



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 4, 2019

Mr. Daniel G. Stoddard
Senior Vice President and
Chief Nuclear Officer
Innsbrook Technical Center
5000 Dominion Blvd
Glen Allen, VA 29060

SUBJECT: SURRY POWER STATION, UNITS NOS. 1 AND 2 - REPORT FOR THE
OPERATING EXPERIENCE REVIEW AUDIT REGARDING THE SUBSEQUENT
LICENSE RENEWAL APPLICATION REVIEW (EPID NOS. L-2018-RNW-0023
AND L-2018-RNW-0024)

Dear Mr. Stoddard:

By letter dated October 15, 2018 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML18291A842), as supplemented by letter dated January 29, 2019 (ADAMS Accession No. ML19042A137), the Virginia Electric and Power Company (Dominion Energy Virginia or Dominion) submitted to the U.S. Nuclear Regulatory Commission (NRC or staff) an application to renew the Renewed Facility Operating License Nos. DPR-32 and DPR-37 for the Surry Power Station, Unit Nos. 1 and 2. Dominion submitted the application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," for subsequent license renewal. The NRC staff completed its operating experience review audit at the Excel Services Corporation offices in Rockville, Maryland, from December 6 through December 19, 2018, in accordance with the operating experience review audit plan (ADAMS Accession No. ML18319A184). The audit report is enclosed. If you have any questions, please contact me by telephone at 301-415-4084 or by e-mail at Emmanuel.Sayoc@nrc.gov.

Sincerely,

/RA/

Emmanuel Sayoc, Project Manager
License Renewal Project Branch
Division of Materials and License Renewal
Office of Nuclear Reactor Regulation

Docket Nos. 50-280 and 50-281

Enclosure:
Audit Report

cc w/encl: Listserv

SUBJECT: SURRY POWER STATION, UNITS NOS. 1 AND 2 - REPORT FOR THE OPERATING EXPERIENCE REVIEW AUDIT REGARDING THE SUBSEQUENT LICENSE RENEWAL APPLICATION REVIEW (EPID NOS. L-2018-RNW-0023 AND L-2018-RNW-0024) DATED March 4, 2019.

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ADAMS Accession No. ML19046A433

***concurring by email**

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|--------|--------------|---------------|---------------|--------------|
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| DATE | 2/26/2019 | 2/25/2019 | 2/19/2019 | 3/4/2019 |
| OFFICE | PM:MRPB:DMLR | | | |
| NAME | ESayoc | | | |
| DATE | 3/4/2019 | | | |

OFFICIAL RECORD COPY



Audit Report

Operating Experience Review Audit

Surry Power Station, Unit Nos. 1 and 2, Subsequent License Renewal Application

December 6 - 19, 2018

**Division of Materials and License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission**

Enclosure

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION, DIVISION OF LICENSE RENEWAL

Docket Nos: 50-280 and 50-281

License No: DPR-32 and DPR-37

Licensee: Virginia Electric and Power Company (Dominion Energy Virginia)

Facility: Surry Power Station, Unit Nos. 1 and 2

Location: Rockville, Maryland

Dates: December 6 – 19, 2018

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**Report for the Operating Experience Review Audit
Surry Power Station, Unit Nos. 1 and 2
Subsequent License Renewal Application**

1. Introduction

The U.S. Nuclear Regulatory Commission (NRC or the staff) conducted an audit of Virginia Electric and Power Company's (Dominion Energy Virginia or Dominion) Surry Power Station, Unit Nos. 1 and 2 (SPS or the applicant's), plant-specific operating experience (OpE), as part of the staff's review of the SPS subsequent license renewal application (SLRA) at the EXCEL Services Corporation located in Rockville, Maryland, from December 6 to 19, 2018. The purpose of the audit was for the NRC staff to perform an independent review of plant specific OpE to identify examples of age-related degradation, as documented in the applicant's corrective action program database. The regulatory bases for the audit was Title 10 of the *Code of Federal Regulations*, Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," (10 CFR Part 54). The staff also considered the guidance contained in NUREG-2192, Rev. 0, "Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants" (SRP-SLR), dated July 2017, and NUREG-2191, Rev. 0, "Generic Aging Lessons Learned for Subsequent License Renewal (GALL SLR) Report," dated July 2017.

The identified OpE examples will be further evaluated during the staff's subsequent technical review and auditing of aging management programs (AMPs), time limited aging analyses (TLAAs) and aging management review (AMR) line items. The staff's identification and evaluation of pertinent OpE and additional related documentation, provides a basis for the staff's conclusions on the ability of the applicant's proposed AMPs and TLAAs to manage the effects of aging in the period of extended operation.

2. Audit Activities

The following sections discuss the areas reviewed by the staff and identified examples of pertinent OpE.

SLRA AMP B2.1.1, ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: : "cracking," "crack," "leak," "leakage," "flaw," "failure," "degradation," and "weld."

The table below lists the documents that were reviewed by the staff and were found relevant to the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the safety evaluation report (SER).

The table below lists documents that were reviewed by the staff and were found relevant to the audit.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR1065913 | ISI AMP Effectiveness Summary | 10/16/2017 |
| PIR1079417 | ISI Program Self Assessment | 02/15/2018 |
| CR357794 | Rejectable PT Exam | 11/12/2009 |
| CR402204 | Unacceptable PT indication | 11/03/2010 |
| CR503773 | PT Indications Identified during Weld Exam | 10/28/2013 |
| CR1076642 | Review for Commitments | 08/28/2017 |
| CR359010 | Weld Not Found in Field | 12/20/2009 |
| CR403659 | Rejected Weld | 11/04/2010 |

SLRA AMP B2.1.2, Water Chemistry

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “EPRI [Electric Power Research Institute],” “chlorine,” “zinc,” “conductivity,” “dissolved oxygen,” “fluoride,” and “oxygen.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Water Chemistry Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR026004 | 1A and 1C Steam Generators in Action Level 2 for Sodium | 12/01/2007 |
| CR414344 | Chemistry Procedure Sampling Requirement Does Not Agree With Each Other | 02/18/2011 |
| CR552179 | RCS Chemistry Diagnostic Parameter Not Monitored During U2 Start-up | 06/19/2014 |
| CR327245 | U2 CHG-CC Exceeds Chemical Admin Limits of 9.3pH and 5000ppB for Chlorine | 03/17/2009 |
| CR013913 | Chemistry Deviations from EPRI Guidelines not Approved by Manager | 06/14/2007 |
| CR334669 | U1 Lithium is Outside of EPRI Control Band | 05/13/2009 |

SLRA AMP B2.1.3, Reactor Head Closure Studs Bolting

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "Closure Stud."

The table below lists the documents that were reviewed by the staff and were found relevant to the Reactor Head Closure Stud Bolting Program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR577976 | Arc Strike Identified on Reactor Vessel Closure Stud Nut | 04/27/2015 |
| CR1016718 | Reactor Vessel Closure Stud cannot be examined with Ultrasonic Testing | 11/02/2015 |
| CR475382 | Reactor Vessel stud #21 requires evaluation of first seven threads | 05/16/2012 |

SLRA AMP B.2.1.4, Boric Acid Corrosion

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "BAC," "boric," "loss of material," "through wall," "wall thin," "wastage," and "wasted."

The table below lists the documents that were reviewed by the staff and were found relevant to the Boric Acid Corrosion Program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR539461 | Vibration observed on high side tubing associated with flow transmitter. | 02/11/2014 |
| CR334763 | BACC Program Deficiencies | 05/13/2009 |
| CR000747 | Bolting found degraded during BACCP evaluation | 08/30/2006 |

| Document | Title | Revision / Date |
|------------|--|-----------------|
| CR334766 | BACC evaluations do not adequately document independent review | 05/13/2009 |
| CR332725 | Rejectable VT-3 for bolt inspection. | 04/28/2009 |
| CR340044 | BACCP evaluations are not always performed when required. | 07/01/2009 |
| CR355125 | BACCP walkdowns. | 10/27/2009 |
| CR485451 | BACC leaking approximately 2 DPM. | 08/21/2012 |
| CR504064 | Follow up BACC inspection performed on valve. | 01/30/2013 |
| CR530120 | Boric acid on flange piping. | 10/23/2013 |
| CR580644 | During walkdown boric acid leakage identified on valve. | 05/25/2015 |
| SAR002813 | Boric Acid Corrosion Control Program (BACCP) Self Assessment | 12/17/2014 |
| PIR1005185 | Informal self-assessment of license renewal. | 02/05/2018 |

SLRA AMP B2.1.5, Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-induced Corrosion in Reactor Coolant Pressure Boundary Components (PWRs Only)

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “Alloy 600,” “Alloy 182,” “Alloy 82” “Stress Corrosion Cracking,” “PWSCC,” “SCC,” “BAC,” and “Boric Acid Corrosion Control Program.”

