

Vepco

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION

P. O. BOX 402

MINERAL, VIRGINIA 23117

10 CFR 50.73

April 9, 1993

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

NAPS:MPW
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

Dear Sirs:

The Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Units 1 & 2.

Report No. 50-338/93-008-00

This Report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Corporate Management Safety Review Committee for its review.

Very Truly Yours,

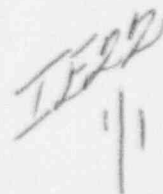

G. E. Kane
Station Manager

Enclosure:

cc: U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W.
Suite 2900
Atlanta, Georgia 30323

Mr. M. S. Lesser
NRC Senior Resident Inspector
North Anna Power Station

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PDR ADOCK 05000338
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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)
North Anna Power Station Units 1 & 2

DOCKET NUMBER (2)
05000338

PAGE (3)
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TITLE (4)
MISSED SURVEILLANCE TO FUNCTIONALLY TEST THE REACTOR COOLANT SYSTEM LOOP STOP VALVE POSITION LIMIT SWITCH INPUTS TO THE SOLID STATE PROTECTION SYSTEM AND MANUAL SAFETY INJECTION SWITCH INPUT TO THE REACTOR TRIP AND BYPASS BREAKERS DUE TO PERSONNEL ERROR.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)											
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)										
0	3	1	6	9	3	9	3	0	0	8	0	5	0	0	0	3	3	9	North Anna Unit 2	05000338
0	3	1	6	9	3	9	3	0	0	8	0	5	0	0	0	3	3	9		

OPERATING MODE (9) 6

POWER LEVEL (10) 000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 6: (Check one or more of the following) (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text: NRC Form 306A)
20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	50.73(a)(2)(vii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(vii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME
G. E. Kane

TELEPHONE NUMBER
AREA CODE
703894-2101

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) ☒ NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately three single-space typewritten lines) (16)

On March 16, 1993, with Unit 1 in Mode 6, Refueling, and Unit 2 in Mode 1, 100 percent power, the continuing evaluation of Technical Specification surveillance requirements, being performed as a corrective action reported under LER 50-338/92-007-00, identified a missed surveillance. Functional testing of the Reactor Coolant System (RCS) loop stop valve did not verify the position limit switch inputs to the Solid State Protection System (SSPS). Upon further evaluation, it was also determined that the Safety Injection (SI) functional test did not verify that all four reactor trip and bypass breaker circuits receive a signal from each of the two manual SI switches. Technical Specification 4.0.3 was invoked permitting the required test within 24 hours on the manual SI switches for Unit 2. These conditions are prohibited by TS and are reportable pursuant to 10CFR50.73 (a) (2) (i) (B).

The cause of the missed surveillances is personnel error resulting in failure to develop adequate procedures to fully test component circuitry.

No significant safety consequences resulted from these conditions because the investigation of the loop stop valve condition on Unit 2 proved the limit switch inputs are functional and performance of the Unit 1 functional test verified operability. Also, no credit is taken for the manual Engineered Safety Feature functional test of the SI input to the reactor trip breakers in the plant's safety analysis. Therefore, the health and safety of the public were not affected at any time during this event.

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TEXT CONTINUATION

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FACILITY NAME (1) North Anna Power Station Units 1 & 2	DOCKET NUMBER (2) 0500033893	LER NUMBER (6)			PAGE (3)	
		YEAR 93	SEQUENTIAL NUMBER 008	REVISION NUMBER 00	02 OF 05	

TEXT (If more space is required, use additional NRC Form 365A's) (17)

