



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

Report Nos.: 50-280/83-18 and 50-281/83-18

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 at Surry site near Williamsburg, Virginia

Inspector: _____

C. M. Hosey

8/5/83

Date Signed

Approved by: _____

K. P. Barr, Section Chief

Operational Programs Branch

Division of Engineering and Operational Programs

8/5/83

Date Signed

SUMMARY

Inspection on July 11-15, 1983

Areas Inspected

This routine, unannounced inspection involved 42 inspector-hours on site in the areas of review of licensee audits, external exposure control, radioactive effluent releases, effluent control instrumentation, reactor coolant quality, notifications and reports, ALARA program, outage planning and preparation, transportation activities, TMI action items, posting, labeling and control and followup on previous inspector identified items.

Results

In the 12 areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- W. L. Stewart, Vice-President, Nuclear Operations
- *J. L. Wilson, Station Manager
- *R. F. Driscoll, Manager, Quality Assurance
- E. S. Grecheck, Project Superintendent
- *P. P. Nottingham, III, Acting Health Physics Supervisor
- E. T. Swindell, Supervisor-Chemistry
- J. Horhutz, Jr., Instrument Supervisor
- *F. L. Rentz, Supervisor, Quality Assurance
- *B. A. Garber, Health Physicist
- D. Densmore, Assistant Health Physics Supervisor
- *R. C. Bilyeu, Licensing Coordinator

Other licensee employees contacted included five construction craftsmen, six technicians, four operators, three mechanics and three office personnel.

NRC Resident Inspector

- *D. J. Burke, Senior Resident Inspector
- *M. J. Davis, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 15, 1983, with those persons indicated in paragraph 1 above. The inspector stated that failure to require that five contract workers, prior to first entry of the individuals into the licensee's restricted area, disclose in a written, signed statement either that they had no prior occupational exposure during the current calendar quarter or the nature and amount of any occupational dose which the individual may have received will be considered a violation of 10 CFR 20.102. The station manager stated that the licensee should receive credit for identifying the item and taking prompt corrective action. The inspector stated that this aspect would be considered when the violation was reviewed by the regional office.

On August 4, 1983, the licensee was informed that failure to obtain the required written statement of occupational dose in the current calendar quarter would be considered a violation of 10 CFR 20.102. However, since the violation was identified by the licensee, was a severity level IV or V violation, was corrected in a reasonable time and was not a violation that could reasonably be expected to have been prevented by the licensee's corrective action for a previous violation, a Notice of Violation will not be issued in accordance with Appendix C of 10 CFR 2.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation (83-05-01) Failure to Post NRC Notice of Violation as Required By 10 CFR 19.11. The inspector reviewed the licensee's response to the violation specified in their letter dated April 8, 1983, and verified that the corrective action specified in the response had been taken. The inspector observed the posting of appropriate Notice of Violation and licensee responses. The inspector had no further questions.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Followup of Previous Inspector Identified Items (IFI)

(Closed) IFI (83-14-07) Verification of Instrument Calibrator Output. The inspector reviewed the results of measurements of the output of various sources in the instrument calibrator. The measurements were performed by a consultant using calibrated instruments. After correction for source decay, the output during the most recent verification was not significantly different from the output data provided by the supplier of the calibrator in 1978. The inspector had no further questions.

(Closed) IFI (83-10-05) Strontium 89 and 90 and Transuranic Analysis of Reactor Coolant. The inspector reviewed the results of the most recent analysis of reactor coolant for Strontium 89 and 90 and transuranics and had no further questions.

(Closed) IFI (83-10-06) Elevated Strontium 89 and 90 Levels in Plant Process Vent and Ventilation Vent composite Samples for 2nd Quarter 1982. The licensee has investigated the elevated levels, including making inquiries of the vendor who analyzed the samples, and did not find any explanation for the elevated levels. A review of the other radionuclides in the samples, indicated no significant differences in reactor coolant concentrations or compositions for the 1982 quarterly composition. The vendor informed the licensee that no problems were experienced during the analysis for strontium. The inspector stated that this item is closed for record purposes, but an evaluation of the licensee's system for routinely reviewing radioactivity analysis results would be performed during a subsequent inspection.

6. Licensee Audits and Surveillance

The inspector reviewed the June, 1983 evaluation of the Station's health physics program performed by the licensee's quality assurance staff. The evaluation frequency was reduced from weekly to monthly in May, 1983 after the licensee concluded that the number and type of discrepancies did not justify continuing the evaluations on a weekly basis. The June, 1983 evaluation appeared to provide a broad ranging review of the health physics program. The discrepancies reported were of a minor nature.