The table below lists the documents that were reviewed by the staff and were found relevant to Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-induced Corrosion in Reactor Coolant Pressure Boundary Components (Pressurized water Reactors (PWRs) only) Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR351498 | Leak-Before-Break Applicability vs. Alloy 600/82/182 | Revision 1 |
| CR377579 | Alloy 600 Management Plan | Revision 8 |

SLRA AMP B2.1.6, Thermal Embrittlement of Cast Austenitic Stainless Steel (CASS)

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “Thermal Embrittlement,” “CASS,” and “Cast Austenitic Stainless Steel,” and “Fracture Toughness.”

No plant-specific operating experience associated with the AMP B2.1.6, “Thermal Embrittlement of Cast Austenitic Stainless Steel,” was noted by the staff during its review.

The staff also audited the description of the SLRA AMP B2.1.6 provided in Section A1.6 Updated Final Safety Analysis Report (UFSAR) supplement. The staff will document its review of relevant operating experience in the SER.

SLRA AMP B2.1.7, PWR Vessel Internals

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “vessel,” “internal,” and “reactor internal.” The staff also reviewed specific condition reports, corrective action reports, inspection reports, evaluations, or work orders referenced in the audit portal for SLRA AMP B2.1.7 that may have included relevant operation experience discussions or evaluations for specified reactor internal components.

The table below lists the documents that were reviewed by the staff and were found relevant to the PWR Vessel Internals Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-------------------|--|------------------------|
| CR344700 | Incorporation of MRP-227-A Into Design Basis Per NEI 03-08 | 08/31/2009 |
| CR324351 (Item 8) | Documentation of Completion of Unit 1 Internals Examination; Justification for Not Inspecting Unit 2 Internals | 02/23/2009 |
| CR1037332 | Incorporation of MRP-227, Rev. 1 Into Design Basis Per NEI 03-08 (MRP Letter No. 2015-039) | 05/12/2016 |
| CR1041877 | Evaluate NSAL-16-1, Baffle Former Bolts | 07/07/2016 |
| CR425355 | Post Baffle Bolt Project Foreign Object Inspection Identified 5 Items on Core Plate (Unit 2 CR) | 05/01/2011 |

| Document | Title | Revision / Date |
|----------------------------------|--|-----------------|
| CR435685 | Condition of Unit 2 RCCA Guide Cards | 07/26/2011 |
| CR547176 | Material Deformation Noted on Upper Internals Assembly, Upper Support Plate (Unit 2 CR) | 04/30/2014 |
| CR547625 | Material Deformation Noted on Core Barrel Assembly, Lower Core Plate (Unit 2 CR) | 05/04/2014 |
| CR558051 | TB-14-5, Reactor Internals Lower Radial Support Clevis Insert Cap Screw Degradation (Westinghouse Technical Bulletin) | 09/09/2014 |
| CR402374 | Unit 1 Baffle Bolt Inspection Indications | 11/04/2010 |
| CR425323 | Unit 2 Baffle Bolt Relevant Indications | 05/01/2011 |
| CR547764 | Relevant Indications Found on Radial Support Keyway at 270° | 05/05/2014 |
| CR1039262 | Industry OE on Baffle Bolt Cracking | 06/07/2016 |
| CA3035539 (related to CR1041877) | Evaluate NSAL-16-1, Baffle Former Bolts | 07/12/2016 |
| CA199817 | CA to Operations Documenting Unit 2 Reactor Vessel Foreign Objection Inspections | 04/30/2011 |
| CA207894 (related to CR435685) | CA to Engineering to Determine and Initiation Enhancements to ET-S-10-0067, Revision 0 | 07/26/2011 |
| CA213269 | CA to Engineering to Determine and Initiation ET-S-10-0067 for Seismic Considerations | 09/22/2011 |
| CA282325 (related to CR547176) | CA to Engineering to Evaluate Deformation in Unit 2 Upper Internals Assembly, Upper Support Plate (U-2) | 05/02/2014 |
| CA289106 (related to CR558051) | CA to Engineering to Evaluate Westinghouse TB-14-5, "Reactor Internals Lower Radial Support Clevis Insert Cap Screw Degradation" | 05/05/2014 |
| CA184568 (related to CR402374) | CA to Engineering for Determining Inspection Frequency for Unit 1 Baffle Bolt C113 (Unit 1 CA Record) | 11/11/2010 |
| CA183945 (related to CR402374) | CA to Engineering for Documenting Completion of ETE SU-10-0008 prior core onload. (Unit 1 CA Record) | 11/05/2010 |
| CA199944 (related to CR425323) | CA to Engineering to Document ETE SU-2011-0017 approval prior to core reload | 05/02/2011 |
| CA199991 (related to CR425323) | CA to Engineering to Develop Inspection Program for Noted Indications for U-1 a. | 05/02/2011 |
| CA209676 (related to CR425323) | CA to Engineering to Add Augmented Inspection Program for Baffle Bolts to ER-SU-AUG-101 | 08/16/2011 |
| CA216460 (related to CR425323) | Document Posting of Procedure Changes in ER-SU-AUG-101, Rev. 6 | 10/19/2011 |

| Document | Title | Revision / Date |
|----------------------------------|--|------------------------|
| CA282639 (related to CR547764) | CA to Engineering to Evaluate Noted Wear Condition in 270° Radial Keyway in Unit 2 | 05/07/2014 |
| NNOE000685 (related to CR402374) | NNOE to Engineering (SPS Unit 1 Baffle Bolt Inspection Results) | 11/11/2010 |
| NNOE000806 (related to CR425323) | NNOE to Engineering to Document Industry Experience | 05/10/2011 |
| ICES Report 253284 (INPO Report) | Document Summary of Westinghouse Technical Bulletin TB-12-5, Westinghouse Downflow Plant Baffle Bolt Degradation | 03/07/2012 |
| ICES Report 322895 (INPO Report) | Salem Unit 1 Record Summarizing Site Specific Baffle-Former Bolt Failures | 05/03/2016 |
| ICES Report 416600 (INPO Report) | Salem Unit 2 Record Summarizing Site Specific Clevis Insert Bolt Failures | 04/30/2017 |
| ETE-SU-2010-0008 | Surry Unit 1 Reactor Vessel Baffle Bolt Examination Evaluation | Rev. 0, 11/11/2010 |
| ETE-SU-2011-0017 | Surry Unit 2 Reactor Vessel Baffle Bolt Examination Evaluation | Rev. 1, 04/26/2012 |
| ETE-SU-2012-0020 | Unit 1 Reactor Vessel Internals – CRGT Guide Cards, CRGT Upper and Lower Flange Welds, and Vessel Hold Down Spring – Startup Evaluation | Rev. 0, 05/22/2012 |
| ETE-SU-2012-0073 | Unit 2 Reactor Vessel Internals – CRGT Guide Cards, CRGT Upper and Lower Flange Welds, and Vessel Hold Down Spring – Startup Evaluation | Rev. 0, 11/20/2012 |
| ETE-SU-2013-0050 | Unit 1 Reactor Internals Examination – Reactor Core Barrel Weld Exams and Balance of MRP-227-A Examination | Rev. 0, 11/12/2013 |
| ETE-SU-2014-0033 | Unit 2 Reactor Internals Examination – Reactor Core Barrel Weld Exams and Balance of MRP-227-A Examination | Rev. 0, 05/16/2016 |
| WO No. 38102881397 | Unit 1 – Unit 1 Reactor Baffle Bolt Inspection for License Renewal | Rev. 0, 10/27/2010 |
| WO No. 38102930378 | Unit 2 – Unit 2 Reactor Baffle Bolt Inspection | Rev. 0, 03/14/2011 |
| WO No. 38103333712 | Unit 2 – Inspection of the Reactor Internals (Components in Lower Internals Package) | Rev. 0, 01/09/2014 |
| WO No. 38103173757 | Unit 2 – Inspection of the Reactor Internals (CRGT, Core Barrel and Upper Internals Flange Weld, and Hold-down Spring Component Locations) | Rev. 0, 09/27/2012 |

