



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

SEP 8 1980

Report No. 50-327/80-29

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

Facility Name: Sequoyah Unit 1

Docket No. 50-327

License No. DPR-77

Inspectors:	<u>W. T. Cottle</u>	<u>9/8/80</u>
	W. T. Cottle	Date Signed
	<u>S. D. Butler</u>	<u>9/8/80</u>
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Approved by:	<u>H. C. Dance</u>	<u>9/8/80</u>
	H. C. Dance	Date Signed

SUMMARY

Inspection on July 6 - July 31, 1980

Areas Inspected

This routine, announced inspection involved 215 inspector-hours onsite in the areas of operational safety verification, start-up test witnessing, special test witnessing, verification of license conditions, licensee event report review, IE Bulletin review, independent inspection effort and followup on plant incidents.

Results

Of the eight areas inspected no items of noncompliance or deviations were identified.

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

J. M. Ballentine, Plant Superintendent  
C. E. Cantrell, Assistant Plant Superintendent  
W. F. Popp, Assistant Plant Superintendent  
J. W. Doty, Maintenance Supervisor (M)  
J. M. McGriff, Maintenance Supervisor (I)  
W. A. Watson, Maintenance Supervisor (E)  
D. J. Record, Operations Supervisor  
W. H. Kinsey, Results Supervisor  
R. J. Kitts, Health Physics Supervisor  
C. R. Brimer, Outage Director  
R. S. Kaplan, Supervisor, Public Safety Services  
W. M. Halley, Preoperational Test Supervisor  
D. O. McCloud, Quality Assurance Supervisor  
J. R. Bynum, Assistant to Plant Superintendent

Other licensee employees contacted included ten operators, fifteen shift engineers, nine security force members, thirteen engineers, four maintenance personnel, seven contractor personnel, and five corporate office personnel.

#### Other Organizations

W. Tobin, USNRC, OIE  
B. Clayton, USNRC, NRR  
M. Rubin, USNRC, NRR  
D. Beckham, USNRC, NRR  
C. Julian, USNRC, OIE  
N. Anderson, USNRC, NRR

### 2. Exit Interview

The inspection scope and findings were summarized with the Plant Superintendent and members of his staff on July 11 and 25, 1980.

### 3. Licensee Action on Previous Inspection Findings

Not inspected.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

## 5. Operational Safety Verification

The inspectors toured various areas of Unit 1 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. Fire protection measures for hot work.
- i. Posting of hold tags, caution tags and temporary alteration tags.
- j. Measures to exclude foreign materials from entry into clean systems.
- k. Personnel, package, and vehicle access control for the Unit 1 area.
- l. General shift security practices on post manning, vital area access control and security force response to alarms.
- m. Surveillance testing and preoperational testing in progress.
- n. Maintenance activities in progress.

The inspectors verified the establishment of interim control rod withdrawal limits in order to prevent operation with a positive moderator temperature coefficient in accordance with Technical Specification 3.1.1.3. Adherence to the established limits was verified on a random basis throughout this reporting period.

The inspectors reviewed a licensee proposal to make a direct radiological effluent discharge from the recycle holdup tanks. This path is not specifically addressed in the Final Safety Analysis Report nor are the specific sample requirements addressed in the Technical Specifications. Following consultation with Region II personnel, the inspectors informed licensee representatives that the proposal was permissible given that the following requirements were met:

- a. Technical Specification 3.11.1.1
- b. Technical Specification 3.11.1.3

- c. A safety evaluation (10 CFR 50.59) be performed.
- d. Temporary alteration administrative controls for any system alteration.

The inspectors reviewed a completed design modification which had removed "B" train air from the containment vacuum breaker isolation valve operators. The valve operators had been originally designed to operate with both "A" and "B" train air supplies. The inspectors determined that the modification had been made in order to improve the valve closure time response and had been completed prior to issuance of the operating license. Discussions held with plant and design personnel and a review of the valve operator installation and logic circuitry by the inspectors revealed that the isolation function of the valves did not appear to have been compromised by the modification. The licensee has agreed to submit an FSAR change detailing the modification. This will be verified in a subsequent inspection. (327/80-29-01)

#### 6. Startup Test Witnessing

During the reporting period the inspectors witnessed portions of the following low power physics tests:

- SU 7.6      RCCA Pseudo Ejection at Zero Power
- SU 7.4      Rod and Boron Worth Measurement During Boron Dilution
- SU 7.7      Minimum Shutdown Verification

During the performance of each test, the inspectors verified proper revision of procedure in use, proper shift manning as required by procedure and operating license, adequate operator knowledge of procedure precaution and limitations, properly executed signoffs of procedural steps, and special test equipment in use and properly calibrated. In addition, coordination between test supervisory personnel, Westinghouse startup personnel and operations personnel was observed to ensure proper conduct of the tests. The inspectors observed collection of test data and were satisfied that the data was being promptly reviewed by responsible individuals and compared to acceptance criteria to detect any discrepancies. Subsequent to the completion of the low power test program, a Region II core physics specialist inspector conducted a detailed review of the completed physics tests. His findings will be reported in IE Report 327/80-31.

