirement to refer to the TVA Safety Manual.
- c. Change the procedure to refer to the Steam Generator's temporary stand-pipes when making level changes.
- d. Define who can sign steps in the procedure and what role the "Cleaning Consultant" representative has.
- e. Add an instrumentation list.
- f. If change in the mix tank level is being used to monitor the addition rate, then the procedure should state how many inches/min equals 30 gpm.
- g. Add a reference to SOI-3 for the operation of the Auxiliary Feedwater System.
- h. The sequence of introducing heated solution should be changed to ensure that the solution is heated before entering the Steam Generator.
- i. Define who determines acceptable chemistry, the Test Director or the Cleaning Consultant, for solutions in the Steam Generator.