



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

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Report Nos.: 50-280/84-18 and 50-281/84-19

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 Date: May 29 - June 1, 1984

Inspection at Surry site near Williamsburg, Virginia

Inspector: *C. M. Hosey* 6/22/84
C. M. Hosey Date Signed

Approved by: *G. R. Jenkins* 6/26/84
G. R. Jenkins, Section Chief Date Signed
Division of Radiation Safety and Safeguards

SUMMARY

Scope: This routine, unannounced inspection involved 34 inspector-hours on site in the areas of radiation protection activities, including organization and management, training and qualifications, external exposure control, internal exposure control, surveys, monitoring, and control of radioactive materials, ALARA Program, implementation of Part 61 requirements, transportation of radioactive material and followup on previous inspector identified items.

Results: Violation - Failure to conduct a quality control program to assure compliance with 10 CFR 61.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. L. Wilson, Station Manager
- *S. P. Sarver, Supervisor of Health Physics
- E. T. Swindell, Supervisor-Chemistry
- *R. F. Driscoll, Quality Assurance Manager
- L. L. Edmonds, Superintendent of Nuclear Training
- *O. E. Hickman, Corporate Health Physics
- *R. C. Bilyeu, Licensing Coordinator
- *B. A. Garber, Health Physicist
- P. Nottingham, Assistant Health Physics Supervisor
- M. Beckman, Assistant Health Physics Supervisor
- D. Densmore, Assistant Health Physics Supervisor

Other licensee employees contacted included six technicians, two operators, three mechanics, and two office personnel.

NRC Resident Inspectors

- 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 June 1, 1984, with those persons indicated in paragraph 1 above. The failure to conduct quality control program to assure compliance with 10 CFR 61 (Paragraph 10) was discussed in detail. The licensee acknowledged the inspection findings.

On June 22, a telephone conversation was held between J. L. Wilson, Station Manager, and H. C. Dance of the Region II office concerning the shifting of a load of waste during transport to a waste burial facility. The licensee agreed to perform a review of plant procedures concerning the shipment of radioactive material and to strengthen the procedures, as necessary, to provide additional assurance that shipments are properly braced to prevent shifting during transport.

3. Licensee Action on Previous Enforcement Matters

- a. (Closed) Violation (83-34-02) The inspector reviewed the licensee's response to the violation specified in their letter dated January 20, 1984 and verified that the corrective action specified in the response had been taken. The inspector had no further questions.

- b. (Closed) Deviation (83-34-01) The inspector reviewed the licensee's response to the deviation specified in their letter dated January 20, 1984 and verified that the corrective action specified in the response had been taken. The inspector had no further questions.

4. Organization and Management Controls (83722)

Technical Specification (TS) 6.2.2 describes the licensee's organization. The inspector reviewed the licensee's organization as it relates to radiation protection and chemistry. The licensee has temporarily assigned a licensed senior reactor operator to the health physics organization to assist the Supervisor of Health Physics in the management of day-to-day activities of the radiation protection organization. During tours of the plant and in discussions with licensee representatives, the inspector concluded that this temporary change has had a positive effect on the plant's radiation protection program.

The licensee has not made organizational changes which would significantly affect plant chemistry.

No violations or deviations were identified.

5. Training and Qualifications (83723)

TS 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 4.5.2 of ANSI N18.1 states in part that technicians in responsible positions shall have a minimum of two years of working experience in their specialty. The inspector reviewed the experience and training records for selected contract senior health physics technicians currently working at the station. The inspector also compared the employment periods reported on each technician's resume with the employment period reported on the radiation exposure history (NRC form 5). The senior contract health physics technicians whose records were reviewed apparently met the minimum experience and training requirements.

TS 6.1.B.2 states that a retraining and replacement training program for the facility staff shall be in accordance with ANSI N18.1-1971. Paragraph 5.5 of ANSI N18.1 states that a training program shall be established which maintains the proficiency of the operating organization through periodic training exercises, instruction periods and reviews.

