



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

April 20, 2015

Mr. David A. Heacock
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

**SUBJECT: NORTH ANNA POWER STATION – NRC PROBLEM IDENTIFICATION
AND RESOLUTION INSPECTION REPORT 05000338/2015009 AND
05000339/2015009**

Dear Mr. Heacock:

On March 12, 2015, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your North Anna Power Station Units 1 and 2. The enclosed report documents the inspection findings, which were discussed on March 12, 2015, with Mr. G. Bischof and other members of your staff. A re-exit was conducted with Mr. Kemp via telephone on April 20, 2015, to discuss the final results of the inspection.

Based on the inspection samples, the inspectors determined that your staff's implementation of the corrective action program supported nuclear safety. In reviewing your corrective action program, the inspectors assessed how well your staff identified problems at a low threshold, your staff's implementation of the station's process for prioritizing and evaluating these problems, and the effectiveness of corrective actions taken by the station to resolve these problems. In each of these areas, the inspectors determined that your staff's performance was adequate to support nuclear safety.

The inspectors also evaluated other processes your staff used to identify issues for resolution. These included your use of audits and self-assessments to identify latent problems and your incorporation of lessons learned from industry operating experience into station programs, processes, and procedures. The inspectors determined that your station's performance in each of these areas supported nuclear safety.

Finally, the inspectors determined that your station's management maintains a safety-conscious work environment adequate to support nuclear safety. Based on the inspectors' observations, your employees are willing to raise concerns related to nuclear safety through at least one of the several means available.

The NRC inspectors did not identify any findings or violations of more than minor significance.

D. Heacock

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). Adams is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Anthony D. Masters, Chief
Reactor Projects Branch 7
Division of Reactor Projects

Docket Nos. 50-338, 50-339
License Nos. NPF-4, NPF-7

Enclosure: IR 05000338/2015009 and
05000339/2015009 w/Attachment:
Supplemental Information

D. Heacock

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The NRC inspectors did not identify any findings or violations of more than minor significance.

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D. Heacock

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Letter to David A. Heacock from Anthony D. Masters dated April 20, 2015.

SUBJECT: NORTH ANNA POWER STATION – NRC PROBLEM IDENTIFICATION AND
RESOLUTION INSPECTION REPORT 05000338/2015009 AND
05000339/2015009

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 05000338, 05000339

License Nos.: NPF-4, NPF-7

Report Nos.: 05000338/2015009 and 05000339/2015009

Licensee: Virginia Electric and Power Company

Facility: North Anna Power Station, Units 1 and 2

Location: Mineral, VA

Dates: February 23 - 27, 2015
March 09 - 12, 2015

Inspectors: N. Staples, Senior Project Inspector, Team Leader
R. Taylor, Senior Project Inspector
C. Jones, Senior Construction Inspector
A. Sengupta, Reactor Inspector

Approved by: Anthony D. Masters, Chief
Reactor Projects Branch 7
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000338/2015009 and 05000339/2015009; February 23 - 27 – March 09 - 12, 2015; North Anna Power Station, Units 1 and 2; Biennial Inspection of the Problem Identification and Resolution Program.

The inspection was conducted by two senior project inspectors, a senior construction inspector and a reactor inspector. No findings were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Identification and Resolution of Problems

The inspectors concluded that, in general, problems were properly identified, evaluated, prioritized, and corrected. The licensee was effective at identifying problems and entering them into the corrective action program (CAP) for resolution, as evidenced by the relatively few number of deficiencies identified by external organizations (including the NRC) that had not been previously identified by the licensee, during the review period. Generally, prioritization and evaluation of issues were adequate, formal root cause evaluations for significant problems were adequate, and corrective actions specified for problems were acceptable. Overall, corrective actions developed and implemented for issues were generally effective and implemented in a timely manner.

The inspectors determined that overall, audits and self-assessments were adequate in identifying deficiencies and areas for improvement in the CAP, and appropriate corrective actions were developed to address the issues identified. Operating experience usage was found to be generally acceptable and integrated into the licensee's processes for performing and managing work, and plant operations.

Based on discussions and interviews conducted with plant employees from various departments, the inspectors determined that personnel at the site felt free to raise safety concerns to management and use the CAP to resolve those concerns.

The NRC inspectors did not identify any findings or violations of more than minor significance.

