



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

Report Nos.: 50-327/85-05 and 50-328/85-05

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

Docket Nos.: 50-327 and 50-328

License Nos.: DPR-77 and DPR-79

Facility Name: Sequoyah 1 and 2

Inspection Conducted: January 21-25, 1985

Inspector: M. F. Runyan 2/19/85
 M. F. Runyan Date Signed

Accompanying Personnel: L. R. Moore, Region II

Approved by: C. M. Upright 2/19/85
 C. M. Upright, Section Chief Date Signed
 Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection entailed 76 inspector-hours on site in the areas of licensee action on previous enforcement matters, surveillance testing and calibration control program, and measuring and test equipment program.

Results: Of the three areas inspected, no violations or deviations were identified in two areas; one apparent violation was found in one area (Failure to Evaluate Out-of-Calibration Measuring and Test Equipment in a Timely Manner).

REPORT DETAILS

1. Licensee Employees Contacted

- *R. E. Alsup, Supervisor, Compliance
- *H. S. Boles, Supervisor, Mechanical Maintenance Engineering
- *C. E. Bosley, SQN P.E. Group of QAB
 - C. Brannon, Supervisor, Power Stores Section
 - G. Buchannon, Supervisor, Planning and Scheduling
- *D. L. Cowart, Supervisor, Quality Surveillance
 - M. Crane, Supervisor, Material Unit
- *D. C. Craven, Supervisor, QA Staff
 - G. A. Erikson, Supervisor, Measurement Lab
 - K. Faulkner, Supervisor, Measurement Lab
- *J. Hamilton, Supervisor, Quality Engineering
- *M. Harding, Supervisor, Engineering Group
 - D. Jeralds, General Foreman, Instrument Shop
- *G. B. Kirk, Engineer, Compliance
- *A. Lehr, General Foreman, Instrument Maintenance
 - D. Love, Supervisor (Acting), Mechanical Maintenance Group
- *R. L. Moore, Head, Sequoyah Evaluation Group
- *L. M. Nobles, Plant Superintendent, O&E
- *B. Patterson, Supervisor, Instrument Maintenance Section
 - J. Ragsdale, Supervisor, QA/QC
 - C. Stutz, Quality Engineer, QA
- *P. R. Wallace, Plant Manager
- *F. W. Watson, Supervisor, Management Services
 - J. Wheeler, Supervisor, Maintenance Scheduling

Other licensee employees contacted included technicians and office personnel.

NRC Resident Inspectors

- E. Ford
- *L. Watson

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 25, 1985, with those persons indicated in paragraph 1 above. The licensee did not identify as proprietary any materials provided to or reviewed by the inspectors during this inspection. The licensee acknowledged the following inspection results:

Violation: Failure To Evaluate Out-Of-Calibration Measuring and Test Equipment in a Timely Manner, paragraph 6.a.

Inspector Followup Item: Revision Status Of Surveillance Instruction (SI-1), paragraph 5.

Inspector Followup Item: Control and Accountability of Measuring and Test Equipment, paragraph 6.b.

3. Licensee Action on Previous Enforcement Matters (92702)

- a. (Closed) Severity Level V Violation 327,328/84-01-02: Failure to Provide Proper Material Storage.

The licensee response dated May 25, 1984, was considered acceptable by Region II. The inspector verified that a local section instruction on stacking of crates had been added to the existing program. The inspector toured Outside Building One and observed that the boxes involved in the violation were stacked in a manner to preclude distortion of internal parts. All other crates were properly stacked. The inspector concluded that the licensee had corrected the previous problem and developed corrective action to preclude recurrence of similar problems. Corrective actions stated in the licensee response have been implemented.

- b. (Open) Unresolved Item 327,328/84-01-04: Lack of Aerosol Control.

The inspector reviewed a letter from C. C. Mason, Site Director, Sequoyah to H. L. Abercrombie, Director, Nuclear Services Division, dated July 17, 1984. This letter, which contains a list of aerosols used at Sequoyah, requested that NCO Chemical, Metallurgy, and Standards Group analyze the sprays for halogen content. Until this analysis is completed and appropriate aerosol controls are established, this item will remain open.

- c. (Closed) Unresolved Item 327,328/84-01-05: Lack of Shaft Key Control.

