



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

December 16, 2019

Mr. Daniel Stoddard
Senior Vice President
and Chief Nuclear Officer
Virginia Electric & Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 29060

SUBJECT: NORTH ANNA POWER STATION, UNITS 1 AND 2 – BIENNIAL PROBLEM
IDENTIFICATION AND RESOLUTION INSPECTION REPORT
05000338/2019011 AND 05000339/2019011

Dear Mr. Stoddard:

On November 7, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your North Anna Power Station, Units 1 and 2. On November 7, 2019 the NRC inspectors discussed the results of this inspection with Mr. Jim Jenkins and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

No NRC-identified or self-revealing findings were identified during this inspection.

A licensee-identified violation which was determined to be of very low safety significance is documented in this report. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Bradley J. Davis, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket Nos. 05000338 and 05000339
License Nos. NPF-4 and NPF-7

Enclosure:
As stated

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IDENTIFICATION AND RESOLUTION INSPECTION REPORT
05000338/2019011 AND 05000339/2019011 dated December 16, 2019

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers: 05000338 and 05000339

License Numbers: NPF-4 and NPF-7

Report Numbers: 05000338/2019011 and 05000339/2019011

Enterprise Identifier: I-2019-011-0030

Licensee: Virginia Electric and Power Company

Facility: North Anna Power Station, Units 1 and 2

Location: Mineral, VA

Inspection Dates: October 21, 2019 to November 08, 2019

Inspectors: A. Beasten, Resident Inspector (Team Leader)
G. Eatmon, Resident Inspector
P. Niebaum, Senior Project Engineer
J. Steward, Resident Inspector

Approved By: Bradley J. Davis, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a biennial problem identification and resolution inspection at North Anna Power Station, Units 1 and 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. A licensee-identified non-cited violation is documented in report section: 71152B.

List of Findings and Violations

No findings or violations of more than minor significance were identified.

Additional Tracking Items

None.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

OTHER ACTIVITIES – BASELINE

71152B - Problem Identification and Resolution

Biennial Team Inspection (IP Section 02.04) (1 Sample)

- (1) The inspectors performed a biennial assessment of the licensee's corrective action program, use of operating experience, self-assessments and audits, and safety conscious work environment.
 - **Corrective Action Program Effectiveness:** The inspectors assessed the corrective action program's effectiveness in identifying, prioritizing, evaluating, and correcting problems.
 - **Operating Experience, Self-Assessments and Audits:** The inspectors assessed the effectiveness of the station's processes for use of operating experience, audits and self-assessments.
 - **Safety Conscious Work Environment:** The inspectors assessed the effectiveness of the station's programs to establish and maintain a safety-conscious work environment.

INSPECTION RESULTS

Assessment	71152B
<p><u>Corrective Action Program Assessment:</u> Based on the samples reviewed, the team determined that the licensee's corrective action program (CAP) complied with regulatory requirements and self-imposed standards. The licensee's implementation of the CAP adequately supported nuclear safety.</p> <p><u>Effectiveness of Problem Identification:</u> The inspectors determined that the licensee was effective in identifying problems and entering them into the CAP at the appropriate threshold. This conclusion was based on a review of the requirements for initiating condition reports (CRs) as described in licensee procedure PI-AA-200, "Corrective Action Program," and the site's management expectation that employees were encouraged to initiate condition reports. Additionally, site management was actively involved in the corrective action program and focused appropriate attention on significant plant issues. The inspectors performed walk downs, reviewed CRs, and reviewed system health trending for Diesel Generators and</p>	

emergency AC power, the Service Water System, and the Low Head Safety Injection System. Based on the inspectors' reviews and walk downs of accessible portions of those systems, the inspectors determined that deficiencies were being identified and placed in the CAP.

