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

Report Nos.: 50-338/85-36 and 50-339/85-36

Licensee: Virginia Electric & Power Company
Richmond, VA 23261

Docket Nos.: 50-338 and 50-339

Facility Name: North Anna 1 and 2

Inspection Conducted: December 2, 1985 - January 5, 1986

Inspectors: A. J. Ignatonis 1/30/86
for M. W. Branch, Senior Resident Inspector — Date Signed

A. J. Ignatonis 1/30/86
for L. P. King — Date Signed

Approved by: A. J. Ignatonis 1/30/86
A. J. Ignatonis, Acting Section Chief — Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine inspection by the resident inspectors involved 122 inspector-hours on site in the areas of licensee event report (LER) review, engineering safety features (ESF) walkdown, operational safety verification, monthly maintenance, monthly surveillance, and startup from refueling.

Results: One violation was identified: design change procedure for installation of environmentally qualified solenoid operated valves (SOV) was defective, in that the procedure did not effectively incorporate vendor installation instructions; paragraph 10.

REPORT DETAILS

1. Licensee Employees Contacted

*E. W. Harrell, Station Manager
*D. B. Roth, Quality Control (QC) Manager
G. E. Kane, Assistant Station Manager
E. R. Smith, Assistant Station Manager
R. O. Enfinger, Superintendent, Operations
J. R. Harper, Superintendent, Maintenance
A. H. Stafford,Superintendent, Health Physics
*J. A. Stall, Superintendent, Technical Services
J. L. Downs, Supervisor, Administrative Services
J. R. Hayes, Operations Coordinator
D. A. Heacock, Engineering Supervisor
D. E. Thomas, Mechanical Maintenance Supervisor
E. C. Tuttle, Electrical Supervisor
R. A. Bergquist, Instrument Supervisor
F. T. Terminella, QA Supervisor
R. S. Thomas, Supervisor Engineering
G. H. Flowers, Nuclear Specialist
*J. H. Leberstein, Licensing Coordinator
*M. G. Pinion, Supervisor Engineering
*H. V. Lee, Engineer

Other licensee employees contacted include technicians, operators, mechanics, security force members, and office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 7, 1985, with those persons indicated in paragraph 1 above. The licensee acknowledged the inspectors findings. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Inspection Findings

(Closed) Violation 338,339/84-30-02: Non-qualified Paint Inside Units 1 and 2 Containment. The inspectors reviewed the licensee's corrective action outlined in their November 8, 1984 response (S/N 609) and found it acceptable. Additionally, the inspectors reviewed and found acceptable the licensee's implementation of program modifications which included: development of new procedures, changes to existing procedures and specifications and augmented training for craft and QC inspectors. The inspectors also reviewed the findings of Audit N-84-35 dated November 19, 1984, "Compliance With NAPS Nuclear Coatings Site Operating Procedures" and found it acceptable.

(Closed) Violation 338/84-19-01: Failure of A&C Personnel to Follow Relay Test Procedures. The inspectors reviewed the licensee's response of September 7, 1984 (S/N 475) and found it acceptable. Additionally, the inspectors monitored the work practice of this group during the recent Unit 1 outage and improvement in the area of procedure adherence was noted.

4. Plant Status

Unit 1

Unit 1 started up from refueling on December 24, 1985. Problems with the 1A low head safety injection pump and the "C" loop cold leg RTD bypass line, had delayed the planned startup several days. During the evening of December 24, 1985, the unit was shutdown when the "B" loop RTDs started to drift with the "C" loop in trip. Also on December 29, 1985, the reactor was shutdown when containment unidentified leakage exceeded the one gallon per minute TS limit. At the end of the inspection period, the unit remained shutdown with plans to remove the reactor head and replace the "O" ring seals.

Unit 2

Unit 2 operated at or near 100% during the entire inspection period.

5. Licensee Event Report (LER) Follow-Up

The following LER was reviewed and closed. The inspector verified that reporting requirements had been met, that causes had been identified, that corrective actions appeared appropriate, that generic applicability had been considered, and that the LER forms were complete. Additionally, the inspectors confirmed that no unreviewed safety questions were involved and that violations of regulations or Technical Specification (TS) conditions had been identified.

(Closed) LER 338/85-10, original and revision 1; Pressurizer PORVs opening in mode 5 after RCP start.

