



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

Report Nos. 50-338/82-29 and 50-339/82-29

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

Facility Name: North Anna Units 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: K. O. Landis for 10/4/82
M. B. Shymlock Date Signed

Accompanying Inspector: M. Davis, Resident Inspector Surry August 16-20

Approved by: C. Julian 10/8/82
C. Julian, Section Chief, Division of Project and Resident Programs Date Signed

SUMMARY

Inspection on August 6 - September 5, 1982

Areas Inspected

This routine inspection by the resident inspectors involved 208 inspector hours on site in the areas of outage activities, surveillance and maintenance activities, plant operations, and followup on significant events.

Results

Of the five areas inspected, one violation was identified. (Failure to adhere to Technical Specification for required surveillance activity, see paragraph 5).

DETAILS

1. Persons Contacted

Licensee Employees

W. R. Cartwright, Station Manager
*E. W. Harrell, Assistant Station Manager
*J. A. Hanson, Superintendent - Technical Services
J. R. Harper, Superintendent - Maintenance
*D. L. Benson, Superintendent - Operations
G. Paxton, Superintendent - Administrative Services
J. M. Mosticone, Operations Coordinator
J. P. Smith, Engineering Supervisor
F. Terminella, Engineering Supervisor
P. T. Knutsen, Engineering Supervisor
R. A. Bergquist, Instrument Supervisor
J. R. Stratton, Mechanical Maintenance Supervisor
D. E. Thomas, Electrical Supervisor
A. H. Stafford, Health Physics Supervisor
*A. L. Hogg, Jr., Site QA Manager
F. P. Miller, QC Supervisor
M. E. Fellows, Staff Assistant
*K. A. Huffman, Senior Clerk

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

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 3, 1982, with those persons indicated in paragraph 1 above. The violation presented in paragraph 5 was discussed with station management at that time and they acknowledged their understanding of the finding.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Missed Surveillance on Safeguards Area Ventilation Systems

On August 27, 1982 while conducting an 18 month surveillance on the Safeguards Area Ventilation Systems it was determined that a previous similar surveillance item was missed. Technical Specification (TS)

4.7.8.1.c, requires that after every 720 hours of charcoal absorber operation a laboratory analysis of a representative carbon sample be obtained. A sample of the filter carbon in the auxiliary building charcoal filters 1-HV-FL-3A and 1-HV-FL-3B was not removed for analysis after 720 hours of operation.

The charcoal was last analyzed on January 20, 1981. As of August 25, 1982 the filter had accumulated 2922 hours of operation for 1-HV-FL-3A and 2848 hours for 1-HV-FL-3B. This is a violation of TS. 4.7.8.1.c and is designated 338/82-29-01 and 339/82-29-01.

Since both filters were outside of their surveillance, TS-3.0.3 requires that both units be in cold shutdown within 37 hours. Unit 1 was currently defueled and Unit 2 was in Mode 3. Unit 2 commenced cooling down an hour and a half after it was determined that the filters were inoperable. Unit 2 reached cold shutdown at 0845 on August 28, 1982.

Carbon samples from both charcoal absorber filters were immediately taken and sent to a testing laboratory for analysis. The results were obtained at 1950 hours on August 28, 1982. The charcoal absorber efficiencies were 99.43% for 1-HV-FL-3A and 99.46% for 1-HV-FL-3B. The acceptance criteria for the efficiencies is greater than 99%. Therefore, although the surveillance was missed, the filters were continuously capable of performing their design function.

Following this missed surveillance item numerous surveillance items in the licensee TS surveillance program were reviewed.

This review included:

- a. determining if the current surveillance performance test (PT) had been conducted as required,
- b. determine if the group responsible for accomplishing the surveillance activity was informed in a timely manner,
- c. review of Engineering's Computer Tracking system for Periodic Tests, and
- d. review of the QA/QC audit program of surveillance activities.

