



UNITED STATES
NUCLEAR REGULATORY COMMISSION

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

Report Nos.: 50-338/84-40 and 50-339/84-40

Licensee: Virginia Electric and Power Company
Richmond, VA 23261

Docket Nos.: 50-338 and 50-339

License Nos.: NPF-4 and NPF-7

Facility Name: North Anna 1 and 2

Inspection Conducted: October 9 - 12, 1984

Inspectors:

William Peery
for W. W. Peery

11/19/84
Date Signed

W. T. Cooper
W. T. Cooper

11/19/84
Date Signed

Approved by:

G. R. Jenkins
G. R. Jenkins, Section Chief
Division of Radiation Safety and Safeguards

11/19/84
Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 44 inspector-hours on site in the areas of organization and management, training and management, external exposure, internal exposure and control of radioactive material, liquid effluents, and open items related to the Post Accident Sampling System.

Results: One violation was identified - liquid releases without prior analysis.

REPORT DETAILS

1. Licensee Employees Contacted

- *M. L. Bowling, Assistant Station Manager
- *S. B. Eisenhart, Licensing Coordinator
- *O. E. Hickman, Supervisor, Health Physics (Corporate)
- *A. H. Stafford, Supervisor, Health Physics
- *F. T. Terminella, Supervisor, Quality Control
- J. O'Connell, Assistant Health Physics Supervisor
- S. Tipsword, Assistant Health Physics Supervisor
- R. Irwin, Assistant Health Physics Supervisor
- M. Johnson, Assistant Health Physics Supervisor
- S. Montgomery, Training Specialist
- J. Breeden, Training Specialist

NRC Resident Inspectors

- *M. W. Branch, Senior Resident Inspector
- *J. G. Luehman, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on October 12, 1984, with those persons indicated in paragraph 1 above. Unresolved Item 84-01-02, Uncontrolled/Unmonitored Releases of Radioactive Liquids was reviewed in detail and upgraded to a violation (See paragraph 10). One licensee identified violation was discussed involving a failure to provide a meter or Health Physics coverage in high radiation area (see paragraph 7). One unresolved item* was identified involving failure to perform a bioassay (see paragraph 5).

During a telephone conversation between the Station Manager and Mr. Steve Elrod of our office on October 26, 1984, the inoperability of the post accident sampling system was discussed. Equipment problems currently prevent the collection of reactor coolant samples during degraded core conditions. Other system failures, related to capsahelic gauges, flow metering and measuring devices and boronmeter operation were discussed. The Station Manager has initiated an engineering evaluation to outline all the problems currently being encountered with the system. At the completion of the engineering evaluation, a report will be generated with details of the system inoperability and North Anna's target dates for correction of the identified problems. A copy of this report is to be in the Region II office by November 21, 1984, per a commitment from the Station Manager.

*An Unresolved Item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or a deviation.

3. Licensee Action on Previous Enforcement Matters

(Closed) Unresolved Item (338, 339/84-01-02) Unmonitored/Uncontrolled Releases of Radioactive Liquid. This unresolved item has been upgraded to a violation. Further discussion may be found in paragraph 10 of the inspection report.

4. Training and Qualification (83723)

Technical Specification 6.3.1 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 supervised.

One inspector attended the licensee's General Employee Training (GET) and reviewed the contents of this program. In addition, Health Physics personnel are given more detailed training in phases. The inspector selectively reviewed the contents of the training and training records. The training facilities and equipment were of good quality. A licensee representative stated that plans had been approved to expand the training program for North Anna employees.

No violations or deviations were identified.

5. Internal Exposure Control (83725)

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 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 engineering controls, MPC-hour controls, and the use of respirators.

Reviews were made of licensee calibration logs for whole body counters and selected terminated employees' exposure histories. It was noted that one terminated employee did not receive a whole body count; however, he did receive a whole body count two weeks prior to his termination and a re-employment whole body count revealed no detectable uptake. The licensee's procedure 3.1.3, Personnel Dosimetry - Bioassays, dated December 21, 1983, states in Section 4.1.5 that all terminated employees shall be whole body counted unless waived by the Health Physics Supervisor. This is an unresolved item to be discussed in a future inspection (338, 339/84-40-01).

6. Organizations and Management Controls (83722)

Technical Specification 6.2 describes the licensee's organization. Detailed responsibilities and lines of authority are specified in the plant radiation protection plan.

The inspector reviewed changes made to the licensee's organization, staffing levels and lines of authority as they related to radiation protection and radioactive material control and verified that the changes had not adversely affected the licensee's ability to control radiation exposures or radioactive material.

Implementation of the plant radiation protection plan which began on October 15, 1984, will be reviewed on future inspections.

