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

DEC 12 1985

Report Nos.: 50-327/85-38 and 50-328/85-38

Licensee: Tennessee Valley Authority
6N11 B Missionary Ridge Place
1101 Market Street
Chattanooga, TN 37402-2801

Docket Nos.: 50-327 and 50-328 License Nos.: DPR-77 and DPR-79

Facility Name: Sequoyah Nuclear Plant

Inspection Conducted: November 18-21, 1985

Inspector: G. B. Kuzo 4 December 1985
Date Signed

Approved by: W. E. Cline 12/10/85
W. E. Cline, Section Chief Date Signed
Emergency Preparedness and Radiological
Protection Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection involved 30 inspector-hours in the areas of radiological environmental monitoring, meteorological instrumentation operability, and review of inspector followup items.

Results: Additional example of previously identified violation (50-327/85-26-03, 50-328/85-26-03): Failure to perform adequate hand and foot frisk prior to leaving a regulated area .

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*P. R. Wallace, Plant Manager
*J. M. Anthony, Operations Group Supervisor
*M. R. Harding, Engineering Group Supervisor
*R. W. Fortenberry, Engineering Section Supervisor
*W. L. Williams, Chemistry Unit Supervisor
*D. G. Amos, Chemistry Engineer
*J. D. Pierce, Radiation Chemistry Laboratory Supervisor
*G. B. Kirk, Compliance Supervisor
*D. C. Craven, Quality Assurance (QA) Staff Supervisor
H. R. Rogers, Compliance Engineer
B. J. Norton, Instrumentation Engineer, Field Operations
J. L. Pierce, Health Physicist, Western Area Radiological Laboratory (WARL)
R. Carter, Assistant Laboratory Supervisor, WARL

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

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on November 21, 1985, with those persons indicated in Paragraph 1 above. The inspector discussed the following inspector followup items: Lower Limit of Detection (LLD) calculations (Paragraph 6.b.), meteorological instrumentation calibration record availability, (Paragraph 7.c) and improved surveillance of environmental monitoring stations for operability (Paragraph 8.a). A potential violation regarding failure to perform an adequate hand and foot frisk by licensee personnel leaving a regulated area was discussed (Paragraph 6.c). Licensee representatives acknowledged the inspector's comments. On November 29, 1985, NRC Region II Management notified licensee representatives by telephone that the failure to perform an adequate hand and foot frisk would be considered an additional example of a previously identified violation (50-327/85-26-03, 50-328/85-26-03). NRC representatives informed cognizant licensee representatives that this additional example of noncompliance may indicate that corrective actions as detailed in the response dated October 7, 1985, to the original Notice of Violation (NOV) may not be adequate to achieve compliance by January 3, 1986, as specified. NRC management representatives requested licensee personnel to evaluate their corrective actions and provide a supplemental response regarding the identified violations to the Region II Office by

January 3, 1986. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation 50-327/85-15-02, 50-328/85-15-02, Failure to Meet LLD for Xe-138 in Waste Gas Decay Samples. From review of procedures (Paragraph 6.a) and discussions with cognizant licensee representatives the inspector noted that procedures are adequate to meet technical specification Lower Limits of Detection for effluent samples.

4. Quality Control Program (80721)

a. The inspector reviewed selected portions of the Quality Assurance (QA) program with cognizant licensee representatives. QA activities regarding environmental sample collection and radiochemical analyses, and the subsequent reporting of environmental monitoring program results is conducted at the TVA Western Area Radiological Laboratory (WARL). The WARL was audited during a previous independent NRC inspection (50-327/85-14, 50-328/85-14). The subject inspection detailed no significant concerns regarding the QA program.

No violations or deviations were identified.

5. Audits (80721)

Technical Specification (TS) 6.5.2.8 states audits of unit activities shall be performed under the cognizance of the Nuclear Safety Review Board (NRSB) encompassing conformance of unit operation to provisions contained within the TS's and applicable license conditions at least once per 12 months; the Radiological Environmental Monitoring Program and the results thereof at least once per 12 months; the Offsite Dose Calculation Manual and implementing procedures at least once per 24 months; and the performance of activities required by the Quality Assurance Program to meet the criteria of Regulatory Guide 4.15, December 1977 at least once per 12 months. The inspector reviewed the following audit reports:

(a) Quality Program Audit Report No. CH-8300-02, Meteorological Monitoring, May 23 - July 28, 1983.

(b) Division of Quality Assurance Audit Report No. CH-8500-03, Meteorological Monitoring and Nonradiological Monitoring October 9-26, 1984.

(c) Office of Quality Assurance Audit Report No. CH-8300-05, Radiological Effluent Monitoring, Radiological Environmental Monitoring, Environmental Dose Assessment, and Radiological Assessment Review Committees, September 26 - October 14, 1983.

(d) Office of Quality Assurance Audit Report No. CH-8400-15, Radiological Environmental Monitoring and Radiological Assessment and Review Committee (RARC), September 24 - October 19, 1984.