The inspector reviewed the training materials for a foundational health physics training course for the health physics staff in progress during the inspection and discussed the training program with licensee representatives. The inspector discussed with licensee representatives, plans to revise and strengthen the licensee's technician development program.

No violations or deviations were identified.

6. External Exposure Control (83724)

10 CFR 20.101 specifies the applicable radiation dose standards. The inspector reviewed the computer printouts (NRC form 5 equivalent) for the fourth quarter 1983 and the first quarter 1984 and verified that the radiation doses recorded for plant personnel were well within the quarterly limits of 20.101(a). 10 CFR 20.101(b)(3) requires the licensee to determine an individual's accumulated occupational dose to the whole body on an NRC form 4 equivalent record prior to permitting the individual to exceed the limits of 20.101(a). The inspector selectively reviewed the occupational exposure histories (complete NRC form 4s) for individuals who exceeded the limits of 10 CFR 20.101(a). The exposure histories were being completed and maintained as required by 10 CFR 20.102.

The inspector reviewed the following plant procedures which established the licensee's program for personnel monitoring of external dose in accordance with 10 CFR 20.202:

Health Physics Manual, Section 1 (Nov. 18, 1983)

Health Physics Manual, Section 2 (Jan. 1, 1984)

Health Physics Procedure, HP-3.1.3, Personnel Dosimetry - Dosimetry Issue and Dose Determination (Nov. 18, 1983)

During the tours of the plant, the inspector observed workers wearing the appropriate personnel monitoring devices.

The inspector reviewed Health Physics Manual, Section HP-2.1, Radiation Work Permits (January 1, 1984), which provides detailed instructions on the preparation and processing of Radiation Work Permits (RWPs).

The inspector selectively reviewed active RWPs for appropriateness of the radiation protection requirements based on work scope, location, and conditions. During tours of the plant, the inspector observed the adherence of plant workers to the RWP requirements and discussed the RWP requirements with plant workers at the job site.

No violations or deviations were identified.

7. Internal Exposure Control (83725)

10 CFR 20.103(a) establishes the limits for exposure of individuals to concentrations of radioactive materials in air in restricted areas. This section also requires that suitable measurements of concentrations of radioactive materials in air be performed to select and evaluate the airborne radioactivity in restricted areas and that appropriate bioassays be performed to detect and assess individual intakes of radioactivity.

The inspector selectively reviewed the results of general in-plant air samples taken during the months of April and May 1984, and the results of air samples taken to support work covered by specific radiation work permits issued to support the current outage.

10 CFR 20.103(b) requires that when it is impracticable to apply process or engineering controls to limit concentrations of radioactive material in air below 25% of the concentrations specified in Appendix B, Table I, Column 1 of this part other precautionary measures should be used to maintain the intake of radioactive material by any individual within seven consecutive days as far below 40 MPC-hours as is reasonably achievable. By review of records, observations and discussions with licensee representatives, the inspector evaluated the licensee's respiratory protection program, including fit-testing, medical qualifications, MPC-hr controls, and the issue, use, and storage of respirators.

No violations or deviations were identified.

8. Surveys, Monitoring, and Control of Radioactive Material (83726)

10 CFR 20.201(b) requires each licensee to make or cause to be made such surveys as (1) may be necessary for the licensee to comply with the regulations in this part and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present.

The inspector selectively reviewed the records of radiation, contamination, and airborne radioactivity surveys performed in April and May 1984, and discussed the survey results with licensee representatives. The inspector performed independent radiation and loose surface contamination surveys in the auxiliary building and in the restricted area outside the auxiliary building and verified that the areas were properly posted.

The inspector also discussed with the licensee the method used to release material from the restricted area and observed technicians performing release surveys for material. The inspector also observed personnel using the personnel frisker (RM-14/RM-16 with HP-210 pancake probe) to perform contamination surveys of themselves prior to exiting the controlled area.