6. Follow-up of Previously Identified Items

(Closed) IFI 338,339/84-04-04: Discrepancies noted during system walkdown and valve position verification of the Auxiliary Feedwater System. All identified items were reviewed and closed in Inspection Report 338,339/85-12, except the updating of drawing 11715-FM-74A. The inspectors reviewed revision 18 of drawing 11715-FM-74A and verified that items identified by the inspectors were corrected.

(Closed) IFI 338,339/84-06-12: ICP-P-1-L-163 showed an incorrect voltage tolerance acceptance criteria. The inspectors reviewed the 09-30-85 revision of procedure ICP-P-1-L-163 and verified that the incorrect reference to ± 30mVDC was eliminated.

(Closed) IFI 338,339/84-06-13: Update of instrumentation forms for procedure review. The inspectors verified that the 11-14-85 revision of Station Administrative Procedure ADM 5.3 "Review of Procedures" requires the use of the Procedure Review Checklist by all departments including the instrument group. Additionally, the inspectors interviewed several Instrument Department procedure reviewers and verified that the correct review form was being used.

(Closed) IFI 338,339/84-06-11: Incorrect station administrative procedure referenced in maintenance procedures for the ASME Section XI IWV program. The inspectors reviewed several maintenance procedures, updated since the 1984 inspection, and verified that the incorrect reference was corrected.

7. Monthly Maintenance (62703)

Station maintenance activities affecting safety related systems and components were observed/reviewed, to ascertain that the activities were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with Technical Specifications. The inspectors closely monitored the emergency diesel generator (EDG) overhaul of the 1H and 1J EDG. Details of the EDG overhaul are discussed in a separate section of this report. The inspectors also monitored the repair of the unit 1, 1A Low Head Safety Injection pump, which locked up during performance of post-maintenance testing after seal replacement. The existing lower impeller casing insert ring was found to be eccentric, and due to tolerances, created an interference which bound the pump. With vendor concurrence, the insert ring was machined and the pump was reassembled and tested.

8. Monthly Surveillance (61726)

The inspectors observed/reviewed Technical Specification (TS) required testing and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that Limiting Conditions for Operation (LCO) were met and that any deficiencies identified were properly reviewed and resolved.

On December 16, 1985, the inspector witnessed portions of Performance Test (PT) 1-PT-83.1 "Simulated Blackout and SI-"H" Bus". This test was being performed to satisfy the surveillance requirements of T.S. 4.8.1.1.2.C.3.a, 4.8.1.1.2.C.3.b, 4.8.1.1.2.C.3.C, 4.8.1.1.2.C.5 and 4.7.1.2.b.1. The test was well coordinated by the test engineer, and the required data was taken in a controlled and timely manner. A temporary change to the procedure was initiated when the 27Y relay failed to energize when jumpered. The change

was properly reviewed and called for pushing the relay trip bar to actuate the relay in-lieu of jumpering the coil. The 27Y relay was subsequently replaced and tested. Although the relay failure appeared to be an isolated failure, the licensee conducted a review of past failures to ensure no generic connection.

No violations or deviations were identified in this area.

9. ESF System Walkdown (71710)

The following selected ESF systems were verified operable by performing a walkdown of the accessible and essential portions of the systems on December 20, 1985.

Unit 1

Chemical Addition Tank (1-OP-7.8A)

RWST (1-OP-7.7A)

Casing Cooling (1-OP-7.10A)

Quench Spray System (1-OP-7.4A)

Unit 2

Chemical Addition Tank (2-OP-7.8A)

No violations or deviations were identified in this area.

10. Routine Inspection (71707)

By observations during the inspection period, the inspectors verified that the control room manning requirements were being met. In addition, the inspectors observed shift turnover to verify that continuity of system status was maintained. The inspectors periodically questioned shift personnel relative to their awareness of plant conditions.

Through log review and plant tours, the inspectors verified compliance with selected Technical Specification and Limiting Conditions for Operations.

During the course of the inspection, observations relative to protected and vital area security were made, including access controls, boundary integrity, search, escort, and badging.

On a regular basis, radiation work permits (RWP) were reviewed and the specific work activity was monitored to assure the activities were being conducted per the RWPs. Selected radiation protection instruments were periodically checked and equipment operability and calibration frequency was verified.

The inspectors were kept informed, on a daily basis, of overall status of both units and of any significant safety matter related to plant operations. Discussions were held with plant management and various members of the operations staff on a regular basis. Selected portions of operating logs and data sheets were reviewed daily.

The inspectors conducted various plant tours and made frequent visits to the Control Room. Observations included: witnessing work activities in progress; verifying the status of operating and standby safety systems and equipment; confirming valve positions, instrument and recorder readings, annunciator alarms, and housekeeping.