No violations or deviations were identified.

7. External Exposure Control and Personal Dosimetry (83724)

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 or equivalent record prior to permitting the individual to exceed the limits of 20.101(a). The inspector reviewed selected occupational exposure histories for individuals who exceeded the values in 10 CFR 20.101(a). The exposure histories were being completed and maintained as required by 10 CFR 20.102.

On October 5, 1984, the licensee issued Deviation Report Number 84-1462 which detailed a contract worker receiving a whole body dose of 1,293 mrem in the third quarter of 1984. The report also states that this employee had an improperly completed NRC Form-4 on file at North Anna.

The inspector reviewed the employees NRC Form-4 and NRC Form-5. Licensee representatives stated that they believed the employee's NRC Form-4 to be correct and that they had no control over the exposures which were recorded or deleted on the form. The inspector agreed that the method used by the licensee to control the total occupational dose depends upon cooperation by the employee in providing certified information on previous employment involving radiation dose. The NRC does not exercise direct regulatory control over individual workers and, therefore, the NRC does not take enforcement action against a licensee solely because an individual worker withholds or falsifies previous personal exposure information. The information deleted from the NRC Form-4 in question was from 1979, 1981 and 1982 and required no change to the allowed exposure for the quarter in question. In this case, the licensee believed the NRC Form-4 to be correct and the worker was allowed to exceed 1,250 mrem with completed forms on file; therefore, no overexposure occurred.

10 CFR 20.202 requires each licensee to supply appropriate personnel monitoring equipment to specific individuals and requires the use of such equipment.

During tours of the plant, the inspector observed workers wearing appropriate personnel monitoring devices. The program to supply personnel with monitoring devices was adequate.

Technical Specification 6.8 requires the licensee to have written radiation protection procedures, including the use of radiation work permits. The inspector reviewed the plant radiation work permit procedure which provided detailed instructions on the preparation and processing of Radiation Work Permits (RWP).

The inspector reviewed selected 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.

Technical Specification 6.12.1 states in part: "Any individuals entering a high radiation area shall be provided with or accompanied by one or more of the following:"

- a. A radiation monitoring device which continuously indicates the radiation dose rate in the area.
- b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate level in the area has been established and personnel have been made knowledgeable of them.
- c. An individual qualified in the protection procedures who is equipped with a radiation dose rate monitoring device. This individual shall be responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by the facility health physicist in the RWP.

On October 5, 1984, five workers were abandoned in a high radiation area in Unit 2 containment when the contract Health Physics Technician exited the area and was later found sleeping by a North Anna H. P. Technician. The contract H. P. Technician was immediately relieved of his duties by the North Anna H. P. Technician. It was also found that the workers did not have any portable radiation monitoring devices in their work area. Radiation work permit number 84-SP-1359 was issued to reinstall the B steam generator primary manways and required continuous Health Physics job coverage. The radiological conditions as stated in the RWP indicated radiation levels in

the general area from 250 mrem/hr to 800 mrem/hr. Radiation levels at contact with the hot leg were 3000 mrem/hr, cold leg 2,500 mrem/hr.

The inspector stated that this was a violation of Technical Specification 6.12.1. However, Since the violation meets the criteria of 10 CFR 2 Appendix C for a licensee identified violation, no enforcement actions will be taken.

During a review of external exposure records, the inspector noted a discrepancy in the lifetime dose of a contract worker of 0.150 rem. This dose was not reflected on the worker's signed NRC Form-4. Previous exposure records for the contract worker were in Richmond, Virginia being microfiched for the North Anna Station. A request was made by North Anna to retrieve the exposure history. It was determined upon examination of these records that the contract worker had received previous exposure at North Anna in April 1982 of 0.150 rem and had failed to record this exposure on his NRC Form-4.

No overexposure occurred and the licensee's system was effective in identifying the missing 0.150 rem exposure.

10 CFR 20.408(b) requires that when an individual terminates employment with a licensee, or an individual assigned to work in a licensee's facility but not employed by the licensee completes the work assignment, the licensee furnished the NRC with a report of the individual's exposure to radiation and radioactive material incurred during the period of employment or work assignment, containing information recorded by the licensee pursuant to 20.401(a) and 20.108. 20.409 requires that the licensee send a report to the individual if the report is sent to the NRC in accordance with 20.408. 20.401(a) requires each licensee to maintain records showing the radiation exposure of all individuals for whom personnel monitoring is required under 20.202 of the regulations. Such records shall be kept on NRC Form-5 or equivalent.

The inspector discussed the reporting requirements with licensee representatives and reviewed selected individual exposure records maintained by the licensee and copies of exposure reports sent to the NRC and to individuals during the period of June-August 1984.

