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

August 6, 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 INTEGRATED INSPECTION REPORT 05000338/2015002 and 05000339/2015002

Dear Mr. Heacock:

On June 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your North Anna Power Station Units 1 and 2. On July 29, 2015, the NRC inspectors discussed the results of this inspection with Mr. G. Bischof and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

The inspection examined activities conducted under your licenses as they related to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

NRC inspectors documented one self-revealing finding of very low safety significance (Green) in this report which was determined to involve a violation of NRC requirements. The NRC is treating this finding as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you wish to contest this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the North Anna Power Station.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at the North Anna Power Station.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Steven D. Rose, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos.: 05000338, 05000339
License Nos.: NPF-4, NPF-7

Enclosure:
IR 05000338/2015002 and 05000339/2015002
w/Attachment: Supplementary Information

cc: Distribution via Listserv

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Steven D. Rose, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos.: 05000338, 05000339
License Nos.: NPF-4, NPF-7

Enclosure:
IR 05000338/2015002 and 05000339/2015002
w/Attachment: Supplementary Information

cc: Distribution via Listserv

☒ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE ☒ NON-SENSITIVE

ADAMS: ☒ Yes ACCESSION NUMBER:_____ ☒ SUNSI REVIEW COMPLETE ☒ FORM 665 ATTACHED

OFFICE	RII:DRP	RII:DRP	RII:DRS	RII:DRS	RII:DRP	RII:DRP	RII:DRS
SIGNATURE	GJK2	TGR1	CAF2	SPS	SDR2	SON	RXK3 /RA for/
NAME	GKolcum	GSkaggs Ryan	CFontana	SSanchez	SRose	SNinh	RHamilton
DATE	7/31/2015	8/5/2015	7/30/2015	8/3/2015	8/6/2015	8/6/2015	8/3/2015
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO
OFFICE	RII:DRS	RII:DRS	RII:DRP				
SIGNATURE	RSK3	WSP1	CMD4				
NAME	RKellner	WPursley	CDykes				
DATE	8/3/2015	8/2/2015	8/4/2015				
E-MAIL COPY?	YES NO	YES NO	YES NO				

OFFICIAL RECORD COPY DOCUMENT NAME: G:\DRPII\RPB5\NORTH ANNA\REPORTS\2015\2015-002\NA2015-002 REPORT FINAL.DOCX

Letter to David A. Heacock from Steven D. Rose dated August 6, 2015.

SUBJECT: NORTH ANNA POWER STATION – NRC INTEGRATED INSPECTION REPORT 05000338/2015002 AND 05000339/2015002

DISTRIBUTION:
S. Price, RII
D. Gamberoni, RII
L. Gibson, RII
OE Mail
RIDSNRRDIRS
PUBLIC
RidsNrrPMNorthAnna Resource

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-338, 50-339
License Nos:	NPF-4, NPF-7
Report No:	05000338/2015002 and 05000339/2015002
Licensee:	Virginia Electric and Power Company (VEPCO)
Facility:	North Anna Power Station, Units 1 & 2
Location:	Mineral, Virginia 23117
Dates:	April 1, 2015 through June 30, 2015
Inspectors:	G.Kolcum, Senior Resident Inspector G. Skaggs Ryan, Resident Inspector C. Fontana, Emergency Preparedness Inspector, Sections 1EP2, 1EP3, 1EP4, 1EP5, and 4OA1 S. Sanchez, Senior Emergency Preparedness Inspector, Sections 1EP2, 1EP3, 1EP4, 1EP5, and 4OA1 R. Hamilton, Senior Health Physicist, Section 2RS8 R. Kellner, Senior Health Physicist, Sections 2RS6 and 4OA1 W. Pursley, Health Physicist, Sections 2RS7 and 4OA1
Approved by:	Steven D. Rose, Chief Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

SUMMARY

IR 05000338/2015-002, 05000339/2015-002; 04/01/2015 – 06/30/2015; North Anna Power Station, Units 1 and 2. Maintenance Effectiveness.

The report covered a three-month period of inspection by resident inspectors and senior operations engineers from the region. One self-revealing finding was identified and was determined to be a non-cited violation (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated April 29, 2015. The cross-cutting aspects are determined using IMC 0310, "Components Within the Cross Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Mitigating Systems

- Green. A self-revealing NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for the licensee's failure to maintain an adequate maintenance procedure to set the governor valve on the Unit 1 Turbine Driven Auxiliary Feedwater (TDAFW) pump to the fully closed position. Specifically, the licensee failed to clarify key measurements in Maintenance Procedure 0-MCM-0412-02, "Repair of the Terry Turbine Governor Valve," Revision 11, section 6.4.6, which sets the fully closed position of the governor valve that also adversely impacted the performance of the TDAFW system, and the TDAFW system suction source, the Emergency Condensate Storage Tank (ECST). This issue was entered this into the licensee's corrective action program as CR 572803.

  The licensee failed to maintain an adequate maintenance procedure to set the governor valve on the Unit 1 TDAFW pump to the fully closed position was a performance deficiency (PD). Using Manual Chapter 0612, Appendix B, Issue Screening, dated September 7, 2012, the inspectors determined that the PD was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage) and is therefore a finding. The finding was screened in accordance with NRC Inspection Manual Chapter (IMC) 0609, Attachment 4, Initial Characterization of Findings, dated June 19, 2012, and was determined to affect the short term secondary system heat removal safety function within the Mitigating Systems Cornerstone. The finding was determined to represent a loss of system function of the auxiliary feedwater (AFW) system as the incorrectly set governor caused the TDAFW pump to run at higher discharge pressure under low flow conditions, lifting the TDAFW discharge relief valve, which bypassed approximately 200 gpm flow to the ground. With the loss of 200 gpm the ECST could not have met its mission time which represented a loss of system function requiring a detailed risk analysis.

A detailed risk analysis was performed by a regional senior reactor analyst (SRA) in accordance with the guidance of NRC IMC 0609, Appendix A, The Significance Determination Process (SDP) for ndings At-Power, dated June 19, 2012, using the NRC North Anna SPAR model. The major analysis assumptions included: the ECST failed for a one year exposure period, no additional failure modes from the incorrectly set TDAFW pump governor valve other than the early depletion of the ECST, and no recovery for the condition other than to align to alternate suction source which remained at nominal failure probability. The dominant sequence was a loss of offsite power with success of reactor protection system, success of the emergency power system and late failure of AFW and late failure of feed and bleed leading to core damage. The risk was mitigated by the availability of other suction sources. The result of the analysis was that the PD represented an increase in core damage frequency of < 1.0 E-6/year, a GREEN finding of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance associated with resources attribute because leaders failed to ensure that personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety to maintain the ECST inventory during the mission time. [H.1]. (1R12).

REPORT DETAILS

Summary of Plant Status

Unit 1 began the period at full Rated Thermal Power (RTP) and operated at full RTP power until the Unit experienced an automatic trip on April 2, 2015, due to an electronic card failure on the automatic voltage regulator. Unit 1 restarted on April 4, 2015 and returned to full RTP on April 5, 2015. Due to grid instability, Unit 1 lowered reactor power to 96 percent on April 6, 2015, and returned to full RTP on April 8, 2015. Unit 1 operated at full RTP for the remainder of the report period.

Unit 2 began the period at full RTP. Due to grid instability, Unit 2 lowered reactor power to 94 percent on April 6, 2015, and returned to full RTP on April 8, 2015. Unit 2 operated at full RTP power for the remainder of the report period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

.1 Review of Offsite Power and Alternate AC Power Readiness

a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternative alternating current (AC) power systems were appropriate. The inspectors reviewed the licensee's procedures affecting those areas, and the communications protocols between the transmission system operator and the nuclear power plant to verify that the appropriate information was exchanged when issues arose that could impact the offsite power system. The inspectors evaluated the readiness of the offsite and alternative AC power systems by reviewing the licensee's procedures that address measures to monitor and maintain the availability and reliability of the offsite and alternative AC power systems.

b. Findings

No findings were identified.

.2 Seasonal Susceptibilities

a. Inspection Scope

The inspectors reviewed the licensee's adverse weather preparations for hot weather operations, specified in 0-GOP-4.1, "Hot Weather Operations," Revision 32, and the licensee's corrective action program (CAP) database for hot weather related issues. The inspectors walked down three risk-significant systems/areas listed below to verify compliance with the procedural requirements and to verify that the specified actions provided the necessary protection for the structures, systems, or components.

- Unit 1 & 2 Emergency Diesel Generators (EDG)
- Station Blackout Diesel
- Switchyard

b. Findings

No findings were identified.

.3 Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors performed three site specific weather related inspections due to anticipated adverse weather conditions. The inspectors reviewed licensee's adverse weather response procedures, including 0-AP-41, "Severe Weather Conditions," Revision 64, and site preparations including work activities that could impact the overall maintenance risk assessments.

- April 10, 2015, high wind warnings with gusts up to 50 miles an hour for the area
- June 25, 2015, severe thunderstorm with lightning
- June 23, 2015, severe thunderstorm with lightning

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial Walkdowns

a. Inspection Scope

The inspectors conducted four equipment alignment partial walkdowns, listed below, to evaluate the operability of selected redundant trains or backup systems with the other train or system inoperable or out of service. The inspectors reviewed the functional systems descriptions, Updated Final Safety Analysis Report (UFSAR), system operating procedures, and Technical Specifications (TS) to determine correct system lineups for the current plant conditions. The inspectors performed walkdowns of the systems to verify the operability of a redundant or backup system/train or a remaining operable system/train with a high risk significance for the current plant configuration (considering out-of-service, inoperable, or degraded condition); or a risk-significant system/train that was recently realigned following an extended system outage, maintenance, modification, or testing; or a risk-significant single-train system. The inspector conducted the reviews to ensure that critical components were properly aligned, and to identify any discrepancies which could affect operability of the redundant train or backup system.

