



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

Report Nos. 50-327/82-14 and 50-328/82-14

Licensee: Tennessee Valley Authority  
 500A Chestnut Street  
 Chattanooga, TN 37401

Facility Name: Sequoyah Nuclear Plant

Docket Nos. 50-327 and 50-328

License Nos. DPR-77 and DPR-79

Inspection at Sequoyah site near Soddy Daisy, Tennessee

Inspectors:

R. V. Stuyck for  
 E. D. Ford

8/4/82  
 Date Signed

R. V. Stuyck for  
 S. D. Butler

8/4/82  
 Date Signed

Approved by:

D. R. Quick  
 D. R. Quick, Section Chief, Division of  
 Project and Resident Programs

8/4/82  
 Date Signed

SUMMARY

Inspection on June 6 - July 5, 1982

Areas Inspected

This routine, unannounced inspection involved 154 inspector-hours on site in the areas of Operational Safety Verification, Licensed Operator Requalification Training, Security Personnel Training/Retraining, Preparation for Refueling-Unit 1.

Results

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

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

C. C. Mason, Plant Superintendent  
J. E. Cross, Assistant Plant Superintendent  
P. R. Wallace, Assistant Plant Superintendent  
J. M. McGriff, Assistant Plant Superintendent  
J. W. Doty, Maintenance Supervisor (M)  
B. M. Patterson, Maintenance Supervisor (I)  
D. C. Craven, Maintenance Supervisor (E)  
L. M. Nobles, Operations Supervisor  
R. W. Fortenberry, Results Supervisor  
R. J. Kitts, Health Physics Supervisor  
J. T. Crittenden, Public Safety Service Supervisor  
R. L. Hamilton, Quality Assurance Supervisor  
M. R. Harding, Compliance Supervisor  
W. M. Halley, Preoperational Test Supervisor  
J. Robinson, Outage Director  
C. H. Noe, Supervisor PWR Simulator Section, POTC  
R. Joe Johnson, Chief Nuclear Training Branch, POTC

Other licensee employees contacted included field services craftsmen, technicians, operators, shift engineers, security force members, engineers, maintenance personnel, contractor personnel and corporate office personnel.

### 2. Exit Interview

The inspection scope and findings were summarized with the Plant Superintendent and/or members of his staff on June 17, 18, and June 25, 1982.

During the reporting period, frequent discussions are held with the Plant Superintendent and his assistants concerning inspection findings.

### 3. Operational Safety Verification

The inspectors toured various areas of the plant on a routine basis throughout the reporting period. The following activities were reviewed/verified:

- a. Adherence to limiting conditions for operation which were directly observable from the control room panels.
- b. Control board instrumentation and recorder traces.
- c. Proper control room and shift manning.

- d. The use of approved operating procedures.
- e. Unit operator and shift engineer logs.
- f. General shift operating practices.
- g. Housekeeping practices.
- h. Posting of hold tags, caution tags and temporary alteration tags.
- i. Personnel, package, and vehicle access control for the plant protected area.
- j. General shift security practices on post manning, vital area access control and security force response to alarms.
- k. Surveillance and testing in progress.
- l. Maintenance activities in progress.
- m. Health Physics Practices.

On June 3, 1982 the inspector witnessed the performance of Surveillance Instruction SI-139 and Technical Instruction TI-7, "Determination of the at-power Moderation Temperature Coefficient (MTC)" with Unit 1 at full power. Technical Specification 3.1.1.3 requires the end-of-life (EOL) MTC be determined within 7 effective full power days (EFPD) after reaching an equilibrium boron concentration of 300 ppm. The inspector verified that the test was being performed in accordance with approved procedures and that the procedural precautions and prerequisites were being complied with. The test method was discussed with the cognizant reactor engineer. Following the test, the inspector reviewed the completed test package and the calculation of the EOL MTC. No discrepancies were noted. The MTC was less negative than the limit of  $-3.1 \times 10^{-4}$  delta k/k/°F. The MTC is not required to be measured again until the unit is restarted after refueling.

On June 24, 1982 Unit 2 tripped from full power due to a failure of the main feedwater regulating valve (MFRV) for #1 steam generator. During subsequent efforts to restart the unit several additional trips were experienced. The inspector reviewed the circumstances surrounding the trips to determine if the plant was being operated in accordance with approved procedures, if the trips were being reported to the NRC as required by 10 CFR 50.72 and if adequate steps were being taken to correct the causes of the trips prior to restarting the unit. Two of the trips were caused by the failure of Z-PCV-3-122, the pressure control valve on the discharge of the 2A-A auxilliary feed water pump. Following the first failure of the valve, the cause of the failure could not be determined because the problem would not repeat. The valve was stroke tested and returned to service. Following the second failure, the inspector observed the trouble shooting of the valve in accordance with Special Maintenance Instruction (SMI-0-3-3). The cause of the valve malfunction was determined to be the failure of the hydraulic

servo valve, probably due to dirt in the hydraulic fluid. The hydraulic oil was flushed, the system filter replaced and the servo valve replaced in accordance with the SMI. The valve was calibrated and then stroke tested in accordance with Surveillance Instruction SI-166.6 and returned to service. The unit was successfully restarted later on June 25.