SLRA AMP B.2.1.8, Flow-Accelerated Corrosion

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “cavitat,” “CHECWORK,” erosi,” “FAC,” “flow accelerated,” “flow accelerated corrosion,” “flow-accelerated,” “flow-assist,” “impinge,” “min wall,” through wall,” and “wall thin.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Flow-Accelerated Corrosion Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR344096 | Prioritize/schedule FAC inspections of small bore susceptible non modeled lines | 08/07/2009 |
| CR096595 | Main feed pump recirculation piping cavitation erosion, Unit 1 | 04/23/2008 |
| CR1079939 | Surry 2 2017 RO FAC inspection scope did not include FAC components identified by CR1042842 | 10/04/2017 |
| CR1069186 | Internal erosion found on two AS lines | 05/18/2017 |
| CR1042842 | FAC components previously dispositioned “No Further Inspections” require re-evaluation | 07/21/2016 |
| CR1073211 | Surry 2017 INPO MRV Report | 07/11/2017 |
| CR1016378 | Structural damage inside moisture separator reheater. | 10/31/2015 |
| CR099404 | Wall thinning on mini flow recirculation lines for AFW. | 05/17/2008 |
| PIR1026952 | FAC Self-Assessment | 11/30/2016 |
| CR1038564 | Oversight Review Activity | 05/26/2016 |

SLRA AMP B2.1.9, Bolting Integrity

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “bolt,” “SCC,” “stress corrosion cracking,” “crack,” “seal cap,” “moly,” “leak,” “corro,” “preload,” and “loose.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Bolting Integrity Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|---------------|--|-----------------|
| CR337885 | Lab Analysis Indicates Gland Bolting for 01-SI-HCV-1850 was incorrect | 06/11/2009 |
| WO38102544179 | Replace Packing Stud(s) and Repack Valve | 05/06/2009 |
| CR485200 | PWROG MSC has Issued Needed & Good Practice Recommendation per NEI 03-08 | 08/01/2012 |
| CA242410 | CA to Engineering to Determine if Any ASME [American Society of Mechanical Engineers] Class 1 or 2 NSSS Bolted Bonnet Check Valves Have the Subject Encapsulation Devices and Initiate Actions as Required IAW NEI 03-08 | 08/01/2012 |
| WO38103108113 | Valve Replacement | 12/12/2012 |
| CR101630 | Crack in the Motor Box Bolt Hole | 06/17/2008 |
| CR414633 | Caustic Leak at Flange Identified as 2-CP-1405, Caustic Dilution Water Check Vlv | 02/22/2011 |
| WO38103232832 | PM: Inspect the Main Condenser(s)/Condenser Inspection & Repairs | 12/10/2013 |
| CR494061 | New Bolting Rejected for Damaged Threads | 10/31/2012 |
| WO38103093664 | Replace Mech Seal IAW DC (02-RC-P-1B) | 12/20/2012 |
| CR000229 | 1-BR-4 Body to Bonnet Leak | 08/12/2006 |
| WO38073740802 | Tighten Bonnet Bolts | 02/08/2008 |
| CR550236 | 2-CP-DM-1B Outlet Flange Leaking | 05/27/2014 |
| CR1015903 | Highly Corroded Bolts/Studs on 2-CW-E-1C | 10/28/2015 |
| CR559229 | Body to Bonnet Leak on 1-RC-PCV-1455A | 09/19/2014 |

SLRA AMP B.2.1.10, Steam Generators

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “indication,” “tubesheet,” “tube-to-tubesheet,” “foreign material exclusion,” “secondary side cleaning,” “divider plate,” “foreign object,” and “FOSAR.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Steam Generators Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|------------|---|-----------------|
| CR333167 | Electromagnetic permeability partially obstructing eddy current exam. | 05/01/2009 |
| CR424807 | Steam Generator riser barrel has a hole from J-nozzle erosion. | 04/28/2011 |
| CR460580 | SG eddy current exams. | 01/26/2012 |
| CR495529 | Localized degradation for the hot leg channel head. | 11/08/2012 |
| CR532220 | Steam Generator mirror insulation installation degradation. | 11/11/2013 |
| CR547377 | Missed eddy current indications. | 05/02/2014 |
| CR099528 | PWSCC found in tube end of all three SGs. | 05/19/2008 |
| CR403610 | An indication indicative of ODSCC. | 11/13/2010 |
| PIR1030006 | Steam Generator Fleet Self Assessment | 2017 |
| CR358500 | Tube plugging in SG C | 11/17/20019 |

SLRA AMP B2.1.11, Open-Cycle Cooling Water System

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “biofoul,” “biological,” “clog,” “corros,” “fouling,” “shell,” and “silt.” The table below lists the documents that were reviewed by the staff and were found relevant to the Open-Cycle Cooling Water System Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR090520 | Excessive Pitting inside the endbells of 1-CC-E-1D | 02/5/2008 |
| CR118661 | Seepage identified at discharge of 1-VS-E-4C | 11/13/2008 |
| CR323664 | Seepage in valve body | 02/16/2009 |
| CR343410 | 2-SW-S-2B vent may be blocked (SW strainer swap...no water was able to be vented | 08/02/2009 |
| CR366628 | Engineering to evaluate existing PMs for cleaning three 8" SW headers to MER. | 01/27/2010 |
| CR391269 | 2-OSP-SW-001 Performed Un-Satisfactory | 08/14/2010 |
| CR403084 | 1-BC-E-1A inlet SW pipe has extensive corrosion | 11/9/2010 |
| CR403147 | 1SW-46 has metal loss of 1/4 to 3/8 inch depth (active graphitic corrosion) | 11/9/2010 |
| CR403330 | Generate WO to replace 1-SW-50 (active graphitic corrosion) | 11/10/2010 |
| CR403331 | Generated CR to replace 1-SW-42 (active graphitic corrosion) | 11/10/2010 |
| CR472275 | 1-SW-934 repair plan and to track coating repair. | 04/25/2012 |
| CR494627 | As-found inspection of Unit 2 "C" 48-inch SW supply header | 11/3/2012 |
| CR544649 | As Found Inspection Result ID Service Water Header | 04/11/2014 |
| CR549222 | Potential Failure Mode Requires operability review | 05/16/2014 |
| CR1015310 | 2C SW Header as-left | 10/24/2015 |
| CR1015777 | Degradation 2-SW-REJ-201A | 10/27/2015 |
| CR1015784 | 2-SW-REJ-201B REJ Potential Degradation | 10/27/2015 |
| CR1019845 | 2ASW header inspection results with attachments | 11/28/2015 |
| CR1046143 | 1-SW-S-10 Piping needs WO for programmatic cleaning | 09/01/2016 |

| Document | Title | Revision / Date |
|-----------|---------------------------------------|-----------------|
| CR1070325 | 2C SW Header As-Found Dive Inspection | 05/31/2017 |

SLRA AMP B2.1.12, Closed Treated Water Systems

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “biological,” “chloride,” “clog,” “cooler,” “corros,” and “min wall.” The table below lists the documents that were reviewed by the staff and were found relevant to the Close Treated Water Systems Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------|---|-----------------|
| CR003960 | Recirc spray piping replacement testing. | 11/08/2006 |
| CR005310 | 1-CC-E-1C macrofouling in 4-5 weeks | 12/07/2006 |
| CR479498 | CH CC pipe wall loss and corrosion deposits | 06/21/2012 |
| CR483008 | U2 Charging CC Suction Piping Replacement | 07/26/2012 |
| CR487853 | Replace U1 CH CC Suction Piping | 09/12/2012 |
| CR565668 | 18-CC-229-121 line below min wall thickness at pipe support | 11/18/2014 |
| CR1022848 | Peeled away coating clogging 1-CC-E-1C inlet tubes | 01/04/2016 |
| CR1051543 | CC leak in containment at pipe penetrations coolers | 10/24/2016 |

