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

Report Nos.: 50-338/79-10 and 50-339/79-15

Licensee: Virginia Electric and Power Company
Post Office Box 26666
Richmond, Virginia 23261

Facility Name: North Anna Units 1 and 2

Docket Nos.: 50-338 and 50-339

License Nos.: NPF-4 and CPPR-78

Inspection at North Anna Site near Mineral, Virginia

Inspectors: A K Hardin for — 4/3/79
E. H. Webster — Date Signed

A K Hardin for — 4/3/79
J. A. Dyer — Date Signed

Approved by: F. S. Cantrell — 4/16/79
F. S. Cantrell, Acting Section Chief, RONSB — Date Signed

SUMMARY

Inspection on March 5-9, 1979

Areas Inspected

This routine, unannounced inspection involved 20 inspector-hours on-site in the areas of operations review, IE Bulletin and Circular review and review of containment purge controls for Unit 1; 42 inspector-hours on-site in the areas of preoperational test procedure review, preoperational test observation, review of IE Bulletins and Circulars, startup procedure verification and comparison of as built systems to FSAR for Unit 2.

Results

In the seven areas inspected, no apparent items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

License Employees

*W. R. Cartwright, Station Manager
*J. D. Kellams, Superintendent - Operations
*S. L. Harvey, Operating Supervisor
*D. L. Smith, Resident QC Engineer
*J. W. Martin, Supervisor, VEPCO QA
*E. R. Smith, Superintendent - Technical Services
*D. G. McLain, Engineering Supervisor
*W. R. Madison, NRC Coordinator
F. C. White, Acting Fire Marshall
G. A. Kann, Engineer
J. P. Smith, Associate Engineer
J. B. Ferrer, Assistant Engineer
P. A. Furman, Assistant Engineer
T. J. Schreckenghost, Engineering Technician

NRC Resident Inspector

*M. S. Kidd

*Attended Exit Interview

2. Exit Interview

The inspection scope and findings were summarized on March 9, 1979 with those persons indicated in Paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Review of Plant Operations - Unit 1

The inspector reviewed plant operations logs for the period February 15 through March 4, 1979 conformance with requirements established in Technical Specifications, and Licensee Administrative Procedures. The

inspector conducted a plant tour on March 7, 1979 to review administrative controls concerning equipment maintenance health physics, housekeeping, fire protection and staffing.

a. Operations Logs Reviewed:

(1) Shift Supervisor Log (1-log-1)
(2) Control Room Operating Log (1-log-2 and 1-log-4*)
(3) Jumper Log
(4) Shift Order Book
(5) Auxiliary Logs (1-log-6C*and 1-log-6D*)
(6) Deviation Report Index and Deviation Reports from February 15, 1979 to present.
(7) Calorimetric Calibration (1-PT-24*)

*Indicates log reviewed for March 6, 1979 only.

The inspector identified six minor log keeping errors which licensee personnel corrected before inspector departure. Log entries for nine events requiring review and potentially reportable to NRC as nonroutine events were tracked through the licensee's deviation report system and were found to have been properly handled.

b. Plant Tour

The inspector toured the Control Room and Auxiliary Building with attention given in the following areas:

(1) A sampling of monitoring instrumentation recording as required

(2) Radiation controls properly established

(3) Plant housekeeping - The inspector noted unmarked wood pieces in a secondary plant relay panel. In discussing control of flammable materials with licensee management, the inspector was shown two QC inspection reports numbers 1R-N-79-336 dated February 22, 1979 and 1R-N-79-305 dated February 16, 1979 which documented approximately twelve uses of wood in the operating plant, several of which may not have used fire retardant treated wood. Management committed to analyze and revise, as necessary, the flammable control program for wood to preclude recurrence of this problem. The inspector will review this area in future inspections (338/79-10-01).

(4) Fluid Leaks - The inspector noted a rather large steam leak from a feedwater flow sensor fitting designated 1-FW-57. Licensee management was informed and had barriers erected to assure safe personnel access. Plans to replace the fitting were indicated for the upcoming maintenance outage.

(5) Existence of piping vibrations - none noted.

(6) Selected valve positions - as required.

(7) Selected caution tag information as required.

(8) Selected instrument calibrations at proper intervals - as required.

(9) Control room staffing - as required.

(10) Fire protection equipment operable - as required.

The inspector observed a shift turnover in the control room and had no further questions.

No items of noncompliance or deviations were identified.