- Unit 2 casing cooling pump house
- Unit 1 and Unit 2 recirculation spray heat exchangers service water
- Unit 1 and Unit 2 EDG exhaust and intake air bunker
- Station blackout (SBO) EDG lube oil and jacket water

b. Findings

No findings were identified.

.2 Complete Walkdown

a. Inspection Scope

The inspectors performed a detailed walkdown and inspection of the Unit 2 AFW system to assess proper alignment and to identify discrepancies that could impact its availability and functional capacity. The inspectors assessed the physical condition and position of each recirculation spray and casing cooling valve, whether manual, power operated or automatic, to ensure correct positioning of the valves. The inspection also included a review of the alignment and the condition of support systems including fire protection, room ventilation, and emergency lighting. Equipment deficiency tags were reviewed and the condition of the system was discussed with the engineering personnel.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Quarterly Fire Protection Walkdowns

a. Inspection Scope

The inspectors conducted focused tours of the seven areas listed below that are important to reactor safety to verify the licensee's implementation of fire protection requirements as described in fleet procedures CM-AA-FPA-100, "Fire Protection/Appendix R (Fire Safe Shutdown) Program," Revision 10, CM-AA-FPA-101, "Control of Combustible and Flammable Materials," Revision 8, and CM-AA-FPA-102, "Fire Protection and Fire Safe Shutdown Review and Preparation Process and Design Change Process," Revision 5. The inspectors evaluated, as appropriate, conditions related to: (1) licensee control of transient combustibles and ignition sources; (2) the material condition, operational status, and operational lineup of fire protection systems, equipment, and features; and, (3) the fire barriers used to prevent fire damage or fire propagation. Other documents reviewed are listed in the Attachment to this report.

- Main Control Room
- Unit 2 AFW pump houses

- Unit 2 cable vault, tunnel, rod drive rooms
- Unit 1 EDGs
- Unit 2 EDGs
- Unit 1 main steam valve house
- Unit 2 main steam valve house

b. Findings

No findings were identified.

.2 Fire Protection – Drill Observation

a. Inspection Scope

During a fire protection drill on May 6, 2015, at the SBO EDG, the inspectors assessed: the timeliness of the fire brigade in arriving at the scene, the firefighting equipment brought to the scene, the donning of fire protection clothing, the effectiveness of communications, and the exercise of command and control by the scene leader. The inspectors also assessed the acceptance criteria for the drill objectives and reviewed the licensee's corrective action program for recent fire protection issues. The condition reports (CRs) issued for drill critique items are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors reviewed a licensed operator performance on May 27, 2015, during a simulator scenario. The scenario required classifications and notifications that were counted for NRC performance indicator (PI) input.

The inspectors observed the following elements of crew performance in terms of communications: (1) ability to take timely and proper actions; (2) prioritizing, interpreting, and verifying alarms; (3) correct use and implementation of procedures, including the alarm response procedures; (4) timely control board operation and manipulation, including high-risk operator actions; and, (5) oversight and direction provided by the shift supervisor, including the ability to identify and implement appropriate TS actions. The inspectors observed the post training critique to determine that weaknesses or improvement areas revealed by the training were captured by the instructor and reviewed with the operators. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings were identified.

.2 Quarterly Control Room Operator Performance Observations

a. Inspection Scope

During the inspection period, the inspectors conducted three observations of licensed reactor operators actions and activities to ensure that the activities were consistent with the licensee procedures and regulatory requirements. These observations took place during both normal and off-normal plant working hours. As part of this assessment, the inspectors observed the following elements of operator performance: (1) operator compliance and use of plant procedures including technical specifications; (2) control board/in-plant component manipulations; (3) use and interpretation of plant instruments, indicators and alarms; (4) documentation of activities; (5) management and supervision of activities; and, (6) communication between crew members.

The inspectors observed and assessed licensed operator performance during the following events:

- On April 15, 2015, during Unit 2 service water (SW) 'B' pump operation
- On May 28, 2015 during Unit 1 TDAFW pump trip valve maintenance
- On June 16, 2015 during SW air compressor high differential pressure alarm

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

For the four equipment issues listed below, the inspectors evaluated the effectiveness of the respective licensee's preventive and corrective maintenance. The inspectors performed walkdowns of the accessible portions of the systems, performed in-office reviews of procedures and evaluations, and held discussions with licensee staff. The inspectors compared the licensee's actions with the requirements of the Maintenance Rule (10 CFR 50.65), and licensee procedure ER-AA-MRL-10, "Maintenance Rule Program," Revision 6. Other documents reviewed are listed in the Attachment to this report.

- CR576317, "Unit 2 recirculation spray 'B' chiller"
- CR575828, "Unit 1 automatic voltage regulator failed high"
- CR576240, "Main steam radiation monitor alarms, 1-MS-RM-171"
- MRE18558, "1J EDG exhaust"

b. Findings

Introduction: A self-revealing NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for the licensee's failure to maintain an adequate maintenance procedure to set the governor valve on the Unit 1 Turbine Driven Auxiliary Feedwater (TDAFW) pump to the fully closed position. Specifically, the licensee failed to clarify key measurements in Maintenance Procedure 0-MCM-0412-02, "Repair of the Terry Turbine Governor Valve," Revision 11, section 6.4.6, which sets the fully closed position of the governor valve, that also~~,~~ adversely impacted the performance of the TDAFW system, the TDAFW system suction source, and the Emergency Condensate Storage Tank (ECST). This issue was entered this into the licensee's corrective action program as CR 572803.

Description: The February 26, 2015, reactor trip of Unit 1, actuated the TDAFW pump automatically and the relief valve on the pump discharge line was observed lifting, releasing approximately 200 gpm of ECST water to the general yard area. Upon further investigation, the licensee discovered the governor valve on the TDAFW pump was unable to fully seat by approximately 0.1875 inches. With the governor valve unable to fully seat, the TDAFW pump continued to run under low flow conditions and the discharge pressure increased to above the relief valve setpoint. The relief valve lifted as designed and discharged ECST water inventory to the yard area.

Maintenance Procedure 0-MCM-0412-02, section 6.4.6, instructs how to install the governor level assembly into the valve bonnet. The procedure steps are unclear with respect to several key measurements that set the full closed position of the governor valve. Unit 1 TDAFW governor valve was overhauled in February 2015, April 2012, May 2011 and March 2006. Based on the recorded measurements from the governor overhaul work packages, the governor valve would not fully close for Unit 1 from April 2012 to February 2015.

After reviewing pump discharge pressure and flow traces for Unit 1 during the above mentioned time periods, the inspectors noted that Unit 1 experienced TDAFW pressure spikes. The relief valve operates with a setpoint of 1480 psig with a +/- 3% tolerance (1435-1524 psig). The relief valve functions as a safety valve at 10% of its setpoint, 1628 psig with a flowrate of 786 gpm. Unit 1 TDAFW pump discharge pressure during the February 26, 2015 reactor trip reached 1555 psig and released approximately 200 gpm for approximately 15 minutes.

Per Surveillance Requirement SR 3.7.6.1 as defined in Technical Specification (TS) 3.7.6, the ECST shall contain greater than 110,000 gallons of water. As the suction source for the AFW system, the ECST has a mission time of 8 hours to provide residual heat removal and to maintain the plant in Mode 3 would have required operator action to refill the tank from the condensate storage tank, the service water system or the fire protection system to remain operable.

Analysis: The licensee failed to maintain an adequate maintenance procedure to set the governor valve on the Unit 1 TDAFW pump to the fully closed position was a performance deficiency (PD). Using Manual Chapter 0612, Appendix B, Issue Screening, dated September 7, 2012, the inspectors determined that the PD was more

than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). The finding was screened in accordance with NRC Inspection Manual Chapter (IMC) 0609, Attachment 4, Initial Characterization of Findings, dated June 19, 2012, and was determined to affect the short term secondary system heat removal safety function within the Mitigating Systems Cornerstone. The finding was determined to represent a loss of system function of the AFW system as the incorrectly set governor caused the TDAFW pump to run at higher discharge pressure under low flow conditions, lifting the TDAFW discharge relief valve, which bypassed approximately 200 gpm flow to the ground. With the loss of 200 gpm the ECST could not have met its mission time which represented a loss of system function requiring a detailed risk analysis.

A detailed risk analysis was performed by a regional SRA in accordance with the guidance of NRC IMC 0609, Appendix A, The Significance Determination Process (SDP) for Findings At-Power, dated June 19, 2012, using the NRC North Anna SPAR model. The major analysis assumptions included: the ECST failed for a one year exposure period, no additional failure modes from the incorrectly set TDAFW pump governor valve other than the early depletion of the ECST, and no recovery for the condition other than to align to alternate suction source which remained at nominal failure probability. The dominant sequence was a loss of offsite power with success of reactor protection system, success of the emergency power system and late failure of AFW and late failure of feed and bleed leading to core damage. The risk was mitigated by the availability of other suction sources. The result of the analysis was that the performance deficiency represented an increase in core damage frequency of < 1.0 E-6/year, a GREEN finding of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance associated with resources attribute because leaders failed to ensure that personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety to maintain the ECST inventory during the mission time. [H.1].

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” required, in part, that activities affecting quality be prescribed by documented instructions and procedures appropriate to the circumstances and shall be accomplished in accordance with these instructions and procedures.