Several T.S. surveillance items were chosen. The specific PT which was identified as satisfying a surveillance requirement was reviewed as noted below:

<u>Unit</u>	<u>Technical Specification</u>	<u>Title</u>
1	3.1.2.8 Surveillance 4.1.2.8	Borated water Sources Operating a.1. PT-16, PT-58.3 a.2. Log 4 a.3. Log 6D b. Log 4
1&2	3.3.3.1 Surveillance 4.3.3.1	Radiation Monitoring Instrumentation PT-37, PT-38.8.1.6, PT-38.2.1.3
2	3.3.3.6 Surveillance 4.3.3.6	Accident Monitoring Instrumentation PT-44.2.1, PT-44.2.7
1&2	3.5.2 Surveillance 4.5.5.2a 4.5.2.c.2	ECCS Subsystems - Tave greater than 350°F. log 4 PT.57.3
1&2	3.6.4.3 Surveillance 4.6.4.3.a.1	Waste Gas Charcoal Filter System PT-69.1
1&2	3.8.2.1 Surveillance 4.8.2.1 4.8.2.3.2.b.3 4.8.1.1.3.b.1	On site Power Distribution Subsystem AC distribution operating PT-80 PT-86.B (Unit 2) PT-86.B (Unit 1)
1&2	3.8.2.5 Surveillance 4.8.2.5 1.A, 1B	Containment Penetration Conductor Overcurrent Protection Devices The Electrical Dept. and Automatic Control Dept. conduct these surveillance activities under their Preventive Maintenance (PM) program

The review noted above did not identify that any of these surveillance items had not been conducted when required. However, several items of concern were noted and are identified as inspector followup items.

The responsibility for development and implementation of an overall program to assure that all requirements of T.S. surveillance are established is not apparent. Designation of responsibility for the overall TS surveillance program is identified as inspector followup item 338, 339/82-29-02. An internal audit system to assure that the current program is fully implemented is not complete. Review of QA/QC audits indicated that during several past audits of Periodic Tests (1979, 1980, 1981) only PT's and operating logs were reviewed. Expansion of QA/QC Periodic Test Audits to include all mechanisms (i.e. maintenance request form, preventive maintenance program, NDT and ISI Program, etc) used to accomplish T.S. surveillance activities is identified as inspector followup items 338, 339/82-29-03.

Engineering has implemented a computer tracking system (Periodic Test List) that tracks all PT surveillance activities. However, since every T.S. surveillance activity is not accomplished by means of a PT, the need for a central tracking system for all T.S. surveillance activities (independent of how accomplished) should be evaluated. This evaluation is identified as inspector followup item 338, 339/82-29-04.

No other violations were identified in this area.

6. Plant Status

Unit 1

- a. The scheduled refueling and maintenance outage continued during this inspection period.
- b. The following items related to specific Unit 1 activities:

- (1) (Open) 338/82-18-01 Guide Tube Support Pin Replacement.

All 61 guide tubes have been removed and transferred to the fuel building. The following information relates to the status of those guide tubes removed and where support pins parts were missing.

Core Location	Break Away Force (Lbs)	Comments*
F-6	1,600	A
F-10	1,800	A
E-11	2,200	A

L-13	2,500	A
H-10	1,800	A
K-2	1,900	A
G-3	1,600	A
C-7	1,500	A
N-7	2,400	A
G-7	1,600	A
D-8	1,800	A
H-8	2,100	A
G-11	2,000	A
H-12	1,400	A
L-11	2,100	A
K-8	1,200	A
G-9	1,900	A
H-14	1,600	A
H-2	1,000	B
K-10	700	B
J-13	1,000	B
H-6	500	C
M-10	1,700	C

*A - This indicates that one support pin failed and the lower shoulder and leaf portion stayed in the upper core plate.

B - This indicates that both support pins failed and the lower shoulder and leaf portion stayed in the upper core plate.

C - This indicates that one support pin nut was missing and the rest of the support pin (not failed) stayed in the upper core plate.

The Breakaway Force is the force in pounds needed to break the guide tube free from the upper core plate. The lower shoulder pieces were removed from the upper core plate, and the two support pin nuts were removed from the A and C steam generators. All pieces have been accounted for and retrieved.

(2) (Open) 338/82-21-02 Steam Generator Tube Damage Repair

B&W has been contracted by the licensee to accomplish this repair work. They are due on site during the week of September 20.

(3) (Open) 338/82-21-03 Reactor Coolant System Flow Splitter

Work is continuing on this design package. The A and C loop flow splitter plates have been removed. Work is starting on the B loop splitter.

(4) (Open) 338/82-18-03 Unit 1 A Loop Reactor Coolant Pump

The loop B and C reactor coolant pumps were removed. Inspection of the cap screws holding the diffuser adapter to the turning vane diffuser shows they had not failed as those on A loop had done. Westinghouse and the licensee are continuing their review of this problem.