The inspector noted that the environmental and meteorological monitoring program areas were audited against the Final Safety Analysis Report (FSAR), Technical Specifications, Regulatory Guides 1.23, 1.33, and 4.15, and approved procedures. The major concern identified in the 1984 audit involved lack of review by cognizant plant personnel of procedures utilized by the Western Area Radiological Laboratory to implement the Sequoyah Nuclear Plant environmental monitoring program. The inspector discussed this problem with licensee personnel and noted that the licensee was conducting corrective action.

No violations or deviations were identified.

6. Procedures and Manuals (80721)

a. Technical Specification 6.8.1 requires written procedures to be established, implemented and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Rev. 2, February 1978 and the Quality Assurance Program for Effluent Monitoring, using the guidance contained in Regulatory Guide 4.15, December 1977. TS 6.8.4 requires written procedures shall be established implemented and maintained by the Radiological Hygiene Branch covering Offsite Dose Calculational Manual implementation, Quality Assurance Program and environmental monitoring, using the guidance contained in Regulatory Guide 4.15, December 1977, and surveillance requirements and environmental monitoring requirements shown in TS Table 6.1-1. The inspector reviewed selected portions of the following procedures:

(1) SI-3 Daily, Weekly and Monthly Logs, Rev. 46, 5/24/85.

(2) SI-89 Meteorological Monitoring Instrumentation Channel Calibrations (Semiannual), Rev. 5, 1/6/84.

(3) SI-410.4 Waste Gas Decay Tank Release, Rev. 3, 7/17/85.

(4) TI-12 Gamma Spectroscopy, Rev. 22, 7/30/85.

(5) RCI-1 Radiological Hygiene, Rev. 27

(6) QC-100 Calculation of Lower Levels of Detection for Environmental Analysis, Rev. 0, 6/1/79.

(7) I-01 131-Iodine Activity Determination in Milk and Water, Rev. 3, 10/21/85

(8) SC-01 Collection of Environmental Monitoring Samples, Rev. 1, 10/22/85.

(9) NR OPS-FO NRE 6.1 Servicing of Meteorological Equipment at Environmental Data Station, Rev. 0, 12/1/82.

(10) SNP Environmental Data Station Manual, Rev. , 1/2/85.

b. Following review of the Radiological Environmental Monitoring Report and WARL procedures the inspector discussed formula used to calculate the Lower Limits of Detection (LLD) for environmental samples. The inspector noted that all procedures and reports should utilize calculational formula as detailed in TS Table 4.12-1. Following additional discussion with cognizant licensee representatives the inspector noted that proper LLD calculations are being performed for all individual samples analyzed. Licensee representatives stated that QC-100 which detailed improper LLD caculations was being revised and would include the proper calculation formula. The inspector informed licensee representatives that a review of procedures regarding LLD calculations would be considered an inspector follow-up item and would be reviewed in a subsequent inspection (50-327/85-38-01, 50-328/85-38-01).

c. Technical Specification 6.11 requires procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure. The licensee has established Radiological Control Instruction RCI-1, Radiological Hygiene Control, to meet these requirements. RCI-1 details that all personnel exiting a Regulated Area to a Clean Area shall use the hand and foot counter or other contamination check out instruments as provided. RCI-1 lists the service building 690 foot elevation from the access control point to the auxiliary building boundary as a regulated area. During a tour of plant facilities on November 18, 1985, the inspector observed a licensee employee failing to perform an adequate hand and foot frisk upon exit from the regulated area. The inspector noted that accompanying licensee personnel did not attempt to take corrective action. NRC Region II management reviewed the identified frisking concern and a prior frisking violation dated September 6, 1985 (50-327/85-26-03, 50-328/85-26-03) and the licensee's response to the original NOV. On November 29, 1985, the NRC Region II management notified cognizant licensee personnel that the agreed to corrective actions as detailed in the response dated October 7, 1985, to the original NOV may not be adequate to achieve compliance by January 3, 1986. Licensee representatives agreed to evaluate NRC concerns and provide a supplemental response.

Additional example of previous violation: failure to perform adequate hand and foot frisk upon leaving regulated area.

7. Records and Reports (80721)

a. The inspector reviewed selected portions of the following records:

(1) Environmental Data Station (60 day) Calibration Checks for January - September 1985 including:

(a) Rain Gauge
(b) Solar Radiation
(c) Horizontal
(d) Hygrometer Calibration & Operational Checks
(e) Temperature

(2) Daily Meteorological Station Equipment Checks, November 1985.

(3) SI-3 Daily Logsheets for Control Room Meterological Instrumentation, January - November 1985.

(4) SI-89 Periodic Calibration of Meteorological Monitoring Instrumentation, 1984 - 1985.