The licensee’s maintenance procedure, 0-MCM-0412-02, “Repair of the Terry Turbine Governor Valve,” Revision 11, section 6.4.6, sets the fully closed position of the governor valve, that also, impacts the performance of the AFW system and the TDAFW system suction source, the ECST. Contrary to this requirement, the licensee failed to maintain an adequate maintenance procedure to set the governor valve on the Unit 1 TDAFW pump to the fully closed position. Specifically, the licensee failed to clarify key measurements in Maintenance Procedure 0-MCM-0412-02, “Repair of the Terry Turbine Governor Valve,” Revision 11, section 6.4.6, which sets the fully closed position of the governor valve, that also, adversely impacted the performance of the Unit 1 TDAFW

system and the AFW system suction source, the ECST. Because it is of very low safety significance (Green), this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy. The violation was entered into the licensee's corrective action program as CR 572803. This non-cited violation is identified as NCV 05000338/2015002-01, Failure To Maintain An Adequate Maintenance Procedure For The Turbine Driven Auxiliary Feedwater Pump.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, the six activities listed below for the following: (1) effectiveness of the risk assessments performed before maintenance activities were conducted; (2) management of risk; (3) appropriate and necessary steps taken to plan and control the resulting emergent work activities upon identification of an unforeseen situation; and, (4) adequate identification and resolution of maintenance risk assessments and emergent work problems. The inspectors verified that the licensee was in compliance with the requirements of 10 CFR 50.65 (a)(4) and the data output from the licensee's safety monitor associated with the risk profile of Units 1 and 2. The inspectors reviewed the corrective action program to verify that deficiencies in risk assessments were being identified and properly resolved.

- Work week schedule after Unit 1 trip on April 2, 2015
- Emergent work on Unit 1 AFW check valve, 1-FW-68, on April 2, 2015
- Maintenance activities on Unit 1 TDAFW pump after oil sample on April 6, 2015
- Work week schedule during grid loading Ladysmith line on April 13, 2015
- Work week schedule 1J EDG inoperable on April 22, 2015
- Maintenance activities during 'B' SW header maintenance during week of June 22, 2015

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments

.1 Operability and Functionality Review

a. Inspection Scope

The inspectors reviewed six operability determinations and functionality assessments, listed below, affecting risk-significant mitigating systems, to assess, as appropriate: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing degraded conditions were considered as compensatory measures; (4) whether the compensatory measures, if involved, were in place, would work as intended, and were appropriately controlled; and, (5) where continued operability was considered unjustified, the impact on TS Limiting Conditions

for Operation and the risk significance in accordance with the SDP. The inspectors' review included a verification that operability determinations (OD) were made as specified by procedure OP-AA-102, "Operability Determination," Revision 13. Other documents reviewed are listed in the Attachment to this report.

- Review of OD000616, "Unit 1 AFW long term oil moisture content"
- Review of CR572803, "ECST operability"
- Review of CR577502, "1J EDG exhaust inoperability"
- Review of CR577689, "2H and 2J exhaust operability"
- Review of CR580411, "2H EDG exhaust support operability"
- Review of CR581648, "1H EDG coolant leak"

b. Findings

No findings were identified.

1R18 Plant Modifications

.1 Permanent Modifications

a. Inspection Scope

The inspectors reviewed the three completed permanent plant modification design change packages (DCP) listed below. The inspectors conducted a walkdown of the installation, discussed the desired improvement with system engineers, and reviewed the 10 CFR 50.59, Safety Review/Regulatory Screening, technical drawings, test plans and the modification package to assess the TS implications. Other documents reviewed are listed in the Attachment to this report.

- DC-NA-11-01082, "Main Steam Radiation Monitor Replacement"
- DC-NA-11-01168, "Appendix R Radio Handset Replacement"
- DC-NA-15-00048, "1J EDG Pipe Support Anchor Repairs"

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed six post maintenance test procedures and/or test activities, listed below, for selected risk-significant mitigating systems to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had

current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and, (8) equipment was returned to the status required to perform in accordance with VPAP-2003, "Post Maintenance Testing Program," Revision 14.

- 1-OP-58.2, "Rod Control System Operation," Revision 24 for Unit 1 step counter
- 1-PT-71.1Q, "1-FW-P-2 , Turbine Driven Auxiliary Feedwater Pump and Valve Test," Revision 62 for Unit 1 TDAFW oil samples
- WO59102859073 and WO 59102858809, for 1J EDG maintenance
- WO59102858133, for diesel fire pump maintenance
- 2-PT-230.4, "2J Emergency Diesel Generator Starting Air Subsystem" after 'B' air compressor maintenance
- 2-PT-71.1Q, "2-FW-P-2 , Turbine Driven Auxiliary Feedwater Pump and Valve Test," Revision 58 for Unit 2 TDAFW oil samples

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

.1 Unit 1 Forced Outage for Generator Voltage Regulator Failure

a. Inspection Scope

Unit 1 forced outage on April 2, 2015, due to failed voltage regulator for the main generator. During the forced outage period, the inspectors used NRC inspection procedure 71111.20, "Refueling and Outage Activities," to observe portions of the maintenance and startup activities to verify that the licensee maintained defense-in-depth commensurate with outage risk assessments and applicable TS. The inspectors reviewed licensee actions for the outage activities listed below.

- Licensee configuration management, including daily outage reports, to evaluate defense-in-depth commensurate with the outage safety plan and compliance with the applicable TS when taking equipment out of service.
- Controls over the status and configuration of electrical systems and switchyard to ensure that TS and outage safety plan requirements were met.
- Decay heat removal processes to verify proper operation and that steam generators, when relied upon, were a viable means of backup cooling.
- Heat up and startup activities to verify TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant conditions. Reactor coolant system (RCS) integrity was verified by reviewing RCS leakage calculations and containment integrity was verified by reviewing the status of containment penetrations and containment isolation valves.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the five surveillance tests listed below, the inspectors examined the test procedures, witnessed testing, or reviewed test records and data packages, to determine whether the scope of testing adequately demonstrated that the affected equipment was functional and operable, and that the surveillance requirements of TS were met. The inspectors also determined whether the testing effectively demonstrated that the systems or components were operationally ready and capable of performing their intended safety functions.

In-Service Test:

- 2-PT-77.11C, "Control Room Chiller 2-HV-E-4C Pump and Valve Test," Revision 42

Other Surveillance Tests:

- 1-PT-52.2A, "Reactor Coolant System Leakrate," Revision 36
- 2-PT-17.3, "Rod Position Verification Using The Incore Flux Mapping System," Revision 9
- 2-PT-71.2Q, "2-FW-P-3A, A Motor-Driven AFW Pump and Valve Test," Revision 38
- 2-PT-36.5.3B, "Solid State Protection System Output Slave Relay Test (Train B)," Revision 38

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors evaluated the adequacy of the licensee's methods for testing the alert and notification system in accordance with NRC Inspection Procedure 71114, Attachment 02, Alert and Notification System Evaluation. The applicable planning standard, 10 CFR Part 50.47(b) (5) and its related 10 CFR Part 50, Appendix E, Section IV.D requirements were used as reference criteria. The criteria contained in NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Revision (Rev.) 1, were also used as a reference.

The inspectors reviewed various documents which are listed in the Attachment, interviewed personnel responsible for siren maintenance and verified placement of several sirens. This inspection activity satisfied one inspection sample for the alert and notification system on a biennial basis.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System

a. Inspection Scope

The inspectors reviewed the licensee's Emergency Response Organization (ERO) augmentation staffing requirements and process for notifying the ERO to ensure the readiness of key staff for responding to an event and timely facility activation. The qualification records of key position ERO personnel were reviewed to ensure all ERO qualifications were current. A sample of problems identified from augmentation drills or system tests performed since the last inspection were reviewed to assess the effectiveness of corrective actions.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03, Emergency Response Organization Staffing and Augmentation System. The applicable planning standard, 10 CFR 50.47(b) (2), and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

The inspectors reviewed various documents which are listed in the Attachment. This inspection activity satisfied one inspection sample for the ERO staffing and augmentation system on a biennial basis.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, one change was made to the Radiological Emergency Plan, along with changes to several implementing procedures. The licensee determined that, in accordance with 10 CFR 50.54(q), the Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors reviewed these changes to evaluate for potential reductions in the effectiveness of the Plan. However, this review was not documented in a Safety Evaluation Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, Emergency Action Level (EAL) and Emergency Plan Changes. The applicable planning standards of 10 CFR 50.47(b), and its related requirements in 10 CFR 50, Appendix E, were used as reference criteria.

The inspectors reviewed various documents that are listed in the Attachment to this report. This inspection activity satisfied one inspection sample for the emergency action level and emergency plan changes on an annual basis.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness

a. Inspection Scope

The inspectors reviewed the corrective actions identified through the Emergency Preparedness program to determine the significance of the issues, the completeness and effectiveness of corrective actions, and to determine if issues were recurring. The licensee's drill and exercise critique reports, self-assessments, and audits were reviewed to assess the licensee's ability to be self-critical, thus avoiding complacency and degradation of their emergency preparedness program. The licensee's 10 CFR 50.54(q) change process and selected evaluations of Emergency Preparedness document revisions were reviewed to assess adequacy. The inspectors toured facilities and reviewed equipment and facility maintenance records to assess licensee's adequacy in maintaining them. During tours of the main control room, the inspectors observed licensee staff demonstrate the capabilities of selected radiation monitoring instrumentation used to detect dose rates of selected areas of the plant to adequately support declaration of the effected EALs. In addition, the inspectors reviewed licensee procedures and training for the evaluation of changes to the emergency plans.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 05, and Maintenance of Emergency Preparedness. The applicable 10 CFR 50.47(b) planning standards and related 10 CFR 50, Appendix E requirements were used as reference criteria.