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 and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present.

During tours of the plant the inspector observed health physics technicians performing radiation and contamination surveys.

The inspector performed independent radiation surveys in the auxiliary building and verified that the areas were properly posted.

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 plant procedures which establish the program for keeping occupational exposures ALARA and discussed the administrative aspects of the program with licensee representatives.

The inspector discussed the ALARA goals and objectives for the current year with licensee representatives and reviewed the man-rem estimates and results for the current year. As of October 10, 1984, the actual collective exposure for calendar year 1984 was 1810 man-rem which represented 200 percent of the estimated exposure for the year.

Licensee representatives stated that an unplanned outage contributed heavily to the additional exposure received at the facility. The exposure estimate was not revised to reflect the work during the unplanned outage.

No violations or deviations were identified.

10. Liquid Wastes (84723)

Technical Specification 4.11.1.1.1 requires that radioactive liquid wastes shall be sampled and analyzed and the results shall be used to assure that concentrations at the point of release are maintained within the limits of specification 3.11.1.1. Health Physics procedure number HP-3.2.3 Section 4.4.1 requires that when the secondary coolant activity is greater than $1.0 \times 10^{-5} \mu\text{Ci/ml}$ the turbine building sump pumps will be isolated and placed in the manual mode of operation. The inspector reviewed chemistry logs for the secondary side and confirmed that activity of the coolant on February 16, and 25, 1984, exceeded $1.0 \times 10^{-5} \mu\text{Ci/ml}$ gross activity.

Unmonitored and uncontrolled releases have occurred on January 1 and 13, February 2, 16, and 25, 1984, from the turbine building sump during times of primary system to secondary system leakage. These unmonitored releases were first identified in licensee deficiency report number 84-10 dated January 1, 1984. The inspector reviewed additional licensee deficiency report numbers 84-70 (1/13/84), 84-188 (2/2/84), 84-210 (2/16/84), and 84-231 (2/25/84). Each of these reports detailed the release of liquid in the sump without prior health physics analysis or completed health physics release forms.

Procedure number HP-3.2.3 states that Operations will normally obtain the turbine building sump samples and that health physics will perform the analysis prior to release. Due to an apparent communications problem between Operations and Health Physics, samples were not collected, analysis was not performed, and as a result, unmonitored and uncontrolled liquid releases occurred.

On January 1 and 13 and February 2, 16, and 25, 1984, the licensee made unmonitored and uncontrolled releases from the turbine building sump to the storm drains during a time of primary system to secondary system leakage. The failure to perform analysis of the turbine building sump water prior to discharge is a violation of TS 4.11.1.1.1 (338,339/84-40-02).

11. Inspector Followup Items

(Open) IFI (338, 339/84-40-03) A review of the PASS ventilation balancing data revealed that the completed PASS system has not had all of the flows measured to assure that the system is operating as designed. Equipment problems were encountered during the test. The test has been rescheduled with a target date of November 30, 1984, set for completion.

(Closed) IFI (338, 339/83-30-03) A procedure for calculating gaseous radionuclide activity from stripped reactor coolant needed to be provided. Procedure Number 1-OP-12.3, High Radiation Liquid Sampling System was revised to include the calculation for calculating PASS-stripped gas activity.

(Open) IFI (338, 339/83-30-05 and 83-30-06) Development of testing procedures to validate the containment air sampling system and to validate the sump sample point and sampling capability under accident conditions. A contract has been awarded to perform modeling of these systems, demonstrations of operability and issuance of procedures for system operations. The final report to VEPCO is due December 30, 1984.

(Open) IFI (338, 339/83-30-07) Provisions for permanent light and air conditioning for the PASS. Permanent lighting and air conditioning systems have been installed but have not been tested. An enclosure for the PASS is currently being erected. Target date for completion is December 30, 1984.

(Closed) IFI (338, 339/84-07-01) The licensee was awaiting receipt of copies of the detector energy response to demonstrate linearity for photons from 0.1 MeV to 3.0 MeV with response down to 60 KeV. The inspector reviewed a copy of the report on the energy response characteristics of the detectors furnished to VEPCO by the vendor. All detector responses indicated linearity up to 2.5 MeV. Above 2.5 MeV, the vendor extrapolated the detector response to 3.0 MeV.

(Open) IFI (338, 339/84-07-02) The licensee is to review their administrative controls to insure that PASS maintenance time is addressed and maintained at an acceptable level, and that the licensee can obtain and analyze a sample within three hours. Licensee representatives stated that

they would confer with the station manager on the possible revision of administrative procedures. No target date for completion of this item was given.