



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

JAN 28 1985

Report No.: 50-416/84-52

Licensee: Mississippi Power and Light Company
Jackson, MS 39205

Docket No.: 50-416

License No.: NPF-29

Facility Name: Grand Gulf Unit 1

Inspection Conducted: December 17-21, 1984

Inspectors: <u>P. G. Stoddart</u>	<u>1/24/85</u>
P. G. Stoddart	Date Signed
<u>J. D. Harris</u>	<u>1/24/85</u>
J. D. Harris	Date Signed
Approved by: <u>D. M. Montgomery</u>	<u>1/24/85</u>
D. M. Montgomery, Section Chief	Date Signed
Division of Radiation Safety and Safeguards	

SUMMARY

Scope: This routine, unannounced inspection involved 82 inspector-hours on site in the areas of liquid and gaseous radwaste and effluent monitoring systems.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Licensee Employees Contacted

- *J. E. Cross, General Manager
- *M. Wright, Acting Plant Manager, Operations
- *J. C. Roberts, Technical Support Superintendent
- *M. Michalski, Radwaste Supervisor
- *W. R. Harris, Compliance
- *R. A. Fieldes, Radiochemist
- *R. E. Brinkman, Radiological Engineer
- L. F. Daughtery
- J. D. Bailey, Compliance
- P. B. Wedgeworth, Acting Chemistry Supervisor
- D. F. Mahoney, Senior QA Representative
- R. Wells, Technical Support Engineer (GE)

NRC Resident Inspectors

- *J. L. Caldwell

- *Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on December 21, 1984, with those persons indicated in paragraph 1 above. An unresolved item* described in paragraph 10, inadequate information on deposition or loss of particulate and radioiodine aerosols in long sampling lines, was discussed in detail. The licensee acknowledged the findings and took no exceptions. During subsequent discussions between the General Manager and Region II staff by telephone on December 28, 1984, the licensee agreed to provide an evaluation of the adequacy of sampling for radioiodine and particulate aerosols by January 25, 1985.

3. Radwaste System Startup (84521)

Startup of the liquid and gaseous (offgas system) radwaste systems at Grand Gulf had been completed prior to the inspection. The inspector, accompanied by a licensee representative, toured the liquid and gaseous radwaste facilities and observed operations. The inspector reviewed radwaste system procedures for system startup and for routine operation. Selected pre-startup checklists were reviewed. System performance and evaluation during startup were in accordance with FSAR commitments and with established and approved plant procedures and instructions.

*An unresolved item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation.

Baseline measurements and analyses of reactor coolant chemistry were reviewed in records and logs dating from 1981. Selected entries were reviewed for measurements of pH, conductivity, chloride, and gamma spectrum isotopic analyses. Entries were in accordance with requirements of Technical Specification Tables 3.4.4-1 and 4.4.5-1. Startup of the liquid and gaseous radwaste systems permitted the licensee to meet the following Technical Specifications (TS):

- a. TS 3.11.1.3, which requires the use of the liquid effluent treatment (radwaste) system under certain conditions.
- b. TS 4.11.1.3.2, which requires the liquid effluent treatment system to be demonstrated operable by meeting TS 3.11.1.1 and TS 3.11.1.2.
- c. TS 3/4.11.2.4, which requires the gaseous radwaste treatment (offgas) system to be in operation whenever the main condenser air ejector system is in operation.
- d. TS Table 3.4.4-1 and TS Table 4.4.5-1, which require the performance of chemical and radiochemical analyses to determine reactor coolant chemistry conditions.

The inspector reviewed records of comparisons of effluent monitor readings against effluent radioactivity concentrations. At the time of the inspection, effluent concentrations were at monitor background levels or exceeded monitor background only marginally and were, therefore, not of sufficient statistical significance to be utilized in monitor calibration.

The inspector reviewed selected records of sampling and analysis performed on normally nonradioactive process and effluent streams and determined that a program was in place for the detection of unanticipated radioactivity.