The inspectors reviewed various documents which are listed in the Attachment. This inspection activity satisfied one inspection sample for the maintenance of emergency preparedness on a biennial basis.

b. Findings

No findings were identified.

1EP6 Drill Evaluation

Emergency Preparedness Drill

a. Inspection Scope

On June 23, 2015, the inspectors reviewed and observed the performance of a drill that involved a General Emergency where a main steam line failed, leading to a ruptured steam generator, and failed fuel. The inspectors assessed emergency procedure usage, emergency plan classification, notifications, and the licensee's identification and entrance of any problems into their corrective action program. This inspection evaluated the adequacy of the licensee's conduct of the drill and performance critique. Exercise issues were captured by the licensee in their corrective action program as CRs. Requalification training deficiencies were captured within the operator training program.

b. Findings

No findings were identified.

2. RADIATION SAFETY (RS)

Cornerstones: Occupational Radiation Safety (OS) and Public Radiation Safety (PS)

2RS6 Radioactive Gaseous and Liquid Effluent Treatment

a. Inspection Scope

Event and Effluent Program Reviews: The inspectors reviewed the 2013 and 2014 Annual Radiological Effluent Release Report (ARERR) documents for consistency with requirements in the Offsite Dose Calculation Manual (ODCM) and TS. Five ODCM revisions completed since the last inspection were reviewed by the inspectors. The revisions were primarily administrative or applicable to the Radiological Environmental Monitoring Program (REMP). No changes were made to radioactive gaseous or liquid effluent treatment systems. Routine and abnormal effluent release results and reports, as applicable, were reviewed and discussed with responsible licensee representatives. Status of the radioactive gaseous and liquid effluent processing and monitoring equipment as described in the UFSAR and current ODCM were discussed with responsible staff.

Radioactive Waste Treatment Systems: The inspectors walked-down the gaseous and liquid radioactive waste (radwaste) processing and discharge systems for material condition and configuration. To the extent practical, the inspectors observed and evaluated the material condition of in-place waste processing equipment for indications of degradation or leakage that could constitute a possible release pathway to the environment. Inspected components included waste monitor tanks (clarifier), waste gas decay tanks, ventilation filtration systems, boron recovery tanks, vendor-supplied liquid waste processing equipment, and associated piping and valves. The inspectors

interviewed licensee staff regarding radwaste equipment configuration and effluent monitor operation. The inspectors also reviewed surveillance testing records for auxiliary building ventilation filtration systems.

Effluent Processing: The inspectors observed the collection of liquid effluent samples from the Steam Generator High Capacity Blow Down Tank, and the Clarifier Effluent Proportional Tank. Inspectors observed technician proficiency in collecting and analyzing some of the samples. The inspectors discussed liquid and gaseous effluent discharge pathways and operability of the effluent radiation monitors with plant personnel. The inspectors reviewed gaseous and liquid release permits, effluent monitor setpoints, and public dose calculations. The reviews included review and discussion of selected dose calculation summaries. Release quantities and dose impacts were reviewed and discussed. Inspectors reviewed 10 CFR 61 analysis data. The inspectors reviewed the calculated public dose results for any indications of higher than anticipated or abnormal releases. The inspectors also reviewed compensatory sampling data for time periods when selected radiation monitors were out of service. The inspectors reviewed the results of the radiochemistry cross-check program for 2013 and 2014 to evaluate the quality of the radioactive effluent sample analyses, and results of the 2013 and 2014 land use census. Meteorological data used to calculate doses to the public were evaluated as part of Inspection Procedure (IP) 71124.07.

Ground Water Protection: The inspectors reviewed historical and current groundwater sample results. The inspectors discussed changes in the groundwater protection program, updates to the site hydrology model, and efforts to identify the source of tritium detected in several on-site monitoring wells. The groundwater program was discussed with Radiation Protection representatives. The inspectors reviewed and discussed the licensee's program for monitoring of structures, systems, and components with the potential to release radioactive material to the environment, including selected portions of the liquid radwaste system. Potential effluent release points due to onsite surface water bodies were also evaluated.

Problem Identification and Resolution: The inspectors reviewed selected CAP CR documents in the areas of gaseous and liquid effluent processing and release activities. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure PI-AA-200, "Corrective Action," Rev. 24. The inspectors also discussed the scope of the licensee's internal audit program and reviewed recent assessment results.

Effluent process and monitoring activities were evaluated against details and requirements documented in UFSAR Sections 11 and 12; ODCM; TS 5.6.3 (Annual Radioactive Release Report),10 CFR Part 20; Appendix I to 10 CFR Part 50; and approved licensee procedures. In addition, ODCM and UFSAR changes since the last onsite inspection were reviewed against the guidance in NUREG-1301 and Regulatory Guide (RG) 1.109, RG 1.21, and RG 4.1. Documents and records reviewed are listed in the report Attachment.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program

a. Inspection Scope

REMP Status and Results: The inspectors reviewed and discussed planned changes to the ODCM and results presented in the Annual Environmental Radiological Environmental Operating Report (AREOR) documents issued for 2013 and 2014. The REMP contract laboratory (Teledyne Brown Engineering (TBE)) cross-check program results and current procedural guidance for offsite collection, processing and analysis of airborne particulate and iodine, broadleaf vegetation, and surface water samples were reviewed and discussed. The AREOR environmental measurement results were reviewed for consistency with licensee effluent data and evaluated for radionuclide concentration trends. The inspectors reviewed and discussed detection level sensitivity requirements and results for selected environmental media analyzed by the offsite environmental laboratory.

Site Inspection and Equipment Walkdown: The inspectors discussed implementation of selected REMP monitoring and sample collection activities for atmospheric, broadleaf vegetation samples, and water and milk samples as specified in the current ODCM and applicable procedures. The inspectors observed equipment material condition and verified operability, including verification of flow rates and total sample volume results for the weekly airborne particulate filter and iodine cartridge change-outs at twelve atmospheric sampling stations. In addition, the inspectors discussed broadleaf vegetation sampling for selected stations. Thermo-luminescent dosimeter (TLD) material condition and placement were verified by direct verification at twelve ODCM locations. Land use census results, actions for missed samples including compensatory measures, sediment sample collection/processing activities, and availability of replacement equipment were discussed with knowledgeable licensee staff. In addition, sample pump calibration and maintenance records for selected environmental air samplers were reviewed. The current status and completeness of the licensee's 10 CFR 50.75(g) decommissioning files were reviewed and discussed, as well as the licensee's assessment of structures, systems, and components (SSCs) that could potentially leak material into the groundwater. Additional assessment of the ground water protection program, including sampling of wells was completed and is documented in Section 2RS6.

Meteorological Monitoring Program: The inspectors conducted a tour of the meteorological tower and observed local data collection equipment computer used to provide local readout if required. The inspectors observed the physical condition of the tower and associated instruments and discussed equipment operability, maintenance history, and backup power supplies with responsible licensee staff. The inspectors evaluated transmission of locally generated meteorological data from the meteorological tower to the main control room operators. For the meteorological measurements of wind

speed, wind direction, and temperature, the inspectors reviewed applicable tower instrumentation calibration records for 2013 and 2014 and evaluated meteorological measurement data recovery for 2013 and 2014.

Procedural guidance, program implementation, quantitative analysis sensitivities, and environmental monitoring results were reviewed against 10 CFR Part 20; Appendix I to 10 CFR Part 50; TS Sections 5.6.1, ODCM, Rev. 26; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment; and the Branch Technical Position, An Acceptable Radiological Environmental Monitoring Program - 1979. Licensee procedures and activities related to meteorological monitoring were evaluated against: ODCM; UFSAR Chapter 11; RG 1.23, Meteorological Monitoring Programs for Nuclear Power Plants, and ANSI/ANS-2.5-1984, Standard for Determining Meteorological Information at Nuclear Power Sites. Procedures and records reviewed during the inspection are listed in the Attachment.

Problem Identification and Resolution: The inspectors reviewed selected CAP CR documents in the areas of environmental and meteorological monitoring. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with PI-AA-200, Corrective Action, Rev. 24. Documents and records reviewed are listed in the report attachment.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

a. Inspection Scope

Waste Processing and Characterization: During inspector walk-downs, accessible sections of the liquid and solid radioactive waste (radwaste) processing systems were assessed for material condition and conformance with system design diagrams. Inspected equipment included radwaste storage tanks; resin transfer piping, resin and filter packaging components; and abandoned evaporator equipment. The inspectors discussed component function, processing system changes, and radwaste program implementation with licensee staff.

The 2013, and 2014 Annual Radiological Effluent Release Reports and radionuclide characterizations for selected waste streams were reviewed and discussed with Radioactive Material Control (RMC) staff. For the Unit 1, Unit 2, and Common Dry Active Waste (DAW) waste streams the inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined quality assurance (QA) comparison results between licensee waste stream characterizations and outside laboratory data. Waste stream mixing and concentration averaging methodology for

resins and filters was evaluated and discussed with RMC staff. The inspectors also reviewed the licensee's procedural guidance for monitoring changes in waste stream isotopic mixtures and discussed radionuclide characterization data for radioactive filter media, and resins.

Radioactive Material Storage: During walk-downs of indoor and outdoor radioactive material storage areas located inside and outside the protected area, the inspectors observed the physical condition and labeling of storage containers and the posting of Radioactive Material Areas. The inspectors also reviewed licensee procedural guidance for storage and monitoring of radioactive material.

Radioactive material and waste storage activities were reviewed against the requirements of 10 CFR Part 20. Reviewed documents are listed in Section 2RS8 of the report Attachment.