The inspector reviewed a letter from J. E. Law to C. C. Mason, Power Plant Superintendent, dated January 26, 1984, explaining the method by which shaft keys are controlled. On the basis of this clarification, the unresolved item is closed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Surveillance Testing and Calibration Control (61725)

References: (a) 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants

(b) Regulatory Guide 1.33, Quality Assurance Program Requirements (Operations), Revision 2

(c) ANSI N18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants

(d) Technical Specifications, Sections 4 and 6

The inspector reviewed the licensee surveillance testing and calibration control program required by references (a) through (d) to verify that the program had been established in accordance with regulatory requirements, industry guides and standards, and Technical Specifications. The following criteria were used during this review to determine the overall acceptability of the established program:

- A master schedule for surveillance testing and calibration has been established which includes frequency, responsibilities for performance, and testing status.
- The master schedule has been updated to reflect Technical Specification or license revisions.
- Responsibilities have been assigned to maintain the master schedule up-to-date.
- Requirements have been established for conducting surveillance testing in accordance with approved procedures which include appropriate acceptance criteria.
- Formal methods and responsibilities have been defined for review and evaluation of surveillance test data, including procedures for reporting deficiencies, failures, and malfunctions.
- Responsibilities have been assigned for assuring that required schedules for surveillance are satisfied.

The inspector also verified that similar controls have been established for calibration of instruments not specifically identified in the Technical Specifications. The documents listed below were reviewed to verify that these criteria had been incorporated into the surveillance testing and calibration control program:

NQAM, Part II, Section 2.4, Control of Installed Process Instrumentation, October 12, 1984

NQAM, Part II, Section 4.5, Plant Surveillance Testing Program, October 12, 1984

NQAM, Part II, Section 5.1, Inservice Inspection, October 12, 1984

SI-1, Surveillance Test Program, Revision 11

SQA-41, Surveillance Test Program, Revision 3

SQA-121, Technical Specification Interpretation, Revision 0

SQA-134, Critical Structure, Systems, and Components List, Revision 4

AI-12, Adverse Conditions and Corrective Actions, Revision 19

The inspector acquired a computer printout of the master schedule for surveillance testing, calibration, and inservice inspection. The schedule contained the frequency for each test, test procedure number, responsible plant group, and test status. A daily printout of planned tests was sent to each affected work group and was returned showing which tests had been completed. This formed a closed loop for scheduling and updating test status. The inspector spot-checked the master schedule for completeness and accuracy against several ranges of active surveillance instructions, verifying that each test was scheduled to be performed at its prescribed frequency.

The inspector selected the following Technical Specification surveillance test requirements for a detailed review of program implementation:

Overpower ΔT , Channel Functional Test, Monthly

Loss of Flow-Single Loop, Channel Functional Test, Quarterly

Reactor Trip System Interlock, Turbine Impulse Chamber Pressure, P-13, Channel Calibration, Refueling

Pressurizer Pressure Low, Channel Functional Test, Quarterly

Phase "B" Isolation, Containment Pressure High-High, Channel Calibration, Refueling

* Containment Purge Air Exhaust, Channel Functional Test, Monthly

For each of the above, work packages for the last three performances were reviewed to verify that Technical Specification frequencies were met and that test data had been evaluated and approved.

The inspector selected the following installed process instruments to determine whether calibration requirements have been established for components associated with safety-related systems or functions not specified in the Technical Specifications as requiring calibration:

PI 62-105,106	Suction, discharge pressure, centrifugal charging pump
PI 74-4,6	Suction, discharge pressure, safety injection pump
PI 63-9,150	Suction, discharge pressure, residual heat removal pump

TI 63-37

Temperature indicator, boron injection tank

The above instruments were included in a formal calibration program with frequencies and procedures specified for each calibration.

The inspector reviewed the licensee's program for inservice inspection of pumps and valves as required by ASME Code Section XI, Subsections IWP and IWV. The licensee's updated program was submitted on March 28, 1984, and is pending approval by the Division of Licensing, NRC. The inspector selected the following inservice tests to insure that the program is being implemented:

SI 166.1-30	Valves
SI 40	Centrifugal Charging Pumps
SI 129	Safety Injection Pumps
SI 30.1	Auxiliary Feed Pumps

Work packages for the above were reviewed and verified to meet program requirements.