Effectiveness of Problem Prioritization and Evaluation: Based on the review of CRs sampled by the inspection team during the onsite period, the inspectors concluded that problems were prioritized and evaluated in accordance with the CAP requirements described in procedure PI-AA-200. The inspectors determined that adequate consideration was given to system or component operability and associated plant risk. The inspectors determined that plant personnel had generally conducted cause evaluations in compliance with the licensee's CAP procedures, including appropriate cause determinations, and performed adequate levels of analysis based on the significance of the issues being evaluated.

Effectiveness of Corrective Actions: Based on a review of corrective action documents, interviews with licensee staff, and verification of completed corrective actions, the inspectors determined that corrective actions were effective, timely, and commensurate with the safety significance of the issues. For significant conditions adverse to quality, the corrective actions directly addressed the cause and effectively prevented recurrence. The inspectors reviewed performance indicators, CRs, and effectiveness reviews, as applicable, to verify that the significant conditions adverse to quality had not recurred. Effectiveness reviews for corrective actions to preclude repetition (CAPRs) were sufficient to ensure corrective actions were properly implemented and were effective.

Assessment	71152B
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Operating Experience, Self-Assessments, and Audits: The inspectors examined the licensee's program for obtaining and using industry operating experience. This included a review of procedure PI-AA-100-1007, "Operating Experience Program," selected corrective action program action requests, and the licensee's operating experience (OE) database to assess the effectiveness of how external and internal OE data was evaluated at the plant. Additionally, the inspectors selected OE documents such as NRC generic communications, licensee event reports, vendor notifications, and plant internal OE items which had been issued since July 2017 to verify that the licensee had appropriately evaluated each notification for applicability to the station, and whether issues identified through these reviews were entered into the CAP.

The inspectors determined that the scopes of assessments and audits were adequate. Self-assessments were generally detailed and critical. The inspectors verified that condition reports (CRs) were created to document areas for improvement and findings resulting from self-assessments and verified that actions had been completed consistent with those recommendations. Audits of the quality assurance program appropriately assessed performance and identified areas for improvement. Generally, the licensee performed evaluations that were technically accurate.

The inspectors determined that the station's processes for the use of industry and NRC operating experience information and for the performance of audits and self-assessments were effective and complied with all regulatory requirements and licensee standards. The implementation of these programs adequately supported nuclear safety. The inspectors concluded that operating experience was adequately evaluated for applicability and that appropriate actions were implemented to address lessons learned as needed. The

inspectors determined that the licensee was effective at performing self-assessments and audits to identify issues at a low level, properly evaluated those issues, and resolved them commensurate with their safety significance.

Assessment	71152B
<p><u>Safety Conscious Work Environment:</u> Based on a sample of 25 individuals interviewed from a cross-section of plant employees, the inspectors found no evidence of challenges to the safety conscious work environment. Employees interviewed appeared knowledgeable of avenues to raise safety concerns and appeared willing to raise nuclear safety concerns through at least one of the several means available.</p>	

Licensee-Identified Non-Cited Violation	71152B
<p>This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.</p>	
<p>Violation: North Anna Technical Specifications 5.4, "Procedures", paragraph 5.4.1 required in part that written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Regulatory Guide (RG) 1.33, Rev. 2, Appendix A, dated February 1978. RG 1.33, "Quality Assurance Program Requirements (Operations)", Rev. 2, Appendix A, section 9.b required in part that preventive maintenance schedules should be developed to specify inspections of equipment. Licensee Procedure 0-MPM-1207-04, "Annual Pumping of Security and Electrical Cable Vaults", Rev. 10, implemented this requirement for certain safety related (SR) medium voltage cables. Contrary to the above, the licensee failed to inspect (SR) medium voltage cables susceptible to water submergence in accordance with this procedure. Licensee procedure 0-MPM-1207-04 required annual pumping and inspections of SR medium voltage cables susceptible to submergence to prevent long term submergence of electrical cables which could lead to cable degradation. According to the licensee, the annual inspections have not occurred since 2016.</p>	
<p>Significance/Severity: Green. This violation was screened to Green, very low safety significance in accordance with IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power, dated June 19, 2012, Exhibit 2, "Mitigating Systems Screening Questions" because all of the screening questions were answered "No."</p>	
<p>Corrective Action References: This issue was documented in the licensee's corrective action program (CAP) as condition report (CR) 1133235.</p>	

