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

JAN 18 1990

Report No.: 50-416/90-26

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

Docket No.: 50-416 License No.: NPF-29

Facility Name: Grand Gulf Nuclear Station

Inspection Conducted: December 17 through 21, 1990

Inspector: J R Decker for 1/17/91
R. R. Marston Date Signed

Approved by: J R Decker 1/17/91
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 water chemistry, liquid, solid, and gaseous radwaste, training, radiological environmental monitoring, meteorological monitoring, and periodic reports.

Results:

No violations or deviations were identified. The licensee had maintained an adequate program in all areas evaluated. No effluent limits were exceeded. The inspector determined from examination while touring the plant that the plant was very clean.

REPORT DEATAIL

1. Persons Contacted

Licensee Employees

*J. Antoine, Chemistry Supervisor, Technical Support
J. Barlow, Supervisor, Environmental Services
B. Bryant, Supervisor, Operator Initial Training
S. Cotton, Technical Assistant to Radiation Control Superintendent
D. Coulter, Health Physics Supervisor, Dosimetry Administration
*L. Daughtery, Compliance Supervisor
C. Hayes, Manager, Quality Systems
*T. Hildebrandt, Radiation Control Superintendent
C. Hutchinson, General Manager
D. Jackson, Chemistry Supervisor
J. Lassetter, Radiological Engineer
M. Michalski, Radwaste Supervisor
*J. Parrish, Manager, Plant Operations
*J. Reaves, Manager, Quality Services
*J. Summers, Compliance Coordinator
T. Tankersley, Supervisor, Technical Training
*T. Williamson, Chemistry Superintendent
*G. Zinke, Licensing Superintendent

Other licensee employees included engineers, specialists, security officers, and administrative personnel.

NRC Resident Inspectors

J. Mathis, SRI

*Attended exit interview

2. Water Chemistry (84750)

Technical Specifications (TSs) 3.4.4 and 3.4.5 state the chemistry requirements and radiochemistry requirements for the reactor coolant system respectively. TSs 4.4.4 and 4.4.5 state the surveillance requirements for chemistry and radiochemistry parameters respectively. The TS and other chemistry and radiochemistry requirements are implemented by Chemistry Instructions, specifically, Procedures 06-CH-1B21-M-0008, Reactor Coolant Dose Equivalent Iodine, Revision 27, January 27, 1990, and 06-CH-1B21-W-0002, Reactor Coolant Routine Chemistry, Revision 27, August 3, 1990. The inspector reviewed Quarterly Chemistry Reports for the second and third quarters of Calendar Year 1990, and the annual Formal Review of Chemistry Functional Areas for the period from October 1, 1989 to October 1, 1990, to verify compliance and assess quality. The Quarterly Chemistry Reports described and graphed trends in Reactor Water, Primary Water, Reactor Water Cleanup Systems, Condensate Demineralizer

Effluent, Condensate Pump Discharge, and Final Feedwater parameters, as well as those of specified auxiliary systems. The parameters were maintained within limits with few exceptions. Where limits were exceeded, the parameters were brought back into acceptable values in a timely manner.

The Review of Chemistry Functional Areas presented manning, budgetary, and error rate information for the Chemistry Section for the Fiscal Years (FYs) 1989 and 1990. Further data was presented on liquid and gaseous radwaste, including goals for the Calendar Year. Reactor water chemistry and radiochemistry parameters were plotted, as well as Makeup Water Quality. The Report presented information on the Intralaboratory and Interlaboratory cross-check programs for chemistry and radiochemistry. The proposed training schedule for the Chemistry Section for the coming year was presented.

Licensee Procedures in the 08-S-04- series state the requirements for operation of the count room and analytical chemistry laboratory equipment. Procedures 08-S-03-15, Intralaboratory Monitoring Program, 08-S-03-20, Interlaboratory Monitoring Program, and 08-S-03-23, Chemistry Quality Control Program state the requirements of the laboratories and count room quality control programs. The inspector toured and examined the count room, the clean lab, and the hot lab to verify compliance and assess capability. The remodeling of the count room and the clean lab had been completed. The hot lab still required some work to finish the job, and some equipment was to be moved from the clean lab to the hot lab. The count room was equipped with three gamma spectroscopic systems which were calibrated for various liquid and gas geometries, one sodium iodide well counter, a liquid scintillator beta counter, and two gas proportional counters; one calibrated for alpha counting and one for beta counting. The hot lab was equipped with an inductively coupled plasma spectrophotometer unit for detection of metals, a well counter, and a gamma spectroscopic system. The Chemistry Superintendent stated that an ion chromatograph, a Total Organic Carbon analyzer, an atomic absorption spectrophotometer, and several other pieces of equipment would be moved from the clean lab to the hot lab for use.