6. Review of Containment Purge Controls - Unit 1

The inspector verified licensee comments made in letter serial number 729/121178 dated January 17, 1979 concerning containment purge controls to the Office of Nuclear Reactor Regulation (ONRR), NRC. The letter was in response to an ONRR questionaire concerning the issues of 1) indiscriminate purging during power operation, 2) design controls of containment purge valves to insure they close in the event of an accident and 3) design and administrative controls to assure safety circuits are not bypassed to conduct purging operations. Since Technical Specification 3.6 - requires the licensee to maintain sub-atmospheric pressure in [illegible]ontainment during Mode 1, 2, 3, and 4 operations, administrative controls in operating procedures allow containment purging only in Modes 5 and 6. The inspector then verified design controls to assure purge valve closure in the event of an accident and had no further questions in this area.

7. IE Bulletin 78-14 - Units 1 and 2

IEB 78-14 dated December 19, 1978 was addressed to all licensees for information, but required written response only from Boiling Water Reactor facilities. The inspector noted that IEB 78-14 had not been reviewed, distributed or evaluated for applicability, and, therefore shall review this area again in future inspections. Due to lack of timely response and ineffective tracking system afforded this bulletin, the inspector shall review the licensee's tracking system in future inspections. (338/79-10-02). This area as discussed further in paragraph 8.

8. IE Circulars and Notices - Units 1 and 2

a. IE Circulars

The inspector reviewed the following IE Circulars to insure that the licensee had received them, reviewed them for applicability and taken or planned corrective action, as necessary:

(1) IEC 78-13 dated July 10, 1978 concerned operability of service water pumps. This matter was indicated as closed on the licensees tracking system, having been reviewed by the Station Nuclear Safety and Operating Committee (SNSOC) on July 17, 1978. Licensee management, at the inspector's request, produced a written analysis which indicated that the conditions discussed in the circular are not applicable to this site. The inspector had no further questions in this area.

(2) IEC 78-19, dated December 29, 1978 concerned manual bypass of safety actuation signals. The issue was reviewed as described in paragraph 6 above for Unit 1 and Unit 2 as well. The inspector had no further questions in this area.

(3) IEC 79-02, dated January 16, 1979, was received, but not reviewed or distributed, and hence, remains open.

b. IE Notices

This relatively new communication medium is used by NRC to provide early information of possibly significant matters. The inspector reviewed the following Notices to insure licensee receipt, review, and action taken or planned, as necessary.

(1) IEN 79-01 dated February 2, 1979
(2) IEN 79-03 dated February 9, 1979
(3) IEN 79-04 dated February 16, 1979

All three notices had been received, but not routed or reviewed. Licensee management committed to incorporate IEN in the licensee committment tracking system and treat them as IE Circulars have in the past. The inspector will review this area in future inspections as noted in paragraph 7. above.

9. Review of Preoperational Test Procedures

Preoperational tests were reviewed for conformance to FSAR Sections 3A.9, 3A.79, 6.2.2, 6.3.4.2, 7.2, 7.3 and 8.31; FSAR Supplement Sections 6, 7 and 8; FSAR Table 14.1-1; and proposed Technical Specifications 3/4.3.1 and 3/4.3.2.

a. No discrepancies were noted during review of the following procedures:

(1) 2-PO-61: Feedwater Isolation. Approved June 21, 1978

(2) 2-PO-62: Engineered Safety Features and Feedwater Isolation Logic Test. Approved Juny 5, 1978

(3) 2-PO-63: Engineered Safety Features Functional Test - Containment Depressurization Actuation. Approved August 9, 1978

(4) 2-PO-64: Reactor Protection System Logic Test. Approved May 12, 1978

(5) 2-PO-65.1: Reactor Protection and Engineered Safety Features Response Time Testing - Sensors. Approved May 10, 1978

(6) 2-PO-65.2: Reactor Protection and Engineered Safety Features Response Time Testing-Circurity. Approved June 22, 1978

(7) 2-PO-65.3: Engineered Safety Features Equipment and Containment Isolation Valve Response Times. Approved July 17, 1978

(8) 2-PO-65.4: Reactor Protection and Engineered Safety Features Response Time Testing - Slave Relays. Approved May 26, 1978

(9) 2-PO-65.5: Reactor Protection Response Time Testing - UV Coil, Breaker and Gripper Coil. Approved May 22, 1978

(10) 2-PO-65.6: Reactor Protection and Engineered Safety Features - Total Response Times. Approved June 21, 1978

(11) 2-PO-73: Reactor Protection System Loss of Power Fail Safe Test. Approved July 17, 1978

(12) 2-PO-78: Rod Control System Inhibit Functions Test. Approved December 18, 1978

b. Discrepancies were noted during review of the following procedures which were resolved, or will require resolution prior to implementation of the procedures.