SLRA AMP B2.1.13, Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “crane,” “bolt,” “corro,” “fatigue,” “degrad,” “stud,” “loose,” “crack.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR1054974 | New Fuel Crane Paint & Preservation | 12/02/2016 |
| CR1073809 | Request WO for ½-FH-CRN-5 Aging Management Crane Inspection | 07/18/2017 |
| CR1071593 | This is an NOD Audit Finding, 17-04-03S | 06/15/2017 |
| CA3060162 | NOD to Initiate Actions as Required to Disposition Audit Finding 17-04-03S IAW NO-AA-102 | 06/19/2017 |
| CR1068682 | Aging Management Activities are Not Conducted IAW Program Requirements | 05/15/2017 |
| CR1063146 | Sheared Crane Rail Mount Stud on 1-FH-CRN-13 | 03/24/2017 |
| CA3053762 | CAART Directed Assignment: D&I to Address Concerns With Sheared Crane Rail Mount Stud on 1-FH-CRN-13 | 08/11/2017 |
| WO38103804873 | Perform Repairs IAW ENG Direction | 07/13/2017 |

SLRA AMP B2.1.14, Compressed Air Monitoring

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “air,” “aging,” “moist,” “chlorine,” “dew,” and “instrument.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Compressed Air Monitoring Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR347728 | 1-IA-D-3 failed unsat for system pressure dew point | 09/09/2009 |
| CR362110 | 2-IA-33 failed unsat for system pressure dew point | 12/16/2009 |
| CR418673 | Low level IA Dryer Dew Point Failure | 03/22/2011 |
| CR406913 | Low Level Air Dryer 1-IA-D-3 Failed on Quarterly Dew Point Check | 12/09/2010 |

| Document | Title | Revision / Date |
|----------|---|-----------------|
| CR418239 | Low level IA Dryer Dew Point Failure 0-CSP-IA-004 | 03/18/2011 |
| CR090509 | Moisture Trap 2-IA-TD-48 clogged at 2-IA-D-48 | 02/05/2008 |

SLRA AMP B.2.1.15, Fire Protection

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “penetration seal,” “fire door,” “fire wall,” “fire damper,” “insulation,” “combustible,” “halon,” “carbon dioxide,” and “fire suppression.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Fire Protection Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------|---|-----------------|
| CR1084941 | Engineering was asked to inspect a passive fire barrier along the south wall, which showed a whole completely through a box. | 11/29/2017 |
| CR1085782 | A fire barrier that protects discharge piping was identified as breached (CR1084941). Pictures reveal corrosion at the location of the fire barrier failure. A work order was created to remove portions of the barrier and inspect the piping and supports with appropriate contingency plans. | 12/12/2017 |
| CR581450 | The first floor double doors in the admin building will not secure in the event that the fire alarm system automatically released the doors. A supervisor was notified of safety and loss prevention. | 06/04/2015 |
| CR575355 | Fire resistive testing and qualification documentation were not found to prove to an NRC inspector that a masonry wall was a qualified 3-hour rated fire barrier. Penetration seals were also noted as not having a controlled manner of verifying the adequacy of the seals. | 03/27/2015 |
| CR572510 | Door will not latch completely when opened a normal distance. Door was deadbolted and declared functional as a fire barrier and gas barrier | 02/24/2015 |

| Document | Title | Revision / Date |
|----------|---|-----------------|
| CR565907 | A fire barrier penetration did not have the required semkit foam seal installed. The penetration does not have an actual location number. | 11/20/2014 |
| CR544364 | Penetration between the Unit 2 normal switchgear room and the Unit 2 turbine building contains a one-inch steel conduit grouted into the block wall with a pull box on each side of the wall. An inspection showed that no foam was installed in the conduit through the wall. In this condition, the penetration would not have performed tis function as a 3-hour rated fire barrier. Once new cables are pulled in, foam will be installed in the conduit as part of the modification package. | 04/09/2014 |
| CR540746 | Appendix R penetration is not sealed. Cables currently installed are spares and are scheduled to be removed to permit installation of new cabling, which will then be sealed. | 02/25/2014 |
| CR540963 | Corrective Action 278440 was assigned to engineering to determine and initiate required actions and to perform and extent of condition walkdown based on penetration documented in CR540746. One similar penetration in Unit 2 was identified without sealant inside the conduit, but no other penetrations of this type were noted in either unit. | 02/27/2014 |
| CR491395 | The fire barrier penetration between the Unit 1 Cable Tunnel and Cable Vault, in the cable trays are is not in compliance with the station fire barrier requirements. The requirement is to have 10 inches of fire material in the penetration to achieve a 3-hour fire barrier. The wall is 6 inches thick and the material in the wall penetration is also 6 inches. An additional 4 inches of material is required by procedure. | 10/12/2012 |
| CR024815 | The foamed piping penetration in the wall between the MSVH and CSPH is not shown in the Technical Requirements Manual (TRM) as a fire barrier. A door that penetrates the same wall is shown as a balance of plant fire door. It is unclear if the piping penetration is a fire barrier. Recommended corrective action is to determine the correct classification of the door, wall, and foamed penetration, and initiate any changes. | 11/13/2017 |

| Document | Title | Revision / Date |
|-----------|---|-----------------|
| CR106695 | While inspecting the auxiliary building and cable vault pipe tunnel fire barriers for extent of condition relative to CR106369, a hydrogen analyzer line was found that could be potentially similar. Work order is needed to remove insulation and check penetration fire barrier. | 08/21/2008 |
| CR106369 | A fire seal was breached in between the Unit 2 cable tunnel and portion of the auxiliary building during a walkdown. | 08/19/2008 |
| CR322632 | Required inspections were not performed during fire barrier repair | 02/05/2009 |
| CR1087926 | Skins on fire door are failing and allowing the door to flex. The insulation material inside has become damaged and falling out of the seams due to movement. | 01/16/2018 |
| CR1074953 | Fire Protection/Appendix R Health Report overall rating is white for the second quarter of 2017 with several Yellow and Red Health attributes. The Red attribute is that an Appendix R fire door has excessive gap under the active door leaf, and is non-functional. Due to vendor measurement discrepancies, multiple attempts to install the new door leaf have been unsuccessful. | 08/03/2017 |
| CR119988 | Monthly Fire Door Inspection was completed UNSAT because two doors are locked/blocked closed for known issues. | 11/23/2008 |
| CR1006002 | Halon cylinder was discovered to be 4 pounds below the minimum weight per the test requirements. | 08/11/2015 |
| CR1006004 | Spare halon cylinder was discovered indicating 0 gauge pressure. This cylinder was returned to Surry Power Station from the vendor on 08/05/2015 after being hydro tested at their shop. It was previously verified satisfactory for overall weight (605 pounds) and pressure (450 psi [pounds per square inch]) upon return from the vendor on 08/05/2015. | 08/11/2015 |

| Document | Title | Revision / Date |
|-----------|---|-----------------|
| CR1015731 | Emergency switchgear room fire damper associated with the halon system located in the dividing wall was found tripped. The two dampers located in the dividing wall were inspected as an extent of condition when the rest of the fire dampers tripped under CR1014895 | 10/27/2015 |
| CR527809 | There have been multiple occurrences of emergency switchgear room fire dampers and the fire door spuriously repositioning, requiring operator action. Responding to this condition requires investigation and evaluation of the fire suppression system functionality, and an evaluation for Appendix R and TRM compliance. | 10/01/2013 |

SLRA AMP B2.1.16, Fire Water System

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “aging,” “biofoul,” “blister,” “block,” “break,” “clog,” “corros,” “damage,” “fail,” “flow restrict,” “foul,” “leak,” “recur,” “rupture,” “sprinkler,” “tank,” and “through wall.” The table below lists the documents that were reviewed by the staff and were found relevant to the Fire Water System Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|----------|--|-----------------|
| CR380377 | The sensing line upstream of a main drain gauge isolation valve is clogged as evidenced by the static and dynamic pressure reading being the same. | 05/08/2010 |
| CR393845 | A drain on unit 1 south side turbine building is clogged. Subsequent condition report, 398027 (10/06/2010), confirmed that blockage was not downstream of the drain valve. | 09/08/2010 |
| CR480051 | Extensive corrosion was detected at a 2-inch elbow in the vicinity of hose rack 20. | 06/02/2012 |
| CR485286 | Deposits of brown reddish sediment were detected inside an elbow in the vicinity of 1-FP-282. | 08/18/2012 |