The inspectors reviewed the completed procedure for initial criticality, SU-7.2, and had no further questions.

No items of noncompliance or deviations were identified.

#### 7. Special Test Witnessing

During the period July 12-18, 1980, the inspectors witnessed portions of the following special tests:

- S/T1    Natural Circulation Test
- S/T2    Natural Circulation With Simulated Loss of Offsite AC Power

- S/T3 Natural Circulation With Loss of Pressurizer Heaters
- S/T4 Effect of Steam Generator Secondary Side Isolation on Natural Circulation
- S/T5 Natural Circulation at Reduced Pressure
- S/T6 Cooldown Capability of the Charging and Letdown
- S/T7 Simulated Loss of All Onsite and Offsite AC Power
- S/T8 Establishment of Natural Circulation from Stagnant Condition
- S/T9A Forced Circulation Cooldown
- S/T9B Boron Mixing and Cooldown

As a minimum, the initial performance of each test was witnessed and subsequent performances were witnessed at random as necessary to monitor licensed operator performance and training. In each test, the plant response was essentially as predicted. Licensed operator participation and training in the special test program was adequate. A memorandum reporting on the tests was forwarded to IE Headquarters by Region II. The memorandum contained observations and comments concerning the special test program at Sequoyah including recommendations regarding the use of simulator training in lieu of a special test program at other facilities.

No items of noncompliance or deviations were identified.

#### 8. Verification of License Conditions

The senior resident inspector coordinated a regional review of the Sequoyah Technical Specifications. The primary purpose of the review was to insure the clarity and enforceability of the specifications. Inputs were received from all branches in the Region II Office. Regional comments were combined with the inspector's comments and forwarded to the Offices of Inspection and Enforcement (OIE) and Nuclear Reactor Regulations (NRR).

The inspectors completed the verification of all license conditions in Section 7.0 of Appendix A of the Sequoyah Unit 1 operating license prior to the start of the special low power test program. This was documented in a memorandum to Region II management for transmittal to OIE.

The inspectors documented the readiness of the facility for receipt of a full power operating license in a memorandum to Region II management. Included in the memorandum was a summary of the status of the inspection program and the status of outstanding IE Bulletins. There were no open items identified which required further resolution prior to operation at 100% power.

No items of noncompliance or deviations were identified.

#### 9. Licensee Event Report (LER) Review

During the reporting period, LER's were reviewed on a routine basis as they were received from the licensee. Each LER was reviewed to determine that:

- a. The report accurately described the event.

- b. The reported cause was accurate and the LER form reflected the proper cause code.
- c. The report satisfied the technical specification reporting requirement with respect to information provided and timing of submittal
- d. Corrective action appeared appropriate to correct the cause of the event
- e. Corrective action has been or is being taken
- f. Generic implications if identified were incorporated in corrective action
- g. Corrective action taken or to be taken was adequate, particularly to prevent recurrence
- h. The event did not involve continued operation in violation of regulatory requirements or license conditions.

During this period, the initial 40 LER's submitted by the plant were reviewed in detail with licensee's representatives. There were a number of problem areas identified in these reports which will necessitate the submittal of corrected LER's. The licensee has committed to review LER's 8001 through 80100 and submit corrected reports in a timely manner. This will be verified in subsequent inspections (327/80-29-02).

The licensee has recently taken actions to improve the timeliness and completeness of LER's. A compliance supervisor position has been established and the reporting system is in the process of being restructured to provide a more formally controlled system of preparation, review and submittal.

No items of noncompliance or deviations were identified.

#### 10. IE Bulletin Review

The inspectors reviewed a memorandum dated July 1, 1980 from G. W. Reinmuth, Assistant Director, Division of Reactor Construction Inspection, IE to Charles E. Murphy, Chief, Reactor Construction and Engineering Support Branch, Region II. The memorandum covered the review of weld material documentation of eleven (11) reactor pressure vessels fabricated for Westinghouse in response to IE Bulletin 78-12, 12A, and 12B. The review concluded that the weld material used in the various reactor vessels, including Sequoyah 1 and 2 met the applicable acceptance criteria. Based upon completion of Westinghouse's and the licensee's documentation submittal required by the Bulletin and IE Headquarter's approval of the submittal, IE Bulletin 78-12, 12A, and 12B concerning Atypical Weld Material in Reactor Pressure Vessel Welds is closed for Sequoyah Unit 1.

The inspectors reviewed the requirements of IE Bulletin 80-03 concerning Loss of Charcoal from Standard Type II, 2-inch, Tray Adsorber Cells. This

condition was initially identified at Sequoyah Nuclear Plant and reported to the NRC in Construction Deficiency Report NCR 17P. The inspector determined that the requirements of IE Bulletin 80-03 have been adequately addressed by the licensee in their report dated March 21, 1980 and their resolution of NCR 17P, which was closed in IE Report 50-327/80-16. IE Bulletin 80-03 is closed for Sequoyah Unit 1.

No items of noncompliance or deviations were identified.

