10CFR50.73

Virginia Electric and Power Company
North Anna Power Station
1022 Haley Drive
Mineral, Virginia 23117

September 17, 2021

Attention: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Serial No.: 21-321
NAPS: CNC
Docket Nos.: 50-338, 50-339
License Nos.: NPF-4, NPF-7

Dear Sir or Madam:

Pursuant to 10CFR50.73, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Power Station Unit 1 and Unit 2.

Report No. 50-338/2021-002-00

This report has been reviewed by the Facility Safety Review Committee and will be forwarded to the Management Safety Review Committee for its review.

Sincerely,

Fred Mladen
Site Vice President
North Anna Power Station

Enclosure

Commitments contained in this letter: None

cc: United States Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE, Suite 1200
Atlanta, Georgia 30303-1257

NRC Senior Resident Inspector
North Anna Power Station

bc (hard copy distribution):

Mr. D. G. Stoddard	IN2SW, Senior Vice President, Chief Nuclear Officer
Mr. G. T. Bischof	IN2NW, Senior Vice President, Nuclear Operations
Mr. M. D. Sartain	IN2NW, Vice President, Nuclear Engineering and Fleet Support
Mr. G. Crenshaw	Clearinghouse, Director Corporate Risk Management
Mr. M. Harris	ODEC
Ms. K. H. Barret	IN2NW, Licensing
Station Records	NAPS (VOA package)
Licensing File	NAPS, Licensing

bc (electronic distribution):

Mr. F. Mladen	NAPS, Site Vice President
Mr. D. Lawrence	SPS, Site Vice President
Mr. J. R. Daugherty	MPS, Site Vice President
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Ms. L. A. Hilbert	NAPS, Plant Manager
Mr. J. H. Jenkins	NAPS, Director Station Safety and Licensing
Mr. S. W. Morris	NAPS, Director Engineering
Mr. B. L. Standley	IN2NW, Director Nuclear Regulatory Affairs
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Mr. C. A. McClain	IN2NW, Director Nuclear Performance Improvement & Training
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Ms. E. N. Combs	IN2NW, Licensing
Mr. D. V. Atkinson	IN2NW, Nuclear Performance Assessment
Mr. S. A. Luchau	IN3SW, Supervisor Nuclear Safety Analysis
Mr. M. LaPrade	IN3SW, Supervisor Fuel Performance Analysis
Mr. G. H. Young	NAPS, Organization Effectiveness/OE
Mr. M. S. Hanson	SPS, Organization Effectiveness /OE
Ms. B. M. Perkins	MPS, Organization Effectiveness /OE
Mr. J. R. Roth	IN2NW, MSRC Coordinator
MSRC	eRoom Document Repository

Verification of Accuracy

1. CR1177199 App R concern identified with cable separation associated with U1&U2 EDG and Emergency bus operation
2. CA8539011 Reasonable Assurance of Safety
3. CA8539529 Request for Engineering Assistance
4. CA8543316 Review EDG Start circuits for possibility of negative ground on the EDG batteries
5. CA8539530 Re-evaluate items 2 and 3 for MSO scenarios
6. Operations Narrative Logs 07/20/21
7. Event Notification #55375 on 07/22/21 at 2028
8. FSRC Meeting No. 21-046 on September 17, 2021

Commitments

None

Action Plan

Implement Corrective Actions identified in Reasonable Assurance of Safety (CA8539011)

Changes to the UFSAR or QA Topical Report

None

NRC FORM 366 (08-2020) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)
(See NUREG-1022, R.3 for instruction and guidance for completing this form
http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023

1. Facility Name	2. Docket Number	3. Page
North Anna Power Station, Units 1 and 2	05000 338	1 OF 3

4. Title

Unanalyzed Condition Due to App R Concern Identified With Cable Separation

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	Docket Number
07	22	2021	2021	- 002 -	00	09	17	2021	North Anna Power Station	05000 339
									Facility Name	Docket Number 05000

9. Operating Mode	10. Power Level
1	100

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(4)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(1)(i)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(i)
☐ 20.2203(a)(2)(iii)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.77(a)(2)(ii)
☐ 20.2203(a)(2)(iv)	☐ 50.36(c)(1)(i)(A)	☑ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.2203(a)(2)(v)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	

☐ **OTHER** (Specify here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Fred Mladen, Site Vice President	(540) 894-2101

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS		Cause	System	Component	Manufacturer	Reportable to IRIS

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☑ No	☐ Yes (If yes, complete 15. Expected Submission Date)				

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

On July 20, 2021 at 1707 hours, an apparent non-compliance with 10CFR50, Appendix R, Section III.G.2 (separation of redundant fire safe shutdown equipment) was identified. On July 22, 2021 at 1751 hours, a further review of the affected control circuits for the Unit 1 and Unit 2 Emergency Diesel Generator (EDG) output breakers and Emergency Bus feeder breakers identified a concern that breaker position interlocks routed to or through non-safety related components or spaces may affect the ability to provide emergency power on the affected unit due to impacts on the control power circuits during an Appendix R fire associated with a loss of offsite power. An 8-hour non-emergency report was made per 10 CFR 50.72(b)(3)(ii)(B) for an unanalyzed condition. Hourly fire watches were established in the affected areas.