(1) 2-PO-30.4: Fuel Transfer System Manipulator Crane. Approved April 21, 1978. The procedure as presently written does not verify the manual operating features of the manipulator crane. (339/79-15-01)

(2) PO-36.3: Safety Injection System Functional Test Pump Performance Verification. Approved December 26, 1978. The inspector noted that testing did not call for a drawdown verification on the refueling water chemical addition tank. A procedure deviation was processed to include a drawdown of the spray additive tank. Portions of PO-36.3 were witnessed in conjunction with the resident inspector.

(3) 2-PO-38.3: Casing Cooling System. Approved February 21, 1978 The valve lineup does not establish a flow path prior to commencing the test. (339/79-15-02)

(4) 2-PO-70: Emergency Diesel Load Test During Simulataneous Safety Injection and Loss of Normal Emergency Power. Approved February 21, 1979. The procedure does not call for attachments 6.3 H and 6.3 J (verification that non-essential trips are bypassed) to be performed. (339/79-15-03)

No items of noncomplaince or deviations were identified.

10. Preoperational Test Procedure Verification

The following procedures were reviewed to verify that management approval was in accordance with the "Nuclear Power Station Quality Assurance Manual" Section 5 and that the test objectives were consistent with the test title:

Test Description	Approval Date
(a) 2-PO-1 Emergency Power System	11-27-78
(b) 2-PO-2.2 Fire Protection System - Hose Racks	03-30-78
(c) 2-PO-3.2 Fire Protection System - Low Pressure Carbon Dioxide	03-30-78
(d) 2-PO-3.3 Fire Protection System - Smoke Detectors	03-30-78

(e)	2-PO-3.4 Fire Protection - Reactor Coolant Pump Radiant Heat Detectors	03-30-78
(f)	2-PO-4 Fire Protection System - Halon 1301	04-21-78
(g)	2-PO-6 Service Water System	09-18-78
(h)	2-PO-7 Instrument Air Subsystem Bottles	05-12-78
(i)	2-PO-8 Communications Systems	07-17-78
(j)	2-PO-11.1 Component Cooling System Test at Ambient Plant Conditions	03-30-78
(k)	2-PO-11.4 Component Cooling System Test at Hot Plant Conditions	04-21-78
(l)	2-PO-12 Neutron Shield Tank Cooling System	03-30-78
(m)	2-PO-17 Containment Ventilation System	04-21-78
(n)	2-PO-18 Heating and Ventilation Systems Test	04-21-78
(o)	2-PO-19 Hydrogen Removal System Test	12-06-78
(p)	2-PO-21 Control Rod Drive Mechanism Cooling System	06-13-78
(q)	2-PO-29 Reactor Coolant and Associated Systems Piping Vibrational Test	12-12-78
(r)	2-PO-30.3 Fuel Transfer System Transfer Canal	03-30-78
(s)	2-PO-30.4 Fuel Transfer System Manipulator Crane	04-21-78
(t)	2-PO-31.2 Fuel Handling Tools and Fixtures in the Containment	06-20-78
(u)	2-PO-33 Chemical and Volume Control System Test During Hot Functionals	09-18-78
(v)	2-PO-34 Boric Acid Transfer System	06-27-78
(w)	2-PO-36.1 Safety Injection System Functional Test Breakers and Valves	06-22-78

