



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W.  
 ATLANTA, GEORGIA 30323  
 DEC 12 1984

Report Nos.: 50-280/84-32 and 50-281/84-32

Licensee: Virginia Electric and Power Company  
 Richmond, VA 23261

Docket Nos.: 50-280 and 50-281

License Nos.: DPR-32 and DPR-37

Facility Name: Surry 1 and 2

Inspection Conducted: November 5 - 9, 1984

Inspectors:	<u>P. G. Stoddart</u>	<u>11/27/84</u>
	P. G. Stoddart	Date Signed
	<u>W. B. Gloersen</u>	<u>11/23/84</u>
	W. B. Gloersen	Date Signed
Approved by:	<u>D. M. Montgomery</u>	<u>11/29/84</u>
	D. M. Montgomery, Section Chief	Date Signed
	Division of Radiation Safety and Safeguards	

SUMMARY

Scope: This routine, unannounced inspection entailed 60 inspector-hours on site in the areas of liquid and gaseous radwaste systems, liquid and gaseous effluent sampling, analysis and monitoring, reactor coolant chemistry, and environmental monitoring.

Results: No violations or deviations were identified.

8501180211 841212  
 PDR ADDCK 05000280  
 G PDR

## REPORT DETAILS

### 1. Licensee Employees Contacted

- \*R. F. Saunders, Station Manager
- \*D. L. Benson, Assistant Station Manager, O&M
- H. Miller, Assistant Plant Manager
- \*D. A. Christian, Superintendent, Operations
- \*S. Sarver, Superintendent, Health Physics
- M. R. Kansler, Superintendent, Technical Services
- \*R. F. Driscoll, Manager, Quality Assurance
- E. T. Swindell, Supervisor, Chemistry
- \*W. D. Grady, Supervisor, Quality Control
- \*F. L. Thomasson, Corporate Health Physics
- E. Ferreria, Supervisor, Instrumentation
- \*B. A. Garber, Health Physicist
- P. Blount, Counting Room Supervisor
- R. Willman, Environmental Technician
- T. Stallings, Senior Instrument Technician
- L. Miller, Assistant Supervisor, Chemistry
- W. Hagen, Operations Coordinator, Waste Management

#### NRC Resident Inspectors

- \*D. L. Burke, Senior Resident Inspector
- M. Davis, Resident Inspector

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on November 9, 1984, with those persons indicated in paragraph 1 above. One inspector followup item was closed and three new inspector followup items (paragraphs 8.a., 8.b., and 9) were identified. The licensee acknowledged the inspection findings and took no exceptions. Subsequent to the inspection the review of environmental technical specifications was discussed with licensee representatives by telephone on November 30, 1984, (paragraph 9).

### 3. Audits and Appraisals (84723, 84724, 80721)

Technical Specification 6.1.C.3 requires audits of the radiological environmental monitoring program at least once each 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 procedure at least once each 24 months.

The inspector reviewed the licensee's audit program. Audit S84-20, dated June 29, 1984, covered the radiological environmental monitoring program, as did Audit S83-20, dated September 29, 1983. An audit of the current radio-

logical sample analysis contractor, Teledyne Isotopes, Inc., Westwood, New Jersey, was reported under Audit 83-60, dated November 23, 1983, performed for the licensee's North Anna facility.

The Offsite Dose Calculation Manual (ODCM), and the Process Control Program (PCP) were audited under Audit S84-32 dated August 28, 1984.

No violations or deviations were identified.

4. Changes to Equipment and Procedures (80721, 84723, 84724)

Technical Specification 6.4.A(4) requires changes to procedures to be reviewed by the Station Nuclear Safety and Operating Committee and approved by the Station Manager prior to implementation. Technical Specification 6.9 requires major changes to radwaste systems to be reported to the Commission.

