



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

Report Nos. 50-238/81-11 and 50-339/81-07

Licensee: Virginia Electric and Power Company  
P. O. Box 26666  
Richmond, VA 23261

Facility Name: North Anna 1 and 2

Docket Nos. 50-338 and 50-339

License Nos. NPF-4 and NPF-7

Inspection at North Anna site near Mineral, Virginia

Inspector: HC Dance / for  
E. H. Webster

4/29/81  
Date Signed

Approved by: HC Dance  
H. C. Dance, Section Chief, Division of Resident  
and Reactor Inspection

4/29/81  
Date Signed

SUMMARY

Inspection on March 6 - April 5, 1981

Areas Inspected

This routine inspection involved 107 resident inspector-hours on site in the areas of extended shutdown review, maintenance, surveillance, operational safety, plant transients, IE Bulletin, startup operations, and TMI Task Plant Items.

Results

Of the eight areas inspected, no violations or deviations were identified.

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*W. R. Cartwright, Station Manager
- \*E. W. Harrell, Assistant Station Manager
- \*D. L. Benson, Superintendent - Technical Services
- J. R. Harper, Superintendent - Maintenance
- S. L. Harvey, Superintendent - Operations
- \*J. M. Mosticone, Operations Coordinator

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

#### Other Organizations

Westinghouse Nuclear Services Division

G. Williams, Resident Westinghouse Engineer

\*Attended one or more exit interviews

### 2. Exit Interview

The inspection scope and findings were summarized on March 13, and 27, 1981 with those persons indicated in Paragraph 1 above.

### 3. Licensee Action on Previous Inspection Findings

- a. (Closed) Violation (338/80-38-08): Failure to conduct a safety evaluation on Special Test 1-ST-37. The Safety Evaluation approved by the safety committee September 24, 1980 was located and was on file. This violation is withdrawn and the item closed.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

### 5. Unit 1

During this inspection period, North Anna Unit 1 completed the second refueling outage. The outage commenced December 27, 1980 and initial criticality for the restart was achieved at 1:36 a.m. April 6. During this one hundred day outage, the planned maintenance testing uncovered several problems, some of which have been discussed in previous IE Reports. During this inspection period, the inspector spent a majority of the time verifying completion of work packages and design changes and following the licensees process of assuring systems were operable for recovery from the outage.

a. Design Change Review Program

The following documents describe the design change program and final review processes for design changes:

- 10 CFR 50.59
- Topical Report VEP-3-A, Section 17.2.3
- VEPCO NPSQAM, Sections 3 and 18
- Project Procedure Manual, Section PPM-4
- Administrative Procedure ADM 43.62

The inspector reviewed the following design change packages at various stages in the review process:

- DC 79-569      Reactor Coolant System Vents
- DC 80-506      Relocate LIT 155 A&B
- DC 80-564      A&B Relocate LIT 255 A&B
- DC 79-575      Modification to AFW Pump Tap Valve
- DC 80-520      MSTV Control Modification
- DC 79-576      CRDM Fan Control Modification
- DC 79-579      SW Radiation Monitor Pump Control Modification
- DC 80-511      Air Ejector Discharge Control Modification
- DC 80-545      Generator Breaker/4KV Cross Connect Installation
- DC 80-502      ECST Level Indicator Installation (Unit 1)
- DC 80-542      ECST Level Indicator Installation (Unit 2)
- DC 80-528A      Lamp Test Modification

Package DC 80-545 was identified as requiring NRC level approval, but did not have such approval. A more thorough discussion of the technical adequacy of this package is presented in paragraph 5b. below. Resolution of this administration is identified for followup in future inspections (338/81-11-01).

Package DC 80-502 required revision to Alarm Response Procedure AR-4. The revised AR-4 procedure had not been forwarded to the control room for use during plant recovery, while the procedure was being typed, as required by station administrative procedure ADM-13.1 This was corrected by the operations staff within the day. Licensee management agreed to look into administrative controls surrounding distribution of revised procedures to give better assurance that out of date procedures are not used. (338/80-11-02)

Final Design Implementing Procedure signoffs by QC and technicians indicated completion dates of steps were different than the QC inspection of those steps. In several cases it appears that QC approved an item before it was completed, in other cases it appears steps were not held for QC as the QC date is after subsequent procedure steps were signed off. In discussing this item with QC staff all examples checked indicated inaccurate dates were filled in on the implementing procedure checkoffs, but adequate QC inspection of completed work occurred. The Safety Committee (SNSOC) apparently noted

this same deficiency during review of design changes in the Unit 2 outage in November, 1980 and mitigated this disparity by assuring test results were satisfactory. A SNSOC memo, dated November 26, 1980 documents this finding and has been inserted in several design change packages. The inspector shall followup on licensee actions to correct this problem in future inspections (338/81-11-02 and 339/81-07-01).