The inspector also reviewed reports of surveillances of radioactive waste packaging and shipping performed by quality control personnel between April 20, 1983 and June 30, 1983. The surveillances reviewed the packaging, loading and shipping of various types of radioactive waste. It appears that the licensee took prompt corrective action when the quality control inspector identified problems in the radioactive waste area. During the review of the surveillance procedure, SAC-25, HP Radwaste Procedure, the inspector noted that the procedure indicated the limit for free standing water was 1% rather than 0.5% as specified in the waste burial facility's license. A licensee representative stated that the checklist would be changed to reflect the correct limit.

No violations or deviations were identified.

7. External Exposure Control

The inspector reviewed the licensee's dose monitoring program and discussed the program with licensee representatives. The inspector reviewed the current TLD reader calibration and the daily TLD reader checks. During tours of the plant the inspector observed workers wearing personnel monitoring devices (pocket dosimeter and/or TLD). The licensee was maintaining radiation dose records as required by 10 CFR 20.401.

On June 24, 1983 the licensee reported in accordance with 10 CFR 20.405(a)(1) the exposure of five individuals to radiation in excess of the limit specified in 10 CFR 20.101(a) without the documentation required by 10 CFR 20.102. The inspector reviewed the radiation exposure records of the five individuals and discussed the records with licensee representatives. 10 CFR 20.101(a) limits an individual's whole body radiation exposure to 1.250 rems in one calendar quarter. However, 10 CFR 20.101(b) states that a licensee may permit an individual to receive a total occupational dose to the whole body greater than the limits of 20.101(a) provided the dose to the whole body in any calendar quarter does not exceed three rems, the dose to the whole body when added to the accumulated occupational dose does not exceed $5(N-18)$ rems where "N" is the individual's age in years at his last birthday, and this licensee has determined the individuals accumulated occupational dose to the whole body on Form NRC-4 and has otherwise complied with the requirements of 20.102. 10 CFR 20.102(b) requires the licensee to obtain a certificate on a Form NRC-4, or similar record containing the same information, showing each period of time after the individual attained the age of 18 in which the individual received an occupational dose of radiation and to calculate on the Form NRC-4, the previously accumulated occupational dose received by the individual and the additional dose allowed for that individual under 20.101(b). 10 CFR 20.102(a) also requires each licensee to obtain from an individual prior to first entry of the individual into the licensee's restricted area during each employment or work assignment under circumstances that this individual could exceed in a calendar quarter an occupational radiation dose in excess of 25% of the limit of 20.101(a), a written, signed statement that the individual had no prior occupational dose during the current calendar quarter or the nature and amount of any occupational dose during that

specifically identified current calendar quarter from sources controlled by other persons.

The five individuals were employed by the same contractor and were initially brought on site in February or March, 1983. The initial work assignment ended in March, 1983. When the individuals first came on site, the licensee had each worker complete a Form NRC-4, and obtained written reports from other facilities where these individuals had been exposed. The worker also provided the written signed statement of current quarter exposure required by 10 CFR 20.102(a). When the workers terminated in March, their computerized dosimetry files were inactivated rather than being purged from the computer pending completion of the termination reports required by 10 CFR 19.13 and 10 CFR 20.408. In April 1983, the five workers returned to the plant for another work assignment. The dosimetry technician reviewed the computer files, noted that the individuals were in the system and the file indicated the Form NRC-4 was on file. For some unknown reason the technician failed to ask the workers to complete a HP-5, Determination of Prior Dose Statement as required by 10 CFR 20.102(a). The individuals were reissued TLDs. When the computerized request for exceeding the station's administrative limits was prepared, the extension form for each indicated that the NRC-4 was on file, indicating the necessary histories were available to permit the individuals to exceed 1.250 rems in the calendar quarter. The workers' exposure for the 2nd Quarter, 1983 ranged from 1.558 rems to 2.361 rems.

The licensee identified the problem with one worker while responding to a request for exposure information. The licensee reviewed all active records and, with the exception of the remaining four individuals discussed above, verified that current histories were on file for each active worker on file. The procedure for terminating dosimetry files was revised to change the field "NRC Form 4" from Yes to No when the file is terminated. On July 14, HP Procedure 3.1.2 was formally changed to add this step to the termination procedure. The inspector stated that failure of the licensee to have a completed, current Form NRC-4 or equivalent on file for the five individuals prior to permitting them to exceed 1.250 rems in the 2nd calendar quarter, 1983 and failure to obtain a signed written statement of prior radiation dose in the second quarter, 1983 prior to their entry into the licensee's restricted area is a violation of 10 CFR 20.102. However, since the violation was identified by the licensee, was a Severity Level IV or V violation, was promptly corrected and was not a violation that could reasonably be expected to have been prevented by the licensee's corrective actions for a previous violation, no enforcement action will be taken in accordance with Appendix C to 10 CFR 2.