Transportation: There were no significant shipments during the week of inspection, however the inspectors did review shipping procedure requirements and discussed preparation of shipping documents, package marking and labeling, and interviewed shipping technicians regarding Department of Transportation (DOT) regulations.

Selected shipping records were reviewed for consistency with licensee procedures and compliance with NRC and DOT regulations. The inspectors reviewed emergency response information, DOT shipping package classification, waste classification, radiation survey results, and evaluated whether receiving licensees were authorized to accept the packages. Licensee procedures for handling shipping containers were compared to Certificate of Compliance requirements and manufacturer recommendations. In addition, training records for selected individuals currently qualified to ship radioactive material were reviewed.

Problem Identification and Resolution: The inspectors reviewed CRs in the area of radioactive material control, radwaste processing, and transportation. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure PI-AA-200, "Corrective Action," Rev. 24. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results.

Radwaste processing activities and equipment configuration were reviewed for compliance with the licensee's Process Control Program (PCP) and UFSAR, Chapter 11. Waste stream characterization analyses were reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 61, and guidance provided in the Branch Technical Position on Waste Classification (1983). Transportation program implementation was reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 71, 49 CFR Parts 172-178, as well as the guidance provided in NUREG-1608. Training activities were assessed against 49 CFR Part 172 Subpart H. Documents and records reviewed are listed in the report attachment.

b. Findings

No findings were identified.

OTHER ACTIVITIES

Cornerstones: Barrier Integrity, Emergency Preparedness, Public Radiation Safety, and Occupational Radiation Safety

4OA1 Performance Indicator (PI) Verification

.1 Barrier Integrity PIs

a. Inspection Scope

The inspectors performed a periodic review of the two Unit 1 and 2 PIs listed below to assess the accuracy and completeness of the submitted data and whether the performance indicators were calculated in accordance with the guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspection was conducted in accordance with NRC inspection procedure 71151, "Performance Indicator Verification." Specifically, the inspectors reviewed the Unit 1 and Unit 2 data reported to the NRC for the period April 1, 2014 through March 31, 2015. Documents reviewed included applicable NRC inspection reports, licensee event reports, operator logs, station performance indicators, and related CRs.

- RCS Specific Activity (BI01)
- RCS Leakage (BI02)

b. Findings

No findings were identified.

.2 Emergency Preparedness PIs

a. Inspection Scope

The inspectors sampled licensee submittals relative to the PIs listed below for the period April 1, 2014, through March 31, 2015. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 7, was used to confirm the reporting basis for each data element.

Emergency Preparedness Cornerstone

- Drill/Exercise Performance
- Emergency Response Organization Drill Participation
- Alert and Notification System Reliability

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the Attachment. This inspection satisfied three inspection samples for PI verification on an annual basis.

b. Findings

No findings were identified.

.3 Radiation Safety PIs

a. Inspection Scope

Occupational Radiation Safety Cornerstone: The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the Occupational Radiation Safety Cornerstone from September 2014 through May 2015. For the assessment period, the inspectors reviewed electronic dosimeter (ED) alarm logs and selected CRs related to controls for exposure significant areas. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in of the report Attachment

Public Radiation Safety Cornerstone: The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from July 2014 through April 2015. For the assessment period, the inspectors reviewed cumulative and projected doses to the public contained in liquid and gaseous release permits and CRs related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents and records reviewed are listed in the report attachment.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

.1 Review of Items Entered into the Corrective Action Program

As required by NRC inspection procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human

performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by reviewing daily CR report summaries and periodically attending daily CR Review Team meetings.

.2 Annual Sample: Review of CR575828, "Unit 1 Trip and Automatic Voltage Regulator Failure"

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for CR575828, "Unit 1 Trip and Automatic Voltage Regulator Failure," to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors also evaluated the CR against the requirements of the licensee's CAP as specified in licensee procedure, PI-AA-200, "Corrective Action Program," Revision 25 and 10 CFR 50, Appendix B.

b. Findings and Observations

No findings were identified. In general, the inspectors verified that the licensee had identified problems at an appropriate threshold and entered them into the CAP database, and had proposed or implemented appropriate corrective actions.

.3 Annual Sample: Review of CR573058, "Unit 2 Main Control Room Chiller Arc/Fire"

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for CR573058, "Unit 2 Main Control Room Chiller Arc/Fire," to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors also evaluated the CR against the requirements of the licensee's CAP as specified in licensee procedure, PI-AA-200, "Corrective Action Program," Revision 25, and 10 CFR 50, Appendix B.

b. Findings and Observations

No findings were identified. In general, the inspectors verified that the licensee had identified problems at an appropriate threshold and entered them into the CAP database, and had proposed or implemented appropriate corrective actions.

.4 Annual Sample: Review of ACE19889, "Unit 1 Terry Turbine Governor and Relief Valve"

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for ACE19889, "Unit 1 Terry Turbine Governor and Relief Valve," to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and

appropriate corrective actions were specified and prioritized. The inspectors also evaluated the CR against the requirements of the licensee's CAP as specified in licensee procedure, PI-AA-200, "Corrective Action Program," Revision 25, and 10 CFR 50, Appendix B.

b. Findings and Observations

In general, the inspectors verified that the licensee had identified problems at an appropriate threshold and entered them into the CAP database, and had proposed or implemented appropriate corrective actions. See section 1R12 for details of findings.

.5 Annual Sample: Review of RCE1134, "Unit 1 Trip Due to "B" Main Feed Regulating Valve Failure"

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for RCE1134, "Unit 1 Trip Due to "B" Main Feed Regulating Valve Failure" to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors also evaluated the CR against the requirements of the licensee's CAP as specified in licensee procedure, PI-AA-200, "Corrective Action Program," Revision 25, and 10 CFR 50, Appendix B.

b. Findings and Observations

No findings were identified. In general, the inspectors verified that the licensee had identified problems at an appropriate threshold and entered them into the CAP database, and had proposed or implemented appropriate corrective actions.

.6 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment and corrective maintenance issues but also considered the results of daily inspector corrective action program item screening discussed in Section 4OA2.1. The review included issues documented outside the normal corrective action program in system health reports, corrective maintenance work orders, component status reports, site monthly meeting reports, and maintenance rule assessments. The inspectors' review nominally considered the six month period of January 2015 through June 2015, although some examples expanded beyond those dates when the scope of the trend warranted.

The inspectors compared and contrasted their results with the results contained in the licensee's latest integrated quarterly assessment report. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy. Trends noted by the inspectors were previously identified by the licensee and addressed in their CAP.

b. Assessment and Observations

No findings were identified. In general, the licensee has identified trends and has addressed the trends with their corrective action program.

4OA3 Event Followup

.1 (Closed) LER 05000338/2015-001-00: Automatic Reactor Trip Due to Low-Low Level on "B" Steam Generator

On February 26, 2015, with Unit 1 in Mode 1 at 96 percent power, at 1511 hours an automatic trip occurred. The initiating signal was a low-low level on "B" steam generator caused by the closure of the "B" main feed regulating valve. Closure of the valve was due to a loss of power on the final driver card. The event posed no significant safety implications and the health and safety of the public were not affected by this event. The cause of the event was a faulty component. Completed interim actions included removing the circuit card for failure analysis. The TDAFW pump relief valve lifted and discharged approximately 200 gpm to the ground.

This issue is in the licensee's CAP as CR572757 and RCE1134. See section 1R12 for details of findings.

.2 (Closed) LER 05000338/2015-002-00 Manual Reactor Trip Due To Inability To Maintain Main Generator Voltage In Specification

The inspectors followed up on actions taken in response to the failure of the Unit 1 Main Generator Voltage Regulator which required a manual reactor trip on April 2, 2015 at 0426 EDT, while operating at 100 percent power. The operations crew entered the reactor trip procedure and stabilized the unit in Mode 3 at normal operating pressure and temperature. All control rods fully inserted into the core following the reactor trip. This reactor protection system actuation and the AFW System actuated as designed. The inspectors reviewed the problem resolution documents and the licensee actions taken to ensure appropriate corrective actions were specified and prioritized. Documents reviewed are listed in the Attachment to this report. No findings or violations of NRC requirements were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On July 29, 2015, the resident inspectors presented the inspection results to Mr. G. Bischof and other members of the staff, who acknowledged the findings. The inspectors verified no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:
M. Becker, Manager, Nuclear Outage and Planning
G. Bischof, Site Vice President
L. Black, Site Supervisor Emergency Preparedness (Surry)
J. E. Collins, Corporate Director Emergency Preparedness
W. Detwiler, Drill Developer
R. Evans, Radiation Protection and Chemistry Manager
B. Gaspar, Manager, Nuclear Site Services
R. Hanson, Manager, Nuclear Protection Services
E. Hendrixson, Director, Nuclear Site Engineering
L. Hilbert, Director, Nuclear Station Safety & Licensing
M. Hofmann, Site Supervisor Emergency Preparedness
J. Jenkins, Manager, Nuclear Maintenance
P. Kemp, Supervisor, Station Licensing
J. Leberstien, Technical Consultant, Licensing
A. Maly, Supervisor Health Physics Tech Services
F. Mladen, Plant Manager
N. Nicholson, Health Physicist III
L. Oakes, Supervisor Health Physics
B. Plesants, Radiation Protection Technician
D. Plogger, Emergency Preparedness Specialist
J. Plossl, Supervisor, Nuclear Station Procedures
S. Ripley, Corporate Supervisor Emergency Preparedness
R. Savedge, Corporate Emergency Preparedness Specialist
J. Schleser, Manager, Nuclear Organizational Effectiveness
G. Simmons, Supervisor Health Physics Operations
J. Slattery, Manager, Nuclear Operations
W. Standley, Manager, Nuclear Training
T. Swearinger, Corporate Emergency Preparedness Specialist
N. Turner, Corporate Manager Emergency Preparedness
M. Whalen, Technical Advisor, Licensing

