



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

MAY 02 1990

Report No.: 50-416/90-05

Licensee: System Energy Resources, Inc.
Jackson, MS 39205

Docket No.: 50-416

License No.: NPF-29

Facility Name: Grand Gulf

Inspection Conducted: March 26-30, 1990

Inspector: *JR Marston* 4/30/90
R. R. Marston Date Signed

Approved by: *JR Decker* 4/30/90
T. R. Decker, Chief Date Signed
Radiological Effluents and Chemistry Section
Emergency Preparedness and Radiological
Protection Branch
Division of Radiation Safety and Safeguards

SUMMARY

Scope:

This routine, unannounced inspection was conducted in the areas of liquid and gaseous radiological effluents, plant chemistry, and radwaste processing.

Results:

The licensee appeared to have maintained an adequate program to control radioactive effluents and plant chemistry parameters. One non-cited violation was identified for failure to obtain NRC approval for disposal of slightly contaminated oil containing licensed material (Paragraph 12).

9005170204 900502
PDR ADOCK 05000416
Q PDC

REPORT DETAIL

1. Persons Contacted

Licensee Employees

- *L. Daughtery, Compliance Supervisor
- *J. Dimmette, Jr., Manager - Plant Maintenance
- B. Edwards, System Engineer
- *C. Elsaesser, Operations Superintendent
- C. Hayes, Acting Audit Supervisor
- *T. Hildebrandt, Radiation Protection Superintendent
- *M. Humphries, System Engineer Supervisor
- *C. Hutchinson, General Manager
- J. Lassetter, Count Room Specialist
- M. Michalski, Radwaste Supervisor
- *J. Parrish, Manager, Plant Operations
- *T. Reaves, Director, Nuclear Support
- *J. Roberts, Manager - Performance and System Engineering
- *G. Smith, Chemistry Superintendent
- *J. Summers, Compliance Coordinator
- *S. Tanner, Manager, Quality Services
- *T. Williamson, Chemistry Supervisor
- *G. Zinke, Plant Licensing Superintendent

NRC Resident Inspectors

- *H. Christensen, SRI
- *J. Mathis, RI

*Attended exit interview

2. Audits (84750)

Technical Specification (TS) 6.5.2.1, Safety Review Committee (SRC) Function, requires that the SRC shall function to provide independent review and audit of designated activities in the areas of (in part):

- o chemistry and radiochemistry
- o metallurgy
- o instrumentation and control
- o radiological safety
- o quality assurance practices

The inspector reviewed the following Quality Assurance Audits which were conducted subsequent to the last inspection in the areas within the scope of this inspection:

- o QSA - 89/0020, Quality Systems Audit of Nuclear Licensing; Plant Management/Nuclear Regulatory Commission Reporting Requirements,

Sections 6.7 and 6.9, conducted October 10 through October 20, 1989. This audit identified some minor administrative faults.

- ° QSA - 89/0018, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs - Effluent Streams and the Environment; conducted September 14 through October 2, 1989. This audit identified three record-keeping errors, and covered the areas of chemistry and instrument & control procedures, chemistry personnel recertification, review of intralab results, calibration and quality control records, standard preparation and computer checks. The audit also reviewed determination of setpoints and software control [regarding Effluent Technical Specification and Offsite Dose Calculation Manual (ODCM) calculations]. Some errors in dose calculations and software quality control problems were identified.
- ° QSA - 89/0064, Chemistry Section, Plant Staff/General Chemistry and Plant Staff Programs, conducted August 10 through September 8, 1989. Weaknesses were identified in control and tracking of non-TS commitment items and in failure of Chemistry Procedures to address use of survey instruments while taking samples.
- ° QSA - 90/0003, Radiological and Environmental Services/Radiological Environmental Monitoring Program; Nonradiological Environmental Protection Plan, conducted January 5 through February 7, 1990.

The Acting Audit Supervisor stated that the Negative Findings were not at a level to require a formal response, and that, for most cases, corrective action had been taken before the end of the audit.

