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

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Report Nos.: 50-327/92-33 and 50-328/92-33

Licensee: Tennessee Valley Authority
6N 38A Lookout 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 1 and 2

Inspection Conducted: October 26-30, 1992

Inspector: D. W. Jones 11/11/92
D. W. Jones Date Signed

Approved by: T. R. Decker 11/13/92
T. R. Decker, Chief Date Signed
Radiological Effluents and Chemistry Section
Radiological Protection and Emergency Preparedness Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of post-accident sampling systems, control room emergency ventilation system, transportation of radioactive materials, and audits.

Results:

No violations or deviations were identified.

The licensee had implemented an adequate program to ensure the capability to obtain and analyze samples of reactor coolant and containment atmosphere under accident conditions. Program performance improvements were being implemented through system modifications. In-line measurement components of the post-accident sampling systems had not been in continuous service but the capability to obtain samples for laboratory analysis had remained intact (Paragraph 2).

The licensee had maintained the control room emergency ventilation system in an operable condition and complied with the surveillance requirements applicable to that system (Paragraph 3).

The licensee had effectively implemented a program for shipping radioactive materials. No recent transportation incidents involving the licensee's shipments of radioactive material have occurred (Paragraph 4).

The licensee had implemented a effective audit program. Audits were of sufficient scope and depth to identify existing problems and that corrective actions were taken for identified findings (Paragraph 5).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

†*R. Alsup, Manager, Site Audits
†D. Amos, Nuclear Chemist, Chemistry
†*D. Bodine, Manager, Process Control, Chemistry
*R. Beecken, Plant Manager
R. Campbell, Systems Engineer, Technical Support
*T. Flippo, Manager, Site Quality
†*W. Jocher, Manager, Chemistry
†*C. Kent, Manager, Radiological Control
*P. Lydon, Manager, Plant Operations
D. Nichols, Health Physicist, Radiological Control
†*J. Osborne, Manager, Radwaste
J. Reagan, Health Physicist, Radiological Control
*R. Richie, Manager, Chemistry Control
W. Smith, Health Physics Specialist, Radiological Control
G. Taylor, Radiochemical Analyst, Chemistry
†*R. Thompson, Manager, Compliance Licensing
†*J. Wilson, Site Vice President

Other licensee employees contacted included engineers, technicians, and administrative personnel.

Nuclear Regulatory Commission

†*W. Holland, Senior Resident Inspector
S. Shaeffer, Resident Inspector
S. Sparks, Resident Inspector

†Attended entrance interview.
*Attended exit interview.

2. Post Accident Sampling Systems (84750)

Technical Specifications (TSs) 6.8.5.e for both units required the licensee to establish, implement, and maintain a program which would ensure the capability to obtain and analyze samples of reactor coolant, radioactive iodines and particulates in plant gaseous effluents, and containment atmosphere under accident conditions. The program was required to include training of personnel, procedures for sampling and analysis, and provisions for maintenance of sampling and analytical equipment.

The licensee's program included the use of separate post-accident sampling systems for each unit. The systems had the capability of collecting samples of reactor coolant and containment atmosphere and analyzing those samples with in-line measurement instruments. The systems also had the capability of collecting diluted and undiluted grab samples for analysis by either the on-site laboratory or an off-site laboratory. The in-line measurement capabilities included chloride

concentration, dissolved oxygen concentration, hydrogen concentration, pH, and conductivity of reactor coolant samples and hydrogen concentration of containment atmosphere samples. Diluted samples were used for laboratory measurements of boron concentration and gamma activity of reactor coolant and for oxygen concentration gamma activity of containment atmosphere.

The inspector reviewed the following procedures and determined that they included provisions for periodic testing of the systems and acceptance criteria for the results obtained during those tests:

1 & 2-TI-CEM-043-066.1 "Post-Accident Sampling and Analysis"

1 & 2-PI-CEM-043-487.0 "Sentry Post Accident Sampling System Operability Verification and Calibration"

0-TI-CEM-260-020.9 "Post-Accident Sampling Quality Control Program"

Procedure 0-TI-CEM-260-020.9 was a new procedure scheduled for implementation on October 30, 1992. It provided for comparison of analytical results obtained from the post-accident sampling systems to results obtained from routine sampling. It also included provisions for recording the time that the tests were started and completed to demonstrate that analytical results could be obtained within 3 hours as recommended in NUREG-0737.