8. Radioactive Effluent Releases

Technical Specifications 3.11.A and 3.11.B specifies the requirements for release rates for radioactive effluents, sampling and analysis, continuous monitoring and operation of the radioactive waste system. The inspector selectively reviewed liquid and gaseous release records for July, 1983. The inspector observed a licensee representative collect and analyze a gaseous

sample of the plant's process vent effluents. The inspector noted the calculated concentration in the process vent based on gaseous radiation monitor (GW-102) readings and the laboratory analysis were in very good agreement. The correlation of the laboratory analysis and the reading on the new monitoring system installed to meet the requirements of NUREG 0737, II.F.1 was excellent.

The inspector reviewed the latest revisions to the following effluent release procedures:

- HP-3.2.5, Radioactive Liquid Waste Sampling and Release Rate
- HP-3.2.4, Releasing Radioactive Liquid Waste
- HP-3.2.1, Releasing Radioactive Gaseous Waste

No violations or deviations were identified.

9. Effluent Control Instrumentation

The inspector reviewed the latest calibration of the radioactive liquid waste discharge monitor, RM-LW-108. The inspector reviewed the daily checks of the process vent radiation monitors, RM-GW-101 and 102, the ventilation vent radiation monitor, RM-GW-109 and 110, and the new effluent monitors, (RI-GW-130, 131, and 132) for July, 1983 performed in accordance with PT 26.1. The alarm and alert setpoints were observed to be those established in accordance with PT 26.2.

No violations or deviations were identified.

10. Reactor Coolant Water Quality

Technical Specification 3.1.D specifies the total specific activity of the reactor coolant, and the maximum concentration of radioiodine in the reactor coolant in terms of Dose Equivalent Iodine-131. Technical Specification 3.1.F specifies the maximum concentration of oxygen, chlorides and fluorides in reactor coolant. Technical Specifications 3.1.D and 3.1.F also include specific action statements if the limits are exceeded. The inspector selectively reviewed the results of samples for Unit 1 collected and analyzed in July, 1983. The inspector noted that the gross activity and the DE I-131 levels are down by a factor of 10 when compared to the level immediately prior to shut down for the just completed outage. It was also noted that greater than 15% power changes did not result in a significant increase in the DE I-131 level; as was the case during the previous fuel cycle.

No violations or deviations were identified.

11. Notification and Reports

The inspector reviewed licensee records to determine if exposure data had been provided to terminated employees as required by 10 CFR 19.13(d). The inspector selected several names of recently terminated employees and

verified that each employee had been sent a letter regarding his exposure history. The inspector verified the radiation exposure reported on the letter to the employee agreed with the information maintained in the individual's exposure record at the plant. The inspector also discussed with a licensee representative the reporting requirements of 10 CFR 20.405 and reviewed licensee records.

No violations or deviations were identified.

12. Qualifications

Technical Specification 6.1.B.1 requires that each member of the facility staff meet or exceed the minimum qualifications of ANSI N18.1-1971 for comparable positions. Paragraph 4 of ANSI N18.1 states in part that technicians in responsible positions shall have a minimum of two years of working experience in this speciality. The inspector reviewed the experience of the senior contract health physics technicians.

No violations or deviations were identified.

13. Unit 2 Refueling Outage

The inspector discussed with licensee representatives, the licensee's planning and preparation for the Unit 2 refueling outage, with particular attention to health physics coverage in containment, decontamination efforts, ALARA considerations, preparation of radiation work permits and direct observation of activities in containment. The licensee is continuing to provide extensive health physics technician coverage for containment work, with a technician assigned to each job. A coordinator is present in containment while work is going on to direct the activities of the technicians and to ensure that radiological requirements are consistent with the radiological conditions. This approach appeared to work quite well toward the end of the Unit 1 outage.

The licensee reserved nine days at the beginning of the outage to decontaminate containment prior to beginning any significant work. This effort appeared to be successful in reducing loose contamination levels to less than the licensee's surface contamination limit in some areas.