Within this area, one inspector followup item was identified. SI-1, Surveillance Program, used as the reference index for the surveillance testing and calibration program, has not been revised since October 27, 1983. The inspector found many surveillance instructions listed in SI-1 that were missing from the computer SI schedule. Others listed on the computer schedule were missing from SI-1. The computer schedule, the actual planning document, appeared to be accurate. Nevertheless, SI-1 is used for QA surveillances and audits and as a general reference document. As such, its inaccuracy is a condition adverse to quality. The licensee had identified the problem and has committed to update SI-1 by March 1, 1985, and subsequently revise it on a more frequent basis. Until SI-1 is revised and a method is established to prevent similar occurrences, this item is identified as Inspector Followup Item 327,328/85-05-02, Revision Status of Surveillance Instruction SI-1.

6. Measuring and Test Equipment Program (61724)

- References:
- (a) 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants
 - (b) Regulatory Guide 1.33, Quality Assurance Program Requirements (Operations), Revision 2
 - (c) ANSI N18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants
 - (d) Regulatory Guide 1.30, Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment, August 11, 1972

(e) ANSI N45.2.4-1972, IEEE Standard, Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations

The inspector reviewed the licensee measuring and test equipment program required by references (a) through (e) to verify that the program had been established in accordance with regulatory requirements and industry guides and standards. The following criteria were used during this review to determine the overall acceptability of the established program:

- Criteria and responsibility for the assignment of calibration frequency have been established.
- An equipment inventory list has been prepared which identifies all test and measurement equipment which will be used on safety related components, the calibration frequency and standard for each piece of equipment, and the calibration procedure to be used.
- Formal requirements exist for marking the latest calibration date on each piece of equipment.
- A system has been provided for assuring that each piece of equipment is calibrated on or before the date required.
- A written requirement has been established which prohibits the use of test and measuring equipment which has not been inspected and calibrated within the prescribed frequency and describes controls to prevent inadvertent use of such equipment.
- Controls have been established requiring that when a piece of equipment is found to be out-of-calibration, the cause of out-of-calibration and the acceptability of items previously tested will be evaluated and documented.
- A formal system has been established to assure that new test and measurement equipment will be added to the inventory list and calibrated prior to being placed in service.

The documents listed below were reviewed to verify that these criteria had been incorporated into the measuring and test equipment program:

TVA-TR75-1A, Quality Assurance Description for Design, Construction, and Operation of TVA Nuclear Power Plants

NQAM, Part III, Section 3.1, Control of Measuring and Test Equipment, August 21, 1984

NQAM, Part IV, Section 4, Calibration Services, December 31, 1984

NQAM, Part V, Section 12.2, Control of Measuring and Test Equipment,
December 31, 1984

AI-12, Adverse Conditions and Corrective Actions, Revision 19

AI-31, Control of Measuring and Test Equipment, Revision 2

SQA-45, Quality Control of Material and Parts and Services, Revision 13

SQA-134, Critical Structure, Systems, and Components List, Revision 4

SQA-149, Tools and Equipment Accountability, Revision 0

IMS-13, Control and Use of Measuring and Test Equipment, Revision 13

The inspector toured the instrument shop, the mechanical maintenance shop-toolroom, and the mechanical maintenance toolroom. Tools and equipment were observed to be properly stored. The inspector reviewed a computer printout master index, Sequoyah Field Services, CSSC Tool Listing, January 21, 1985, for critical structures, systems, and components (CSSC) tools located in the shop-toolroom, toolroom, and hot-toolroom. This index included a unique tool number, tool description, location, tool status, calibration interval, and calibration due date. Individual tool history logs were maintained to document the dates on which tools and equipment were checked out and checked in, as well as the work packages performed. CSSC equipment was segregated from non-CSSC equipment by storage location and by records and documentation. Calibration stickers were found affixed to those tools and instruments randomly checked.

The inspector toured the TVA Central Laboratory Services (CLS), the principal calibration facility for TVA's nuclear plants. Sequoyah's CSSC measuring and test equipment is sent to this facility for calibration.

Environmental factors required for sensitive calibration procedures were observed to be rigidly controlled. Historical calibration records appeared to be complete and accurate. The inspector verified that a calibration performance could be traced to a National Standard.

