



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA ST., N.W., SUITE 3100
 ATLANTA, GEORGIA 30303

Report Nos. 50-280/82-33 and 50-281/82-33

Licensee: Virginia Electric and Power Company
 Richmond, VA 23261

Facility Name: Surry

Docket Nos. 50-280, 50-281

License Nos. DPR-32, DPR-37

Inspection at Surry site near Surry, Virginia

Inspectors: *C.M. Hosey* 12/10/82
 C.M. Hosey Date Signed

for *B. T. Debs* 12/10/82
 B. T. Debs Date Signed

Approved by: *K.P. Barr* 12/13/82
 K.P. Barr, Section Chief Date Signed
 Technical Inspection Branch
 Division of Engineering and Technical Programs

SUMMARY

Inspection on November 1-5, 1982.

Areas Inspected

This routine, unannounced inspection involved 77 inspector-hours on site in the areas of licensee event reports, followup on previous inspector identified items, radioactive waste shipments, radiological surveys, instruments and equipment, posting labeling and control, non radioactive systems, qualifications, effluent release records, and resin Handling.

Results

Of the 10 areas inspected, no violations or deviations were identified in seven areas; two apparent violations were found in three areas (failure to follow station procedures and failure to post radioactive material areas).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. L. Wilson, Station Manager
- *R. F. Saunders, Assistant Station Manager
- *D. A. Christian, Superintendent Technical Services
- *G. E. Kane, Superintendent Operations
- *S. P. Sarver, Supervisor Health Physics
- *O. Wegman, Security Supervisor
- *H. S. VanDyke, Security Operations Supervisor
- *F. L. Rentz, Supervisor Quality Assurance
- *R. F. Driscoll, Manager Quality Assurance
- *M. Beckham, Assistant Health Physics Supervisor
- *D. Densmore, Assistant Health Physics Supervisor
- *E. T. Swindell, Supervisor Chemistry

Other licensee employees contacted included 4 technicians, 2 operators.

NRC Resident Inspector

- *D. J. Burke

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on November 5, 1982, with those persons indicated in paragraph 1 above. The inspector stated that failure to post the "E" building and the 55 gallon drum storage area west and next to Unit 1 containment equipment hatch, both containing greater than 10 times 10 CFR 20 Appendix C quantities of licensed radioactive material, as radioactive material areas would be a violation of 10 CFR 20.203(e). The inspector also stated that Section failure to follow radiation control procedures, HP-3.9.4, HP 1.3-2, HP 2.4.1 would be a violation of Technical Specifications 6.4.D. Licensee management acknowledged the inspector's findings.

3. Licensee Event Reports

- a. LER 82-059/03L-0, Radiation monitor failed to meet acceptance criteria test. This LER reported an event in which the Ventilation Vent B Gaseous Radiation Detector response was found to exceed the acceptance criteria on a periodic channel calibration test on August 27, 1982. The detector response was found to be 27 percent low when checked with a calibration source. The acceptance criteria was $\pm 10\%$. The alarm set

points were exceeded. The alarm set points for the vent were conservatively established at approximately five percent of the release limits specified by Technical Specification. Therefore, even with the 27% under response, an alarm signal would have been received before the release limit was reached. The licensee initiated daily grab samples as required by Technical Specifications. The radiation monitor photomultiplier tube and preamplifier were replaced and the instrument recalibrated. The inspector reviewed the results of the calibration performed on September 1, 1982. The inspector had no further questions.

b. LER 82-084/01T-0, Radioactive Gas Release.

This LER reported an event in which gaseous radioactivity (initially thought to be above the Technical Specification limits) was released from the auxiliary building ventilation system on August 8, 1982, while the licensee was venting the Unit One A charging pump. During the venting operation the Ventilation Vent radiation monitor (RM-VG-104) increased in count rate but did not alarm. The initial assessment of the release used a stack flow rate of 22,000 CFM. A subsequent review of the release, indicated that this was the flow rate through the charcoal filter banks only, rather than total flow rate through the ventilation stack. The recorded stack flow during the release was 110,000 CFM. A release at this flow rate would have exceeded the Technical Specification release limit for radioactive noble gases.