No violations or deviations were identified.

4. Audits and Appraisals (80721, 84723, 84724)

Technical Specification 6.5.2.8 requires audits of the radiological environmental monitoring program at least once per 12 months, of the Offsite Dose Calculation Manual (ODCM) and implementing procedures at least once each 24 months, and of the Process Control Program (PCP) and implementing procedures at least once each 24 months.

The inspector reviewed the following audits and appraisals: MAR (Monitoring Audit Report) 84-/0194, "Radiological Monitoring Programs, Effluent Streams", performed September 14 through November 16, 1984 (issued December 5, 1984); MAR-84/0174, "Program Assessment Audit of the Implementation of the Process Control Program," performed on May 7 through September 21, 1984 (issued October 5, 1984); MAR-84/0175, "Program Assessment Audit of the Implementation of the Offsite Dose Calculation Manual," performed May 7 through September 21, 1984 (issued October 9, 1984); and MAR-84/0091, "Radiological Environmental Monitoring Technical

Specification 3/4.12," performed May 22 through June 5, 1984 (issued June 19, 1984).

No violations or deviations were identified.

5. Changes to Equipment and Procedures (84723, 84724)

Technical Specification 6.15 requires that major changes to radioactive liquid and gaseous waste treatment systems shall be reported to the Commission in the Semi-Annual Effluent Release Report for the period in which the evaluation was reviewed in the plant safety review committee (PSRC).

Within the review areas of this inspection, no changes to liquid or gaseous effluent treatment or effluent monitoring systems had been made since the previous inspection.

Technical Specification 6.8.1 requires the licensee to establish, implement, and maintain written procedures. The inspector reviewed the following procedures which had been issued or revised since the previous inspection. All procedures listed had been reviewed and approved by appropriate plant management, as provided in the Specification.

- 06-CH-SD17-A-0027, "Radwaste Effluent Liquid Process Monitor Calibration," Rev. 20, April 27, 1984.
- 06-IC--SD-17-V-1028, "Liquid Radwaste Effluent Setpoint, Adjustment, and Source Check," Rev. 22, April 16, 1984.
- 06-ME-1Z-51-R-0006, "In-Place Testing of Control Room Emergency Filtration System," Rev. 20, November 16, 1984.
- 06-CH-SG17-P-0041, "Radwaste Release Prerelease Analysis," Rev. 21, September 2, 1984
- 06-CH-SV41-M-0013, "Radwaste Building Ventilation Exhaust Gaseous Isotopic," Rev. 23, September 2, 1984.
- 04-S-01-G17-4, "Liquid Radwaste Discharge System", Rev. 17, May 19, 1984.
- 01-S-08-11, "Radioactive Discharge Controls," Rev. 5, October 22, 1984.
- 06-CH-1B21-SU-0005, "Reactor Coolant Startup Chemistry," Rev. 20, June 15, 1983
- 06-CH-1B21-W-0002, "Reactor Coolant Routine Chemistry," Rev. 21, April 19, 1984.
- 04-1-01-P33-1, "Process Sampling: System Operating Instruction," Rev. 15, March 21, 1984.

- 05-1-02-II-3, "Offsite Gaseous Releases: Offnormal Event Procedure," Rev. 13, September 28, 1984.

No violations or deviations were identified.

6. Semi-Annual and Annual Reports (80721, 84723, 84724)

Technical Specification 6.9.1.6 requires the licensee to submit an Annual Radiological Environmental Report. The inspector reviewed the report for Calendar Year 1983.

Technical Specification 6.9.1.8 requires the licensee to submit a Semi-Annual Radiological Effluent Release Report. The inspector reviewed reports for January-June 1983, July-December 1983, and January-June 1984.

No technical discrepancies were noted and the reports were consistent with the guidance of Regulatory Guide 1.21.