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000338/2015002-01	NCV	Failure To Maintain An Adequate Maintenance Procedure For The Turbine Driven Auxiliary Feedwater Pump (Section 1R12)

Closed

05000338/2015-001-00	LER	Automatic Reactor Trip Due to Low-Low Level on “B” Steam Generator (Section 4OA3.1)
05000338/2015-002-00	LER	Manual Reactor Trip Due To Inability To Maintain Main Generator Voltage In Specification (Section 4OA3.2)

Discussed

None

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Procedure WM-AA-100-1003, "Work Order Closeout," Revision 3
1-OP-7.10, Operation of the Casing Cooling Subsystem of the Recirc Spray System, Revision 33
1-OP-7.10A, Valve Checkoff – Casing Cooling System, Revision 9
2-OP-7.10, Operation of the Casing Cooling Subsystem of the Recirc Spray System, Revision 32
2-OP-7.10A, Valve Checkoff – Casing Cooling System, Revision 11
Manual ELE-00-BCW-P-3, SBO Diesel Jacket Water Heater Pump Motor, Revision 1
Manual ELE-00-BLO-P-1-MOTOR, SBO Pre- Lube Pump Motor, Revision 1
1-OP-31.2A, Valve Checkoff – Auxiliary Feedwater, Revision 25
2-OP-31.2A, Valve Checkoff – Auxiliary Feedwater, Revision 23
1-OP-7.5A, Valve Checkoff – Outside Recirc Spray System, Revision 10
2-OP-7.5A, Valve Checkoff – Outside Recirc Spray System, Revision 10

Section 1R05: Fire Protection

Procedure 0-FPMP-2.12, "Dry Chemical Fire Extinguisher Maintenance," Revision 3
Procedure 0-FPMP-2.6, "Fire Extinguisher and Hose Station Inspection – Aux Buildings, Fuel Building, Clean Change, Health Physics, and Units 1 and 2 Instrument Shop," Revision 2
CM-AA-FPA-10, Fire Protection/Appendix R (Fire Shutdown) Program, Revision 2
0-FPMP-10.0, "Conduct of Fire Drills," Revision 11
1-PT-102.1, "Low-Pressure CO2 – Total Flooding Zones Functional Test and Puff Test," Revision 36
2-FS-S-2, "Fire Fighting Preplan for Cable Vault and Tunnel and 280' Rod Drive Unit 2 Safe Shutdown Equipment," Revision 11
2-FS-AF-1, "Fire Fighting Strategy for Safe Shutdown Equipment for Auxiliary Feedwater Pumphouse," Revision 1
CR579003, Unannounced Fire Dril Critique Items
Drawing 11715-FB-104B, "Flow/Valve Operating Numbers Diagram Low Pressure Carbon Dioxide System 6 Ton Tank System 2" Revision 7
Drawing 11715-FAR-200, "Site Fire Boundaries-Appendix R Key Plan," Revision 8
Design Change 07-115, "CO2 FP Design/Zone 2-2 Nozzle Replacement/NAPS/Units 1&2"
Installation Specification NAS-1014, "Installation of Silicone Foam in Fire Stops"

Section 1R12: Maintenance Effectiveness

Procedure MA-AA-100, "Conduct of Maintenance," Revision 10
Procedure WM-AA-100, "Work Management," Revision 25
Procedure WM-AA-101, "Work Order Planning," Revision 5
Procedure 0-EMC-2504-01, "Main Generator Automatic Voltage Regulator Inspection and Repair," Revision 20
Procedure 1-AP-26, "Failure of Main Generator Voltage Regulator High," Revision 12
Procedure 1-EI-CB-21K Annunciator B4, "Excitation Limiter Active," Revision 2

Procedure 1-EI-CB-21K Annunciator B5, “Excitation Protection Active,” Revision 2
Procedure 1-EI-CB-21K Annunciator C7, “Volts/Hertz Relay Actuation,” Revision 3
Work Order 59102769833, “Repair Spare (UTC) AVR gate firing module and return to Stock”
CR 398023, AVR site acceptance testing fault documentation
CR 558412, U2 AVR gate firing module
CR 575682, Request establishment of emergency support services with Emerson for the AVR
LER 05000-280/1998-002-00, “Turbine-Generator Trip Due to Loss of Generator Excitation Power Results in Reactor Trip”
LER 05000-339/1993-002-00, “Automatic Reactor Trip Initiated by From a Turbine Trip Due to an Over Excitation of the Main Generator”
Millstone Power Station – NRC Special Inspection Report 05000423/2014008 with Preliminary White Finding
Drawing 11715-FM-074A, Flow/Valve Operating Numbers Diagram, Feedwater System, Revision 45
Calculation SM-1152, “NAPS Emergency Condensate Storage Tank Heat Removal Capacity using TS minimum volume,” Revision 0
Calculation, “Evaluation of Over-Pressurization of NAPS Auxiliary Feedwater Piping,” Date 3-27-2015
CA298365, Evaluation for Past Operability of Unit 1 AFW
Pressure Trace for Turbine Driven Auxiliary Feedwater Pump Unit 1 Dates: February 27, 2015, February 26, 2015, October 11, 2013
Pressure Trace for Turbine Driven Auxiliary Feedwater Pump Unit 2 Dates: March 3, 2015, February 2, 2014

Section 1R15: Operability Determinations and Functionality Assessments

OP-AA-102-1001, Development of Technical Basis to Support Operability, Revision 10
OP-AA-102-616, Prompt Operability Determination Documentation for CR576413
CR576413, 1-FW-P-2 Reservoir Oil Replacement Required
CR576104, 1-FW-T-2 Outboard Bearing Oil Cloudy
CR575491, 1-FW-P-2 Bearing oil layered and cloudy
Root Cause Evaluation RCE001132, “Evaluation of Component Failure that Led to Millstone 3 Turbine Driven Auxiliary Feed Water Pump, 3FWA*P2, Trips on 11/4/13, 12/18/13, and 1/23/14”
CA298365 - Evaluation

Section 1R18: Plant Modifications

CM-AA-DDC-201, Design Changes, Revision 16
0-OP-62.1, Operation Of Area Radiation Monitors, Revision 8
1-OP-62.3, Process Radiation Monitors, Revision 21

Section 1R19: Post Maintenance Testing

CR572803, “1-FW-P-2 (Steam Driven AFW pump) governor did not maintain speed during PT”
Apparent Cause Evaluation ACE019889, “1-FW-P-2 governor did not maintain speed during PT”

Procedure 1-EI-CB-21F Annunciator E8, "AFW Supply 20 Min Water Remaining," Revision 2
Procedure 1-MCM-1401-02, "Removal and Installation of Unit 1 Terry Turbine Woodward Governor," Revision 6
Procedure 1-PT-71.1Q, "1-FW-2, Turbine Driven Auxiliary Feedwater Pump and Valve Test," Revision 61

Section 1EP2: Alert and Notification System Evaluation

Procedures, Guidance Documents, and Manuals

North Anna Power Station Emergency Plan, Rev. 41
FEMA Analysis of Alert Notification System for North Anna Plant dated October 19, 1987
Whelen WPS-2800 Series Siren System Operating Manual
0-PT-172.6, Early Warning System Sirens Activation Monitoring, Rev. 2
0-PT-172.7, Early Warning System Polling Functional Test, Rev. 3
North Anna Power Station public information calendar

Records and Data

Early Warning System Polling Function Bi-Monthly Tests, test results June 2013 to March 2015
Early Warning System Activation Quarterly Monitoring, test results August 2013 to February 2015
North Anna EWS Test Form Telecommunications Operability Testing Quarterly Siren Maintenance 2Q13 – 1Q15

Corrective Action Program (CAP) Documents

CR 549751, EWS siren #27 has indication of at least one bad driver or amplifier
CR 550902, EWS siren #14 failed to respond to a scheduled polling test
CR 553104, EWS siren #46 failed to respond to a scheduled siren poll
CR 554083, EWS sirens 28 & 49 failed to respond to a scheduled polling
CR 567705, EWS siren #17 responded to a scheduled poll with elevated DC volts
CR 572003, EWS sirens 45, 48, & 50 responded to polling with elevated DC volts
CR 572021, Quarterly siren activation complete with one discrepancy

Section 1EP3: Emergency Response Organization Staffing and Augmentation System

Procedures, Guidance Documents, and Manuals

NACA-3.05, Augmentation of Emergency Response Organization, Rev. 9
TR-NA-TPG-2400, Nuclear Emergency Responder Training Program Guide, Rev. 2
EPIP-3.02, Activation of Technical Support Center, Rev. 36
EPIP-3.03, Activation of Operational Support Center, Rev. 22
CPIP-3.1, CERC and CEOF Activation, Rev. 26
CPIP-3.2, North Anna LEOF Activation, Rev. 23
EPIP-3.05, Augmentation of Emergency Response Organization, Rev. 9
0-EP-MISC-3, Augmentation Capability Assessment, Rev. 0

Records and Data
Travel time calculations for selected ERO members
Training and qualification records for selected ERO members
2012 on-shift staffing analysis
Current ERO member roster
Augmentation Capability Assessments – ERO response drill results for 2014 and 2015

CAP documents
CR 518496, Some EP qualifications expired due to training activity/drill reschedule
CR 547986, NEI 12-01 staffing study issue – loss of Gaitronics
CR 551951, The ARCOS ERO notification system failed to function during a scheduled test
CR 571179, ERO availability 2-deep minimum standard not met for 2/15/15