#### 11. Independent Inspection Effort

The inspector routinely attended the morning scheduling and staff meetings during the reporting period. These meetings provide a daily status report on the operational and testing activities in progress as well as a discussion of significant problems or incidents associated with the startup testing and operations effort.

In conjunction with a review of selected Sequoyah Emergency Operating Instructions (EOIs) by the Office of Nuclear Reactor Regulations (NRR) the inspector participated in onsite discussions with licensee personnel concerning EOIs 1, 2 and 3. The inspector also participated in simulation of accident conditions at the licensee training center in order to determine if the revised EOIs for Loss of Coolant Accident, Steam Generator Tube Rupture and Loss of Secondary Coolant were adequate and usable by the operators. Discrepancies with the procedures were discussed with the licensee and resolved to the satisfaction of NRR. In addition, some NRR concerns with equipment labeling on the Unit 1 control board were discussed with the licensee and resolved. The details of the NRR Emergency Procedure review are contained in Supplement 2 to Sequoyah's Safety Evaluation Report.

On July 28, 1980 the inspectors witnessed the performance of Surveillance Test SI-149 of the Auxiliary Building Gas Treatment System (ABGTS). The test was performed to show that corrective measures taken by the licensee since the issuance of the low power operating license enabled the ABGTS to maintain the spent fuel storage area and ESF pump rooms at .25" negative pressure as required by technical specification. The requirement was waived during the low power test program but is required for full power operations. Each train of ABGTS was initiated individually and data collected by the inspectors at each ESF pump room and the spent fuel storage area. In each instance, the system operated properly to maintain the required negative pressures. Data collected by the inspectors and the licensee was forwarded to the system reviewer at the Office of Nuclear Reactor Regulation. In addition, the inspectors participated in a conference call with the NRR system reviewer and licensee representatives to answer additional questions the reviewer had about the system operation and testing.

In response to concerns expressed by a member of the plant security force, the inspectors reviewed the adequacy of communications between security force members and the Central Alarm Station as required by 10 CFR 73.55. The inspectors determined that although communications were not inadequate,

it was recognized by the licensee that at times communications was intermittent at certain locations in the auxiliary and reactor buildings due to interference from steel and concrete in the structures. The licensee's proposed corrective action consists of installing an antenna system to prevent "dead" spots and improve the reception and transmission ability of the hand-held two-way radios. In addition, the battery chargers used for radio batteries were being altered to ensure batteries were being fully charged prior to being placed back in service and better quality radios were procured and tested. This problem was identified to a member of the Region II Safeguards Branch who concurred with the inspectors that although there was room for improvement, the licensee's communication system was adequate.

On July 14, 1980, the inspectors went to the licensee's training center and interviewed personnel to obtain information regarding the qualifications of operator training instructors. The inspector determined that all operator systems and simulator instructors were licensed as Senior Reactor Operators. This information was relayed to Region II and to the Operator Licensing Branch of the Office of Nuclear Reactor Regulations.

The Senior Resident Inspector briefed OIE personnel on plant status and inspection program status to facilitate the preparation of testimony for the Advisory Committee on Reactor Safeguards Subcommittee and full Committee hearings during the reporting period.

The following evaluations/observations were conducted in response to requests from the Office of Nuclear Reactor Regulation:

- a. The proposed degraded core training program was reviewed.
- b. Plant capabilities for incore thermocouple mapping and readout were reviewed.
- c. The effects of elevated operating temperatures on the spring constants for the main steam safety valves were evaluated.
- d. Proposed overtime limits on licensed operators were reviewed.
- e. A liner of solidified radwaste was inspected following a road test (approximately 25 miles) for any evidence of free water. No indication of free water was observed.
- f. The status of implementation of items identified in the NRR/Essex control room review was inspected. The inspection included taking background noise level measurements in the control room. Significant improvements in the background noise level have been accomplished and licensee's efforts in this area are continuing.



12. Followup on Plant Incidents

On July 5, 1980, an unidentified individual apparently gained access to the Unit 1 protected area by using a ladder to scale the Unit 1/2 interface fence. The Senior Resident Inspector responded to the notification and conducted a preliminary investigation in order to ascertain that adequate measures had been taken to safeguard Unit 1 vital equipment. The incident was subsequently reviewed at the plant site by a safeguards specialist from the Region II Office. Details of the followup inspection are contained in IE Report No. 50-327/80-26.

On July 28, two licensee craftsmen working in the Unit 1 reactor building were apparently overcome by heat exhaustion. They were transported to a local hospital for treatment. No radiological contamination was involved in the incident.

On July 17, a licensee employee from the Knoxville Corporate Office indicated radioactive contamination upon exiting the Unit 1 Regulated Area. A subsequent investigation by licensee personnel revealed that the contamination had resulted from the employee's previous job at a Department of Energy facility. Further investigative efforts were coordinated with NRC Region II and the Department of Energy.

On July 18, the Senior Resident Inspector received a memorandum from the Plant Superintendent outlining apparent allegations made by a licensee employee during a meeting on July 14. The inspector forwarded the memorandum to the Region II Investigative Section for review and for followup as might be deemed necessary.

No items of noncompliance or deviations were identified.