1.0 Description of the Event

On March 16, 1993, with Unit 1 in Mode 6, Refueling, and Unit 2 in Mode 1, 100 percent power, the continuing evaluation of Technical Specification surveillance requirements, being performed as a corrective action reported under LER 50-338/92-007-00, identified a missed surveillance. Functional testing of the Reactor Coolant System (RCS) loop stop valve (EIIS System AB, Component ISV) functional test did not verify the position limit switch (EIIS System AB, Component 33) inputs to the Solid State Protection System (SSPS) (EIIS System JG). Upon further evaluation, it was also determined that the Safety Injection (SI) (EIIS System BQ) functional test did not verify that all four reactor trip (EIIS System JD, Component BKR) and bypass breaker (EIIS Component BKR) circuits receive a signal from each of the two manual SI switches (EIIS System BQ, Component HS). Technical Specification 4.0.3 was invoked permitting the required test within 24 hours on the manual safety injection switches for Unit 2. These conditions are prohibited by TS and are reportable pursuant to 10CFR50.73 (a)(2)(i)(B).

The TS requirements, 3.3.1.1 and 3.3.2.1, for the RPS Instrumentation (EIIS System JD) and Engineered Safety Feature (ESF) (EIIS System JE) Actuation System Instrumentation do not specifically indicate testing requirements for the RCS loop stop valve position limit switch inputs to the SSPS. However, due to the nature of their interlock with the subject ESF and Reactor Protection logics the loop stop valve limit switch inputs should be considered interlocks and surveilled as such every 18 months as required for other interlocks referenced in TS surveillance requirements 4.3.1.1.2 and 4.3.2.1.2.

The RCS loop stop valve position limit switch input to the SSPS for a reactor trip and SI blocking function was originally provided to support the plant design for two loop operation with one loop isolated for maintenance. North Anna is not licensed for two loop operation.

Proper functioning of the interlock for each loop during loop isolation and subsequent unisolation was verified by reviewing data obtained during the last Unit 2 refueling outage. Proper functioning of the Unit 1 interlock was verified during the current refueling outage.

Review of the SSPS logic drawings and testing procedures verified that satisfactory results from the SSPS testing of the subject protection functions would indicate the protective functions are not blocked by any circuit malfunction related to loop stop valve position interlocks in Solid State. Though the SSPS test does not specifically test the interlocks from field inputs, a short in the downstream wiring in Solid State would be indicated by an unsatisfactory logic system test.

Although no failure would be indicated by the test equipment for an "open" in the interlock circuit in Solid State (resulting in a defeat of the blocking function capability) the result would have no consequence as far as

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

protective function is concerned since the blocking function is not required, nor desired for 3 loop RCS operation.

Investigation of this condition with regard to Unit 2 power operation revealed that historical documentation existed to prove that the loop stop valve position limit switch inputs to the SSPS are functional and sufficient testing is performed on the SSPS logic circuitry to verify no circuit malfunctions exist that would adversely affect the subject ESF and Reactor Protection Logics (i.e. there are no faults in the inputs and related circuitry that would block the associated protection functions for any operating loop).

With regard to the second missed surveillance, on the manual SI switches, the RPS Instrumentation for SI input from ESF consists of two independent ESF signal paths for accomplishing a reactor trip. The first signal path uses each of four automatic SI signals developed within each train of the SSPS. The automatic signals have been adequately tested at least once per 62 days on a staggered test basis as required by TS.

The other signal path uses the two manual SI switches in the control room, each of which directly energizes the shunt trip coils of both trains of reactor trip and bypass breakers. This signal path does not pass through the SSPS logic and is designed as a backup to the automatic circuit. The controlling test procedure for SI functional testing did not test each manual switch against all four reactor trip and bypass breakers.

Previous functional testing consisted of testing the output from one manual SI switch to both reactor trip breakers and one bypass breaker and the output from the redundant manual SI switch to the other bypass breaker.

2.0 Significant Safety Consequences and Implications

No significant safety consequences resulted from the first missed surveillance because the investigation of the loop stop valve condition on Unit 2 proved the position limit switch inputs are functional and performance of the Unit 1 functional test verified operability.

No significant safety consequences resulted from the second missed surveillance because the circuitry is a redundant independent backup to the automatic reactor trip signal generated by any automatic SI signal in the SSPS and manual reactor trip circuitry. In addition, no credit is taken for the manual ESF functional test of the SI input to the reactor trip breakers in the plant's safety analysis. The Unit 1 functional test was performed satisfactorily prior to entering Mode 4. Therefore, the health and safety of the public were not affected at any time during this event.