(x)	2-PO-36.2 Safety Injection System Functional Test Passive System (Accumlators)	05-31-78
(y)	2-PO-36.3 Safety Injection System Functional Test Pump Performance Verification	12-26-78
(z)	2-PO-36.4 Safety Injection System Hot Functional Test	07-07-78
(aa)	2-PO-37.1 Quench Spray System Pump Performance Testing	03-30-78
(bb)	2-PO-37.2 Quench Spray Systems Spray Nozzles Testing	03-30-78
(cc)	2-PO-38.1 Recirculation Spray System Pump Performance Testing	06-21-78
(dd)	2-PO-38.2 Recirculation Spray System Spray Nozzles Testing	03-30-78
(ee)	2-PO-38.3 Casing Cooling System	02-21-79
(ff)	2-PO-39.1 Residual Heat Removal System Testing at Cold Conditions	05-12-78
(gg)	2-PO-39.2 Residual Heat Removal System Heat Removal Capability Test	05-13-78
(hh)	2-PO-39.3 Residual Heat Removal System - Valve Interlocks Test	04-19-78
(ii)	2-PO-40 Hydrostatic Test of Reactor Coolant System and Associated High Pressure Auxiliary Systems	09-11-78
(jj)	2-PO-44 Reactor Internals Inspection	03-30-78
(kk)	2-PO-45 RCS - Heatup for Hot Functionals	12-18-78
(ll)	2-PO-46 RCS - At Temperature for Hot Functionals	01-9-79
(mm)	2-PO-47 RCS - Cooldown from Hot Functionals	12-06-78
(nn)	2-PO-48.1 Reactor Coolant and Associated Systems Thermal Expansion and Restraint Test	12-12-78

(oo)	2-PO-48.3 Pipe Rupture Restraint Hot Gap Measurement	12-12-78
(pp)	2-PO-48.4 Bumper Gap Measurements Hot, Cold and Crossover Legs	12-12-78
(qq)	2-PO-51 Pressurizer Code Safety Valve Setpoint Verification	05-22-78
(rr)	2-PO-52.1 Pressurizer Relief Tank Test at Cold Conditions	05-12-78
(ss)	2-PO-52.2 Pressurizer Relief Tank Test During Hot Functionals	09-18-78
(tt)	2-PO-54 Turbine Runback Control System	12-06-78
(uu)	2-PO-55 Initial Turbine Roll During Hot Functionals	01-08-79
(vv)	2-PO-56 Main Steam Decay Heat Release and Atmospheric Steam Dump Valves	04-19-78
(ww)	2-PO-57 Main Steam Safety Valve Setpoint Verification	04-19-78
(xx)	2-PO-58.1 Main Steam Line Trip Valves Test at Cold Plant Conditions	04-19-78
(yy)	2-PO-58.2 Main Steam Line Trip Valves Test at Hot Plant Conditions	09-18-78
(zz)	2-PO-59 Condenser Steam Dump Control	01-08-79
(aaa)	2-PO-63 Engineered Safety Features Functional Test-Containment Depressurization Actuation	08-09-78
(bbb)	2-PO-64 Reactor Protection System Logic Test	05-12-78
(ccc)	2-PO-65.5 Reactor Protection Response Time Testing - UV Coil, Breaker and Gripper Coil	05-22-78
(ddd)	2-PO-66 D. C. Power System Test	05-15-78
(eee)	2-PO-67 125 VDC Power Supply Independence Test	05-31-78

(fff)	2-PO-68 120 V AC Vital Bus Test	09-18-78
(ggg)	2-PO-69 Station Blackout Test at Shutdown Conditions	12-18-78
(hhh)	2-PO-70 Emergency Diesel Load Test During Simultaneous Safety Injection and Loss of Normal Emergency Power	02-21-79
(iii)	2-PO-74 Containment Structural Acceptance Test	12-19-78
(jjj)	2-PO-78 Rod Control System Inhibit Functions Test	12-18-78

No items of noncompliance or deviations were identified.

11. Startup Procedure Verification

The following procedures were reviewed to verify that management approval was in accordance with the "Nuclear Power Station Quality Assurance Manual" Section 5 and that the test objectives were consistant with the test title:

	Test Description	Approval Date
(a)	SU-6 Initial Core Loading	12-04-78
(b)	SU-7 Incore Moveable Detectors	12-12-78
(c)	SU-8 Containment Shielding and Radiation Survey	12-18-78
(d)	SU-11 Rod Drop Time Measurement	12-04-78
(e)	SU-13 Rod Position Indication	12-04-78
(f)	SU-14 Pressurizer Spray and Heater Capability and Setting Continuous Spray Flow	12-12-78
(g)	SU-16 Reactor Coolant System Flow Coastdown Measurement	12-04-78
(h)	SU-17 Initial Criticality	01-08-79
(i)	SU-18 Nuclear Design Check Test	01-08-79