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Procedures
EP-AA-101, 10 CFR 50.54(q) Change Evaluation, Rev. 5
EP-AA-102, Revision & Control of Emergency Plan, Emergency Action Levels (Technical Basis & Matrix), & Reference Manual, Rev. 7
DQR-EP-AA, Emergency Preparedness Data Analyst, Rev. 1
DQR-EP-AA, Emergency Preparedness Change Evaluator, Rev. 1
DQR-EP-NA, Drill/Exercise Performance Evaluator, Rev. 3

Change Packages
North Anna Power Station Emergency Plan, Rev. 41
North Anna Power Station EAL Technical Bases Document, Rev. 7
Procedure Action Request (PAR) for Revision to NAPS Emergency Plan, dated 12/17/14
50.59/72.48 Applicability Review for Revision to NAPS Emergency Plan, dated 12/4/14
NA-14-018, 50.54(q)(3) Screening and Evaluation for NAPS Emergency Plan Revision, dated 11/24/14
NA-14-020, 50.54(q)(3) Screening and Evaluation for NAPS emergency Plan Revision to Update Appendix 10, Letters of Agreement, dated 9/8/14
NA-14-032, Screening for NAPS Emergency Plan Revision for Editorial/Administrative Changes, dated 10/29/14
NA-14-033, 50.54(q)(3) Screening and Evaluation for NAPS Emergency Plan Revision to Incorporate Changes to Drill and Exercise Requirements, dated 11/24/14
NA-14-037, 50.54(q)(3) Screening and Evaluation for NAPS Emergency Plan Revision to Delete Section 8.5.7, dated 4/2/0/15

Corrective Action Documents
CR 539943, Emergency Plan Rev. 40 staffing Table 5.1 “addition” error

Section 1EP5: Maintenance of Emergency Preparedness

Procedures
North Anna Power Station Emergency Plan, Rev. 41
EP-AA-100, Maintaining Emergency Preparedness, Rev. 6
EP-AA-101, 10 CFR 50.54(q) Change Evaluation, Rev. 5

EP-AA-303, Equipment Important to Emergency Response, Rev. 6
EP-AA-400, Drill and Exercise Program, Rev. 7
PI-AA-200, Corrective Actions, Rev. 24
PI-AA-200, 2001, Trending, Rev. 5
PI-AA-200, 2002, Effectiveness reviews, Rev. 8
0-AP-40.2, Dam Failure Assessment & Notification (With 6 Attachments), Rev. 21

Records and Data
Training Drill Management Critiques: 2014
Nuclear Oversight Audits 14-02 and 15-02: Emergency Preparedness
10 CFR 50.54(x) and (y) training materials
Self-Assessment Report 2330, ERO Availability Trend Analysis, dated June 13, 2013
Self-Assessment Report 2685, Hostile Action Based Drills report
Self-Assessment Report 3148, Emergency Preparedness (2015 WANO, Atlantic Center)
Emergency Action Plan North Anna Hydroelectric Project Lake Anna Dam, dated 12/14/10

Change Packages
NA-14-011, 50.54 (q)(3) screening for EPIP-1.04, Response to Site Area Emergency, dated 8/20/2014
NA-14-012, 50.54 (q)(3) screening for Response to General Emergency, dated 8/20/2014
NA-14-015, 50.54 (q)(3) screening for Activation of Operational Support Center, dated 8/5/2014
NA-14.016, 50.54 (q)(3) screening for Activation of Technical support Center, dated 8/5/2014
NA-14-002, 50.54 (q)(3) screening for Controller procedures, dated 7/2/2014

Corrective Action Documents
CR 506188, EP training activity deficiencies
CR 506793, EP Drill/Exercise deficiencies noted in NOD observations
CR 506975, E-Plan revision approval not documented as required
CR 543829, On-shift staffing requirements
CR 540155, Organization on-shift staffing change made for Radiation Protection (one added)
CR 540169, Minimum ERO shift requirements
CR 540297, Organization on-shift minimum staffing
CR 540889, EP drill critique did not provide evidence that an objective met
CR 541567, Performance gaps identified during a post drill critique
CR 531679, Follow-up of incorrect radiation monitor for EAL associated corrective action
CR 571543, EP-NAPS TSC Emergency Management training for SEM
CR 571825, Critique 2014 summary met/not met #'s did not agree
CR 572811, Interviews with ORO not scheduled
CR 582140, RP emergency monitoring kits only contain medium sized respirators

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

References
2013 Annual Radioactive Effluent Release Report
2014 Annual Radioactive Effluent Release Report
Offsite Dose Calculation Manual (ODCM), Revision 26
Offsite Dose Calculation Manual (ODCM) revision summaries for Revisions 22, 23, 24 and 25
CC-AA-LQC-400-1000, "Confirmatory Measurements Using Blind Samples, Revision 3
HP-3010.010, "Radioactive Effluents Record and Reports", Revision 11

HP-3010-020, “Radioactive Liquid Waste Release Permits”, Revision 5
HP-3010-021, “Radioactive Liquid Waste Sampling and Analysis”, Revision 22
HP-3010-022, “Radioactive Liquid Waste Accountability and Dose Calculations”, Revision 6
HP-3010-030, “Radioactive Gaseous Waste Release Permits”, Revision 11
HP-3010-031, “Radioactive Gaseous Waste Sampling and Analysis”, Revision 37
HP-3010-032, “Radioactive Gaseous Waste Accountability and Dose Calculations”, Revision 15
HP-3010-033, “Abnormal Gaseous Release”, Revision 17
HP-3010.040, “Radiation Monitoring System Setpoint Determination”, Revision 26
HP-3010.050, “Preparing Effluent Records and Reports Using Computer Programs”, Revision 3
HP-3010.051, “Preparing Effluent Records and Reports Using OpenEMS”, Revision 3
0-PT-487.10, “Radiological Environmental Monitoring Program, Land Use Census”, Revision 11

Records and Data Reviewed

Eckert & Ziegler Radiochemistry Cross Check Program 1st Quarter and 3rd Quarter 2013
Eckert & Ziegler Radiochemistry Cross Check Program 1st Quarter and 3rd Quarter 2014
eSOMS Station Narrative Logs, Re: 1-LW-RM-111, 11/07/2014
Groundwater Protection Program Sample Trends [Excel Spreadsheet] including sample results for the period April 2013 thru May 2015
Licensee Event Report (LER) 50-339/2014-002-00, Failed Fuel Assembly, 12/11/2014
List, Effluent Radiation Monitors Out of Service for Greater than 24 Hours since 04/26/2013
List, Records search for 10 CFR 50.75(g) [decommissioning records]
DAW Nuclide Distribution Report, Common DAW (03/2015), 03/11/2015
Unplanned Gaseous Release Record, ID 13-AGR-01, U-1 PZR Gas Space, 09/09/2013
Unplanned Gaseous Release Record, ID 13-AGR-02, U-1 Reactor Head Vent, 09/11/2013
Gaseous Release Permit # G-20130909-315-B, Process Vent, 09/09/2013
Gaseous Release Permit # G-20130911-316-B, Process Vent, 09/11/2013
Gaseous Release Permit # G-20140302-082-B, Unit 1 VCT via Vent Vent A [unplanned release], 03/02/2014
Release Permit # L-20150613-061-C, Clarifier, 06/06/2015
System Health Report, Gaseous Waste, 2nd and 4th Quarter 2013 and 4th Quarter 2014
System Health Report, Radiation Monitors [includes effluent monitors], 2nd Quarter 2013 thru 1st Quarter 2015
0-PT-77.4A, Laboratory Analysis- 1-HV-FL-3A ECCS PREACS, completed 04/22/2014 WO# 59102581661
0-PT-77.4B, Laboratory Analysis- 1-HV-FL-3B ECCS PREACS, completed 09/30/2014 WO# 59102615626
0-PT-77.14A, ECCS PREACS Train A In-Place Test (1-HV-FL-3A), completed 12/05/2014 WO# 59102621498
0-PT-77.14B, ECCS PREACS Train B In-Place Test (1-HV-FL-3B), completed 02/27/2014 WO# 59102510611
0-PT-487.10, Radiological Environmental Monitoring Program, Land Use Census, 09/12/2013
0-PT-487.10, Radiological Environmental Monitoring Program, Land Use Census, 09/11/2014
Nuclear Oversight Audit Report, Audit 13-11: Offsite Dose Calculation Manual, Radiological Environmental Monitoring Program, Environmental Protection Plan (ODCM / REMP / EPP), 01/09/2014

Corrective Action Program (CAP) Documents

Apparent Cause Evaluation, ACE # 019800, 1-LW-RM-111 Inoperable Condition Not Identified

CA271593	CR535082	CR558708
CA288823	CR541897	CR559479
CA289519	CR543400	CR558708
CR513064	CR544741	CR566392
CR524097	CR547468	
CR529479	CR547720	

Section 2RS7: Radiological Environmental Monitoring Program (REMP)

Procedures, Guidance Documents, and Manuals

VPAP-2103N, Offsite Dose Calculation Manual (North Anna), Rev. 26
HP-3051.010, Radiological Environmental Monitoring Program, Rev. 28
C-HP-1033.620, Portable Air Samplers Calibration and Operation, Rev. 9
North Anna Power Station UFSAR Chapter 11, Section 11.6, Offsite Radiological Monitoring Program