REPORT DETAILS

4OA2 Problem Identification and Resolution

1. Corrective Action Program Effectiveness

a. Inspection Scope

The team reviewed the licensee's Corrective Action Program (CAP) procedures which described the administrative process for initiating and resolving problems primarily through the use of condition reports (CRs). To verify that problems were being properly identified, appropriately characterized, and entered into the CAP, the inspectors reviewed CRs that had been issued between March 2013 and March 2015, including a detailed review of selected CRs associated with the following risk-significant systems: Station Blackout (SBO), Auxiliary Feedwater (AFW), and Service Water (SW). Where possible, the team independently verified that the corrective actions were implemented as intended. The team also reviewed selected common causes and generic concerns associated with root cause evaluations (RCE) to determine if they had been appropriately addressed. To help ensure that samples were reviewed across all cornerstones of safety identified in the Reactor Oversight Process (ROP), the team selected a representative number of CRs that were identified and assigned to the major plant departments, including quality assurance, health physics, chemistry, emergency preparedness and security. These CRs were reviewed to assess each department's threshold for identifying and documenting plant problems, thoroughness of evaluations, and adequacy of corrective actions. The team reviewed selected CRs, verified corrective actions were implemented, and attended meetings where CRs were evaluated for significance to determine whether the licensee was identifying, accurately characterizing, and entering problems into the CAP at an appropriate threshold.

Plant walkdowns of equipment within the selected systems listed above and other plant areas were conducted by inspectors to assess the material condition and to identify deficiencies that had not been previously entered into the CAP. The inspectors reviewed CRs, maintenance history, corrective actions (CAs), completed work orders (WOs) for the systems, and reviewed associated system health reports. These reviews were performed to verify that problems were being properly identified, appropriately characterized, and entered into the CAP. Items reviewed generally covered a two-year period of time; however, in accordance with the inspection procedure, a five-year review was performed for selected systems for age-related issues.

Control Room walk-downs were also performed to assess the main control room (MCR) deficiency list and to ascertain if deficiencies were entered into the CAP and tracked to resolution. Operator workarounds (OWA) and operator burden screenings were reviewed, and the inspectors verified compensatory measures for deficient equipment which were being implemented in the field. The inspectors conducted a detailed review of selected CRs to assess the adequacy of the root cause and apparent cause evaluations of the problems identified. The inspectors reviewed these evaluations against the descriptions of the problem described in the CRs and the guidance in licensee procedure PI-AA-300-3001, "Root Cause Evaluation" and PI-AA-300-3002,

“Apparent Cause Evaluation.” The inspectors assessed if the licensee had adequately determined the cause(s) of identified problems, and had adequately addressed operability, reportability, common cause, generic concerns, extent-of-condition, and extent-of-cause. The review also assessed if the licensee had appropriately identified and prioritized corrective actions to prevent recurrence.

The inspectors reviewed selected industry operating experience (OE) items, including NRC generic communications, to verify that they had been appropriately evaluated for applicability and that issues identified through these reviews had been entered into the CAP.

The inspectors reviewed site trend reports, to determine if the licensee effectively trended identified issues and initiated appropriate corrective actions when adverse trends were identified.

The inspectors reviewed licensee audits and self-assessments, including those which focused on problem identification and resolution programs and processes, to verify that findings were entered into the CAP and to verify that these audits and assessments were consistent with the NRC’s assessment of the licensee’s CAP. The inspectors attended various plant meetings to observe management oversight functions of the corrective action process. These meetings included Condition Report Review Team (CRT) and Corrective Action Assignment Review Team (CAART).

Documents reviewed are listed in the Attachment.

b. Assessment

Problem Identification

The inspectors determined that the licensee was generally effective in identifying problems and entering them into the CAP and there was an appropriately low threshold for entering issues into the CAP. This conclusion was based on a review of the requirements for initiating CRs as described in licensee procedure PI-AA-200, “Corrective Action,” management’s expectation that employees were encouraged to initiate CRs for any reason. Trending was generally effective in monitoring equipment performance. Site management was actively involved in the CAP and focused appropriate attention on significant plant issues. Based on reviews and walkdowns of accessible portions of the selected systems, the inspectors determined that system deficiencies were being identified and placed in the CAP.

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 generally prioritized and evaluated in accordance with the licensee’s CAP procedures as described in the CR significance

determination guidance in PI-AA-200. Each CR was assigned a priority level at the CR screening meeting, and adequate consideration was given to system or component operability and associated plant risk.

The inspectors determined that station personnel had conducted root cause and apparent cause analyses in compliance with the licensee's CAP procedures and assigned cause determinations were appropriate, considering the significance of the issues being evaluated. A variety of formal causal-analysis techniques were used depending on the type and complexity of the issue consistent with PI-AA-300-3001, "Root Cause Evaluation" and PI-AA-300-3002, "Apparent Cause Evaluation."