On the basis of the Semi-Annual Effluent Release Reports discussed above and on the basis of the inspector's review of selected liquid and gaseous effluent release permits (see details in Sections 7 and 8 of this Inspection Report) the inspector concluded that plant effluents were within Appendix I (10 CFR Part 50) design objectives, and were ALARA (As Low as Reasonably Achievable).

No violations or deviations were identified.

7. Radioactive Liquid Wastes and Liquid Effluent Treatment Systems (84723)

Technical Specifications 3/4.11.1.1, 3/4.11.1.2 and 3/4.11.1.3 establish limits for concentrations of radioactive materials in liquid effluents, establish limits for radiation dose from liquid effluents, and require the use of the liquid effluent treatment system under certain conditions.

Technical Specification 3.11.1.2 requires the licensee to limit the dose or dose commitment to an individual from radioactive materials in liquid effluent releases to:

- a. During any calendar quarter to less than or equal to 1.5 mrem to the total body and to less than or equal to 5 mrem to any organ, and
- b. During any calendar year to less than or equal to 3 mrem to the total body and less than or equal to 10 mrem to any organ.

Technical Specification 4.11.1.3.2 requires the liquid radwaste system to be demonstrated operable by meeting Technical Specification 3.11.1.1 and 3.11.1.2.

The inspector reviewed selected liquid effluent release permits for the period January 1, 1984, through December 15, 1984.

The inspector reviewed the ODCM and corresponding implementing procedures as well as selected release permits and dose calculation records to meet the requirements of Technical Specification 3.11.1.1, 3.11.1.2 and 3.11.1.3.

The inspector verified from selected records of liquid effluent releases made during the period of January 1, 1984 through December 15, 1984, that the records required by Technical Specification 6.10 were maintained in terms of frequency and content.

No violations or deviations were identified.

8. Radioactive Gaseous Waste and Gaseous Effluent Treatment Systems (84724)

Technical Specification 3.11.2.1 requires that the dose rate due to radioactive materials released in gaseous effluents from the site shall be limited to:

- a. For noble gases: less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin, and
- b. For radioiodines and for all radioactive materials in particulate form and radionuclides (other than noble gases) with half lives greater than 8 days: less than or equal to 1500 mrem/yr to any organ.

Technical Specification 3.6.6.3 requires that two independent standby gas treatment subsystems shall be operable. Technical Specification 4.6.6.4 requires that each standby gas treatment subsystem be demonstrated operable.

Technical Specification 3.11.2.2 requires that the air dose due to noble gases released in gaseous effluents, from each reactor unit, to areas at or beyond the site boundary shall be limited to:

- a. During any calendar quarter: less than or equal to 5 mrads for gamma radiation and less than or equal to 10 mrads for beta radiation and,
- b. During any calendar year: less than or equal to 10 mrads for gamma radiation and less than or equal to 20 mrads for beta radiation.

Technical Specification 3.11.2.3 requires that the dose to a member of the public from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released from each reactor unit to areas at and beyond the site boundary shall be limited to:

- a. During any calendar quarter: less than or equal to 7.5 mrems to any organ and,
- b. During any calendar year: less than or equal to 15 mrems to any organ.

Technical Specification 3/4.11.2.4 requires that the gaseous radwaste treatment (off-gas) system shall be in operation whenever the main condenser air ejector system is in operation.

Technical Specification 3/4.11.2.4 requires that the ventilation exhaust treatment systems shall be operable and that appropriate portions of these systems shall be used to reduce releases of radioactivity when the projected doses in 31 days due to gaseous effluent releases from each reactor unit, to areas at and beyond the site boundary would exceed 0.3 mrem to any organ of a member of the public.

Technical Specification 3/4.11.2.7 requires that the gross gamma radioactivity rate of the noble gases measured at the off-gas recombiner effluent shall be limited to less than or equal to 380 millicuries per second, after 30 minutes decay.