Records and Data Reviewed

Calibration Certificates - Portable Air Sampler for Kits 1,4,8,9 and 12, Dated 10/29/2013
WMG Nuclide Distribution Report, DAW, March 11, 2015
HP-3051.010, Attachment 10, Environmental Air Sample Stations, Dated 06/16/2015
HP-3051.010, Attachment 7, Radiological Monitoring Report Log for 2013
Work Order 0-PT-40.1, performed using the following procedures:
0-ICP-MM-ST-100, Backup Weather Tower Sigma Theta Calibration, Rev. 12, dated 03/04/2014 and 08/26/2013
0-ICP-MM-Z-101B, Weather Tower 10 Meter Wind Direction Calibration, Rev. 11, 08/27/2013 and 02/26/2014
0-ICP-MM-TEMP-1, Primary Meteorological Tower Ambient Temperature and Differential Temperature Calibration, Rev. 14, dated 07/30/2014 and 02/04/2015
0-ICP-MM-SR-ZR-2, Backup Meteorological Tower Wind Speed and Wind Direction Calibration, Rev. 11, dated 03/04/2014 and 02/11/2015
0-ICP-MM-Z-101A, Weather Tower 48 Meter Wind Direction Calibration, Rev. 11, 08/27/2013 and 02/26/2014
0-ICP-MM-Z-101C, Backup Weather Tower Wind Direction Calibration, Rev. 9, dated 08/26/2013 and 03/04/2014
0-ICP-MM-T-100A, Weather Tower 10 Meter Temperature Calibration, Rev. 12, 08/27/2013 and 02/26/2014
0-ICP-MM-T-100B, Weather Tower 10/48 Meter Delta Temperature Calibration, Rev. 14, dated 08/27/2013 and 02/26/2014
Climatronics Incorporated Factory Acceptance Test, Job Number 106811, Model IMP-865, Serial Numbers T15900 and T15901, Dated 04/15/2015
Sonic Wind Sensor Certificate of Calibration, Model 102874-1, Serial Numbers, T12590, T12591, T12592, T12867 and T12868, Dated 03/05/2015Met One Instruments Incorporated, Report of Calibration Points, Platinum Resistance Thermometer Model T-200, Serial Numbers, 1633032, 1633033, 1633034, 1633035, 1633038, Dated 02/24/2014
Quarterly Interlaboratory Comparisons Results Analytics to Teledyne Brown for 2013 and 2014
Interlaboratory Comparisons DOE Mixed Analyte Performance Evaluation Program to Teledyne Brown for 2013 and 2014

Interlaboratory Comparison ERA Environmental Radioactivity Cross Check Program Teledyne Browns for 2013 and 2014
NAPS U-1 Priority_Index2013.xls (Potential Groundwater Risk Matrix for Unit 1)
NAPS U-2 Priority_Index2013.xls (Potential Groundwater Risk Matrix for Unit 2)
2013 Meteorological Data Joint Frequency Distribution and Data Recovery, 1/15/14
2014 Meteorological Data Joint Frequency Distribution and Data Recovery, 1/15/15
Annual Radiological Environmental Operating Report, North Anna Power Station January 1-December 31, 2013
Annual Radiological Environmental Operating Report, North Anna Power Station January 1-December 31, 2014

CAP Documents

CR 582528
CR 514950
CR 536636
CR 536639
CR 536640
CR 536642
CR 556388
CR 558854
CR 569900
CR 570876
CA 289645
CA 581152
SAA 037365

Section 2RS8: Radioactive Material Processing and Transportation

Procedures, Manuals, and Guides

C-HP-1071.010, Control of Radioactive Sources, Rev. 8
C-HP-1071.030, Receiving Radioactive Material, Rev. 4
C-HP-1071.040, Packaging and Shipment of Radioactive Material, Rev. 12
C-HP-1072.010, Packaging Radioactive Waste, Rev. 2
C-HP-1072.030, Computer Programs for Radwaste and Radioactive Material, Rev. 1
C-HP-1072.040, Radioactive Waste Disposal Using the Barnwell Disposal Facility, Rev. 9
C-HP-1072.050, Radioactive Waste Transfer To Licensed Waste Processors, Rev. 11
C-HP-1072.070, Radioactive Waste Disposal Using the EnergySolutions Containerized Waste Facility, Rev. 6
C-HP-1072.071, Radioactive Waste Disposal Using The EnergySolutions Bulk Waste Facility, Rev. 6
HP-1071.021, Storing Radioactive Material outside the Protected Area, Rev. 21
HP-1072.020, Sampling, Analyzing, and Classifying Solid Radioactive Waste, Rev. 11
HP-1072.080, Radioactive Waste Transfer To Erwin ResinSolutions, Erwin, TN, Rev. 9
HP-1072.090, Radioactive Waste Disposal Using Waste Control Specialists Compact Waste Disposal Facility, Rev. 2
HP-1072.100, Guidance for Primary Resin Transfer to a Liner, Rev. 0
HP-1072.300, Guidance for Transferring Filters into the OSSC, Rev. 1PI-AA-200, Corrective Action, Rev. 24
RP-AA-108, Radioactive Material Control Program, Rev. 4
RP-AA-232, Radioactive Material Control, Rev.6
North Anna UFSAR Sections 11.5 and Section 12.4, Rev. 50.06
VPAP-2103N, Offsite Dose Calculation Manual (North Anna), Rev. 26
VPAP-2104, Radioactive Waste Process Control Program (PCP), Rev. 8

Shipping Records and Radwaste Data
15-1025
15-BPF-01
15-DUR-04
15-ERS-01
14-CWF-03
14-SPF-02
13-CWF-01
DAW Nuclide Distribution Report, ALPS Anion Resin, 1/21/2014
DAW Nuclide Distribution Report, RPIX, 1/28/2015
DAW Nuclide Distribution Report, SHRT, 1/28/2015

CAP Documents
RP-AA-111-1008, Attachment 1, Radioactive Material Control Program Review, December 2012 through February 2015
Audit 14-06 RP/PCP/Chemistry, 8/13/14
C-HP-1091.272, Attachment 1, Solid Radioactive Waste Program Evaluation, 1st Qtr 2012 -3rd Qtr 2013
CR511165
CR513724
CR536346
CR554495
CR556068
CR570502

Section 4OA1: Performance Indicator Verification
Procedures, Guidance Documents, and Manuals
RP-AA-112, Radiation Safety Performance Indicator Reporting, Rev. 4

Records and Data Reviewed
Spreadsheet of Electronic Dosimeter Dose and Dose Rate Alarms, 09/08/2014 thru 03/10/2105
NAPS Monthly NRC Performance Indicator Data for July 2014 through May 2015
NAPS NRC Performance Indicator Data, July 2014 thru April 2015
Gaseous Release Permit # G-20150425-152-B, BRT Vent, 05/04/2015
Gaseous Release Permit # G-20150607-208-B, BRT Vent, 06/15/2015
Liquid Release Permit # L-20150401-044-C, Unit 1 HCBD, 05/05/2015
Liquid Release Permit # L-20150401-045-C, Unit 2 HCBD, 05/05/2015
Liquid Release Permit # L-20150401-032-C, Clarifier, 04/06/2015
Liquid Release Permit # L-20150407-036-C, Clarifier, 04/10/2015
CR516872
CR541149
CR551711

Procedures, Guidance Documents, and Manuals
EP-AA-103, Emergency Preparedness Performance Indicators, Rev. 3

Records and Data
DEP opportunities documentation for 2nd Quarter 2014 through 1st Quarter 2015
Drill and exercise participation records of ERO personnel for 2nd 2014 through 1st Quarter 2015
Siren test data for 2nd Quarter 2014 through 1st Quarter 2015

Corrective Action Documents
CR 582080, EP baseline inspection – GE DEP opportunity without PAR
CR 582085, NRC baseline inspection – question ERO minimum staff individuals response time

Section 4OA3: Event Followup
CA295665, "CA to Operations to present CR568624 to RMRT for review of RM Classification"
CA295734, "CA to Operations to present this CR to RMRT for review of RM classification"
CR 575828, "Unit 1 Voltage Regulator Failed High Resulting in Manual Reactor Trip"
RCE 1135, "Unit 1 Voltage Regulator Failed High Resulting in Manual Reactor Trip"

LIST OF ACRONYMS

ACE	Apparent Cause Evaluation
AC	Alternating Current
ADAMS	Agencywide Document Access and Management System
AFW	Auxiliary Feedwater
AREOR	Annual Environmental Radiological Environmental Operating Report
ARERR	Annual Radiological Effluent Release Report
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
DAW	Dry Active Waste
DCP	Design Change Package
DOT	U.S. Department of Transportation
EAL	Emergency Action Level
ECST	Emergency Condensate Storage Tank
ED	Electronic Dosimeter
EDG	Emergency Diesel Generator
ERO	Emergency Response Organization
GPM	Gallons Per Minute
IMC	Inspection Manual Chapter
IP	Inspection Procedure
NCV	Non-cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OD	Operability Determination
ODCM	Off-site Dose Calculation Manual
OS	Occupational Radiation Safety
PARS	Publicly Available Records
PCP	Process Control Program
PD	Performance Deficiency
PI	Performance Indicator
PS	Public Radiation Safety
PSIG	Pounds per Square Inch Gauge
QA	Quality Assurance
RCS	Reactor Coolant System
REMP	Radiological Environmental Monitoring Program
RG	Regulatory Guide
RMC	Radioactive Material Control
RTP	Rated Thermal Power
RS	Radiation Safety
SBO	Station Blackout
SDP	Significance Determination Process
SR	Surveillance Requirements
SRA	Senior Reactor Analyst
SSC	Structures, Systems, and Components
SW	Service Water
TDAFW	Turbine Driven Auxiliary Feedwater

TLDs	Thermoluminescent Dosimeters
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
VEPCO	Virginia Electric and Power Company
VPAP	Virginia Power Administrative Procedure
WO	Work Order