Minor Violation	71152B
<p>Minor Violation: The NRC identified a minor violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to ensure that instructions, procedures, or drawings were appropriate for the circumstances. Specifically, the licensee failed to ensure that maintenance procedure 0-MPM-0452-18, "Visual Inspection of Damper for Condition of External Duct Work, Operator, Hardware and Operation," and the model preventive maintenance (PM) work orders (WO) included adequate instructions for inspection of the Control Room and Emergency Switchgear Air Handlers.</p>	
<p>Following a failure of the main control room chiller fan discharge damper to open when the</p>	

fan was started, the licensee revised maintenance procedure 0-MPM-0452-18 to include instructions for mechanical inspection of the damper linkages. The inspectors reviewed the maintenance procedure and observed that the Note added prior to step 6.2.3 in the procedure failed to direct action to use a wrench to test for tightness.

Screening: The inspectors determined the performance deficiency was minor. The performance deficiency was screened in accordance with Inspection Manual Chapter 0612 Appendix B. The inspectors determined the performance deficiency was minor because no subsequent failures of the main control room chiller discharge dampers have occurred. This issue was captured in CR 11135344.

Enforcement: This failure to comply with 10 CFR 50, Appendix B, Criterion V constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On November 7, 2019, the inspectors presented the biennial problem identification and resolution inspection results to Mr. Jim Jenkins and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152B	Calculations	CT-EQUAL-000-GQE-06.02-G01		1
71152B	Calculations	NA-EQUAL-000-PQE-06.02-P01		2
71152B	Corrective Action Documents	ACE 013252 ACE 3066417 ACE 3070837 ACE 3056632 ACE 3084650 ACE 3151216	Apparent Cause Evaluation	
71152B	Corrective Action Documents	CA 3031034 CA 3049131 CA 3056633 CA 3065939 CA 3069003 CA 3070099 CA 3070100 CA 3070231 CA 3070232 CA 3075045 CA 3075050 CA 3151215 CA 3154355 CA 3166734 CA 3166959 CA 3168772 CA 3168774 CA 7298545 CA 7310582 CA 7312500 CA 7374628 CA 7376776		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CA 7395457 CA 7433019 CA 7459183 CA 7474370 CA 7482599 CA 7482608 CA 7486588 CA 7488252 CA 7488254 CA 7492892 CA 7498661 CA 7510589 CA 7512926 CA 7517194 CA 7517205 CA 7517219 CA 7517220 CA 7517221 CA 7518983 CA 7519648 CA 7520768 CA 7525374 CA 7584424 CA 7587968 CA 7593188 CA 7605944 CA 7608868 CA 7610872 CA 7616221 CA 7631022 CA 7631762 CA 7631763 CA 7639127 CA 7642350		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CA 7646744 CA 7649215 CA 7656339 CA 7658212 CA 7660850 CA 7671240 CA 7695557 CA 7695558		
71152B	Corrective Action Documents	CR 1113558 CR 1119927 CR 1129587 CR 1131745	Part 21 Evaluations	