(5) (Open) 338/82-18-04 Loop Stop Valve Guide Missing

The valve guide has been identified in two pieces in the bottom of the reactor vessel. The lower internals package will be removed during this outage and the guide pieces removed.

(6) (Open) 338/82-21-04 Thermal Sleeves in Reactor Coolant Piping

The work to locate the thermal sleeve from the 6" safety injection A loop nozzle is continuing. Other repair work on the nozzles is also continuing.

Unit 2

The unit was returned to service August 22 following its shutdown July 7, 1982 to investigate a noise detected in a steam generator by the installed acoustic monitors and examination of thermal sleeves. The reactor was critical at 0422 hours on August 22. After the turbine was latched and while raising valve position limit a first stage pressure spike occurred causing a reactor trip. The reactor was again taken critical and power was stabilized at 30% power for secondary chemistry hold by 0950 hours on August 22. However, at 1931 hours the 'B' main transformer failed (exploded). The 'B' main transformer was replaced and the unit was returned to service August 29, with the reactor going critical at 1237 hours. Unit 2 reached 100% power at 0440 hours on September 1 and continued at that power level during the inspection period.

7. Followup of Previously Identified Items

(Closed) 338/82-08-01, Incorrect description of wind direction on 1 log 6A. The log was revised and approved June 18, 1982.

(Closed) 339/82-21-01 Thermal Sleeve repair for Unit 2. The thermal sleeves which were identified as affected during ultrasonic testing and radiographic testing were removed (3" normal charging nozzle B loop, 6" safety injection nozzle loop C, 12" accumulator discharge nozzle loop B, and 12" accumulator discharge nozzle loop C).

The licensee submitted an Evaluation of RCS Piping Thermal Sleeves, serial #460 dated August 4, 1982, to NRR. Region II was informed verbally from Mr. Leon Engle, Licensing Project Manager for North Anna that the licensee submittal was acceptable to NRR.

8. Licensee Event Report (LER) Followup

The following LER's were reviewed and closed. The inspector verified that reporting requirements had been met, causes had been identified, corrective actions appeared appropriate, generic applicability had been considered, and the LER forms were complete.

338/82-35 - The 2B fuel oil storage system contained less than 45,000 gallons.

9. Exposure Control

The inspector reviewed numerous station deviation reports for 1982 concerning deviations from health physics procedures. HP procedure 3.1.2 (dose control) was also reviewed for compliance with exposure limit extension authorizations. The health physics staff at North Anna is short of qualified licensee personnel, therefore the licensee relies heavily on contract HP technicians to monitor radiation exposure control during the present extensive maintenance effort. When HP procedures are not followed, Station Deviation Reports are initiated and corrective actions are taken in a timely manner. The following are specific examples reviewed during this inspection effort:

For extension of an individual's quarterly exposure control administrative limit to 2,000 mrem paragraph 4.5 of HP Procedure 3.1.2 requires authorization by the Station Manager or Superintendent of Technical Services. The authorization form, attachment 1 to HP 3.1.2, has the authorization signature block designated "Station Manager/Assistant Station Manager Authorization".

The review of several completed authorization forms showed that the proper approval and authorization signatures are being obtained as required. The authorization form was revised on 4/23/82. Several exposure extension forms completed as recently as 6/28/82 used the superseded authorization form. Examples:

- (1) TLD #0141 completed 6/28/82
- (2) TLD #0161 completed 6/23/82
- (3) TLD #0174 completed 5/24/82

Future use of the correct form is identified as inspector followup item 338, 339/82-29-05.

Examples of Station Deviation Reports Reviewed are as follows:

82-62 (2-19-82) concerned two men in a high radiation area without a radiation monitoring device. Disciplinary action was taken that included formal counseling and a one day suspension of both individuals.

82-126 (3-23-82) concerned a group of carpenters building scaffolding in a high radiation area. The HP technician left the area and did not escort the carpenters from the area. The responsible HP technician was terminated.

82-207 (4-20-82) concerned a man allowed into the protected area by security with a radiation worker's visitor badge but without a TLD. HP had pulled the TLD to check radiation dose. The individual was provided with a TLD and security personnel were advised of proper procedures so no one would be allowed into the protected area without a TLD.

82-239 (5-5-82) concerned an HP technician losing control of a job in a high radiation area due to being asleep and inattentive to the job being performed. The responsible HP technician was terminated.

82-396 (6-22-82) concerned an HP technician leaving a job site in a high radiation area. The HP technician was terminated.