The following procedures were reviewed by the inspector:

HP Procedure 3.2.1, Radioactive Gaseous Waste Sampling Program, June 28, 1984

HP Procedure 3.2.2, Gaseous Waste Discharge Records and Permits, June 29, 1984

HP Procedure 3.2.3, Accidental, Unplanned or Uncontrolled Gaseous Releases, June 28, 1984

HP Procedure 3.2.5, Liquid Waste Discharge Records, June 29, 1984

HP Procedure 3.2.8, Radioactive Waste Reporting of Radioactive Effluent Releases, March 15, 1984

HP Procedure 3.3.7, Radiation Monitoring System Setpoints, June 29, 1984

HP Procedure 3.4.1, Instrument Operation, and Quality Control Program for NMC PC-4 and PC-55, March 29, 1984

HP Procedure 3.4.1.3, Instrument Operation, Nuclear Data 6600 Multi-channel Analyzer, June 28, 1984

HP Procedure 3.4.1.6, ND 6600 Detection System Energy Calibration and Quality Control Program, March 29, 1984

HP Procedure 3.4.2, Health Physics Count Room Standard Source Preparation, December 1, 1983

HP Procedure 3.5.1, Radiological Environmental Sample Collection Program, November 2, 1984

The inspector determined that changes or revisions to the above procedures had been reviewed and approved by appropriate staff and management prior to issue.

No violations or deviations were identified.

5. Reports (84723, 84724, 80721)

The Surry Power Station adopted the standard Radiological Effluent Technical Specifications (RETS) effective July 1, 1984. Under the previous Technical Specifications, radiological effluent releases were reported annually, rather than semi-annually. The release report for 1983, was therefore an annual report. A licensee representative stated that the release report for the first half of 1984 would be submitted at the same time as the semi-annual report for the second half of 1984; all future reports would be submitted on a semi-annual basis in accordance with the reporting requirements of TS 6.6.3.c.

The inspector reviewed the annual report "Radioactivity in Effluent Releases and Solid Waste, Surry Power Station", dated February 29, 1984, covering calendar year 1983. Based on the reported releases, the licensee met the ALARA criteria of 10 CFR 50, Appendix I.

The inspector reviewed the annual Radiological Environmental Monitoring Report required by TS 6.6.3.b. The report was submitted March 2, 1984, but was not complete because certain sample analysis data had not been received from the vendor. A licensee representative stated that a revision would be submitted; however, the revised report had not been received for review at the time of the inspection.

No violations or deviations were identified.

6. Radioactive Gaseous Wastes and Gaseous Effluent Treatment System (84724)

Technical Specifications 3.11.B and 3.11.C specify radioactive noble gas and iodine gaseous effluent release concentrations and dose or dose commitment to individuals offsite from gaseous releases.

The inspector reviewed selected gaseous effluent release permits for the period January 1, 1984 to October 31, 1984. The inspector also reviewed the annual Radiological Effluent Release Report for calendar year 1983. The inspector verified based on selected gaseous effluent release permits that the records required by Technical Specification 6.5 were maintained in terms of frequency and content.

Technical Specification Section 4.12 lists the testing and surveillance requirements for the Auxiliary Ventilation Exhaust Filter Trains. The inspector examined records of charcoal absorber sample efficiency tests, of HEPA and charcoal absorber in-place leak tests, and of operability tests.

No violations or deviations were identified.

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

Technical Specification 3.11.A.1 establishes limits for concentrations of radioactive materials in liquid effluents. Technical Specification 3.11.A.2 establishes limits for dose commitments to an offsite individual as the consequence of the release of radioactive materials in liquid effluents. Technical Specification 3.11.A.3 requires the liquid radwaste treatment system to be operable and requires use of the radwaste treatment system under certain conditions.

The inspector reviewed selected liquid waste discharge permits and records for the release of radioactive liquid effluents for the period January 1, 1984 through October 31, 1984, and determined that records required by Technical Specification 6.5 were being maintained in terms of frequency and content.

The inspector noted that the 1983 annual total release of radioactive liquid wastes was 14.5 Ci of mixed fission products and activation products. Through in-plant observation and in discussions with licensee personnel, the inspector determined that the licensee had undertaken efforts to reduce both the volume of liquid radwaste entering the process stream and the radioactivity concentration of the effluent streams. An active leak reduction program was in place and had reduced total plant input to the liquid radwaste system from about 25 gpm in 1983 to an average of 8 gpm (combined input from both operating units), which included approximately 2 to 3 gpm of groundwater inleakage to building sumps.