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR556879 | Twenty five percent of the diesel driven fire water pump normal cooling water strainer is clogged. Less than five percent of the bypass cooling water strainer is clogged. | 08/25/2014 |
| CR1089670 | A loop seal prevents deluge piping downstream of 1-FP-DL-28 from draining. | 02/08/2018 |
| CR1089673 | A loop seal prevents deluge piping downstream of 1-FP-DL-17 from draining. | 02/08/2018 |
| CR316728 | Blistering was detected in the internal coatings on the bottom and side walls of the fire protection/domestic water storage tank (FWST) 1A. | 12/22/2008 |
| CR318515 | Extensive surface corrosion was detected on the external surfaces of the bottom two feet of FWST 1A. | 12/31/2008 |
| CR318521 | Extensive surface corrosion was detected on the external surfaces of the bottom two feet of FWST 1B. | 12/31/2008 |
| CR325572 | Inspections of FWST 1A and FWST 1B revealed corrosion on the bottom plate and sides. | 03/05/2009 |
| CR514139 | Indications of general corrosion were detected on the bottom two feet of FWST 1A and FWST 1B. | 05/02/2013 |
| CR540390 | Thirty locations on FWST 1A exhibited plate thinning exceeding 10 percent of the nominal wall thickness. | 02/21/2014 |
| CR553861 | The internal coating on FWST 1B exhibited peeling on the tanks walls above the water line and the ceiling. Some blistering was noted below the waterline. | 08/11/2014 |
| CR556901 | Forty-six locations on FWST 1B exhibited plate thinning exceeding 10 percent of the nominal wall thickness. | 08/25/2014 |
| CR564447 | Pitting and coating blistering were detected on the floor of FWST 1B. | 11/05/2014 |
| CR28598 | A through-wall leak was identified in the vicinity of hose reel 30; 4 drops per second (dps). | 01/11/2008 |
| CR103488 | A through-wall leak was identified between 1-FP-243 and 1-FP-250 on the 8-inch supply header to the unit 1 main and station transformer. | 07/13/2008 |

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR316119 | A through-wall leak was identified downstream of 1-FP-383. | 12/08/2008 |
| CR320164 | A through-wall leak was identified in a 6-inch supply line. | 01/15/2009 |
| CR368386 | An internal inspection of 10-inch fire protection piping in the turbine building revealed pitting and nodules. | 02/10/2010 |
| CR408234 | Suspected leakage was identified downstream of the isolation valve for the fire protection header to the training building. | 12/21/2010 |
| CR441171 | A through-wall leak was identified in the vicinity of 1-FP-364. | 09/02/2011 |
| CR458330 | A through-wall leak was identified in a unit 1 turbine building 2-inch fire water supply line. | 01/08/2012 |
| CR536491 | A sprinkler line break occurred in the south side of the unit 1 turbine basement in the vicinity of 1-FP-247. | 08/28/2014 |
| CR1064984 | A through-wall leak was identified in a unit 1 deluge valve drain line; 4 dps. | 02/21/2015 |
| CR557202 | Repair alignment issues occurred for a piping repair, potentially as a result of the pipe break which initiated the repair. | 08/28/2014 |
| CR576447 | The internal inspection of 1-FP-14 revealed pitting, crevice corrosion, and possibly flow accelerated corrosion on both the inlet and outlet piping. | 04/10/2015 |
| CR1064984 | A through-wall leak was identified upstream of the isolation valve for hose rack 56; 1 gallon per minute. | 04/11/2017 |
| CR1071799 | A through-wall leak was identified on piping to hose reel 57. | 06/19/2017 |
| CR1076156 | A through-wall leak was identified from the retard chamber drain line for 1-FP-DL-27; 150 milliliters per minute. | 08/21/2017 |
| CR1085645 | A through-wall leak was identified upstream of hose rack 48; 2 drops per minute (dpm). | 12/10/2017 |
| CR1087698 | A possible water leak from the fire sprinkler system was identified in warehouse 8. | 01/11/2018 |

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR105806 | Surface water was detected near fire hydrant adjacent to the training center parking lot. | 08/12/2008 |
| CR329250 | Surface water was detected at the north east corner of a construction site laydown area within 100 feet of 1-FP-1046. | 03/31/2009 |
| CR330747 | Surface water was detected in the vicinity of the station training center. | 04/13/2009 |
| CR345000 | Surface water was detected in the vicinity of post indicating valve 01-FP-86. | 08/16/2009 |
| CR456235 | Surface water was detected in the vicinity of fire hydrant 1-FP-708. | 12/14/2011 |
| CR470098 | Surface water was detected in the vicinity of 1-FP-100. | 04/11/2012 |
| CR474655 | Surface water was detected in the vicinity of post indicating valve 1-FP-1024. | 05/10/2012 |
| CR477285 | Surface water was detected in the vicinity of hose house 29. | 05/31/2012 |
| CR497754 | Surface water was detected in the vicinity of curb box valve 1-FP-1010. | 11/24/2012 |
| CR498946 | Surface water was detected in the vicinity of post indicating valve 1-FP-49. | 12/03/2012 |
| CR504380 | Surface water was detected in the vicinity of 1-FP-1027. | 02/03/2013 |
| CR510828 | Surface water was detected in the vicinity of post indicating valve 1-FP-35. | 04/11/2013 |
| CR538837 | Surface water was detected in the vicinity of the curb box near 1-FP-70. | 02/04/2014 |
| CR553533 | Surface water was detected in the vicinity of hose house 13. | 07/09/2014 |
| CR556008 | Surface water was detected in the vicinity of 1-FP-535. | 08/13/2014 |
| CR580443 | Surface water was detected in the vicinity of 1-FP-542 | 05/22/2015 |
| CR1019199 | Surface water was detected in the vicinity of 1-FP-321 | 11/21/2015 |

| Document | Title | Revision / Date |
|-----------|---|-----------------|
| CR1079710 | Surface water was detected in and around fire hose house 31; less than one gallon per hour. | 10/02/2017 |
| CR1086752 | Surface water was detected in the vicinity of 1-FP-379; by the training center. | 12/28/2017 |
| CR1087963 | Surface water was detected between 1-FP-124 and 1-FP-519 | 01/16/2018 |
| CR002099 | A sprinkler head is leaking at west end of unit 2 condenser; 40 dpm. | 10/05/2006 |
| CR007510 | A sprinkler head in the laundry building is spraying a fine mist. | 02/12/2007 |
| CR485731 | Corrosion was detected on a sprinkler in the chemistry primary hot lab. | 08/22/2012 |
| CR496505 | A sprinkler head is leaking in the turbine building; 10 dpm. Subsequent condition report, 497330 (11/20/2012), stated that the leak had increased to 2 dps. | 11/14/2012 |
| CR497330 | A sprinkler head is leaking in the unit 2 turbine building; 2 dps. | 11/20/2012 |
| CR503979 | A unit 2 turbine building sprinkler head is spraying water. | 01/29/2013 |
| CR1080728 | A sprinkler head above unit 2 air ejector failed. | 10/13/2017 |