10. Unit 2 Concerns Prior to Power Resumption

Several items of concern were identified prior to power resumption during the Unit 2 outage. The specific concerns were:

- a. The effects of 18 loose neoprene washers in the reactor coolant system.
- b. The failure of a main loop isolation valve guide in Unit 1 and the possibility of a similar failure on Unit 2.
- c. The failure of cap screws in the reactor coolant pump diffuser adapter in Unit 1 and the possibility of a similar failure on Unit 2.

The licensee submitted a letter to Region II serial #492 dated August 17, 1982 which addressed these concerns. NRR and Region II concluded that their submittal was acceptable and power operations were allowed to resume.

The chloride and fluoride concentration analysis required during heatup at 100°F increments was conducted. The concentrations remained well below the Technical Specification limits. Item 339/82-18-01 is closed based on the licensee submittal and chemistry analysis conducted during heatup.

11. IE Bulletin 79-27

The licensee response for IEB 79-27 dated May 1980 was acceptable to NRR. As per Mr. Roger J. Mattson, Director, Division of System Integration NRR memorandum for Mr. Darrell G. Eisenhut, Director, Division of Licensing dated June 1, 1982 IEB 79-27 for Unit 1 at North Anna is acceptable and can be closed. IEB Bulletin 79-27 is closed and IFI 338/79-BU-27 is also closed.

12. Review of Plant Operations

a. 'B' Phase Main Transformer Failure

On August 22, 1982 at 1931 hours, Phase 'B' Main Transformer Differential Trip alarm was received. A turbine trip and a reactor trip immediately followed. The reactor had been at a stable 28.5% power level awaiting secondary chemistry cleanup. The fire protection deluge system annunciator for 'B' Phase Main Transformer was also sounded. The initial investigation indicated that the 'B' Phase Main Transformer had exploded internally and transformer oil had been sprayed on the 'C' Reserve Station Service tubular bus, insulators and vertical cabling on the turbine building. There was no fire.

The resident inspector arrived onsite to follow the event later in the evening. The unit was in stable condition, Mode 3, with A and B reactor cooling pumps running and the primary system borated to the cold shutdown concentration. The 2J and 1J emergency diesel generators were loaded, and the 'C' Reserve Station Service Bus was removed from service. The licensee was preparing to wash down the tubular buses, cabling and insulators. After this work was accomplished the 'C' Reserve Station Service Bus was returned to service in the early morning of August 23, 1982. The main transformer was later replaced and the unit restarted.

b. Control Room Operator Movement

Administrative Procedure (ADM) 29.10 Conduct of Operations, Limitations on Control Room Operators Movement, identifies specific areas in which a control room operator should remain during normal plant operations. In the event of an emergency his/her entry into other areas is also identified. However, the Senior Reactor Operator movement is not so defined. The licensee had committed to revising ADM 29.10 to identify this concern. Review of the revised 29.10 will be identified as inspector followup item 338, 339/82-29-06.

c. Backup Overcurrent Protection System

The review of the design change packages that are being worked to implement backup overcurrent protection system for containment electrical penetrations identified several concerns.

1. System to identify to operations personnel which circuit breakers are operable.
2. Update of OP Load List to reflect current status of design change
3. Physical location of some circuit breakers that could be repositioned if accidentally hit.
4. Training of operations personnel on design change.

This is identified as inspector followup item 338, 339/82-29-07.

d. Miscellaneous Activities

Containment entries were made during the current Unit 1 refueling outage. These entries were made to observe work in progress, overall housekeeping, adherence to health physics requirements and witnessing of fuel handling activities.

By observation during the inspection period, the inspector verified the control manning requirements of 10 CFR 50.54 (k) and that Technical Specifications were being met. In addition, the inspector observed shift turnovers to verify that continuity of system status was maintained. The inspector periodically questioned shift personnel relative to their awareness of plant conditions.

Through log review and direct observation during tours, the inspector verified compliance with selected Technical Specification Limiting Conditions for Operation. During the course of these inspections, 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 procedures (RWP's) were reviewed and the specific work activity was monitored to assure the activities were being conducted per the RWP's. Radiation protection instruments were verified operable and calibration/check frequencies were reviewed for completeness. The inspectors 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 operation 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, status of operating and standby safety systems and equipment, confirming valve positions, instrument readings and recordings, annunciator alarms, housekeeping and vital area controls.

No violations were identified in these areas.