Corrective Actions

Based on a review of corrective action documents, interviews with licensee staff, and verification of completed corrective actions, the inspectors determined that overall, corrective actions were timely, commensurate with the safety significance of the issues, and effective, in that conditions adverse to quality were corrected and non-recurring. For significant conditions adverse to quality, the corrective actions directly addressed the cause and effectively prevented recurrence in that a review of performance indicators, CRs, and effectiveness reviews demonstrated that the significant conditions adverse to quality had not recurred. Effectiveness reviews for corrective actions to prevent recurrence (CAPRs) were sufficient to ensure corrective actions were properly implemented and were effective.

However, the inspectors identified that a minor performance deficiency, related to prioritization and evaluation of issues, attributed to an inadequate closure of a corrective action. The performance deficiency was screened in accordance with Manual Chapter 0612, Issue Screening, and was determined to be of minor significance and not subject to enforcement action in accordance with the NRC's Enforcement Policy.

Inspectors identified a performance deficiency in which the licensee closed CA 288581 without providing procedure-required documentation showing which emergency action levels were reviewed, what criteria were applied for determining acceptability, or details of the specific results and bases for conclusions. The licensee's apparent cause evaluation included CA 288581 to identify other emergency action levels that had not been adequately verified and to perform a revalidation of the accuracy of the associated classification schemes using procedures EP-AA-101 and EP-AA-102. In addition, an interview with responsible program management identified that the scope of review had been substantially reduced from the extent of review specified by CA 288581. However, no record was established in the central reporting system (CRS) to show a justification and approval for the change in scope or for the omission of the documentation prescribed by the specified procedures. The verification of the accuracy of the classification schemes was necessary to assure adequate assessments of potential releases under accident conditions. The improper closure of CA 288581 was minor because it did not render an EAL ineffective such that any Site Area Emergency would not be declared, or declared in a degraded manner for a particular off-normal event. The issue was placed in the licensee's corrective action program as CR 572760.

c. Findings

No findings were identified.

2. Use of Operating Experience

a. Inspection Scope

The team examined the licensee's use of industry OE to assess the effectiveness of how external and internal operating experience information was used to prevent similar or recurring problems at the plant. In addition, the team selected operating experience documents (e.g., NRC generic communications, 10 CFR Part 21 reports, licensee event reports, vendor notifications, and plant internal operating experience items, etc.), which had been issued since March 2012, to verify whether the licensee had appropriately evaluated each notification for applicability to the North Anna Power Station, and whether issues identified through these reviews were entered into the CAP.

b. Assessment

Based on a review of selected documentation related to operating experience issues, the inspectors determined that the licensee was generally effective in screening operating experience for applicability to the plant. Industry OE was evaluated at either the corporate or plant level depending on the source and type of the document. Relevant information was then forwarded to the applicable department for further action or informational purposes. OE issues requiring action were entered into the CAP for tracking and closure. In addition, operating experience was included in all apparent cause and root cause evaluations in accordance with licensee procedure PI-AA-300-3001.

c. Findings

No findings were identified.

3. Self-Assessments and Audits

a. Inspection Scope

The team reviewed audit reports and self-assessment reports, including those which focused on problem identification and resolution, to assess the thoroughness and self-criticism of the licensee's audits and self-assessments, and to verify that problems identified through those activities were appropriately prioritized and entered into the CAP for resolution in accordance with licensee procedure PI-AA-100-1004, "Self Assessments."

b. Assessment

The team determined that the scopes of assessments and audits were adequate. Self-assessments were generally detailed and critical, as evidenced by findings consistent

with the inspector's independent review. The team verified that CRs were created to document areas for improvement and findings resulting from the self-assessments, and verified that actions had been completed consistent with those recommendations. Generally, the licensee performed evaluations that were technically accurate.

c. Findings

No findings were identified.

4. Safety-Conscious Work Environment

a. Inspection Scope

During the course of the inspection, the team assessed the station's safety-conscious work environment (SCWE) through review of the station's Employee Concerns Program (ECP) and interviews with various departmental personnel. The team reviewed a sample of ECP issues to verify that concerns were being properly reviewed and identified deficiencies were being resolved and entered into the CAP when appropriate.

b. Assessment

Based on the interviews conducted and the CRs reviewed, the inspectors determined that licensee management emphasized the need for all employees to identify and report problems using the appropriate methods established within the administrative programs, including the CAP and ECP. These methods were readily accessible to all employees. Based on discussions conducted with a sample of plant employees from various departments, the inspectors determined that employees felt free to raise issues, and that management encouraged employees to place issues into the CAP for resolution. The inspectors did not identify any reluctance on the part of the licensee staff to report safety concerns.

c. Findings

No findings were identified.