SLRA AMP B2.1.17, Outdoor and Large Atmospheric Metallic Storage Tanks

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “corrosion,” “crack,” “pinhole,” “leak,” “tank,” “blistering,” “coating,” and “wall thickness.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Outdoor and Large Atmospheric Metallic Storage Tanks Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|----------------------|---|------------------------|
| CR514136 | Insulation underneath protective covering of Fire Protection Domestic Water Storage Tank was moist. | 05/02/2013 |
| CR1044007 | The recirculation line on the Refueling Water Storage Tank was missing a portion of insulation near the top of the tank. | 08/04/2016 |
| CR479414 | A large void was found in exterior concrete surface of the Emergency Condensate Storage Tank. The void appears to be from a piece of wood that was embedded in the concrete surface and previously removed. | 06/20/2012 |
| CR178979 | A corrective action was sent to Engineering to address 10 CFR 54.4(a)(2) and initiate actions to determine if piping meets the requirements in 10 CFR 54.37b. | 02/23/2011 |
| CR510027 | Work order for inspection of RWST 2-CS-TK-1 | 04/04/2013 |
| CR510031 | Work order for inspection of RWST 1-CS-TK-1 | 04/04/2013 |
| CR518493 | Emergency Condensate Storage Tank local indicator reading in error. | 06/17/2013 |
| CR543269 | Surry Power Station committed to inspecting Unit 2 Refueling Water Storage Tank in accordance with American Nuclear Issues Guideline 07-01, which requires tank interiors to be periodically inspected (including tank bottom, shell plates, roof plates, pipe connections, welds, and coatings). | 03/27/2014 |
| CR514142 | Vegetation was noted growing underneath insulation during a walkdown of the Fire Protection Water Storage Tanks. | 05/02/2013 |
| CR318515 CR318521 | Bottom 2 feet of the subject Fire Protection Domestic Water Tank was buried in soil for an extended period of time. Upon excavation, it was revealed that the area previously buried has no protective coating and corrosion is occurring. | 12/31/2008 |
| CR002934 | Unit 2 Chemical Addition Tank level began to decrease. | 10/21/2006 |

| Document | Title | Revision / Date |
|----------|--|-----------------|
| CR423485 | To fulfill a license renewal commitment, 1-FP-TK-1B was visually inspected using ultrasonic testing (UT). Some corrosion was found on the bottom side of the bottom plate via UT. The issue is summarized in CR325572. | 04/20/2011 |
| CR325572 | The bottom coating of 1-FP-TK-1B is blistered, but intact with no indication of corrosion on top of the bottom plate. The inside walls have some coating failure. | 03/05/2009 |
| CR317397 | During UT of 1-CN-TK-1, foreign material was discovered in 2 locations. | 12/17/2008 |

SLRA AMP B.2.1.18, Fuel Oil Chemistry

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "fuel oil," "MIC," "microbiologic," "tank," "biofuel," "biological," "bacterial," and "biodiesel."

The table below lists the documents that were reviewed by the staff and were found relevant to the Fuel Oil Chemistry Program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------|---|-----------------|
| CR009031 | Diesel fuel oil issues identified during RCE27 investigation | 03/21/2007 |
| CR014915 | Fuel oil pump house, sump pumps, water intrusion, flooding | 06/28/2007 |
| CR344349 | Critical observation of chemistry EDG #2 sampling | 08/10/2009 |
| CR057720 | Unknown material found in AAC fuel oil filters | 03/11/2013 |
| CR554108 | Foreign material in new fuel oil tank 1-FP-TK-4 | 07/16/2014 |
| CR1011699 | Ten Year PMs to Clean and inspect fuel oil tanks were deleted | 10/01/2015 |
| CR511830 | Debris identified within AAC primary fuel oil filters | 06/04/2013 |

| Document | Title | Revision / Date |
|--------------------------|---|-----------------|
| CR517334 | Evaluate condition of 1-FP-TK-4, 1-FP-P-2 fuel oil tank | 06/04/2013 |
| CR390322 | Water layer detected in fuel oil tank. | 08/05/2010 |
| CR003949 | Fire protection diesel day tank requires cleaning. | 11/07/2006 |
| CR492073 | EDG biodiesel preparedness. | 10/17/2012 |
| CR526769 | Fire protection diesel day tank requires cleaning. | 09/21/2013 |
| CR554108 | Foreign material in new fuel oil tank 1-FP-TK-4. | 07/16/2014 |
| CR522766 | Water found in 1-EE-TK-2B. | 08/08/2013 |
| ETE-SU-2011-0070-API-653 | Diesel tank inspection summary. | Revision 0 |
| PIR1005185 | Fuel oil self-assessment | 12/10/2015 |

SLRA AMP B2.1.19, Reactor Vessel Material Surveillance

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using these keywords: "embrittle," "brittle," "capsule," "surveillance," "astm," "integrated," "toughness," "ferri," "rpv," , "rv," and "vessel." The staff also reviewed condition reports and any associated corrective action reports referenced in the audit portal for SLRA Section B2.1.19, "Reactor Vessel Material Surveillance."

The table below lists the documents that were reviewed by the staff and were found relevant to the reactor pressure vessel (RPV) material surveillance described in SLRA Section B2.1.19. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|----------|--------------------------------------|-----------------|
| CR362195 | Unit 1 Vessel Surveillance, 1-PT-4.0 | 12/16/2009 |
| CR579127 | Unit 2 RV Heat Number Discrepancies | 05/08/2015 |

The staff acknowledges that, in addition to the above CRs, operating experience related to the RPV surveillance program (which is based on the requirements 10 CFR Part 50, Appendix H) is summarized in RPV surveillance reports that are generated in accordance with the reporting requirements in the 10 CFR Part 50, Appendix H. The staff's in-house audit report input for SRLA Section B2.1.19 identifies the applicable RPV surveillance capsule reports.

SLRA AMP B2.1.20, One-Time Inspection

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "blister," "break," "clam," "coat," "corro," "crack," "damage," "delamin," "fail," "flaw," "hole," "holiday," "rust," and "scal."

The table below lists the documents that were reviewed by the staff and were found relevant to the One-Time Inspection Program. These documents were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|------------------------|--|-----------------|
| CR438418 | Through-wall leaks in carbon steel piping | 08/12/2011 |
| CR549183 | Metal flaking inside carbon steel piping | 05/16/2014 |
| CR563677 | Discharge carbon steel piping to the inlet canal was found pitted beyond repair | 10/29/2014 |
| CR580786 | Oil leak from carbon steel piping sensing line | 05/27/2015 |
| CR1019835 | Through-wall leak of CW inlet piping from galvanic corrosion between SS valve and CS flange | 11/28/2015 |
| CR1025969 | Fish screen carbon steel piping has through-wall holes from corrosion from brackish water | 02/02/2016 |
| CR1051990 CR1052010 | Corrosion of 1" carbon steel piping in CC water system was noted during license renewal inspection | 10/27/2016 |

SLRA AMP B2.1.21, Selective Leaching

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "bronze," "graphiti," "dealloy," "zinc," "leach," "dealum," and "cast."

The table below lists the documents that were reviewed by the staff and were found relevant to the Selective Leaching Program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR443965 | Work Order to Perform Inspection of 38-01-SW-183 valve | 09/21/2011 |
| CR444706 | Work Order to Perform Inspection of 38-00-SW-183 valve | 09/26/2011 |
| CR444710 | Work Order to Perform Inspection of 38-00-PL-12 valve | 09/26/2011 |
| CR566581 | Bronze pipe plug 2-CP-S-5 Filter Has through wall leak | 12/02/2014 |
| CR444773 | Work Order to Perform Inspection of 38-02-SW-ICV-3048 valve | 09/26/2011 |
| CR452774 | Work Order to Perform Inspection of 38-01-CP-82 valve | 11/15/2011 |
| CR500597 | Work Order to Perform Inspection of 38-00-BSA-LU-1-Mechan valve | 12/20/2012 |
| CR500614 | Work Order to Perform Inspection of 38-00-BLO-12 valve | 12/20/2012 |
| CR500617 | Work Order to Perform Inspection of 38-02-PL-12 valve | 12/20/2012 |

SLRA AMP B2.1.22, ASME Code Class 1 Small-Bore Piping

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "fatigue," "fatigue cracking," "thermal fatigue," "stress corrosion," "PWSCC," "SCC," and "small bore."

The table below lists the documents that were reviewed by the staff and were found relevant to the ASME Code Class 1 Small-Bore Piping Program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR002804 | Drain Line at Tee on 2-SI-PI-200 Leaked When the System Was Pressurized | 10/19/2006 |
| CR003283 | Piping (Small Bore) and Support (2-DG-18) in "A" loop bent next to 2-RH-MOV-2700" | 10/26/2006 |
| CR003402 | Radiography Reject of 2-SI-MOV-2867C, Three Indications, Weld Repaired and Passed | 10/28/2006 |
| CR353510 | Weld Leak on 2-RH-33 | 10/19/2009 |
| CR402204 | Unacceptable PT Linear Indication Found during ASME Section XI ISI Weld Exam | 11/03/2010 |
| CR402568 | Indication on SI Line during ISI Exam, Unit 1 | 11/05/2010 |
| CR423990 | Flow Accelerated Corrosion (FAC) in Small Bore Piping | 04/23/2011 |
| CR491984 | I-SI-P-2 Seal Leakage While Pump is Isolated | 10/16/2012 |
| CR531555 | NDE Linear Indications on 2 inch SI-73-1503 Weld 1-27 During ISI Examination | 11/04/2013 |
| CR551332 | IER L4-14-30 Analysis of Vibration Induced Piping and Tubing Leaks (2010-2013) | 06/10/2014 |
| CR579624 | SPC U1 RCS Drain Line Thermal Fatigue Inspection Assessment | 05/14/2015 |
| CR577754 | Indications on "B" Cold Leg Drain Line | 04/24/2015 |
| CR579624 | SPS U1 RCS Drain Line Thermal Fatigue Inspection Assessment, Less Than 90% Coverage | 05/14/2015 |

SLRA AMP B2.1.23, External Surfaces Monitoring of Mechanical Components

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "corros," "cracking," "jacket," "leak," "rust," "scale," "ammonia," and "copper."