Results of the record review were discussed with cognizant licensee representatives as noted in Paragraphs 7.b and 7.c.

b. Technical Specifications 6.9.1.6 and 6.9.1.7 detail required licensee actions regarding environmental monitoring reports. The inspector reviewed and discussed the Environmental Radioactivity Levels Sequoyah Nuclear Plant Annual Reports for 1983 and 1984. The inspector discussed with cognizant licensee representatives, calculation of detection capabilities (LLD) detailed in the reports as noted above (Paragraph 6). For the 1983 report, no significant trends or increases of radionuclides in environmental media were noted. The 1984 report also showed no significant trends for increased concentration of radionuclides in environmental samples. However, some increases in fission product radionuclides in selected vegetation, asiatic clams and sediment were noted. All increased concentration values, near the lower limits of detection, were below reporting levels.

c. Technical Specification 4.3.3.4 details surveillance requirements for plant meteorological instrumentation. The inspector reviewed selected records to verify channel and calibration checks. The inspector noted difficulty in obtaining records for review to verify calibration of instrumentation at the meteorological station. The inspector discussed the need for all records regarding the meteorological equipment to be maintained onsite. Licensee representatives agreed to evaluate this area. The inspector notified licensee representatives that this would be considered an inspector followup follow-up item and would be reviewed during a subsequent inspection (50-327/85-38-02, 50-328/85-38-02).

No violations or deviations were identified.

8. Radiological Environmental Monitoring Program (80721)

Technical Specification 3.12.1 states that the Radiological Environmental Monitoring Program shall be conducted as specified in TS Table 3.12-1. The inspector and cognizant licensee representatives toured selected environmental monitoring stations to verify location and operability as specified by procedure and technical specifications. A total of 14 monitoring stations, both local and perimeter stations, were observed. For all stations, excluding W-6 (well water sampling station) all equipment was operable and maintained. Well water monitoring station (W6) which provides a monthly proportional sample was inoperable during the inspection. Further inspection disclosed that the monitoring station had been inoperable for 10 days. The inspector noted that the only verification of this system's operability was during the monthly sample collection. The inspector discussed with licensee representatives the need for increased frequency of periodic surveillance checks regarding all environmental monitoring stations. Licensee representatives agreed to evaluate this area. The inspector informed licensee representatives that this area was considered an open item and would be reviewed during a subsequent inspection (50-327/85-38-03, 50-328/85-38-03).

No violations or deviations were identified.

9. Inspector Follow-up Items (92701)

a. (Open) 50-327/84-28-01, 50-328/84-28-01, Provide Evaluation of License Initiated Major Changes to Liquid Radwaste System Per TS 6.15.1: This item was not reviewed during this inspection.

b. (Closed) 50-327/84-28-02, 50-328/84-28-02, Determine Disposition of Missing TLDs and Assure Replacement TLDs are Installed at Ramseytown Road Location: The inspector verified placement of licensee and NRC TLDs at Ramseytown Road locations during a tour of the environmental monitoring stations.

c. (Closed) 50-327/85-15-01, 50-328/85-15-01, Review of Waste Gas Decay Tank Procedures and Records: From a review of appropriate procedures and discussion with cognizant licensee representatives the inspector noted that gas decay tank releases made outside of normal hours must be reviewed and documented by the SRO.

d. (Closed) 50-327/85-15-03, 50-328/85-15-03, Review of NRC Spiked Sample Results for H-3, Sr-89, Sr-90 and Fe-55: The inspector reviewed and discussed the H-3, Sr-89, Sr-90 and Fe-55 spiked sample results with cognizant licensee representatives. The data are listed in Table 1 with the acceptance criteria listed in Attachment 1. All results were in agreement.

e. (Closed) 50-327/85-15-04, 50-328/85-15-04, Review of Laboratory and Counting Room Areas for Cleanliness and Improved Record Maintenance: The inspector toured the chemistry and counting room laboratories with

cognizant licensee representatives. The laboratories were clean and organized. Maintenance of selected chemistry records was deemed adequate.

TABLE 1

RESULTS OF H-3, Sr-90, and Fe-55 ANALYSES FOR SEQUOYAH NUCLEAR PLANT, MARCH, 1985

SAMPLE	ISOTOPE	LICENSEE	NRC	RESOLUTION	RATIO LICENSEE/NRC	COMPARISON
NRC Spiked Liquid Sample March, 1985	H-3	2.26 E-4	2.48±0.05 E-4	50	0.91	Agreement
	Fe-55	1.48 E-4	1.33±0.04 E-4	33	1.11	Agreement
	Sr-89	4.60 E-6	5.27±0.16 E-6	33	0.87	Agreement
	Sr-90	1.16 E-6	9.31±0.36 E-7	26	1.24	Agreement

Attachment 1

CRITERIA FOR COMPARING ANALYTICAL MEASUREMENTS

This attachment provides criteria for comparing results of capability tests and verification measurements. The criteria are based on an empirical relationship which combines prior experience and the accuracy needs of this program.

In these criteria, the judgement limits are variable in relation to the comparison of the NRC's value to its associated uncertainty. As that ratio, referred to in this program as "Resolution", increases, the acceptability of a licensee's measurement should be more selective. Conversely, poorer agreement must be considered acceptable as the resolution decreases.

$$\text{RATIO} = \frac{\text{LICENSEE VALUE}}{\text{NRC REFERENCE VALUE}}$$

Resolution	Agreement
<4	0.4 - 2.5
4 - 7	0.5 - 2.0
8 - 15	0.6 - 1.66
16 - 50	0.75 - 1.33
51 - 200	0.80 - 1.25
>200	0.85 - 1.18