4OA6 Exit

Exit Meeting Summary

On March 12, 2015, the inspectors presented the inspection results to Mr. G. Bischof and other members of the site staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection. A re-exit was conducted with Mr. Kemp via telephone on April 20, 2015, to discuss the final results of the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:

W. Belcher, ECP Specialist
G. Bischof, Site Vice President
J. Chapman, Systems Engineering
J. Collins, Emergency Preparedness Director
F. Erico, CAP Supervisor
J. Graf, Emergency Preparedness
P. Harper, CAP Coordinator
E. Hendrixson, Site Engineering Director
L. Hilbert, Director Safety & Licensing
P. Kemp, Licensing Supervisor
S. Kottowski, Engineering Manager
F. Mladen, Plant Manager
J. Schleser, Organizational Effectiveness Manager
T. Shalaski, Emergency Preparedness
J. Slattery, Operations Manager
M. Whalen, Technical Specialist

NRC personnel:

G. Kolcum, Senior Resident Inspector

LIST OF REPORT ITEMS

Opened and Closed

None

Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

Procedures

0-ECM-0302-05, Inspection/Repair/Replacement/Testing of Cell Switch Assemblies for 4160-Volt Breakers, Rev. 0
AD-AA-102, Procedure used in Adherence, Rev. 9
CM-AA-REA-1001, Request for Engineering Assistance, Rev. 2
EP-AA-101, 10 CFR 50.54(q) Change Evaluation, Rev. 5
EP-AA-102, Revision and Control of Emergency Plan, emergency Action Levels (Technical Basis and Matrix), and Reference Manual, Rev. 7,
ER-AA-102, Preventive Maintenance Program, Rev. 7
ER-AA-MRL-10, Maintenance Rule Program, Rev. 4, 6
ER-AA-MRL-100, Implementing Maintenance Rule, Rev. 7
ER-AA-PRS-1002, Equipment Reliability Health Report, Rev. 8
ER-AA-SYS-1001, System Health Report, Rev. 8
MR-AA-100, Conduct of Maintenance, Rev. 10
OP-AA-102, Operability Determination, Rev. 9
PI-AA-10, Performance Improvement Process, Rev. 0
PI-AA-100, Performance Monitoring, Rev. 4
PI-AA-100-1004, Self-Assessments, Rev.11
PI-AA-100-1007, Operating Experience Program, Rev. 11
PI-AA-100-1007, Operating Experience Program, Rev. 3
PI-AA-200, Corrective Action, Rev. 20, 23
PI-AA-200-2001, Trending, Rev. 3
PI-AA-200-2002, Effectiveness Reviews, Rev. 5
PI-AA-3002, Apparent Cause Evaluation, Rev.6
PI-AA-300-3001, Root Cause Evaluation, Rev. 3
PI-AA-300-3001, Root Cause Evaluation, Rev. 4
PI-AA-300-3002, Apparent Cause Evaluation, Rev. 6
PI-AA-300-3003, Common Cause Evaluation, Rev. 0
PI-AA-300-3004, Cause Evaluation Methods, Rev. 2
VPAP-0692, Vendor Technical Manual Control, Rev. 5
VPAP-0803, Preventive Maintenance Program, Rev.17, 18, and 19
WM-AA-100, Work Management, Rev. 25

Condition Reports

569900	569284	506542	478151
553922	569326	517184	465646
558002	569681	518945	343321
559911	568886	523054	558842
560250	539853	523501	555227
524596	542433	509571	550379
387400	542674	558002	481297
523054	551416	554291	526965
566217	566217	559911	373123
414961	414966	560250	401552
542454	538201	522419	405494
568636	542454	389196	486379
568982	504740	451712	533586

418644	516498	506584	538098
555405	553922	508186	540391
556452	558002	514072	540451
560378	559911	515220	541424
553069	560250	515250	542490
565540	558002	515959	554335
507166	416450	516848	554618
525130	558720	518207	554758
535207	527516	519724	554763
535555	560311	520188	554788
508199	526000	521940	558085
508199	526040	528581	569647
488720	536183	529648	531128
489552	516848	531679	560311
489521	508838	535840	568000
488720	533387	537729	501347
508538	106792	537792	531679
506538	505210	535915	