A detailed evaluation performed by the licensee determined that the flow indicator was in error in the conservative direction. The actual flow was 86,200 CFM. During this evaluation the licensee also determined that the alarm setpoint had not been adjusted following completion of modification to the ventilation system which increased the stack flow rate. The licensee has verified all alert and alarm setpoints for radiation monitors in the process and ventilation vent systems. Calculations performed by the licensee and verified by the inspector indicated that approximately 15 curies of radioactive noble gases were released from the ventilation vent to the environment. Readings from thermoluminescent dosimeters off-site and down wind indicated no increase over background levels. During the venting operation, plant procedures were followed. In addition, personnel were assigned to watch the radiation monitor (RM-VG-104) and health physics personnel were assigned to the ventilation vent sample station. Higher than expected noble gas activity is partly attributed to higher than normal primary coolant activity in Unit 1 due to known fuel defects. The inspector observed the activities of the licensee while draining a charging pump in Unit 1. The licensee took appropriate precautions to perform the task while not exceeding the instantaneous release limit. The inspector had no further questions.

c. LER 82-086/03L-0, Liquid Waste Monitor (RM-LW-108) Malfunction

This LER reported an event on August 27, 1982, in which, during a release, the count rate on the liquid waste radiation monitor increased above the alert and alarm set points without annunciating and automatically closing the discharge isolation valve (HCV-LW-104A). Reviews of the monitor strip chart indicated that the activity levels remained within limits permitted by Technical Specifications. The release was terminated when the elevated count rate was observed. The licensee determined that the reset pushbutton on the monitor had failed. The pushbutton was replaced and the monitor recalibrated. The inspector reviewed the liquid waste discharge permit, the radioactivity analysis for the release, the strip charts for the monitor and the records of the recalibration performed after the monitor was repaired. The inspector had no further questions.

d. LER 82-011/03L-0, Unsampled Release

This LER reported three incidents (between January 25-26, 1982) when the Unit 1 and Unit 2 sub surface drains had been released to the discharge canal without sampling prior to each release. The licensee determined that the total release was 0.2 percent of the limits allowed by Technical Specification. The licensee also determined that the failure to sample resulted from a failure of plant operations personnel to notify health physics prior to beginning the pumping operation. The inspector reviewed analysis performed on prior releases and samples collected after the events reported. The licensee has changed the procedures for releasing and sampling the subsurface drain system. The subsurface drain systems are now pumped automatically when a high level is reached. The drains are sampled on a daily basis by health physics. The results of this sample along with the volume released since the last sample is used to determine total curies of radioactivity released. The inspector had no further questions.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Followup on Previous Inspector Identified Items (IFI)

- a. (Closed) IFI (82-14-02) Installation of New RM-108 Radiation Monitor. The licensee has completed the installation and calibration of the new liquid radioactive waste monitor, RM-LW-108. The monitor is now in full operation. The inspector reviewed the most recent calibration of this monitor and had no further questions.

- b. (Open) IFI (82-25-02) Reduced Pressure in Gas Sample Chambers. The licensee has requested that the plant's architectural engineering firm perform an engineering evaluation of the problem. The inspector stated this item will remain open until the evaluation is complete and necessary corrective action taken.

6. Radioactive Waste Shipment

The inspector observed a radioactive material shipment, shipment identification number 11-82-178-A, for Department of Transportation (DOT) shipping requirements. The licensee was shipping low specific activity (LSA) material to a waste burial facility. The inspector reviewed the shipping records and performed independent measurements of the shipping container and vehicle cab. No violations or deviations were observed.

The inspector selectively reviewed radioactive material shipping documents for the months of September and October 1982. The inspector noted that the Shipping Container checkoff sheet, cask shipments only, Attachment 1 to Health Physics Procedure HP-3.9.4, for shipment number B82-99 dated October 27, 1984 was incomplete. The checkoff sheet did not have the quality control inspector's initials verifying vehicle placarding for as required by HP-3.9.4. The inspector further noted that the Quality Control inspector's initials were missing from the shipping container checkoff sheet for shipment identification number B82-87 dated September 29, 1982, as required by HP-3.9.4.

In both cases the Quality Control Inspector signed the quality control inspection report verifying the accuracy and completeness of applicable documentation as required by VEPCO Quality Assurance Operations and Maintenance Instructions Section 10.13, Preparation, Loading and Survey of Radioactive Waste Shipment. Failure to follow station Procedure HP-3.9.4 is a violation of Technical Specification 6.4.D(82-33-01).

The inspector discussed with licensee management the licensee's present method of transporting 55 gallon drums of solidified low specific activity waste to the low level building. The drums are moved on a flat bed truck which is not equipped with side boards or any other means of securing the barrels. The barrels are transported approximately 0.3 miles on a dirt road from the radiologically controlled area to the Low Level Building. Licensee management stated that the material in the barrels was solidified and that any spill which might result from a barrel falling from the truck would be on owner controlled property and could be easily cleaned up. The inspector had no further comment.