The licensee has an ALARA staff consisting of an assistant health physics supervisor and a plant health physics technician. A licensee representative stated that plans are underway to augment the staff with two additional technicians. In addition, a technician has been assigned to the maintenance department to coordinate between the health physics staff and maintenance, and to ensure adequate radiation protection planning in all maintenance activities for the outage.

As of July 14, 1983, the licensee has received approximately 1950 person-rem for the year. The projected dose was 1650 person-rem for the same period. The total exposure for 1983 was estimated by the licensee to be 2400 person-rem. During the Unit 1 outage removal and installation of snubbers

and unnecessary reactor coolant pump seals work contributed significantly to exceeding the estimate.

The licensee's ALARA staff appears to be aggressively pursuing ways to reduce exposure on the job during the Unit 2 outage. There appears to be strong management support and support from other station departments. For example, 8-10 person-rem was expended pulling the Unit 1 RCP motors. For Unit 2 the oil collection system was removed from the motor after removal of the motor from the cubicle, additional shielding was used, pump bolt removal was with a pneumatic wrench rather than manually and the number of workers in the area was reduced. Only 0.3 person-rem was used to pull the first Unit 2 RCP motor. During tours of the plant the inspector observed the installation of lead shielding in the Unit 2 containment. The inspector reviewed the ALARA planning for several high exposure jobs and in each case recommendations to reduce exposure were made and accepted by plant management.

The inspector selectively reviewed radiation work permits for the Unit 2 outage for appropriateness of the radiation protection requirements based upon work, scope, location and conditions. During tours of the plant the inspector observed the adherence of plant workers to the RWP requirements.

In discussion with plant workers, the inspector noted an increased awareness on the part of the worker of the necessity to adhere to radiation control requirements. The inspector also noted an improved working relationship between health physics personnel and other plant workers. It appears that the training sessions being conducted by the plant manager and his staff with all plant workers have been successful in making the worker aware of the individual worker's responsibility for health physics and management's commitment to strict adherence to health physics procedures and requirements.

No violations or deviations were identified.

14. Transportation Activities

10 CFR 71.62 specifies the records the licensee is required to maintain for each shipment of more than Type A quantity of radioactive material in a single package. The inspector selectively reviewed the records of radioactive waste shipments to burial facilities in 2nd quarter 1983. The licensee was maintaining the records required by 10 CFR 71.62.

The inspector observed the performance of surveys and the loading of a LSA waste shipment (55 gallon drums) on July 13, 1983. The shipment was surveyed, drums labeled, inspected by a QC inspector, loaded, and the vehicle placarded in accordance with Station Procedure HP-3.2.9, Packaging and Shipment of Solid Radioactive Waste. The inspector reviewed the shipping papers for the shipment.

No violations or deviations were identified.

15. Improved Inplant Iodine Instrumentation

NUREG 0737, Item III.D.3.3 directed that all licensees provide equipment and associated training and procedures for accurately determining the airborne iodine concentration in areas within the facility where personnel may be present during an accident. The station has on hand silver zeolite cartridges for collecting inplant iodine samples. Emergency procedure have been prepared addressing the collection of inplant samples and their analysis. The procedures include use of portable instruments for analyzing the samples in the event the normal counting room is not accessible or usable. Periodic training in emergency procedures received by health physics personnel includes a review of the inplant air sample procedures. The action required by NUREG 0737, Item III.D.3.3 have been implemented at the station.

16. Posting, Labeling and Control

The inspector reviewed the licensee's posting and control of radiation areas, high radiation areas, airborne radioactivity areas, contamination areas, radioactive material areas, and the labeling of radioactive material during tours of the plant.

No violations or deviations were identified.

17. Radiological Statistics

As of July 12, 1983, the total person-rem received by the station was 1977 or 82% of the goal established for 1983. The actual exposure as of July 12, exceeds the projected expenditure as of that date by approximately 20%. Between January 1, 1983 and May 30, 1983, the licensee released the following liquid and gaseous effluents:

1983 Liquid Release (To Discharge Canal)

Gross Radioactivity (Beta-gamma)	6.6	Ci
Tritium	313.3	Ci
Dissolved Noble Gases	3.9	Ci

1983 Gaseous Releases

Total Noble Gases	3,554	Ci
Total Halogens	0.037	Ci
Total Particulate Radioactivity	0.004	Ci
Total Tritium	12.179	Ci

All releases were significantly below Technical Specification Limits.

Also during the period of January 1, 1983 through May 30, 1983, the licensee made 82 shipments of low level radioactive waste to burial facilities. A total of 1932 curies were contained in the 42,850 cubic feet of waste shipped.