The radioactivity content of liquid leakage from both units to the radwaste system had been running at a relatively high level as the result of leaking fuel. Efforts were made over the last two years to replace all leaking fuel; however, recent sipping tests indicated that six leaking fuel assemblies remained in the Unit 2 core.

The method of treatment of liquid radwastes utilized series-connected demineralizer vessels in a flexible array. At the time of the inspection, eight demineralizer vessels, each containing 10 ft<sup>3</sup> of ion exchange resins (alternating anion and cation resins rather than mixed bed resins), were being operated in series. The use of multiple series-connected beds was a recent innovation at Surry and produced good quality effluent at a flow of 15 to 20 gpm and at a cost on the order of 1-1½¢ per gallon. As a result of improvements in leakage control and processing techniques, a licensee representative estimated that the last six months of 1984 would show a substantial reduction in releases from the liquid radwaste system. Input of expended demineralizer resins to the solid waste system, averaged over approximately a one-year period, was one cubic foot of resin per 3,000 gallons of liquid radwaste processed.

The original liquid radwaste processing system installed at Surry consisted of an evaporator and a mixed bed demineralizer in series. The system was still in place at the time of the inspection but had not been used since 1977. Since that time, an alternative system, using demineralizers only and located in the decontamination building, had been used for all liquid radwaste processing. Fifteen demineralizer vessels, each with a capacity of 10 ft<sup>3</sup> of resin, were available and could be connected in a flexible array with the use of hose connections.

The Chemical and Volume Control System (CVCS) was designed to process and recycle primary coolant water let down from the primary coolant system for volume control and coolant purification. Approximately one year prior to the date of the inspection, the mode of operation of the CVCS was changed and the processed primary coolant was no longer recycled but was discharged from the plant as liquid effluent after treatment in the CVCS evaporator and a polishing demineralizer. A licensee representative stated that the change was made to improve the quality of the primary coolant.

No violations or deviations were identified.

8. Liquid and Gaseous Effluent Monitoring and Sampling (84723, 84724)

- a. Technical Specification 4.9 provides criteria for the monitoring, sampling, and analysis of liquid and gaseous effluents.
- b. The inspector, accompanied by a licensee representative, toured the plant on November 6, 1984. Effluent monitoring equipment and sampling stations were observed for operation and for evidence of adequate maintenance and calibration. It was observed that the high range gaseous effluent monitors for the process vent of both Units 1 and 2 were out of service. Discussion with licensee representatives indicated a possible generic problem with the instrument system. The instrument system computer was reported to require a volumetric flow of 3 scfm through the sampling system; however, the pumps supplied by the manufacturer were not able to develop the three scfm flow called for by the computer software, resulting in a system malfunction. A licensee representative stated that the licensee was actively pursuing remedial action through the vendor (Inspector Followup Item 50-280, 281/84-32-01: Resolve disposition of possible generic problem in Kaman high range gaseous effluent monitors involving discrepancy between pump capacity and computer software requirements).
- c. The inspector reviewed calibration and maintenance logs for liquid and gaseous effluent monitoring instrumentation. Licensee was unable to provide data relative to the traceability of the manufacturer's original calibration of the gaseous monitors' detector and sample geometry to a National Bureau of Standards gaseous source. Licensee representatives were, however, able to satisfactorily demonstrate an

acceptable cross-calibration through analyses of samples taken during periods of release of radioactive gaseous effluents and were able to provide instrument readings at the times samples were obtained. Licensee representatives agreed to assemble and collate the instrument readings and sample analysis results in memorandum form and to enter this material in the plant instrument calibration files (Inspector Followup Item 50-280, 281/84-32-02: Verify inclusion of cross-calibration data for radioactive gaseous effluent monitors in plant calibration file.)

No violations or deviation were identified.