The audits performed included both positive and negative findings, and observation/comments (for improvement). The inspector also reviewed the checklists for the audits reviewed, and determined that the audits were thorough and comprehensive enough to identify any programmatic weaknesses that might exist.

No violations or deviations were identified.

3. Changes to Chemistry Program (84750)

The inspector discussed changes to the chemistry program which took place since the last inspection in this program area (Inspection Report No. 50-416/89-20) with the Chemistry Superintendent. The Superintendent stated that the authorized level for the Chemistry Group was 35 personnel, with 34 slots filled. A new "clean" chemistry laboratory was in the process of being established on the 133 foot level of the Radwaste Building with an adjoining count room. The count room was still operating out of the area adjacent to the Hot Lab on the 118 foot level of the Radwaste Building. The Superintendent stated that the Hot Lab would remain in the same area but with major remodeling and expansion. The ND66 hardware in the count room was being replaced with new Hewlett Packard hardware.

No violations or deviations were identified.

4. Count Room and Chemistry Laboratories (84750)

Procedures in the CB-S-04 series specify requirements for chemistry sampling and analysis and calibration and operation of the chemistry laboratory and count room equipment.

The inspector and a Chemistry Supervisor toured the Chemistry Laboratories and the Count Room. The new Clean Lab and Count Room were located on the 133 foot level of the Radwaste Building. The lab and count room were being set up and were not yet operational. The Hot Chemistry Lab and Count Room were located on the 118 foot level of the Radwaste Building. The Count Room still had two operational gamma spectroscopic systems; one had been transferred up to the new count room but was not yet in operation. The Hot Lab was equipped with three hoods, one PE 5000 Atomic Absorption Spectrophotometer, two PE UV/VIS Spectrophotometers, two Ion Chromatographs, two Gas Chromatographs, one Photo-chem Total Organic Carbon analyzer, and a NMC alpha/beta gas proportional counting system.

The inspector reviewed calibration and quality control data for gamma spectroscopic systems 3 and 4, which were still operational in the old count room. Efficiency calibrations were done for the various geometries during August - September 1989 for Detector 3, and during August 1989 for Detector 4. The inspector also reviewed calibration data for the Tricarb 460-C Liquid Scintillation System. The efficiency calibrations were done for Tritium in January 1989, and for Iron-55 in April 1989. The efficiency calibrations for these systems had been done approximately one year apart as required by the procedures.

Quality control data and control charts for the gamma spectroscopic systems were also reviewed by the inspector. The checks appeared to have been done at required frequencies and maintained within specified limits.

No violations or deviations were identified.

5. Process and Effluent Monitors (84750)

TS 3.3.7.11 requires that the radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3.7.11-1 shall be operable with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.1.1 are not exceeded. TS 4.3.7.11 requires that each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated operable by performance of the channel check, source check, channel calibration and channel functional test operations at the frequencies shown in Table 4.3.7.11-1. TS 3.3.7.12 requires that the radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3.7.12-1 shall be operable with their alarm/trip setpoints set to ensure that the limit of Specification 3.11.2.1 are not exceeded. TS 4.3.7.12 requires that each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated operable by performance of the channel

check, source check, channel calibration and channel functional test operations at the frequencies shown in Table 4.3.7.12-1.

The inspector reviewed documentation showing the latest calibration for the following monitors on the following dates:

- June 6, 1989 - Fuel Handling Area Gaseous Monitor Calibration
- July 11, 1989 - Radwaste Building Ventilation Gaseous Monitor Calibration
- Aug. 31, 1989 - Standby Service Water Loop A Liquid Process Monitor Calibration
- Sep. 6, 1989 - Turbine Building Ventilation Gaseous Monitor Calibration
- Sep. 26, 1989 - Main Condenser Air Ejector Offgas Post Treatment Radiation Monitor, Channel A, Calibration
- Sep. 27, 1989 - Main Condenser Air Ejector Offgas Post Treatment Radiation Monitor, Channel B, Calibration
- Oct. 6, 1989 - Component Cooling Water Liquid Process Radiation Monitor Calibration
- Nov. 14, 1989 - Offgas Post Treatment Gaseous Monitor Calibration
- Nov. 30, 1989 - Radwaste Effluent Liquid Process Monitor Calibration
- Mar. 23, 1990 - Liquid Radwaste Effluents Radiation Monitor Calibration
- Mar. 25, 1990 - Liquid Radwaste Effluent Setpoint Adjustment and Source Check

The monitors had been calibrated at the required frequencies.