7. Radiological Surveys

The inspector reviewed past survey maps of the turbine building. The inspector noted that the licensee was performing weekly surveys, however, Health Physics Procedure HP-3.2.18 states in Section 4 that the frequency of

general area surveys and smears of the turbine building should be weekly, while another paragraph states that the surveys are monthly for the building unless air ejector activity is above specific limits. Licensee management stated that they would correct the inconsistency in the procedure.

On two occasions, the inspector observed the survey of "clean" trash to be carried off-site by a trash truck to the Surry County landfill. The health physics technicians split the bag of trash open and either scanned or spot checked the top of the trash in the bag and then scanned and spot checked the bottom and sides of the trash with a count rate instrument equipped with a HP-210 pancake GM probe. The inspector discussed the survey techniques with licensee representatives. The inspector stated that the depth of trash in the bag (approximately 6 to 12 inches) could shield radioactive material located in the center of trash volume and could exceed the fixed contaminated level of .1mr/hr or 1000 dpm/100 cm² removable contamination limits established for free release. The inspector stated that the plant should consider performing "clean" trash surveys with a more sensitive instrument. Licensee management stated that would probably not be feasible due to high background radiation levels however, the survey techniques would be reviewed. The inspector stated that this area would be reviewed during subsequent inspections (82-33-03).

No violations or deviations were identified.

8. Instruments and Equipment

The inspector observed a variety of radiological instruments (portable survey instruments, portal monitors, personnel friskers) in use and available for use. The inspector checked calibration stickers, performed battery checks for selected portable instruments in the health physics office, and response checked selected portable instruments for proper operation.

The inspector observed that the alarm set point on the RM-14 stationed at the RCA exit was set up to 500 CPM (maximum set point on 0-500 CPM scale). The inspector brought this to the attention of health physics personnel who reset the alarm to 100 CPM above background. Health physics personnel stated that they have a reoccurring problem with non health physics personnel setting up the alarm set points. However, a licensee representative stated that workers are instructed to observe the meter while frisking. Licensee management stated that they would consider tamper proofing the alarm adjustment. The inspector will evaluate any licensee actions in this area during subsequent inspections (82-33-04).

No violations or deviations were identified.

9. Posting, Labeling and Control

The inspector performed independent radiation and contamination surveys in and around the unrestricted area of Component Cooling Water (CCW) heat exchangers located on the 9 foot 6 inch level of the turbine building. Of the twelve smears taken in the area, all revealed contamination greater than 1000 dpm/100 cm². General loose contamination on the turbine building floor around the CCW heat exchange was approximately 10,000 dpm/100 cm² with contamination levels reaching 257,400 dpm/100 cm² in one area. The contamination was probably due to leakage from the CCW system which has been contaminated to 10⁻² uCi/ml from primary to CCW leakage. Health Physics Procedure HP 1.3-2, states that contamination levels shall be less than 1000 dpm/100 cm² of smearable beta-gamma activity for unrestricted areas within the site boundary. The presence of contamination levels in unrestricted areas within the site boundary in excess of those permitted by HP Procedure 1.3-2 is another example of failure to follow procedure and is a violation of Technical Specification 6.4.D(82-33-01).

The inspector discussed with licensee management why the turbine building contamination problem had not previously been discovered on routine surveys. The inspector noted that approximately five or six smears are taken on each level of the building. Licensee management stated that they were considering making the turbine building survey maps more detailed and requiring an increased number of smears taken in areas where system cross contamination was possible. The inspector stated that the adequacy of turbine building surveys would be reviewed during future inspections (82-33-02).

On several occasions the inspector observed station personnel performing whole body frisks at the Radiological Controls Area (RCA) exit. When personnel observed an increase in meter response, they would not wait for the meter to stabilize but would go to the decon sink and wash their skin and resurvey. In discussions with licensee representatives, they stated that a Form HP-3, "Personnel Decontamination Record" is only completed if the first attempt at decontamination fails. On November 3, 1982, the inspector's right hand was contaminated to 1200 dpm/Probe area as a result of a CCW spill of approximately 50ml. The accompanying health physics technician directed the inspector to wash his hands. No Form HP-3 was completed. Health Physics Procedure HP2.4.1, states that Form HP-3 is to be completed when an individual needs personal decontamination. Failure to complete the HP-3 is another example of failure to follow procedures and a violation of Technical Specification 6.4.D(82-23-01).

10 CFR 20.203(e) requires that each area or room in which licensed material is used or stored and which contains any radioactive material (other than natural uranium or thorium) in an amount exceeding 10 times the quantity of such material specified in Appendix C of 10 CFR 20, shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words "Caution (Danger), Radioactive Materials." While touring the yard

area within the RCA, the inspector observed that the "E" Building used for the storage of radioactive material was posted only as a radiation area and not with the 10 CFR 20.203(e) required sign bearing the radiation caution symbol and the words "caution/danger, radioactive material(s)." This situation also existed with an area containing numerous 55 gallon drums located next to its Unit 1 containment equipment hatch. The area barrier was posted as a High Radiation Area but not Radioactive Material. Failure to post the two areas as radioactive material areas is a violation of 10 CFR 20.203(e) (82-83-05).