9. Radiological Environmental Monitoring (80721)

The inspector reviewed the licensee's radiological environmental monitoring program as required by Technical Specification 3.11.D.1. The licensee changed contractors responsible for analyzing radiological environmental data and providing written reports in March 1984. Results for ten milk samples and four river water samples were still missing from the 1983 "Annual Report for Operational Radiological Environmental Monitoring Program." A licensee representative stated that an attempt was being made to recover this data from the contractor. At the time of the inspection, the licensee was reviewing draft Revision 1 to the 1983 Annual Environmental Monitoring Report. (Inspector Followup Item 50-280, 281/84-32-03: Review Missing Data in 1983 Annual Environmental Monitoring Report).

The inspector reviewed HP Procedure 3.5.1, Radiological Environmental Sample Collection Program, which incorporated requirements of the recently adopted standard Radiological Effluent Technical Specifications. The inspector also reviewed the newly revised Technical Specifications, which were implemented July 1, 1984, and noted an error in T.S 4.9 and in Tables 4.9-4 and 4.9-5, where the I-131 reporting level in water was listed as 2 pCi/liter while the lower limit of detection level was shown as 10 pCi/liter. Subsequent to the inspection, it was determined from discussion with NRR that 2 pCi/liter was in accordance with official guidance. However, it was recognized that this could result in reporting levels of little significance. Licensee representatives, were informed by telephone on November 30, 1984 that NRR would consider a request to increase the reporting level to 20 pCi/liter which would be consistent with other environmental reporting levels.

The inspector reviewed selective environmental monitoring sample collection records and analysis results for the period between January 1984 and October 1984 and verified that the required samples were collected at the specified frequencies. It was noted, however, that several state-collected river water composite samples were delivered to the licensee a month or more after collection. This delivery delay caused the lower limit of detection levels (LLD) for several short-lived nuclides, including I-131, Ba-140, and La-140, to exceed the LLD specified in Table 4.9-5 of the Technical Specifications.

The licensee responded by requesting the State, in a letter dated October 30, 1984, to deliver the required split samples to the licensee as soon as possible after the collection so that the samples could be shipped to the vendor's analytical laboratory in time to analyze the samples for short-lived nuclides.

The inspector, accompanied by a licensee representative, inspected approximately ten randomly selected offsite environmental monitoring stations and verified the operation of five air sampling devices and the presence of TLD packets at each location. The inspector reviewed appropriate calibration records and determined that the air sampling flow meters in use had been calibrated every six months. The inspector verified by direct observation and by record review that the required primary and back-up meteorological monitoring stations sensors and readouts were operable and maintained. The inspector observed, however, that the dew point monitor at the primary meteorological station had been out of service for nearly two months. All meteorological instruments had been calibrated quarterly. The licensee provided a 12-volt battery system as a backup power supply in the event there was a loss of offsite power. The inspector verified that the meteorological readouts in the control room were functioning properly. The licensee used strip chart recorders for recording windspeed, direction, temperature difference, and sigma. Time-averaged data in the control room were obtained by visual observation of the strip chart.

No violations or deviations were identified.

10. Reactor Coolant and Secondary Water Chemistry (84723)

Technical Specification 3.1.F specifies the maximum coolant concentration limits for dissolved oxygen, chloride, and fluoride when the coolant temperature is above 250°F. Sampling frequencies are specified in Technical Specification Table 4.4.3. Technical Specification 3.1.D specifies sampling and analysis frequencies for primary coolant analyses for gross radioactivity, dose equivalent I-131, and radiochemical E Bar determination.

The inspector reviewed selected records for the period of November 1983 through September 1984 and verified that the required tests were performed at the specified frequencies.

No violations or deviations were identified.

11. Inspector Followup (92701)

- a. (Closed) Inspector Followup Item 50-280, 281/83-25-01, Completion of audit of radiological environmental monitoring program with TS 4.9 requirements within 12 month period assigned. The inspector reviewed Audit S83-20, issued September 29, 1983. The audit was issued within two weeks following inspection 50-280, 281/83-25; this date was within the 12 month period specified.

No violations or deviations were identified.