The table below lists the documents that were reviewed by the staff and were found relevant to the External Surfaces Monitoring of Mechanical Components Program. These documents were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR001977 | Removed insulation from CC coolers and found advanced corrosion | 10/2/2006 |
| CR002938 | Many examples of rusted piping, some heavily | 10/21/2006 |
| CR025704 | Four CW loop drain valves externally corroded | 11/28/2007 |
| CR025803 | Boric acid leakage on piping insulation | 11/29/2007 |
| CR099000 | Stress corrosion cracking on outlet nozzle of residual heat removal heat exchanger | 05/14/2008 |
| CR388637 | Condition Monitoring of AMP | 07/21/2010 |
| CR388637 | AMP program inspection report | 07/21/2010 |
| CR403084 | SW piping (inlet) has extensive corrosion | 11/9/2010 |
| CR424720 | NRC license renewal (LR) inspector found general corrosion of CC water piping | 04/27/2011 |
| CR500594 | External surfaces inspection of copper pipe exposed to air has potential aging effect of cracking | 12/20/2012 |
| CR500599 | Cu-Ni pipe exposed to air could crack | 12/20/2012 |
| CR500606 | Cu-Ni pipe exposed to air could crack | 12/20/2012 |
| CR500607 | Cu-Ni pipe exposed to air could crack | 12/20/2012 |
| CR103891 | Loss of material and surface rust on chiller piping | 04/05/2016 |
| CR1052010 | NRC license renewal (LR) inspector noted corrosion on a carbon steel pipe in cooling jacket 1-CC-E-3B | 10/27/2016 |
| CR1052023 | LR Inspection of 1-CC-888 and associated piping noted corrosion | 10/27/2016 |
| CR1052026 | LR inspection of 1-CC-964 and 6"CC-75-151 noted flaking and rusting | 10/27/2016 |
| CR1052034 | LR inspection of CC bolting noted corrosion | 10/27/2016 |

| Document | Title | Revision / Date |
|-----------|--|-----------------|
| CR1052035 | LR inspection of CC piping noted corrosion | 10/27/2016 |
| CR1052038 | LR inspection of CC pipe union noted corrosion | 10/27/2016 |

SLRA AMP B2.1.24, Flux Thimble Tube Inspection

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “wear,” “thimble tube,” and “flux.” The staff also reviewed condition reports or corrective action reports referenced in the audit portal for SLRA AMP B2.1.24, “Flux Thimble Tube Inspection.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Flux Thimble Tube Inspection Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|--|--|-----------------|
| CR1051570 | Scraping and Scratch Indications on Unit 2 D7 Flux Thimble Tube | 10/24/2016 |
| CR1051569 | Through-Wall Pin Hole in Unit 1 Thimble Tube B7 (Outer Tube Wall) | 12/24/2016 |
| CR547625 | Material Deformation Noted on Core Barrel Assembly, Lower Core Plate (Unit 2 CR) | 05/04/2014 |
| CA3043346 (Related to CR1051569 and CR1051570) | CA to Engineering for Evaluation of Indications in Unit 2 D7 Flux Thimble Tube | 10/28/2016 |
| CA199817 | CA to Operations Documenting Unit 2 Reactor Vessel Foreign Object Inspections | 04/30/2011 |

SLRA AMP B2.1.25, Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “aging,” “biofoul,” “piping,” “leak,” “microbiologic,” “wall thin,” “wall loss,” “through wall,” and “loss of material.”

No significant plant-specific operating experience associated with the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program was noted by the staff during its review.

SLRA AMP B2.1.26, Lubricating Oil Analysis

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “lubricating oil,” “lube,” “LO,” and “sample.”

No significant plant specific operating experience associated with the Lubricating Oil Analysis Program was noted by the staff during its review.

SLRA AMP B2.1.27, Buried and Underground Piping and Tanks

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “aging,” “buried,” “coat,” “corro,” “wrap,” “vault,” “underground,” “microbiologic,” “loss of material,” “holiday,” “flaw,” “excavat,” “galvanic,” “chloride,” “wall loss,” “wall thin,” and “leak.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Buried and Underground Piping and Tanks Program. These documents were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR006624 | Buried auxiliary feedwater (AFW) piping is not examined on a periodic basis to assess its condition | 01/22/2017 |
| CR011232 | Emergency diesel generator (EDG) fuel oil lines have passive cathodic protection installed but no PMs to test | 04/26/2007 |
| CR105973 | Coating failures identified during buried piping inspection | 08/13/2008 |
| CR1068527 | Underground piping program inspection revealed missing coating | 05/13/2017 |
| CR114414 | Buried fire protection (FP) leak discovered | 10/16/2018 |
| CR385883 | Pitting identified in pipe wall during Buried Pipe Program inspection | 06/25/2010 |
| CR386494 | Surface pitting found on excavated piping | 06/30/2010 |
| CR441171 | Through wall leak discovered in FP pipe | 09/01/2011 |
| CR442030 | Underground/buried pipe leakage | 09/08/2011 |
| CR480972 | Buried condensate (CN) line leak | 07/06/2012 |
| CR497540 | Two pin hole leaks in buried CN line | 11/22/2012 |
| CR1068384 | Underground piping program inspection revealed missing coating | 05/11/2017 |
| CA126782 | CA to engineering to evaluate the adequacy of the cathodic protection systems | 01/21/2009 |

SLRA AMP B2.1.28, Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “blister,” “coat,” “delam,” “flak,” “flaw,” “holiday,” “leak,” “lined,” “lining,” “peel,” “spall,” and “tank.”

The table below lists the documents that were reviewed by the staff and were found relevant to Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks Program. These documents were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR003120 | Unit 2 96-inch diameter inlet circulating water (CW) piping corrosion and coating failures | 10/23/2006 |
| CR325572 | Documentation of tank inspection results | 03/05/2009 |
| CR316728 | Coating on the inside of 1-FP-TK-1A | 12/11/2008 |
| CR004559 | Liner/coating failures and corrosion damage in Unit 2 water boxes | 11/09/2006 |

SLRA AMP B2.1.29, ASME Section XI, Subsection IWE

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “bellows,” “blister,” “bolt,” “chase,” “containment,” “corros,” “coat,” “crack,” “degrad,” “fatigue,” “IWE,” “leak,” “liner,” “loss of material,” “pit,” “rust,” “SCC,” “through wall,” and “moisture barrier.”

The table below lists the documents that were reviewed by the staff and were found relevant to the ASME Section XI, Subsection IWE Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR1017925 | U2 Areas with degraded coatings were identified in the concrete-liner interface (along back of containment sump) | 11/10/2015 |
| CR1019840 | U2 Containment Liner require Coating Repairs in the containment sump | 11/28/2015 |

| Document | Title | Revision / Date |
|-----------|---|-----------------|
| CR1068179 | U2 Degraded liner coating at containment sump concrete-liner interface | 05/10/2017 |
| CR356642 | U2 containment liner with coating damage | 11/05/2009 |
| CR1051463 | U1 IWE Liner Inspection found coatings damage requiring attention | 10/24/2016 |
| CR546261 | U2 Containment Liner Coatings Repairs - 2R25 | 04/24/2014 |
| CR496900 | U2, Arc strikes and weld spatter on containment liner wall | 11/17/2012 |
| CR480271 | U1 For RFO 1R25 – Various areas of U1 containment liner require coating repairs. | 06/28/2012 |
| CR428070 | U2 containment liner inspection found blistered paint area 6"x24" | 05/21/2011 |
| CR424719 | NRC inspector identified general corrosion issue during containment walkdown in the MFW penetration area [CA 200353] | 04/27/2011 |
| CR548520 | IN 2014-07: Degradation of Leak Chase Channel Systems for Floor Welds of Containment Metal shell and Metallic Liner [CA293562 & CA283112] | 05/11/2014 |

SLRA AMP B2.1.30, ASME Section XI, Subsection IWL

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keyword: "containment," "concrete," "tendon," "grout," and "IWL."