No violations or deviations were identified.

b. Design Change DC 80-545

This design change modifies the emergency electrical bus connections and switching and installs output breakers on the main generator output. The modifications to the emergency bus work and interties change the automatic sequencing to allow the emergency bus to be supplied from an in-plant bus. This sequencing shifts the power supply from the normal preferred Reserve Station Service Transformer (RSST) feed, should it experience a degraded or loss of voltage, first to the specified in plant bus, then, if the low voltage condition continues, to the emergency diesel generator. The automatic switching is timed to meet the Technical Specification requirements of T.S. 3.3.2.1 and to assure emergency power, supplies are not cross connected.

The design change will result in the 'J' emergency 4KV buses being aligned for supply from the opposite units in-plant bus (Unit 1 'J' bus from unit 2 bus 2B, Unit 2 'J' bus from unit 1 bus 1A). At the close of this refueling outage, neither of these connections have been completed, but prior to hookup, this inspector has requested the licensee demonstrate compliance of this design with 10 CFR 50 Appendix A criterion 5 - "sharing of structures, systems, and components" (338/81-11-04)

It was also noted that the approved design change request identifies this design change as requiring NRC level approval. After discussing the scope of this change with the licensing project manager and the NRC technical staff, it was determined that NRC level approval, as described by 10 CFR 50.59 was not required. Licensee staff agree that they do not feel NRC level approval is needed, but have not administratively changed the design change package to so reflect. Paragraph 5a(1) above identifies this item for followup.

c. Design Change DC 79-569

This design change adds vents off the top of the reactor vessel and the pressurizer. The package was not completed during this outage, but the penetrations, piping, valves, and associated supports were installed, electrical leads were prepared, but not connected to control the valves. The licensee promulgated Standing Order No. 74 to identify the system and control its operation until the design change is completed. Completion of this change shall be followed up in future inspections

for both units as required by TMI Task Action Plan Item II.B.1. (338/81-11-05 and 339/81-07-02).

d. Design Change DC 80-S64 A&B

This design change moved the level indication transmitters, LIT-151 A and B for the recirculation sump level channels. These transmitters were reported in LER 80-71 as not being qualified for the harsh environment where they were located during postulated accident scenarios. The design change package for unit 1 was completed satisfactorily and this issue is closed (338/80-26-02). The same issues for Unit 2 also covered by DC 80-S64 A&B remains open pending completion of field change 4 (339/80-31-06).

e. Low Pressure Turbine Disc Inspection and Replacement

As discussed in IE Reports 338/81-05, Paragraph 5c, and 338/81-02, paragraph 5e, the licensee replaced the number 2 low pressure turbine rotor with one from another facility when crack indications were found in several discs. During this reporting period the licensee completed the installation of the new rotor and reassembled the main turbine. The inspector witnessed portions of the installation including fit-up of the rotor hubs and clearance measurements for the blades to the housing. On April 9, the turbine was rolled with steam and slowly brought up to operating speed.

Vibration measurements showed less than 3 mils vibration which indicated no further balancing was necessary. Item (338/81-02-05) is closed and the licensee was informed that the NRC staff is satisfied with corrective actions for the disc cracking that had been identified.

f. Plant Transients

The following plant transients occurred during this reporting period. In each case, the inspector verified the sequence of events, the designated cause and corrective action completed.

Safety Injection (SI) actuation on March 29 at 3:24 p.m. during conduct of a monthly safety system logic test. The unit was in mode 5, cooled down and depressurized, with one charging pump operable. There was no impact on plant conditions and the actuation was promptly reset. The cause was operator error in conducting the test.

Safety injection actuation on March 31 at 9:49 a.m. during conduct of a routine safety system calibration surveillance. An operator inadvertently deenergized a DC vital bus resulting in one of two trains of SI actuation when instrumentation powered from that bus reverted to their 'failed' condition. Upon recovery of the vital bus, the other train of SI actuated. The plant was in mode 5 as above and was not significantly affected by the transient.

Ascension from mode 5 on April 2 through criticality on April 6. This was a controlled transient to recover from the outage.