The cause of this condition is the station's original post-fire safe shutdown analysis did not accurately assess the impact on the equipment from associated cable damage due to fire for the select cables. Risk mitigating actions have been developed, implemented, and will continue to be performed until appropriate permanent corrective actions are in place to mitigate this condition.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B) for "Any event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety."

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
North Anna Power Station, Units 1 and 2	05000-338	2021	- 002	- 00

NARRATIVE

Plant Operating Conditions Prior to the Event

Unit 1 – Mode 1, 100 percent Rated Thermal Power
Unit 2 – Mode 1, 100 percent Rated Thermal Power

1.0 Description of Event

On July 20, 2021 at 1707 hours, an apparent non-compliance with 10CFR50, Appendix R, Section III.G.2 (separation of redundant fire safe shutdown equipment) was identified during the development of the North Anna Fire Probabilistic Risk Assessment. On July 22, 2021 at 1751 hours, a further review of the affected control circuits for the Unit 1 and Unit 2 Emergency Diesel Generator (EDG) output breakers (EIIS Component BKR, System EK) and Emergency Bus feeder breakers (EIIS Component BKR, System EK) identified a concern that breaker position interlocks routed to or through non-safety related components or spaces may affect the ability to provide emergency power on the affected unit due to impacts on the control power circuits during an Appendix R fire associated with a loss of offsite power. An 8-hour non-emergency report was made per 10 CFR 50.72(b)(3)(ii)(B) for an unanalyzed condition. This event is reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B) for "Any event or condition that resulted in the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety."

Several control cables were identified within common fire areas that, if fire damaged, could prevent the availability of both trains of Emergency Diesel Generators (EDGs) (EIIS Component DG, System EK) to start and power their respective emergency buses (EIIS Component BU, System EB) required by the station's current Appendix R analysis. The following issues were found:

1. Fire damage to control power cables for EDG output breakers may result in loss of control power and inability to power the emergency bus without manual operator actions outside of the main control room.
2. Hot shorts on the normal/alternate supply breakers (EIIS Component BKR, System EK) could result in spurious breaker operations that may prevent EDGs and/or emergency buses from performing its Appendix R function.

2.0 Significant Safety Consequences and Implications

No significant safety consequences resulted from this event. During this timeframe, North Anna Units 1 and 2 operated at 100% power. The health and safety of the public were not affected by this event.

3.0 Cause of the Event

The cause of this condition is the station's original post-fire safe shutdown analysis did not accurately assess the impact on the equipment from associated cable damage due to fire for the select cables. In addition, the Multiple Spurious Operations review effort failed to recognize applicability of EDG/Emergency Power scenarios for some areas for the plant.

4.0 Immediate Corrective Action

Hourly fire watches were established in the Unit 1 and Unit 2 Turbine Buildings, Unit 1 and Unit 2 Cable Spreading Rooms, and Unit 1 and Unit 2 Normal Switchgear Rooms to mitigate the risk of fire and aid in early detection of fire. Risk mitigating actions have been developed, implemented, and will continue to be performed until appropriate permanent corrective actions are in place to mitigate this condition.

NARRATIVE

5.0 Additional Corrective Actions

A Reasonable Assurance of Safety (RAS) was developed with risk mitigating actions implemented until final resolution is completed. Procedures ECA-0.0 (Loss of All AC Power) and Flex Support Guidelines (FSGs) were reviewed to mitigate the results of a loss of all AC power conditions. Periodic reviews of applicable procedures and Fire Fighting Strategies for fires in areas of concern have been established. Prior to any unavailability of the Turbine Driven Auxiliary Feedwater (TDAFW) pump (EIIS Component P, System BA), guidance has been provided to pre-stage the Beyond Design Basis (BDB) Auxiliary Feedwater Pump.

The station is currently developing design changes to redesign the circuits to eliminate the vulnerability.

6.0 Actions to Prevent Recurrence

The applicable control cables associated with the EDG output breakers, and Emergency Bus normal and alternate feeder breakers will be modified to regain compliance as required by Appendix R Safe Shutdown Analysis.

7.0 Similar Events

A review of internal operating experience was performed, and no similar events were identified that were previously reported to the Nuclear Regulatory Commission.

8.0 Additional Information

Units 1 and 2 continued to operate at 100% power, Mode 1 during this discovery.