The licensee indicated that procedures 1 & 2-TI-CEM-43-066.1 were for use in obtaining and analyzing samples under accident conditions and were also used during training of personnel in the operation of the systems. The inspector reviewed selected data generated by training exercises conducted during 1992. Those data indicated that the analytical capabilities for accuracy recommended by NUREG-0737 were not always met. The licensee indicated that the failure to consistently meet the acceptance criteria for measurement accuracy was due to operational problems with the measurement instruments and inaccurate dilution factors. Studies were recently completed for establishing a new dilution factor for the Unit 1 system and use of the new dilution factor yielded more accurate results. A study had been conducted to establish a new dilution factor for the Unit 2 system but the data failed statistical tests for consistency. A new study is planned for the Unit 2 system after its area ventilation system is returned to service. The licensee indicated that repair work on that ventilation system was scheduled for the first week in November 1992.

Two modification packages for improving the post-accident systems performance had been approved and were scheduled for completion during fiscal years 1993 and 1994. One of those modifications provided for installation of new hydrogen and oxygen measurement instrumentation. The other modification provided for collection of reactor coolant samples through the post-accident sampling system for routine surveillances and for post-accident analysis. The intended purpose of this modification was to eliminate the need for entering a limiting condition for

operation when the post-accident sampling systems were being tested. The licensee indicated that an additional modification package was being prepared for installation of new boron measurement equipment and it was anticipated that this modification would be completed during fiscal year 1993. The overall objective of these modifications was to improve the reliability of the systems, improve the accuracy of the system's measurements and reduce the time required to obtain the measurement results. The licensee's progress in achieving those objectives will be monitored during subsequent inspections.

Through the reviews of the licensee's records and discussions with the licensee, the inspector determined the following: the licensee considered functional testing of the systems as having been achieved through personnel training exercises but a new procedure was being implemented for performance testing of the systems; program improvements were being implemented through system modifications; in-line measurement components of the systems had not been in continuous service but the capability to obtain samples for laboratory analysis had remained intact.

Based on the above reviews and discussions, it was concluded that the licensee had complied with the above TS requirements.

3. Control Room Emergency Ventilation Systems (84750)

TSs 3/4.7.7 for both units described the operational and surveillance requirements for the control room emergency ventilation systems. Two independent systems consisting of fans, pre-filters, high efficiency particulate air (HEPA) filters, and charcoal adsorber filter beds were required to be operable during all operational modes. Action statements applicable to various modes were provided for conditions in which one or both of the systems were inoperable. The frequencies for functional testing, filter leak testing, air flow measurements, differential pressure measurements, and charcoal adsorption efficiency testing were specified.

The inspector toured the plant area in which the control room ventilation systems were located. The licensee's cognizant system engineer located and identified, for the inspector, the major components of the systems. The inspector observed that the components and associated ductwork were well maintained structurally and that there was no physical deterioration of the ductwork sealants.

The inspector reviewed the procedures listed below and determined that they included provisions for performing the above operability and performance tests at the required frequencies. The acceptance criteria for the test results specified in those procedures were consistent with the TS requirements. Review of selected records of those tests indicated that they had been performed at the required frequencies and that the acceptance criteria had been met.

1-SI-OPS-000-002.0	"Shift Log"
0-SI-OPS-030-024.0	"Control Room Air Cleanup Subsystem"
0-SI-SFT-031-144.A (&B)	"Control Room Emergency Ventilation Test Train A (&B)"
0-SI-SFT-031-143.A (&B)	"Control Building Emergency Air Cleanup System Filter Train A (&B) Test"
0-SI-OPS-030-144.0	"Control Room Emergency Ventilation Automatic Actuation"
0-SI-SXX-000-141.0	"Results From Test Laboratory On Charcoal Test Sample"

Based on the above reviews and observations , it was concluded that the licensee had complied with the above operational and surveillance requirements for the control room emergency ventilation systems.

No violations or deviations were identified.

4. Transportation of Radioactive Material (86750)

10 CFR 71.5 required the licensee to comply with the applicable regulations of the Department of Transportation (DOT) in 49 CFR Parts 170 through 189 when transporting licensed material outside the confines of the plant or other place of use, or when delivering licensed material to a carrier for transport. 10 CFR 20.311(d)(1) required the licensee to prepare all radioactive waste transferred to a land disposal facility such that the waste is classified in accordance with 10 CFR 61.55 and meets the waste characteristic requirements of 10 CFR 61.56.