(j)	SU-19 Rod and Boron Worth Measurements during Boron Dilution	12-04-78
(k)	SU-20 Rod and Boron Worth Measurements during Boron Addition	12-04-78
(l)	SU-21 RCC Assembly Pseudo Ejection Test	12-12-78
(m)	SU-24 Automatic Reactor Control	12-18-78
(n)	SU-27 Power Coefficient and Integral Power Defect Measurements	12-18-78
(o)	SU-29 Static RCCA Rod Drop and RCCA Below Bank Position	01-02-79
(p)	SU-30 Incore - Excore Detector Calibration	01-08-79
(q)	SU-31 Nuclear and Temperature Instrumentation Calibration and Thermal Power Measurements	01-08-79
(r)	SU-32 Chemical Analysis of the Reactor Coolant System	09-02-79
(s)	SU-35 Rod Group Drop and Plant Trip	01-08-79
(t)	SU-36 Unit Shutdown From Outside The Control Room	01-02-79
(u)	SU-37 Unit Trip from 100 Percent Power	01-08-79
(v)	SU-38 Station Blackout Test	01-08-79
(w)	SU-41 Process Computer	01-08-79

No items of noncompliance or deviations were identified.

12. Fuel Receipt and Storage

The inspector witnessed the receipt of new fuel elements to verify conformance to the Special Nuclear Materials (SNM) license application and Operating Procedure 4.2 (New Fuel Handling). The inspector verified such items as:

(a) Area and personnel monitoring

(b) Fire protection equipment availability

(c) Cleanliness controls

(d) Health Physics coverage

(e) Retention of shipping, QA/QC, and inspections records

(f) Fuel inspection

No items of noncompliance or deviations were identified.

13. Comparison of As-Built to FSAR: Auxiliary Feedwater System - Unit 2

The inspector walked-down the Auxiliary feedwater system and compared the as-built system to Stone and Webster drawing number 12050-FM-74A-10 and subsequently to the Final Safety Analysis Report (FSAR) figure 10.4.3-4, "Feed Water System" dated November 3, 1978. Two deficiencies were noted and subsequent to the inspection reported to licensee management.

(a) The FSAR figure 10.4.3-4 shows the discharge from pump 1-FW-P-2 branching to a discharge line to A steam generator before splitting to feed the two common discharge leaders capable of supplying all three steam generators. The as-built system conforms to drawing 12050-FM-74A-10 which shows the separate A steam generator line tapping off after the split in the pump discharge line to feed the common discharge leaders. Licensee management committed to analyze and correct this disparity. The inspector will review this area in future inspections (339/79-15-04).

(b) Neither the FSAR figure nor the referenced drawing show a drain valve (2-FW-189) coming off the bypass line to the recirculation filter (2-FW-FL-1), which exists on the system. As above, licensee management committed to review and correct this item and it will be followed up in future inspections (339/79-17-05).

No items of noncompliance or deviations were identified.

14. Previous Inspector Identified Areas of Concern on Unit No. 2

(a) 78-29-01 (Closed) Test of diesel lube oil system at full load.

(b) 78-29-02 (Closed) Test of diesel cooling system at full load.

(c) 78-29-04 (Closed) Flow path verification from all fuel oil sources to the diesels.

The inspector reviewed the test results of 2-PO-1 (Emergency Power System) and the fuel oil system valve lineup to verify that the lube oil and cooling systems were tested and that flow paths from all fuel oil sources were established.

(d) 78-29-07 (Closed) Operability of check valves 92, 100, 106, 113, 118, and 125. 2-PO-36.4 (Safety Injection System Hot Functional Test) required that stable flow be established to insure that the check valves were operable.

(e) 78-29-08 (Closed) Safety inspection and accumulator lines require filling and venting prior to test (2-PO-36.4). This was performed as part of the instrument departments verification that the flow instruments on each line were filled and vented prior to commencing the test.

(f) 78-29-09 (Closed) Throttle safety injection flow path to prevent robbing charging and seal line flows. Operators were cautioned prior to test performance. No problems were encountered.

15. Previous Inspector Identified Areas of Concern on Unit 1

(a) 78-32-03 (Closed) Licensee revision to electrical and mechanical maintenance procedure for valves to include TS Table 6.3-1 stroking requirements. The licensee revised procedures MMP-C-GV-1, EMP.C-LS-1, EMP-C-MOV-1, and EMP-C-SOV-2 on January 2, 1979 to include requirements for valve stroking as required by TS. The inspector had no further questions.

(b) 78-25-04 (Closed) Inclusion of mobile fire extinguishers in periodic test procedures for routine inspections. The licensee revised Procedure PT-105.2.2 on February 24, 1979 to include mobile fire extinguishers. The inspector had no further questions.