The inspector reviewed selected records and logs of gaseous effluent releases for the period of January 1, 1984 through December 15, 1984.

The inspector also reviewed the ODCM and relevant implementing procedures for determining projected offsite doses resulting from gaseous effluent releases.

The inspector reviewed selected procedural records of the calculation of projected offsite doses and verified certain of the licensee's determinations by calculation, using the methods described in the ODCM and implementing procedures.

The inspector verified from selected records of gaseous effluent releases made during the period of January 1, 1984 to December 15, 1984, that the records required by Technical Specification 6.10 were maintained in terms of frequency and content.

The inspector also reviewed the Semi-Annual Radiological Effluent Release Reports for January-June 1983, July-December 1983 and January-June 1984. (See also Section 6 of this inspection report).

No violations or deviations were identified.

9. Testing of Air Cleaning Filtration Systems (84724)

Technical Specifications 4.6.6.3 and 4.7.2 provide requirements for the testing of charcoal absorber sample retention efficiency for methyl iodide and for in-place leak testing of HEPA filtration and charcoal absorption sections of Engineered Safety Feature (ESF) filtration systems.

ESF filtration systems at Grand Gulf include two independent standby gas treatment subsystems and two independent control room emergency filtration systems.

The inspector reviewed test records for vendor tests of methyl iodide retention efficiency of absorber charcoal samples. The inspector also reviewed test records of vendor leak tests of ESF filtration systems.

No violations or deviations were identified.

10. Effluent Radiological Monitoring Instrumentation (84723, 84724)

Technical Specification 3.3.7.11 requires that liquid effluent radioactivity monitors shown in Technical Specification Table 3.3.7.11-1 shall be operable with their alarm/trip setpoints set to ensure that the limits of Technical Specification 3.11.1.1 are not exceeded.

The inspector reviewed appropriate sections of the licensee's ODCM and corresponding implementing procedures for determining and adjusting alarm/trip setpoints. The inspector also reviewed selected instrument maintenance logs and records for instrumentation setpoints and verified that the bases for the setpoints were understood by affected operators and technicians.

Technical Specification Table 4.3.7.11-1 provides surveillance requirements for liquid effluent radioactivity monitors.

The inspector reviewed selected logs and records and verified that the required channel functional tests had been performed at the prescribed intervals.

Table Notation (2) of Technical Specification Table 4.3.7.11-1 provides requirements for channel calibration to appropriate reference standards.

The inspector reviewed selected logs and records and verified that channel calibration had been performed in accordance with the specifications.

Technical Specification 3.3.7.12 requires that gaseous effluent radioactivity monitors shown in Technical Specification Table 3.3.7.12-1 shall be operable with their alarm/trip setpoints set to ensure that the limits of Technical Specification 3.11.2.1 are not exceeded.

The inspector reviewed appropriate sections of the licensee's ODCM and corresponding implementing procedures for determining and adjusting alarm/trip setpoints. The inspector also reviewed selected instrument maintenance logs and records for instrumentation setpoints and verified that the bases for the setpoints were understood by affected operators and technicians.

Technical Specification Table 4.3.7.12-1 provides surveillance requirements for gaseous effluent radioactivity monitors.

The inspector reviewed selected logs and records and verified that the required channel calibration and channel functional tests had been performed at the prescribed intervals.

Table Notation (3) of Technical Specification Table 4.3.7.12-1 provides requirements for channel calibration to appropriate reference standards.

The inspector reviewed selected logs and records and verified that channel calibration had been performed in accordance with the specification.