10 CFR 20.203 specifies the posting, labeling and control requirements for radiation areas, high radiation areas, airborne radioactivity areas and radioactive material. Additional requirements for control of high radiation areas are contained in TS 6.4.B.1. The health physics manual, Section 2.1.E contains additional information on the administrative controls for locked high radiation areas (radiation levels of 1000 mR/hr or greater).

During tours of the plant, 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.

No violations or deviations were identified.

9. ALARA Program (83728)

10 CFR 20.1c states that persons engaged in activities under licenses issued by the NRC should make every reasonable effort to maintain radiation exposure as low as reasonably achievable (ALARA). The recommended elements of an ALARA program are contained in Regulatory Guide 8.8, Information Relevant to Ensuring that Occupational Radiation Exposure at Nuclear Power Stations will be ALARA, and Regulatory Guide 8.10, Operating Philosophy for Maintaining Occupational Radiation Exposures ALARA.

The inspector reviewed the station's ALARA Manual and discussed the administrative aspects of the program with licensee representatives. The inspector reviewed the ALARA evaluations for several jobs to be performed during the current outage.

No violations or deviations were identified.

10. Licensee Audits and Surveillances (83722, 83723, 83724, 83725, 83726, 83728, and 86721)

The inspector discussed the audit and surveillance program related to radiation protection, radioactive waste management and transportation of radioactive material with licensee representatives. The inspector reviewed the following quality assurance audits and surveillances performed by the quality assurance group:

QA Audit S84-26, Health Physics and Radioactive Waste, January 31 - February 27, 1984

Surveillance Audit Checklist 25, Radioactive Waste, May 1984

Surveillance Audit Checklist 21, Contamination Monitoring Status, May 1984

Surveillance Audit Checklist 22, Radiation Area Posting, May 1984

Surveillance Audit Checklist 33, Part 19 Posting and Procedures, May 1984

Surveillance Audit Checklist 32, Respiratory Protection, May 1984

Surveillance Audit Checklist, Dose Control Records, May 1984

10 CFR 20.311 requires that any licensee who transfers radioactive waste to a land disposal facility comply with the requirements in paragraph (d)(1) through (8) of the section. Paragraph 20.311(d)(3) requires that a licensee conduct a quality control program to assure compliance with 10 CFR 61.55 and 61.56. 20.311(d)(3) further requires that the program include management evaluation of audits.

During the review of audits and surveillances performed in 1984, the inspector noted that the audits and surveillances failed to address the station's compliance with 10 CFR 61.55 and 10 CFR 61.56. The inspector reviewed surveillance audit checklist 25, radioactive waste, and the current revision of Quality Control Instruction 10.13, Preparation, Loading, and Survey of Radioactive Waste Shipments (6/1/83). In discussions with the inspector, a licensee representative stated that a revision of QCI 10.13 was in preparation. However, a review of the draft instruction by the inspector revealed that no changes to the procedure had been made to audit compliance of the station to 20.311, 61.55 or 61.56. The inspector stated that failure to have an audit program which evaluated the licensee's compliance with 10 CFR 61.55 and 56 is a violation of 10 CFR 20.311(d)(3) (280/84-18-01 and 281/84-19-01).

11. Implementation of 10 CFR 61 and 10 CFR 20.311 Requirements (84722, 84850)

The inspector reviewed the licensee's implementation of 10 CFR 61 and 10 CFR 20.311 requirements for the packaging, classification, and shipment of radioactive waste to low-level waste burial facilities.

The inspector selectively reviewed the manifest prepared for waste shipments in 1984 and shipping papers to verify that a tracking system is being used to insure that shipments arrive at the intended destination without undue delay.

The methods used by the licensee to assure that waste is properly classified, meets the waste form and characteristics required by 10 CFR 61 and that the disposal site license conditions are met were reviewed by the inspector and discussed with licensee representatives.