On December 13, 1985, during a tour of the Unit 1 containment building, the inspector noted that ASCO solenoid valve on the steam generator (SG) blowdown trip valve, for the "B" SG, (TV-BD-100H), appeared to be improperly installed. The solenoid operated valve (SOV) was identified as SOV-BD-100H which is an environmentally qualified, model K206-380-3u ASCO valve. The valve, because of apparent interference, was mounted with the solenoid at an approximate 45° angle from the vertical. A label attached to the solenoid had an arrow with words to the effect that the solenoid must be mounted upright.

The inspectors consulted the installation and maintenance instructions for Model 206-380 ASCO valves and determined that the valve must be mounted with the solenoid vertical and upright to properly function. The licensee was requested to review the valve installation and determine the technical justification, if any, for not mounting the valve solenoid upright and vertical.

The licensee's review determined that the valve was improperly installed by Design Change 83-32 during the 1984 refueling outage. The licensee conducted an inspection of all solenoid valves installed by that design change and identified several additional valves that were also improperly installed. A field change was issued to correct the condition prior to Unit 1 startup from refueling.

The inspectors conducted a detailed review of Design Change 83-32 through field change 36 dated October 12, 1985, in an attempt to determine root cause of the installation problem. Step 4.1.05.8 of the design change procedure stated to install new SOV in accordance with ASCO instruction manual and in the same orientation as the old SOV was installed (QC hold). It appears the procedure requirements were contradictory and the opportunity of QC and the installing craftsman to correct the condition was missed. The failure to properly implement an acceptable procedure for accomplishing activities affecting quality is identified as violation 338/85-36-01.

11. Cold Weather Preparations (71714)

Using the licensee's Maintenance Department Administrative Procedure (M.D. ADM 20.0, dated 01-30-85) "Plant Winterization Program" as a guide, the inspector reviewed the plant's cold weather preparations. Pressure gage 1-PI-QS-103 for the quench spray pump recirculation line is still not freeze protected. The corresponding gage on Unit 2 was removed due to previous freezing of the gage and the associated line which resulted in the leakage of borated and potentially contaminated water onto the ground.

In addition to maintenance preparations, the Operations Department has established a Cold Weather Operation Procedure (1-MISC-18), which is required reading. This procedure points out special items to check, during operations, for the protection of equipment and personnel.

No violations or deviations were identified within the areas inspected.

12. Plant Startup From Refueling (71711)

In preparation for the unit 1 startup following refueling, the inspectors reviewed 1-PT-94.0, "Refueling Nuclear Design Check", (the controlling document for the performance of physics testing) and it's associated tests 1-PT-94.4-6.

Prior to the unit 1 startup, the inspectors independently verified the valve positions of critical valves in the Safety Injection Accumulator (1-OP-7.3A) and the inside Recirculation Spray (1-OP-7.5) systems.

On December 24, 1985, unit 1 was started up and the inspectors observed/reviewed the following physics tests:

1-PT-94.3, "Boron Endpoint Determination"
1-PT-94.4, "Isothermal Temperature Coefficient Measurement"
1-PT-94.9, "Measure Reactivity Worth of the Control and Shutdown Banks by the Rod Swap Technique"

No violations or deviations were identified within the areas inspected.

13. Diesel Generator Overhaul (92715)

During the refueling outage, the licensee completed the overhaul of the 1H and 1J emergency diesel generator engines. This overhaul was conducted in accordance with approved procedures developed from recommended vendor instructions. The overhaul consisted of dimensional inspection per the vendors specifications and replacement, if necessary, of major components. Additionally, the cylinder liners and piston assemblies were replaced with new or refurbished parts, to eliminate the problems identified during past failure analysis. Following overhaul, the inspectors witnessed portions of the engine run-in as well as the TS required surveillance testing.

Additionally, during the engine overhaul the licensee received a 10CFR, Part 21 report from Colt Industries. The report identified a condition, where the potential exist for connecting rod cap bolt failure due to the fastner nut face not being perpendicular to the thread pitch. The report stated that the engines should be inspected and defective parts replaced. Subsequent correspondence between VEPCO and Colt indicated that the inspection should completed within 90 days from the date of the letter which was December 18, 1985. The unit 1J engine was inspected on December 13, 1985, with 41 of the 48 nuts inspected, being replaced after exhibiting some degree of non perpendicularity. The remaining three engines will be inspected within the 90 days period, after replacement parts are received from Colt.