No violations or deviations were identified.

6. Count Room Quality Control (84750)

Licensee Chemistry Procedure 08-S-03-20, Interlaboratory Monitoring Program, specifies the requirements for conducting the program. The inspector examined licensee records in the area for Calendar Year 1989 and determined that the program appeared to have been conducted in accordance with procedures.

No violations or deviations were identified.

7. Gaseous Effluents (84750)

Technical Specification 3/4.11.2 specifies requirements for gaseous effluent releases and dose limits. The inspector reviewed Gaseous Effluent Release Permits and Laboratory Logs. Releases were made from the Radwaste Building Vent, the Containment Building Vent, the Turbine Building Vent, and the Fuel Handling Area Vent. The records showed that the releases and dose calculations had been conducted in accordance with TSs and were within specified limits.

No violations or deviations were identified.

8. Liquid Effluents (84750)

Technical Specification 3/4.11.1 specifies requirements for liquid effluent releases and dose limits. The inspector reviewed a selection of Liquid Effluent Release Permits. The records showed that the releases and dose calculations had been conducted in accordance with TSs and were within specified limits.

No violations or deviations were identified.

9. In-place HEPA and Charcoal Adsorber Testing (84750)

TS 4.6.6.3 specifies requirements for in-place HEPA filter and charcoal adsorber testing and laboratory charcoal testing for the standby gas treatment subsystems (SBGTS) and TS 4.7.2 specifies those requirements for the Control Room Emergency Filtration Subsystems (CREFS).

The inspector reviewed test results for testing of these systems and discussed the testing program with a cognizant system engineer. The records showed that the filter and charcoal testing had been done at the required frequencies, and had successfully passed the tests with one exception. The charcoal sample from the CREFS, Train A, failed the test on May 19, 1989. The charcoal in the adsorber was replaced with fresh charcoal, sampled, and retested. The new sample passed the test on May 26, 1989.

No violations or deviations were identified.

10. Semiannual Radiological Effluent Report (84750)

TS 6.9.1.8 requires that routine radioactive release reports covering the operation of the unit during the previous 6 months of operation shall be submitted within 60 days after January 1 and July 1 of each year. TS 6.9.1.9 specifies content and format of the report including compliance with NRC Regulatory Guide 1.21.

The inspector reviewed the licensee's Semiannual Radioactive Effluent Release Report for the last half of 1989. The effluent release data

summarized in Table A were obtained from current and previous release reports.

TABLE A

Effluent Release Summary for Grand Gulf

<u>Gaseous Effluents (Curies)</u>	1986	1987	1988	1989
Fission and Activation Gases	1.34E+2	2.08E+2	9.44E+1	1.44E+2
Iodines and Particulates	9.52E-4	4.79E-3	4.90E-4	1.48E-3
<u>Liquid Effluents (Curies)</u>				
Fission and Activation Products	3.01E-1	3.66E-1	3.96E-1	3.20E-1
Tritium	1.47E+1	1.83E+1	1.34E+1	1.32E+1

The report appeared to be complete and to include the information specified in the TS and Reg Guide 1.21. The licensee did not identify any unplanned liquid or gaseous releases during 1989, and also did not identify any monitors as being inoperable for greater than 30 days.

The levels of effluents were changing from one year to the next, but no trends were apparent.

No violations or deviations were identified.