71152B	Corrective Action Documents	CR 525801 CR 549139 CR 577960 CR 1001891 CR 1036687 CR 1036795 CR 1052292 CR 1056554 CR 1057223 CR 1057418 CR 1058722 CR 1062578 CR 1062579 CR 1066949 CR 1073360 CR 1076695 CR 1078223 CR 1078405 CR 1078504 CR 1078722 CR 1079201 CR 1079241		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CR 1079363 CR 1082177 CR 1083343 CR 1083517 CR 1083602 CR 1083620 CR 1083636 CR 1083803 CR 1084460 CR 1084876 CR 1085033 CR 1085065 CR 1087430 CR 1089154 CR 1089699 CR 1091753 CR 1091778 CR 1092314 CR 1093119 CR 1093692 CR 1093769 CR 1097015 CR 1097201 CR 1097721 CR 1097753 CR 1098252 CR 1098808 CR 1098816 CR 1099558 CR 1103503 CR 1103691 CR 1103698 CR 1103788 CR 1104560		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CR 1109736 CR 1109741 CR 1110081 CR 1113055 CR 1113581 CR 1114435 CR 1114785 CR 1114816 CR 1115132 CR 1116471 CR 1116532 CR 1116553 CR 1117127 CR 1117324 CR 1117941 CR 1119937 CR 1120227 CR 1120570 CR 1120826 CR 1120845 CR 1123419 CR 1123421 CR 1123476 CR 1123701 CR 1123824 CR 1124170 CR 1124871 CR 1124877 CR 1124966 CR 1125173 CR 1125645 CR 1125681 CR 1125934 CR 1126297		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CR 1126809 CR 1127060 CR 1127144 CR 1127280 CR 1127555 CR 1127630 CR 1128297 CR 1128633 CR 1128717 CR 1129074 CR 1129857 CR 1130277 CR 1130290 CR 1131509 CR 1131558 CR 1131745 CR 1132414 CR 1132861 CR 119857		
71152B	Corrective Action Documents	DTI-CA-3049490		
71152B	Corrective Action Documents	LEE 7298545 LEE 7315898 LEE 7374629 LEE 7379723 LEE 7419976 LEE 7480479 LEE 7630987 LEE 7646819 LEE 7656340	Level of Effort Evaluation	
71152B	Corrective Action Documents	PIR 1130044 PIR 1116952 PIR 1116837 PIR 1115560	Part 21 evaluations for applicability	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		PIR 1112352 PIR 1110540		
71152B	Corrective Action Documents Resulting from Inspection	59203300380 59203300386 59203300387 59203300388 59203300390 59203300394 59203300395 59203300396 59203300849	Work Orders	
71152B	Corrective Action Documents Resulting from Inspection	CR 1134006 CR 1134008 CR 1134012 CR 1134013 CR 1134014 CR 1134015 CR 1134019 CR 1134020 CR 1134022 CR 1134073 CR 1134083 CR 1134095 CR 1134097 CR 1134100 CR 1134102 CR 1134103 CR 1134104 CR 1134106 CR 1134107 CR 1134108 CR 1134111 CR 1134123 CR 1134125		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CR 1134147 CR 1134150 CR 1134443 CR 1134657 CR 1135103 CR 1135106 CR 1135251 CR 1135302 CR 1135339 CR 1135344		
71152B	Engineering Evaluations	ETE-NA-2019-013 ETE-NA-2018-011 ETE-NA-2019-030 ETE-NA-2015-0054		
71152B	Miscellaneous		Service Water System Health Report	Q2-2019
71152B	Miscellaneous		Service Water System Top Issues List	07/08/2019
71152B	Miscellaneous		Safety Injection System Health Report	Q2-2019
71152B	Miscellaneous	1-LOG-6F	Main Control Room Chiller Operating Logs	124
71152B	Miscellaneous	2-AR-K-E1	Annunciator Response Procedure for RWST HI Level	2
71152B	Miscellaneous	EE007, SW002, EG002	Service Water System Maintenance Rule Scoping Functions	
71152B	Miscellaneous	SDBD-NAPS-SW	Service Water System Design Basis Document	23
71152B	Miscellaneous	Serial No. 17-343	Dominion Energy Letter to the NRC, "Commitments for Resolution of Anchor Darling Double Disc Gate Valve Part 21 Issues."	August 31, 2017
71152B	Miscellaneous	Serial No. 17-343A	Dominion Energy Letter to NRC, "Anchor Darling Double Disc Gate Valve Information and Status."	December 18, 2017