The gamma spectroscopic systems in the count room (Detectors 2, 3, and 4) were calibrated in August 1990. Radiochemistry intra- and interlab cross checks were reviewed for the third quarter of 1989 through the third quarter of 1990. Sample reproducibility checks were done as well as checks of effluent surveillances, semiannual gamma isotopics, and tritium crosschecks. The results were acceptable. In those few cases where an analyst did not achieve an acceptable measurement, an acceptable result was obtained on the first recheck.

The Chemistry Superintendent stated that the Section had 33 personnel authorized with one Chemical Engineer slot vacant. The previous Superintendent had been detached from the organization in order to attend Senior Reactor Operator training. The current Superintendent had been promoted to the job from his Chemistry Supervisor's slot. The Lab

Supervisor had been placed on loan to INPO and was replaced in his absence by one of the Chemistry Shift Supervisors.

The inspector determined from the above that the Chemistry Section should be able to continue to conduct an adequate program. The new equipment being installed should play an important part in upgrading the Section's measurement capability.

No violations or deviations were identified.

3. Liquid and Gaseous Radwaste Programs (84750)

TS 3/4.11 states the requirements for processing, surveillance, and release of liquid, gaseous, and solid radioactive wastes. The inspector toured the plant, examining components of the waste handling, processing, and metering systems to evaluate capability. The inspector observed the Radwaste Control Room, radwaste storage tanks and pumps, and effluent radiation monitors and sampling points. The Radwaste Control Room included annunciator displays and analog indicators and recorders. The Control Room also had a device to indicate tube leaks near the tube sheet of the condensers. A tube break detector was not in service. The Radwaste Operator (RWO) stated that this device needed to be completely redesigned and reinstalled. The Radwaste Supervisor stated that he had fifteen personnel working directly for him. These personnel consisted of five shifts of one Radwaste Shift Supervisor and two Radwaste Operators each. One vendor employee was attached to the Radwaste organization to operate the vendor-supplied dewatering equipment. The Supervisor stated that his group is responsible for all liquid radwaste processing, the Make Up Water System, and the Condensate Cleanup System. Some Design Change Packages (DCPs) were planned for early next year. One would involve a change in the Body Feed system used for processing liquid radwastes. No resins were regenerated onsite; they were used once, then disposed of. Under one DCP, the old condensate demineralizer resins would be used in the radwaste demineralizers. In addition, polymer injection would be used in the floor drain system. Polymer coagulated iron into larger size particles so that it could be more easily filtered.

The inspector observed that the radwaste control room was large, having been originally designed for a two unit system. The Supervisor stated that the control room was generally manned by two personnel, but, quite often, one would leave to carry out other duties.

Gaseous radwaste was controlled by the Main Control Room (CR). The Offgas Treatment System, and Radwaste Building Ventilation were exhausted through the Radwaste Building Ventilation Exhaust, The Turbine Building Ventilation and the Mechanical Vacuum Pump Exhaust were released through the Turbine Building Ventilation Exhaust, and the Auxiliary Building Ventilation and Fuel Handling Area were released through the Auxiliary Building Ventilation Exhaust. The Containment Building vented through the Containment Building Ventilation Exhaust. Under emergency conditions the

Containment Building and the Auxiliary Building exhausts could be directed to the Standby Gas Treatment System.

From the above, the inspector determined that the licensee's processing, handling, and releasing of liquid and gaseous radwaste was adequate.

No violations or deviations were identified.

4. Training (84750)

TS 6.3 states that each member of the unit staff shall meet or exceed the minimum qualifications of ANSI N18.1-1971 for comparable positions... The inspector reviewed the training programs for Chemistry Specialists, Radwaste Operators, and Environmental Specialists to verify compliance. The Chemistry Superintendent stated that the Section had one trainee who was working on the on-the-job (OJT) training in the Section until a training class could be started. The Radwaste Supervisor stated that the RWOs started as Auxiliary Operators (AOs), took four weeks of radwaste specific training from the Training Department, then four more weeks of OJT under supervision until the program was complete. The time would vary depending on the trainee's background. The Supervisor estimated that it would generally take, on the average, three months for the classroom, the OJT and signoff, and the oral walkthrough necessary for the RWO to be fully certified. The inspector reviewed Procedure GI-S-04-3, Non-Licensed Operator Training, Paragraph 6.4, Curriculum, and Subparagraphs 6.4.1, Auxiliary Operator Nuclear Training Program, and 6.4.3, Radwaste Operator. The procedure gave course descriptions for the aforementioned training programs. The Supervisor, Environmental Services stated that initial training for an Environmental Specialist consisted of General Employee Training, Rad Worker 1 & 2, reading the applicable procedures in detail, then conducting the procedures in detail under supervision until signed off. Basically, the Specialist conducted sampling, sample preparation and handling, and completed the requisite paperwork. The samples were all sent offsite for analysis. The Specialist would usually complete his training in one or two months, since no analysis was done.