3.0 Cause of the Event

The cause of the missed surveillances is personnel error resulting in failure to develop adequate procedures to fully test component circuitry. The functionally testing of the loop stop valve position switch inputs to SSPS

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

and manual SI switch input to the reactor trip and bypass breakers were not included in any test procedures.

4.0 Immediate Corrective Actions

Unit 1 was not immediately affected by either missed surveillance due to mode applicability for the surveillance requirements.

A Request For Enforcement Discretion was initiated for Unit 2, concerning functional testing of the manual SI switches, to preclude shutting down the unit. The request was approved by the NRC on March 26, 1993 allowing testing to be deferred until the next scheduled refueling outage or the first opportunity which this testing can be performed safely.

An investigation of the RCS loop stop valve position limit switch inputs to the SSPS was initiated with regard to Unit 2 power operation. The investigation revealed that testing documentation from the last Unit 2 refueling outage proves the loop stop valve position limit switch inputs to the SSPS are functional, and the SSPS logic circuitry contains no circuit malfunctions that would adversely affect the subject ESF and Reactor Protection Logics.

5.0 Additional Corrective Actions

Unit 1 functional testing of the RCS loop stop valve position limit switch inputs to the SSPS was completed satisfactorily prior to Mode 4 entry.

The Unit 1 & 2 maintenance operating procedure will be changed to verify the RCS loop stop valve position limit switch inputs to the SSPS. The Unit 2 functional testing will be performed to test the RCS loop stop valve position limit switch inputs to the SSPS during the next scheduled refueling outage in September 1993 and thereafter.

With regard to the second missed surveillance temporary procedure changes were made and the Unit 1 functional test was completed satisfactorily prior to Mode 4 entry. The controlling test procedure for Unit 1 & 2 will be revised prior to the Unit 2 refueling outage to test the manual SI switches.

An emergency TS change was submitted to the NRC, on March 31, 1993, to exclude the manual ESF functional input check of the SI input from ESF for the remainder of the North Anna Unit 2 operating cycle.

6.0 Actions to Prevent Recurrence

The revisions to the Unit 1 & 2 operating procedures to test the RCS loop stop valve position limit switch inputs to the SSPS and manual SI switch input to the reactor trip and bypass breakers will be sufficient to preclude recurrence.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

7.0 Similar Events

Missed surveillances concerning failure to test entire component circuitry include:

LER N1/2-92-007-00 regarding missed surveillances on the monthly Unit 2 Reactor Coolant Pump bus undervoltage/underfrequency channel functional test, 18 month Unit 1 undervoltage/underfrequency channel calibration and monthly safety injection input to reactor trip.

LER N1/2-92-009-01 regarding missed surveillances on the containment purge and exhaust radiation monitor monthly channel functional test and power operated relief valve alarm identified during corrective action reported under LER N1/2-92-007-00.

LER N1/2-92-014-00 regarding missed surveillances on the emergency diesel generator start circuitry, emergency bus undervoltage/degraded voltage trip circuitry and station service bus undervoltage/underfrequency sensors identified during corrective action reported under LER N1/2-92-007-00.

8.0 Additional Information

The systematic review of the surveillance program was initiated to ensure full compliance with the TS at North Anna. The review involves a line-by-line examination to verify that TS surveillance requirements are completely addressed by station procedures. These reviews are currently scheduled to be completed by June 1993. Status to date includes: Chapters 2 Power Distribution Limits, 4 Reactor Coolant System, 5 Emergency Core Cooling System, 6 Containment, 7 Plant Systems, 8 Electric Power, 10 Special Test Exceptions, and 11 Radioactive Storage - complete; Chapters 1 Reactivity Control and 3 Instrumentation (RPS and Monitoring) - working; and Chapters 3 Instrumentation (ESF only) and 9 Refueling - scheduled.