71152B	Miscellaneous	Serial No. 18-238	Dominion Energy Letter to the NRC, "Updated Anchor Darling Double Disc Gate Valve Information and Repair	December 19, 2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Status."	
71152B	Operability Evaluations	CA 7355047	Service Water Pump House Missile Vulnerability	08/22/2019
71152B	Procedures	0-GEP-52	Conduct of Post Modification Testing	8
71152B	Procedures	0-MPM-0452-18	Visual Inspection of Damper for Condition of External Duct Work, Operator, Hardware and Operation	Revision 4
71152B	Procedures	0-MPM-0806-02	Inspection of Control Room Chillers	1
71152B	Procedures	EC-AA-110	Identifying and Addressing Nuclear Safety and Quality Concerns	1
71152B	Procedures	ER-AA-MRL-10	Maintenance Rule Program	6
71152B	Procedures	ER-AA-MRL-100	Implementing Maintenance Rule	12
71152B	Procedures	ER-AA-PRS-1001	Plant Health Committee	12
71152B	Procedures	ER-AA-SYS-1001	System Health Report	12
71152B	Procedures	OP-AA-102	Operability Determination	15
71152B	Procedures	PI-AA-100-1003	Self Evaluation and Trending	24
71152B	Procedures	PI-AA-100-1004	Self-Assessments	14
71152B	Procedures	PI-AA-100-1007	Operating Experience Program	18
71152B	Procedures	PI-AA-200	Corrective Action	35
71152B	Procedures	PI-AA-300	Cause Evaluation	16
71152B	Procedures	PI-AA-300-3000	Emergent Issue Response	6
71152B	Procedures	PI-AA-300-3001	Root Cause Evaluation	13
71152B	Procedures	PI-AA-300-3004	Cause Evaluation Methods	7
71152B	Procedures	PI-AA-300-3006	Equipment Apparent Cause Evaluation	4
71152B	Procedures	PI-AA-300-3007	Level of Effort Evaluation	0
71152B	Procedures	RM-AA-101	Record Creation, Transmittal, and Retrieval	18
71152B	Self-Assessments		Maintenance Dept Self Evaluation	July 2019
71152B	Self-Assessments		Emergency Plan Department Self Evaluation Monthly Report	August 2019
71152B	Self-Assessments	Audit 17-05	Corrective Action, Independent Review and License Commitments	08/10/2017
71152B	Self-Assessments	Audit 17-07	Inservice Inspection, Inservice Testing and Appendix J	
71152B	Self-Assessments	Audit 17-09	Nuclear Fuel Management and Procurement and MPS Refueling	
71152B	Self-Assessments	Audit 17-10	Offsite Dose Calculation Manual/Radiological Environmental	02/08/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Monitoring Program/Environmental Protection Plan	
71152B	Self-Assessments	Audit 18-02	Emergency Preparedness	04/16/2018
71152B	Self-Assessments	Audit 18-04	Radiological Protection, Process Control Program, and Chemistry	07/10/2018
71152B	Self-Assessments	Audit 18-05	Design Control and Engineering Programs	
71152B	Self-Assessments	Audit 18-06	Materials and Procurement	09/20/2018
71152B	Self-Assessments	Audit 18-07	Document Control, Records, & Procedures	10/31/2018
71152B	Self-Assessments	Audit 19-02	Emergency Preparedness	04/17/2019
71152B	Self-Assessments	Audit 19-04	Fire Protection, QA Program Implementation and MPS Refueling	
71152B	Self-Assessments	Audit 19-05	Corrective Action, Independent Review, and License Commitments	07/22/2019
71152B	Work Orders	59203285593 59080637301 59102472901 59102738867 59102744173 59102776679 59102880719 59103139979 59103140339 59203130034 59203131880 59203140912 59203268300 59203269312 59203275983 59203285346 59203285591 59203290138 59203291616 59203292714 59403012702		