The inspector toured the Low Level building used by the licensee as a low specific activity shipping terminal. The inspector observed that the only radioactive material posting was on the access gate and was badly weathered. The inspector brought this to the attention of licensee management who then had the sign replaced and an additional sign was posted on the personnel access door to the building. The inspector had no further questions.

While observing licensee personnel frisk out of the RCA, the inspector noted that many people either frisked too rapidly or missed large areas of their bodies. The inspector also noted that the posted frisking instructions conflicted, in that one sign required a whole body frisk and another at the same frisking station required only hands and feet. The inspector stated to licensee management that clarification was needed for when a partial or whole body frisk is to be performed. Licensee management acknowledged the inspector's observations. The inspector will evaluate any action taken by the licensee in this area in conjunction with (82-33-04).

10. Non-Radioactive Systems

The inspector asked licensee representatives if the chill water system which interfaces with the CCW system had been sampled for radioactivity. The representative stated that the system is not normally sampled for activity. The inspector requested the licensee to sample the system. On November 3, 1982, a chill water sample was counted and found to contain $1.57E-5$ $\mu\text{Ci/ml}$ of Cesium 134 and $2.43E-5$ $\mu\text{Ci/ml}$ of Cesium 137. The inspector recommended to licensee management that systems which have the potential of being cross contaminated should be sampled for activity on some periodic basis.

The inspector also stated that the licensee's actions taken in response to IE Bulletin 80-10 will be reviewed during a subsequent inspection (82-33-06).

No violations or deviations were identified.

11. Qualification

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 supervisors not requiring a license shall have a minimum of four years experience in the craft or discipline he supervises and that technicians in

responsible positions shall have a minimum of two years of working experience in this speciality. An inspector reviewed the experience of the assistant health physics supervisors (first-line supervisors) and health physics technicians. No violations or deviations were identified.

12. Effluent Release Records

Technicians Specification 3.11.A specifies the requirements related to release rates for radioactive liquids, sampling and analyses, continuous monitoring and operations of the liquid radioactive waste system. The inspector selectively reviewed liquid radioactive effluent release records, including the discharge permits, radioactivity analyses and radiation monitor (RM-LW-108) strip charts, for release which occurred in August, 1982.

Technical Specification 3.11.B specifies the requirements related to release rates for radioactive gaseous wastes, sampling and analyses, continuous monitoring and operation of high efficiency particulate and charcoal filters during releases. The inspector selectively reviewed gaseous radioactive effluent release records for containment purges performed in October, 1982.

No violations or deviations were identified.

13. Other Areas Inspected

The inspector discussed a problem at another facility where a spent resin line had become blocked during a resin transfer. Service air was being used to push the resin out of the storage tank to a shipping liner. Demineralized water was used to clear the transfer line. Plant personnel failed to close the valve on the service air line to the spent resin storage tank. The demineralized water pressure exceeded the service air pressure and the contaminated water and resin was forced into the service air system. The service air system was also used at the facility for breathing air. The inspector toured the plant radioactive waste facilities and discussed the potential for a similar event to occur at Surry. A licensee representative stated that resin are sluiced from the storage tank to the liner rather than being blown with high pressure air.

The inspector also discussed the ALARA considerations of resin handling. The licensee loads the liners with spent resin in the decontamination building. The loaded liners are then lifted by crane and moved to the shipping cask located outside the building. The liners may read several hundred R/hr. A licensee representative stated that the licensee is continuing to evaluate the handling of spent resin to reduce cost as well as radiation exposure. He further stated that at present the total exposure for emptying the demineralizer vessel, transfer of resin to a liner and loading the liner in the cask is approximately 500 mrem, with most of the exposure being received by health physics personnel performing surveys. The

inspector stated that the licensee should evaluate other alternatives (e.g. move cask into the decon building with liner installed) to moving the unshielded liner outside the decon building. The inspector had no further questions

The inspector also discussed a problem at another facility where the lid on a CNS-8-120 cask failed to seal. The licensee indexed the lid and cask upon receipt and, after loading, reinstalled the lid with the same alignment. When a special gas inerting was performed, a leak of nitrogen occurred between the lid and the cask. The licensee determined by markings on the underside of the lid made by alignment pins, that apparently the lid had been misaligned on several occasions. This particular cask is not used at Surry. The inspector had no further questions.