The inspector reviewed the procedures listed below and determined that they adequately addressed the following: assuring that the receiver has a license to receive the material being shipped; assigning the form, quantity type, and proper shipping name of the material to be shipped; classifying waste destined for burial; selecting the type of package required; labeling and marking the package; placarding the vehicle; assuring that the radiation and contamination limits are met; and preparing shipping papers.

RMSM	"Radioactive Material Shipment Manual"
RHSI-1	"Packing Dry Active Waste in Drums and Boxes - Unit 1"
RHSI-1.1	"Packaging Filters and Items of High Levels of Radiation"
RHSI-2	"Shipment to U.S. Ecology Richland, Washington-Unit 0
RHIS-2.1	"DAW Shipment to Chem-Nuclear Systems,Inc., Barnwell, South Carolina - Unit 0"
RHIS-3	"Shipment of Radioactive Waste Other Than DAW to Chem-Nuclear Systems, Inc. - Units 1 & 2"
RHIS-4	"Shipment of Radioactive Material (RAM)"

RHIS-6	"Dewatering of CNSI Steel Liners and CNSI Conical Bottom Envirosafe High Integrity Containers Prior to Shipment to CNSI - Units 1 & 2"
RHSU-7	"Utilization of Polyethylene High Integrity Containers (HICs), HIC Overpacks, and Fiberglass Reinforced Plastic (FRP) HICs"
RHIS-8	"Chem-Nuclear Handling Procedure for Transport Cask CNS 8-120B"
RHSI-8.2	"Chem-Nuclear, Air Pressure Drop Test for CNS 8-120B Cask"
RHSI-8.3	"Chem-Nuclear, Nitrogen Inerting for CNS 8-120B Cask"
RHSI-9.0	"Chem-Nuclear Handling Procedure for Transport Cask 8-120A"
RHSI-9.2	"Chem-Nuclear Nitrogen Inerting for CNS 8-120A Cask"
RHSI-10	"Outside Storage of WWPG Radioactive Waste and Material"
RHIS-11	"Radwaste and Radioactive Material Shipment Personnel Qualification - Unit 0"
TI-61	"Waste Classification, Scaling Factors, and Quantity Determination"

The inspector reviewed the licensee's records for 5 recent shipments. Those records indicated that the shipments were made in accordance with the above procedures and Codes. No recent transportation incidents involving the licensee's shipments of radioactive material have occurred.

Based on the above reviews, it was concluded that the licensee had effectively implemented a program for shipping radioactive materials.

No violations or deviations were identified.

5. Audits (84750 and 86750)

TSs 6.5.2.8 for both units required the licensee to perform audits of facility activities which encompass, in part, the following: the conformance of facility operation to provisions contained within the TSs and applicable license conditions at least once per 12 months; the performance, training, and qualification of the facility staff 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; the Process Control Program and implementing procedures at least once per 24 months; and the performance of activities required by the Quality Assurance Program for effluent and environmental monitoring at least once per 12 months. TSs 6.5.2.10.c required that reports for the above audits be forwarded to facility management within 30 days after completion of the audits.

The inspector reviewed the licensee's reports and selected followup documentation for Audit No. SQA91204 "Radiological Effluent and Environmental Monitoring" and Audit No. SQA92207 "Fuel Design, Handling, Special Nuclear Materials, and Radioactive Material Management". Those audits were conducted during the periods December 2 - 20, 1991, and

March 9 - June 11, 1992, respectively, by the licensee's Site Quality Assurance Department. The scope of those audits included, in part, facility activities in the following areas: liquid and gaseous effluent monitoring program; compliance with the Offsite Dose Calculation Manual; radwaste processing, storage, classification, and shipping; and followup on issues identified during previous audits. Substantive issues were identified and corrected in the areas of radwaste shipping and storage. The inspector determined that the audits were of sufficient scope and depth to identify existing problems and that corrective actions were taken for identified findings. The audit results were well documented and reported to facility management along with recommendations for program improvements. Management response to the audit results and corrective actions were prudent and timely.

Based on the above review, it was concluded that the licensee had implemented an effective audit program.

No violations or deviations were identified.

6. Exit Interview

The inspection scope and results were summarized on October 30, 1992, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results listed above. No dissenting comments were received from the licensee. Proprietary information is not contained in this report.