The licensee's description of the design of the gaseous radioactive effluent monitoring system in FSAR Section 11.5 stated that a representative sample would be continuously extracted from the ventilation (exhaust) ducting through a flow monitoring and isokinetic sample unit in accordance with ANSI N13.1-1969. The inspector examined the installation of the several gaseous effluent monitoring and sampling units serving the principal release points and determined that flow monitoring and isokinetic sampling provisions had been made and that the installation of these features was in accordance with ANSI N13.1-1969. However, the inspector noted that sampling lines, depending on the specific installation, were approximately 30 feet to 100 feet long from the point of sample intake to the point of sample collection or deposition. Accepted design practice holds that sample delivery lines should be as short as possible to minimize sample losses. Information in Appendix B to ANSI N13-1969 indicated that line losses for particulates greater than about 6 microns in diameter approach 100% in lines over about 5 meters in length.

Discussions between the inspector and licensee representatives, concerning calculations or estimates of the extent of line losses, indicated that no information was available for the Grand Gulf installations. At the exit interview, this action was identified as an unresolved item: Inadequate Information on Deposition or Loss of Particulate and Radioiodine Aerosols in Long Sampling Lines (50-416/84-52-01). In a discussion between the General Manager and Region II staff on December 28, 1984, the licensee agreed to provide an evaluation of the adequacy of sampling for radioiodine and particulate aerosols by January 25, 1985.

One unresolved item was identified. No violations or deviations were identified.

11. Reactor Coolant Chemistry (84723)

Technical Specification Table 3.4.4-1 specifies the maximum coolant limits for chloride and conductivity. Sampling frequencies are specified in Technical Specification 4.4.4.b.

Technical Specification Table 4.4.5-1 specifies sampling and analysis frequencies for coolant analyses for gross radioactivity, dose equivalent I-131, radiochemical E determination, and isotopic analyses for I-131 and I-135.

The inspector reviewed selected plant chemistry records for the period January 1984 through November 1984 and verified that the required tests were performed at the specified frequencies and that the results were within specified limits.

No violations or deviations were identified.

12. Environmental Monitoring Program (80721)

Technical Specification 3/4.12.1 requires the establishment of a radiological environmental monitoring program, the principal details of which are provided in Technical Specification Table 3.12.1-1.

Technical Specification 3.12.2 requires the licensee to perform an annual land use census, the results of which are to be included in the Annual Radiological Environmental Operating Report.

Technical Specification 3.12.3 requires the licensee's analytical facility to participate in an Interlaboratory Comparison Program, as described in the ODCM. Technical Specification 4.12.3 requires a summary of the results of the Interlaboratory Comparison Program to be included in the Annual Radiological Environmental Operating Report pursuant to Technical Specification 6.9.1.7.

The inspector reviewed the 1983 Annual Radiological Environmental Operating Report and selected environmental logs for the period May 1984 through November 1984. The inspector established that: 1) an adequate radiological environmental program had been implemented, 2) an annual land census was performed as required, and 3) the analytical contractor participated in an Interlaboratory Comparison program with the EPA. No violations or deviations were identified.

13. IE Bulletins (92703)

The following IE Bulletins were reviewed to ensure receipt, evaluation and appropriate implementation.

IE Bulletin 80-03, February 6, 1980. This bulletin was concerned with leaks of charcoal from tray type charcoal adsorbers. All Grand Gulf systems use bulk-filled deep bed adsorbers, i.e., there are no trays of this type at Grand Gulf. It was noted that the routine leak test procedure contains a step for reporting traces of charcoal dust on the floor of the adsorber housing. This item is closed.

14. Inspector Followup (92701)

- a. (Closed) Item 81-54-03: Documentation of Computer Programs. The inspector confirmed that testing and documentation of chemistry computer programs had been performed.
- b. (Closed) Item 84-05-03: Failure to locate TLD's in 4 to 5 mile range of sections Q, R, and A; failure to take Broad Leaf Vegetable and Milk Grab Samples. The inspector confirmed that changes had been made in the Environmental Technical Specifications which resolved the TLD issue and that the full sampling program for grab samples was being performed.
- c. (Closed) Item 84-05-03: Adequacy of Fish sample 1000 yards upstream of plant discharge. The inspector confirmed that the licensee had researched this issue and that the distance was deemed adequate.