The licensee uses scaling factors to quantify radionuclides not easily identified in waste streams. Laboratory analyses of samples from various waste streams have been performed to validate the scaling factors. Generally, good agreement is obtained between measured activity and the calculated activity based on scaling factors. The classification of waste by the licensee appears to be appropriate. A review of the licensee's audit and surveillance program to assure compliance with 10 CFR 20.311 and 10 CFR 61 is discussed in Paragraph 10 above.

No violations or deviations were identified.

12. Transportation of Radioactive Material (86721)

10 CFR 71.5 requires that licensees who transport licensed material outside the confines of its plant or other place of use, or who delivers licensed material to a carrier for transport, shall comply with the applicable requirements of the regulations appropriate to the mode of transport of the Department of Transportation in 49 CFR Parts 170 through 189. However, 10 CFR 71.10 exempts a licensee from all the requirements of Part 71 with respect to shipments of packages containing radioactive material having a specific activity not greater than 0.002 microcuries per gram.

In a letter dated January 9, 1984, the State of Washington notified the licensee that a radioactive waste shipment (RSR No. 29211) had been received on January 5, 1984, with evidence that liner 83-4951 had shifted approximately one and one half feet while in transit which was a violation of 49 CFR 173.425(b)(6). 49 CFR 173.425(b)(6) requires that shipments be braced to prevent shifting of lading under conditions normally incident to transportation. In discussions with the inspector, licensee representatives stated that the locking mechanism on the tie down chains had been wired down to prevent loosening of the chains during transit. Interviews conducted by the licensee with the truck driver, indicated that he stopped twice during the trip to retighten the holddown chains. The driver also stated that some loosening of the chains during transport is normal. A licensee representative stated that the wood boards placed at the base of the liner were not placed there for bracing but rather to provide a surface for attaching the DOT placards.

The inspector reviewed the shipping papers for the shipment and determined that the health physics and quality control inspections required by station procedure HP-3.2.9, Packaging and shipment of solid radioactive waste, were performed. The specific activity of the material was 0.0003 microcurie per gram. The inspector informed the licensee that although the shipment failed to meet the requirements of 49 CFR 173.425(b)(6), the specific activity of the material was such that the material did not meet the definition of radioactive material in 49 CFR 173.403(y) and was also exempt from the requirements of 10 CFR 71.

10 CFR 71.91 specifies the records the licensee is required to maintain for each non-exempt shipment of radioactive material. The inspector selectively reviewed the records of radioactive waste shipments sent to burial facilities in 1984.

No violations or deviations were identified.

13. Followup on Previous Inspector Identified Items (92701)

- a. (Closed) IFI (82-33-06) Review Licensee Action on Bulletin 80-10. The inspector reviewed the licensee's evaluation of potential unmonitored, uncontrolled releases of radioactivity to the environment. The licensee determined that all release paths are either monitored or sampled. The inspector had no further questions.
- b. (Closed) IFI (83-14-01) Establish Systems to Insure Licensee Commitments Are Met. The inspector reviewed the licensee's Station Commitment Tracking System and discussed the use of the system with a licensee representative. The inspector had no further questions.
- c. (Closed) IFI (83-34-03) Method for Determining Curie Content in Packages. This item concerned the derivation of the conversion factors used by the licensee to convert dose rate on a radioactive waste package to a curie content. The inspector reviewed the technical

report which discussed the derivation of the conversion factors and had no further questions.

- d. (Closed) IFI (84-02-01) Procedure for Test, Checks, and Calibration of the Containment High Radiation Monitor and the Noble Gas Monitor. The inspector reviewed the following procedure for the periodic testing and calibration of post accident monitors:

Periodic Test Procedure PT-26.1, Radiation Monitoring Equipment Check

Calibration Procedure CAL-RM-255, KAMAN Normal Range Gas Effluent Monitor RI-GW-130-1A

Calibration Procedure CAL-RM-259, KAMAN Accident Range Gas Effluent Monitor RI-GW-130-2A

The inspector had no further questions.