The inspector discussed the various training programs with representatives of the Training Department, toured the training facilities, and reviewed lesson outlines. Chemistry Specialist Training would be in common with Health Physics Specialist Training for the first five weeks. The second part would consist of four weeks of classroom work on Chemistry subjects, and the third part would consist of five weeks of Radiochemical Analysis, Radiochemistry, and the remaining Lab Guides which had not yet been covered. The Training Laboratory had most of the equipment which the onsite labs had, was roomy enough to be used for lectures, and had a computer capability which would allow the use of "canned" or previously run analyses. The inspector also reviewed training outlines for the Auxiliary Operator Nuclear Training Program and the RWO Training Program.

The inspector determined from the above discussions and reviews that the training programs described were adequate.

No violations or deviations were identified.

5. Meteorological Monitoring Program (84750)

TS 3.3.7.3 states the operability requirements for the meteorological monitoring instrumentation, and TS 4.3.7.3 states the surveillance requirements for that instrumentation. The inspector reviewed completed calibration packages for Train B of the wind speed and direction instruments, and for Train B of the temperature and temperature difference instruments to verify compliance. The last calibration of those systems had been done on December 12, 1990. The inspector toured the meteorological facilities with a licensee Environmental Specialist. The facility consisted of a tower within a fenced area. The tower had wind and temperature packages at both the ten meter and fifty meter heights, and dewpoint instrumentation at the ten meter height. There were rain gauges within the fence also. Nearby was a backup ten meter tower with instrumentation packages at the ten meter height. The instrument shack near the tower had digital and chart recorders for each channel, and a spare chart recorder for backup. The Environmental Specialist conducted the daily checks required on the primary systems, and stated that Operations conducted whatever checks were done on the backup tower and its systems. The Specialist stated that there was a battery-type backup power supply for the system, and a gasoline engine-driven generator for longer term backup. The inspector determined from a review of the data in the Semiannual Radiological Effluent Report that the system met the required data recovery percentage. The inspector determined that the licensee's meteorological monitoring program was adequate.

No violations or deviations were identified.

6. Radiological Environmental Monitoring (84750)

TS 3.12 states the requirements for the licensee's radiological environmental monitoring program. The program is implemented through Environmental Surveillance Program Administrative Procedures 5.1 to 5.8, and Procedures SP-R-1 through SP-R-13. The inspector accompanied an Environmental Specialist on a tour of the environmental sampling stations to verify compliance and evaluate quality. The sample points were located as specified in the requirements, and the air samplers were in current calibration. The inspector and specialist examined air samplers, vegetation sampling plots, TLD stations, liquid effluent outfalls, rain gauges, and one cistern. The Specialist stated that the rain gauges were for non-radiological fallout studies for deposition of salts from the cooling tower.

The inspector discussed the environmental monitoring programs with the Supervisor, Environmental Services and reviewed analytical records for samples taken January through October 1990 to verify compliance and to assess capability. The Supervisor stated that no analysis was done on site. The TLDs were read out by a vendor, and all other environmental samples were analyzed by a corporate laboratory. Dose calculations for

effluents and environmental results were performed by the Chemistry Section. Implementation of the Offsite Dose Calculation Manual (ODCM) was done by Chemistry, and Radiological and Environmental Services conducted the editing and revising of the ODCM. The Supervisor stated that the Land Use Census for the current year was finished in October 1990.

The Monthly Grand Gulf Radiological Environmental Monitoring Program Report included all analyses performed on environmental samples for the year through the subject month. The results included results for duplicate samples included for quality control purposes. The results were generally around the lower limits of detectability. Higher levels were detected in the Barge Slip sediment, and were reported in the Summary of Monitoring Results included with each report.

The radiological environmental monitoring program was conducted in accordance with requirements, and no limits were exceeded. The only plant-related nuclides detected were those in the Barge Slip sediment, which were discussed in the previous paragraph.

No violations or deviations were identified.

7. Semiannual Radioactive Effluent Release Report (84750)

Title 10 CFR 50.36(a)(2) and TSs 6.9.1.8 and 6.9.1.9 state the requirements for the Semiannual Radioactive Effluent Release Report including timeliness, format, and content requirements. The inspector reviewed the Report to verify compliance. The Report was found to meet all requirements. All effluent releases were within the concentration and total release limits specified by the TSs.

One unplanned liquid release took place during the period covered by the Report. On March 1, 1990, an unmonitored liquid release occurred due to the cross contamination of the Makeup Water Treatment System by the Condensate Transfer Pump. This resulted in a 6.42E-5 microcurie per milliliter concentration at the point of release which was less than 10 CFR 20 limits. This release was addressed in NRC Inspection Report 50-416/90-03.

Meteorological data recovery for the first and second quarters of the calendar year were greater than the required 90 percent. The only data less than 100 percent were dewpoint and precipitation. No inoperative radiation monitors were reported for the period, and no ODCM changes or major changes to Radwaste treatment systems were reported.

9. Exit Interview (84750)

The inspection scope and results were summarized on December 21, 1990, with those persons indicated in Paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. All areas of the licensee's program were adequate. No dissenting comments were received from the licensee. The inspector commended the licensee for the extraordinary cleanliness of the plant. Proprietary information is not included in this report.