6. Unit 2

During this inspection period, North Anna Unit 2 was operated at 100% power. The unit tripped on March 28 at 4:00 a.m. due to loss of main generator field resulting in a turbine trip - reactor trip, and on April 2, at 5:58 p.m. on loss of condenser vacuum resulting in a turbine trip - reactor trip. In both cases safety systems functioned properly and the cause promptly corrected.

a. Westinghouse Gate Valves 3GM88

On or about March 15, NRC was informed of test results run by an independent laboratory which identified a design deficiency in valves designated 3GM88 supplied by Westinghouse Corp. The testing indicated that under high differential pressure conditions, the valves would jam before fully shutting. Unit 2 has two of these type valves installed. One designated MOV-2536, a block valve for a pressurizer power operated relief valve, and MOV 2373, a charging pump recirculation isolation valve.

The licensee evaluated the safety implications of these deficiencies and demonstrated that the valves would shut sufficiently to serve their function and that subsequent pressure transients would result in the ability to close the valve prior to reaching any potential for release.

The licensee notified the Unit 2 operators via Standing Order No. 73 of the possibility that these two valves (MOV 2536 and MOV 2373) may not close under high differential pressure conditions and committed to modify both valve operators, as recommended by Westinghouse during their May 1981 outage. (339/81-07-03).

b. Battery Surveillance

As part of the followup on the battery surveillance issues discussed in IE Report 339/81-03 paragraph 6a., the inspector investigated the 0.05 Volt ICV specification of TS 4.8.1.1.3.b. The inspector discussed the specification with NRC staff and reviewed IEEE 450-1975 "Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries".

The inspector informed the licensee, as a result of this review, that the ICV 'normalization' procedure used to evaluate ICV trends was not acceptable. Since this notification was so close to the earlier commitment date specified for procedure revision, the inspector identified items (338/81-05-03 and 339/81-03-02) to be required prior to the next 3 month surveillance (due in May and items (338/81-05-04 and 339/81-03-03) to be analyzed for completion as soon as possible, but not later than the May deadline for the former items.

c. Computer Operation

During this inspection period the Prodac P-250 computer malfunctioned and was inoperable for one week. The inspector verified licensee conduct of all surveillances normally conducted by the computer and had no further questions in this area.

7. Both Units/Site Issues

a. IE Bulletins

IEB 79-03A, Weld Defects in SA-302 Stainless Steel Piping Based on the licensee's negative reply to use of the specified piping in either unit and a review of the suppliers records to verify that VEPCO did not purchase subject material, this Bulletin is closed.

IEB 80-15, Emergency Notification System Power Supply - The licensee shifted the power supply to the Emergency Notification System from an unprotected source to a vital power supply on March 19, 1981 (Design Change DC 80-S53B). Subsequent testing of all ENS telephones was satisfactory. This Bulletin is closed.

b. Three Mile Island Task Action Plant

(1). PID Controller, Item IIK.3.9

Task item IIK.3.9 requires licensees to remove the rate input to the pressurizer power operated relief valves (PORVA). This rate circuitry is a part of the Westinghouse Design PID (proportional and integral and derivative) controller for one of the two installed PORVs. The inspector confirmed through review of the Westinghouse "Precautions, Limitations, and Setpoints" document for North Anna that the rate time constant set for both units is 0 seconds. Further, the licensee assures the rate circuit is removed from service by removing the JK jumper on circuit card C8-128 in the pressurizer pressure control calibration procedure ICP-P-444, step 4.4.2.6. The licensee has reported this action in letters serial numbers 931 and 985 of November 21, and December 15, 1981 respectively. Licensee management was informed that task item II.K.3.9 is considered closed.

(2). ECST Level Indicators, Item II.E.1.1

Emergency Condensate Storage Tank (ECST) level indicators (338/80-38-05 and 339/80-36-05). Design changes DC 80-S02 and DC 80-S42 added redundant ECST level indicator channels, alarms, and indicators, resulting in safety grade ECST level indication and alarm functions. Completion of these items also closes TMI Task Item II.E.1.1 for both units.

(3). Power Operated Relief Valve Actuation System, Item II.G.1

The inspector reiterated the concerns of items (338/80-35-06 and 339/80-33-06) concerning the PORV backup nitrogen system. During this reporting period the licensee experienced some difficulty in maintaining this nitrogen system operable on Unit 1 for over-pressure protection. The present system leaks enough to drain the nitrogen tanks to below the low pressure setpoint making the operability of the system questionable as a backup to the normal air system. This potential lack of backup motive force for PORV operation is not in keeping with the intent of TMI Task item II.G.1, which was required to be implemented in January, 1980. The licensee has committed to redesign the nitrogen system to make it more reliable in the near future.