The inspector observed a CLS loadout of calibrated instruments onto a truck for return transport to Sequoyah. The manner in which the tools were loaded and the foam-padded storage bins located within the truck provided reasonable assurance that tools and equipment were protected from shocks which could affect their calibration. The inspector observed that measuring and test equipment is stored outside overnight in trucks awaiting morning delivery to the site and expressed a concern that the precision and accuracy of the equipment could be affected by subzero temperatures. CLS personnel responded that equipment containing batteries, such as Flukes, are not loaded until morning. The inspector reviewed several manufacturers' equipment specifications for sensitive types of equipment and found that where storage ranges were specified, a temperature as low as -40 °F could be tolerated.

Within this area, one violation and one inspector followup item were identified and are discussed in the following paragraphs.

a. Failure to Evaluate Out-of-Calibration Measuring and Test Equipment in a Timely Manner

The licensee's accepted QA program, TVA-TR75-1A, Revision 8, endorses ANSI N18.7-1976, which states in Section 5.2.16: "When calibration, testing, or other measuring devices are found to be out of calibration, an evaluation shall be made and documented concerning the validity of previous tests and the acceptability of devices previously tested from the time of the previous calibration." The licensee's implementing procedure, AI-31, states that this evaluation shall be made within 60 days of the receipt of a calibration report marked "out of tolerance."

The inspector reviewed a file of outstanding out-of-calibration investigations in the mechanical maintenance shop-toolroom. The following table lists selected examples of evaluations that had not been completed within 60 days.

<u>Description</u>	<u>Identification Number</u>	<u>Date of Out-of- Calibration Notice</u>	<u>Days Elapsed as of Jan. 24, 1985</u>
Torque Multiplier	E00239	March 20, 1984	296*
Torque Multiplier	E00240	June 21, 1984	217
Torque Wrench	E00516	September 7, 1984	139
Torque Wrench	E00940	September 15, 1983	497
Torque Wrench	E00946	March 1, 1984	329
Pressure Gauge	E01036	August 18, 1984	159
Pressure Gauge	E01039	April 16, 1984	283
Torque Multiplier	E03415	July 27, 1984	181
Megger	TVA 380674	September 17, 1984	129

*Closed January 10, 1984, all other items open as of January 24, 1985.

Of the 52 outstanding evaluations in the file, 43 had exceeded the 60-day limit. This problem was also identified in the instrument shop, but to a lesser degree, with several outstanding investigations exceeding the 60-day limit by five to ten days. This failure to perform timely evaluations in response to out-of-tolerance reports is identified as violation 327,328/85-05-01.

b. Control and Accountability of Measuring and Test Equipment

The inspector investigated the control and accountability of measuring and test equipment in the mechanical maintenance toolroom and shop-toolroom. In the following three cases, equipment was checked out and not returned before the calibration due date.

<u>Description</u>	<u>Identification Number</u>	<u>Location</u>	<u>Calibration Due Date</u>	<u>Status as of Jan. 24, 1985</u>
Thermometer	E01539	Toolroom	Nov. 18, 1984	Out
Spring Scale	TVA 335516	Shop-Toolroom	Dec. 5, 1984	Returned 01/19/85
Milliammeter	TVA 462806	Toolroom	Nov. 4, 1984	Out

The inspector determined that plant-related work had not been conducted with these instruments after their calibration had lapsed. In the following three cases, tools identified on the master index as having expired calibrations could not be located.

<u>Description</u>	<u>Identification Number</u>	<u>Documented Location</u>	<u>Calibration Due Date</u>
Crimping Tool	E01154	Toolroom	Sept. 16, 1984
Torque Multiplier	E02769	Shop-Toolroom	July 7, 1984
Micrometer	E03353	Shop-Toolroom	Sept. 15, 1984

In many other cases, the master index listed incorrect locations and outdated calibration due dates.

Failure to control and account for measuring and test equipment is a violation. However, licensee internal controls had previously identified the problem and initiated corrective action. The licensee stated that a complete inventory and record review in these areas will be completed by March 15, 1985. Until control and accountability of measuring and test equipment has been reestablished, this is identified as Inspector Followup Item 327,328/85-05-03.