Condition Reports Generated

298119, Request Work Order 59102709407 to be Reopened by IT in Maximo
572521, Request Work Order 59102709407 to be Reopened by IT in Maximo
572663, Service Water System Health Report had Incorrect REA Reference
572760, Inadequate Documentation to Support Closure of CA288581
573702, Review Corrective Action Program Process for Assignment Closures

Work Orders

59052707001	59102612700	59101944141	59102444098
59102819845	59102577824	59102818721	59102772418
59102640190	59102280003	59102700363	59102753497
59102157897	59102401598	59102711236	59102753497
59102634467	5910259194	59102088612	59102238655
59102271195	59102679384	59102712521	59102507587
59102709407	59102679518	5910102392	59102497430
59102681714	59102091141	59102490227	59102613668
59102681715	59102230068	59102569102	59102623592
59102679759	59102230062	59102614487	59102692437
59102578715	59102765544	59102619466	59102670642
59102613668	59102612270	59102634467	59102685887
59102679991	59102271196	59102635810	59102702051
59102518754	59107094071	59102635750	59102749514
59102765544	59102815215	59102581190	59102750615
59102113677	59102815215	59102166388	59102753498
59102269146	59102814424	59102398510	
59102567828	59102816290	59102484913	

Self-Assessments

Audit 13-02, Emergency Preparedness, dated 4/9/2013
 Audit 13-06, Nuclear Training, dated 9/25/2013
 Audit 14-02, Emergency Preparedness, dated 4/17/2014
 Assessment 13-05-N, "N2R22 Pre-Outage Readiness Assessment T-2m," 2/12/2013
 Assessment 13-20-N, Time Critical Operator Actions, dated 4/9/2013
 Assessment 13-45-N, Operational Risk Assessments, dated 9/5/2013
 SAR002038, Self-Assessment Maintenance Rule a(3), dated 8/31/2012
 SAR002804, Self-Assessment Maintenance Rule a(3), dated 7/31/2014

Other Documents

A1G000356, No MRFF for one year after implementation of design change, dated 6/8/2013
 ACE 019781, Non-Cited Violation for Effectiveness of Emergency Plan
 AFI 13-005-NAPS, Weaknesses in the Development of the Emergency Plan Scenarios, dated 2/26/2013
 DCN-NA-13-0105 Casing Cooling tank low-low level setpoint change, dated 2/19/2014
 Dwg-11715-FY-8D, Proposed Site Utilization Plan Early Site Permitting Plant Envelope, North Anna Power Station
 LER 05000339 2013-002, Manual Reactor Trip Due to Closure of 2-FW-MOV-250C and Auto Start of 2-FW-P-1B, Rev. 0, dated 7/23/2013
 LR-1762/LR-2762, License Renewal Project Aging Management Activities, dated 2/24/2011
 MRE 13223, Missile Shield Door Will Not Get Closed on O2-BLD-DR-RV73-1, dated 7/15/2013
 MRE 16157, Seal Leakage from 2-HV-2-20A, dated 4/3/2013
 MRE 16614, 2-FW-308 Weld Leak, dated 6/25/2014
 MRE 17006, MRE to Eng for Manually Tripped SBO Diesel, dated 4/3/2014
 MRE 17721, 1-HV-AC-7 Fan Contacting Shroud, dated 11/5/2014
 NNAN01 Report, Control Room Panel Deficiencies, dated December 2014
 NNAN01 Report, Operator Workarounds, dated 11/26/2013
 NNAN02 Report, Control Room Panel Deficiencies, dated December 2014
 NNAN02 Report, Operator Workarounds, dated April 2013
 Nuclear Oversight – North Anna Site Vice President Brief, dated 3/12/2013
 OAFI000066, Weaknesses in the Development of Emergency Plan Scenarios," dated 3/15/2013
 OD 000530, Prompt Operability Determination - Step Change in Vibration Levels with the Pre-Lube Pump Discharge Piping (2H EDG), dated 3/6/13.
 REA 1999-106/DCP 04-008, Replace Service Water Spray Array Piping
 REA 2005-071/DC-NA-08-0145, SW expansion joints in the Tie-in vault & SW valve House to be replaced with spool pieces
 REA 2006-068, SW MOVs 103s 104s 203s & 204s are difficult to adjust and frequently leak by
 REA 2008-057, No Drains to Allow Draining of SW piping to AFW, Alternate AFW water supply
 REA 2012-037, Potential Design Deficiency of the SW Air Sub-System
 REA# 2014-031, Replacement of Stainless Steel Piping with Al6XN
 Service Water Health System Reports, Q3- 2014
 Standing Order SO-13-001, dated 11/6/2013
 Visual Cues Report, Active Control Room Equipment Challenges, dated 2/25/2015