- e. (Closed) IFI (84-02-02) Vendor Calibration of Containment High Range Radiation Monitor. The inspector reviewed the results of a vendor calibration which demonstrated linearity of the monitor through all scales up to the $1E+6$ R/hr scale and verified the monitor met the requirements of NUREG 0737, Item II.F.1. The inspector had no further questions.
- f. (Closed) IFI (84-02-04) Installation and Testing of the Main Steam Safety and Auxiliary Feedwater Pump Turbine Exhaust Monitors. During a tour of the plant, the inspector observed the installation of the following post accident monitors:

1&2 RM-MS-124, 125 & 126 Main Steam Line Radiation Monitors
1&2 RM-MS-129 Auxiliary Feedwater Pump Turbine Exhaust Monitor

The inspector selectively reviewed calibrations of the monitors performed by the station using Calibration Procedure CAL-260, NRC Radiation Monitor Calibration Models TA-600 and TA-900. The inspector reviewed station procedures PT-26.1 and PT-26.2 which provides for daily checks and monthly test of these monitors respectively. The inspector had no further questions.

- g. (Closed) IFI (84-02-08) Formal Procedure for Removal and Transportation of Particulate and Iodine Samples from KAMAN Science Post Accident Effluent Monitors. The inspector reviewed Revision 1 to Emergency Plan Implementing Procedure EPIP-4.24, Gaseous Effluent Sampling During an Emergency (May 31, 1984). The procedure contains instruction on the removal of samples from the monitor and transport of the samples to the appropriate counting facility. The inspector had no further questions.
- h. (Closed) IFI (84-02-09) Training and Retraining of Health Physics Personnel to Operate the KAMAN Science Monitor. The licensee will

begin training of health physics personnel on emergency plan implementing procedures on July 10, 1984. Training on the operation of the KAMAN Science monitor is a part of this training. The inspector had no further questions.

- i. (Closed) IFI (84-02-10) Formal Training on Collection of In-Plant Iodine Samples. Training on this subject will be included in the EPIP training discussed in Paragraph 13.h above. The inspector had no further questions.
- j. (Closed) IFI (84-02-11) Verification by the Licensee of Exhaust Flows From PASS (Post Accident Sampling System). The inspector reviewed documentation related to the testing of the PASS ventilation and discussed the test with a licensee representative. The licensee representative stated that the ventilation was found to be adequate after new gaskets were installed on the cabinet doors of the Century panel. The inspector had no further questions.
- k. (Closed) IFI (84-02-12) Revised Procedure for Boron Analysis. The licensee revised Procedure OP-12.2 to reprogram the boron analyzer to perform a boron analysis, not report the results, perform a second analysis and report this result. Review of the data collected from PASS and from routine sampling indicated that the PASS boron analyzer after being reprogrammed was performing satisfactorily. The inspector had no further questions.
- l. (Closed) IFI (84-02-14) Procedures for Performance Testing and Calibration of PASS. The inspector reviewed the following procedures for the calibration and periodic performance testing of the PASS:

PT-38.47, High Radiation Sampling System Chemistry Instrumentation Calibrations (February 9, 1984)

PT-38.48, High Radiation Sampling System Operability and Operator Training (February 9, 1984)

PT-38.49, High Radiation Sampling System Containment Air Sample, Routine Operation and Operator Training (February 9, 1984)

The inspector selectively reviewed the results of data collected in April and May 1984.

The inspector had no further questions.

- m. (Closed) IFI (84-02-15) Hydrogen Analysis of Reactor Coolant. The licensee determined that the size of the transfer line going from the liquid sample panel to the chemical analysis panel (gas chromatograph) was too large. The line was replaced with a smaller line and the gas chromatography recalibrated. The inspector reviewed the sample results for the month of May 1984 and all were within the acceptance criteria. The inspector had no further questions.