11. Solid Radwaste (84750)

A radwaste shipment from the licensee to the Barnwell burial site was discovered to contain methane gas on February 6, 1989. The licensee believed that the bacteria that produced this gas originated when the Turbine Building Cooling Water Heat Exchanger system was cleaned out. The waste water was allowed to drain into the floor drain system and was subsequently cleaned up by the radwaste filter-demineralizer system. The methane-producing organisms were apparently trapped by the filtering material. When the filter media and resin from the radwaste system were placed in a liner which was dewatered prior to shipment, the bacteria, believed to be anaerobic, started to produce methane. The gas caused some overpressure in the shipping cask, which was released when the cask was opened on arrival at Barnwell. Since it was against DOT Regulations to ship explosive gases with radioactive material, the South Carolina Department of Health and Environmental Control issued a letter of warning to the licensee.

The licensee conducted subsequent tests with other liners containing the radwaste filter-demineralizer media. The bacteria became activated after dewatering and produced methane for about five days. Licensee representatives stated that means were being considered to decontaminate the radwaste system of the bacteria and to ensure gas would not be generated in the future in the liners. A licensee representative stated that since the bacteria were considered to be anaerobic, one method would be to blow air through the dewatered media in the liner. Should this fail, application of biocides would be considered.

No violations or deviations were identified.

12. Contaminated Oil Burn (84750)

10 CFR 20.301 requires that no licensee shall dispose of licensed material, except; (a) by transfer to an authorized recipient as provided in the regulations in other parts of this chapter; or (b) as authorized pursuant to 10 CFR 20.302 or part 61 of this chapter; or (c) as provided in 20.303, applicable to the disposal of licensed material by release into sanitary sewerage systems, or in 20.306 for disposal of specific wastes or in 20.106.

The inspector reviewed NRC and licensee documentation on the subject area and discussed the problem with licensee representatives.

In May 1989, during a conversation with a senior licensee management official, the Director, NMSS (NRC) learned that the utility had disposed of some contaminated turbine lubricating oil by burning at one of the utility's fossil fuel electric generating plants.

Approximately 18000 gallons of oil had been discharged from the turbine during turbine trips from May 1985 through January 1988. The oil flowed into the floor sump which contained contaminated water. The problem which caused the discharge of oil was corrected in January 1988. The oil was separated from the water and decontaminated by physical and chemical means. The contaminated water was processed in the radwaste system, and solids, sludge, and contaminated oil were disposed of as radwaste. There remained approximately 14050 gallons of oil which the licensee considered to be decontaminated and nonradioactive. Most of this oil was burned in three burns at a fossil power plant on July 20, 1988, January 12, 1989 and January 17, 1989.

The licensee had determined that the nuclides present in the remainder of the oil were Cobalt-58, Cobalt 60, Manganese-54, and Iron-59. The licensee established analytical conditions such that analyses would be performed with a Lower Limit of Detection (LLD) of $5E-7$ microcuries per milliliter, which was the Technical Specification LLD for principal gamma emitters in water effluent. The licensee considered that since detectable radioactivity was lower than this limit, the oil could be considered to be nonradioactive.

The NRC staff determined that if the radioactivity was not detectable at the environmental LLD levels, the oil could have been considered non radioactive and released. However, for oil with radioactivity which was nondetectable at effluent levels, the provisions of 10 CFR 20.301 applied. The inspector determined that a violation of 10 CFR 20.301 (b) existed in that the licensee burned contaminated oil without securing prior approval from the NRC or the agreement state. Subsequent to the inspection, in a telephone conversation with Regional management, licensee management committed to modify their procedures to required the use of an environmental TLD threshold for any future similar releases. Therefore, this licensee identified violation is not being cited because of criteria specified in Section V.G.1 of the NRC Enforcement Policy was satisfied.

One non-cited violation was identified, 50-416/90-05-01: Failure to obtain prior approval for disposal of waste containing licensed material.

13. Exit Interview (30703)

The inspection scope and results were summarized on March 30, 1990, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. One non-cited violation noted failure to obtain approval for disposal of waste containing licensed material (Paragraph 12). This violation was discussed with licensee representatives by telephone on April 20, 1990. The licensee did not admit or deny the violation at this time. No proprietary material is contained in this report.