Unit 1 was taken off the line June 26 to repair a leak on the main steam system and returned to service on June 27. Unit 2 was taken off the line June 28 to repair a leak in the main feedwater system. While returning the unit to service on June 29 it tripped from 30% power while an operator was manually adjusting main feedwater pump speed. The inspector verified that plant conditions were stabilized and controlled in accordance with approved procedures and that the trip was reported to the NRC as required by 10 CFR 50.72. The inspector observed the subsequent restart of the unit and the return to power. No problems were noted.

On June 25, 1982 the inspector became aware of a problem that had been identified with the Unit 2 Residual Heat Removal (RHR) pump recirculation valves, 2-FCV-74-12 and 24. The problem was identified while troubleshooting the pump flow switch which controls the recirculation valve and provides a low flow alarm in the control room. The recirculation valves would cycle open and shut when operated by the handswitch with the associated pump breaker open. The cause of the problem was traced to a jumper that had not been removed from auxiliary contacts in the pump breakers that kept the valve operator closed relays energized when the pump breaker was open. There was no affect on the normal operation of the valve in that when the pump was started the valve would operate as necessary to keep flow above minimum to prevent pump damage.

The inspector initially discussed the problem with the Maintenance Superintendent who indicated that an investigation had been initiated to determine the reason for the jumper installation. The jumpers were promptly lifted on the Unit 2 pump breakers and the Unit 1 pump breakers were inspected and it was discovered that the jumpers had already been lifted. The inspector discussed the problem with the Compliance Engineer who had been assigned to investigate the situation. He had determined that the jumpers should have been removed when a modification had been performed on Unit 2 to add the low RHR flow alarm. The Unit 2 modification was done by construction personnel under Engineering Change Notice ECN 2828 and it appears that the drawing for wire modification was inadequately marked and the jumper removal was overlooked. There was no post modification testing done which would have identified the oversight. The same modification was done on Unit 1 by outage personnel under ECN 5033 and even though the same marked up drawing was used, the jumper was properly removed. The inspector discussed the Unit 1 modification with the cognizant outage engineer who recalled that the jumper removal had initially been overlooked as on Unit 2; however, the problem was identified during functional testing of the alarm and corrected.

The inspector discussed the violation with the Compliance Supervisor after the licensee had completed their investigation. The licensee had determined

that their corrective action would include instructions from the Plant Superintendent to all personnel responsible for the preparation of work plans. Included in the instructions were the requirements that work plans be of sufficient detail to ensure that work is completed properly and that post-modification or post-maintenance testing be completed as required. In addition, the Plant Operations Review Committee members would be reinstructed to ensure they thoroughly reviewed work instructions for adequate detail and post-modification testing prior to approval. In that this licensee identified violation meets the criteria of 10 CFR 2, Appendix C, paragraph IV.A., a notice of violation will not be issued.

No other violations or deviations were identified.

#### 4. Licensed Operator Requalification Training

The inspector reviewed the following documents/procedures related to licensed operator requalification training:

- (1) 10 CFR 55, Appendix A "Requalification Programs for Licensed Operators of Production and Utilization Facilities"
- (2) Sequoyah Technical Specification, Section 6.4 "Training"
- (3) March 28, 1980 NRC letter to all licensees "Qualifications of Reactor Operators"
- (4) ANSIN 18.1 - 1971, section 5.5 "Retraining and Replacement Training"
- (5) TVA Operational Quality Assurance Manual Part III, Section 6 "Selection and Training of Personnel for Nuclear Power Plants."
- (6) Administrative Instruction AI-14 "Plant Training Program"
- (7) OSLT -1, Section 10.0 "NRC License Operator (SRO or RO) Related Training".

In addition the inspector reviewed selected operator training files, attended the 1982 week 2 requalification classroom and simulator sessions at the licensee's Power Operation Training Center (POTC) and discussed licensed operator requalification training with cognizant management and supervisory personnel at the plant and the POTC to determine if the training was being administered and documented in accordance with applicable requirements.

The inspector noted deficiencies, particularly in the requalification program description which is contained in various licensee documents and procedures listed above. Essentially identical findings were made by the licensee's quality assurance organizations and were documented in the Office of Power Quality Program Audit Report #OPQAA-CH-82TS-01 (4/12-5/7/82) and Sequoyah Nuclear Plant QA Staff Inplant Survey #2a-81-2(8/31-9/11/81). Until these audit findings are resolved by the licensee they will be carried as inspector followup items (327/82-14-01, 328/82-14-01).

No violations or deviations were identified.

5. Security Personnel Training/Retraining

On June 16, 1982 the inspector attended a security personnel training class given to instruct personnel in the use of new weapons being provided to the guard force at Sequoyah. The inspector verified that the training was being presented by qualified instructors using prepared lesson outlines. Following the training class the inspector witnessed firing range qualifications using the new weapons to determine if it met the requirements of 10 CFR 73, Appendix B "General Criteria for Security Personnel."

No violations or deviations were identified.

6. Preparations for Refueling-Unit 1

On June 11, 1982 the inspector witnessed the unloading, inspection and storage of several new fuel assemblies received at the site for refueling Unit 1. The fuel receipt and inspection was being performed in accordance with Fuel Handling Instruction FHI-1 "Receiving Inspection, and Storing New Fuel" and Technical Instruction TI-1 "Special Nuclear Material Control and Accountability System." The inspector discussed the evolution with the Fuel Handling Supervisor in charge and verified that procedural requirements, prerequisites and precautions were being followed.

No violations or deviations were identified.