The table below lists the documents that were reviewed by the staff and were found relevant to the Structures Monitoring Program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR001881 | U2 Containment ASME Section XI, Subsection IWL exterior concrete anomalies | 09/27/2006 |
| CR003924 | Unit 2 Containment Structure – Visual Exam, ASME Section XI, Subsection IWL | 11/04/2006 |
| CR1040303 | Work Order requested to repair U2 Containment Concrete | 06/17/2016 |
| ET-S-06-0136 | 02-BS-BLD-CONT-BLDG CONTAINMENT STRUCTURE REPAIR PLAN & EVALUATION | Revision 4 |
| CR438612 | Unit 2 Containment concrete repairs not performed | 08/19/2011 |
| CR024233 | Unit 1 containment inner annulus wall has spalled concrete | 11/06/2007 |
| CR488024 | Follow on Inspection results for Unit 2 containment concrete void | 09/12/2012 |
| CR483271 | Suspect areas found during Unit 1 Containment IWL Inspection | 07/30/2012 |
| CR434317 | Residue on Wall of 2-CN-TK-1 | 07/14/2011 |
| CR1053286 | 1-VS-S-1B Concrete Pedestal Degradation | 11/09/2016 |
| CR1018296 | Engineering Inspection of Bottom Side of ESPH (efflorescence) | 11/13/2015 |
| CR392547 | Aging Management Inspection Do Not meet License Renewal Expectation | 08/26/2010 |
| CR099599 | Documentation of Degraded Support | 05/20/2008 |

SLRA AMP B2.1.31, ASME Section XI, Subsection IWF

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “IWF,” “Support,” “Hanger,” “Neutron Shield Tank,” and “VT-3.”

The table below lists the documents that were reviewed by the staff and were found relevant to the ASME Section XI, Subsection IWF Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|--------------------------|
| CR099008 | U2, Neutron Shield Tank, sampled every RFO. Sampled at different times on 5/14/2008 yielded chloride concentration of 620 ppb and 690 ppb. Action level 1 limit is < 150ppb. Previous 4 outages show chloride concentration at 100 ppb. | Revision 0 05/14/2208 |
| CR1005646 | U2, Neutron Shield Tank level is lowering, tank was filled to 80% on 05/28/2014, currently at 17%. | Revision 0 08/07/2015 |
| CR332711 | U1, Neutron Shield Tank in Action Level 1 for chloride and fluoride.is 150 ppb. Sample obtained on 04/28/2009 had chloride and fluoride concentrations at 311 ppb and 301 ppb, respectively. Previous two outages were at 100 ppb and 150 ppb respectively. | Revision 0 04/28/2009 |
| CR358061 | U2, Neutron Shield Tank remains in Action Level 1 for chloride. Current chloride concentration 742 ppb. CA075275 documents Chemistry Technical Report CH-08-001 (Rev 0) to support continuous operation of U2 NST cooling water system with implementation of REA 2007-2009 during RFO23. | Revision 0 11/14/2009 |
| CR479576 | U2, Neutron Shield Tank Detector Well Leakage. Issue was identified in 1989 (reference DR S97-2749 concluded that the NST could perform its function for over 15 years with existing leaks – locations have yet to be determined, S-93-0340). | Revision 0 06/21/2012 |
| CR494734 | U2, Neutron Shield Tank Detector Well Leakage states that potential leaks are likely due to failed welds on the vent shroud structure for the neutron detector enclosure tube in the internals of NST. | Revision 0 11/03/2012 |
| CR530267 | U1, Loose Bolt Identified in Reactor Vessel Support – on B loop hot leg following VT-3 examination. ISI program identifies this support as 1-RC-PAD-5 on ISI DWG 11448-WMKS-RC-R-1.1 (engineering discovery activity ID S1.F1.40.088); CA272041 Engineering to determine and initiate required action. | Revision 0 10/24/2013 |
| CR532703 | U1, Sliding foot support 1-RC-PAD-5 on B loop hot leg rejectable condition during the ASME XI examination due to loose cap screw – condition reviewed during the U1, NRC ISI inspection. | Revision 0 11/15/2013 |
| CR579397 | Pipe Hanger rejected During ISI VT-3 Examination – as found load outside the designed cold-load setting by 300 pounds. | Revision 0 05/02/2015 |
| CR099599 | U2, Documentation of degraded support (Required Actions: clean rust, perform weld repairs, replace corroded bolts, coat steel support. Performed Actions: cleaned, bolts replaced, coated – WO38075928001). | Revision 0 05/20/2008 |

| Document | Title | Revision / Date |
|-----------|--|--------------------------|
| CR002953 | U2, VT-3 examination of support 2-RC-H-001 indicated general corrosion/degradation. Condition documented as rejected by NDE. Engineering noted support considered acceptable as is, recommended cleaning and recoating in next available outage. | Revision 0 10/21/2006 |
| CR003053 | U2, VT-3 examination of support 2-CC-H-001. All thread rod positioned around the pipe and protruding below the support had no washers or nuts. An un-numbered drawing had no record of the U-bolt. | Revision 0 10/23/2006 |
| CR025102 | U1, VT-3 examination on Hanger 19, located on Blow Down Line 3"-WGCB-1-601 has been rejected due to misalignments. Rod section of the hangar bowed. | Revision 0 11/16/2007 |
| CR098628 | U2, ASME Required VT-3 Follow-up examination for next U2 RFO. Activity recorded as Repair/Replacement. Applicable ASME Code, Section XI, Article IWF-2220(b). | Revision 0 05/10/2008 |
| CR1096204 | U1, Rejectable relevant conditions identified during ASME Section XI VT-3 examination of a pipe support – 3 loose fasteners and one instance of improper thread engagement (pipe support 1-SI-H016). | Revision 0 05/01/2018 |
| CR1096216 | U1, Rejectable condition identified during an ASME Section XI VT-3 examination of pipe support 1-SI-H302A/B – loose anchor bolt, identified in the ISI program as two components. | Revision 0 05/01/2018 |
| CR547012 | U2, Missing weld discovered during a scheduled augmented VT-3 examinations of 2-RC-H002, weld shown on drawing 11548-PSSK-124A2.2 and Detail 4 of 11548-FP-9C missing from the support. | Revision 0 04/24/2014 |
| CR356625 | U2, Second Preservice VT-3 Exam required for Support 2-RC-H032. Relevant ASME Section XI is IWF-2220(b). Repair/replacement activity on supports in systems that operate at temperatures greater than 200 degrees F, second preservice VT-3 exam following heatup and cooldown. Support welded repair per WO38102664408 in 2RFO22. | Revision 0 11/05/2009 |
| CR531281 | U2, Bolt heads on inner bolts not tight to side of clamp on support 2-WS-H002B. Inner bolt on both sides of the pipe clamp were found not tight against the side of the clamp. Support non-functional until condition corrected in accordance with IWF-3122.2 or accepted evaluation per IWF-3122.3. | Revision 0 05/01/2014 |
| CR524106 | U1, General corrosion/exfoliation found on ASME Class 3 pipe support 1-WS-H034 identified during ASME Code Section XI VT-3 examination. Applicable ASME XI Section is IWF-3112 acceptance by evaluation. | Revision 0 08/26/2013 |

SLRA AMP B2.1.32, 10 CFR Part 50, Appendix J

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “ILRT,” “LLRT,” “Type A,” “Type B,” “Type C,” “Hatch,” “Leak Rate,” “Leakage,” and “Pressure Boundary.”

The table below lists the documents that were reviewed by the staff and were found relevant to the 10 CFR Part 50, Appendix J Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|--------------------------|
| CR025030 | Unit 1, Failure to notify planning to initiate ASME Sect XI repair/replacement follower (Valve was installed using, bolts, nuts washer without the required ASME Section XI repair/replacement follower if any pressure boundary bolting is replaced). | Revision 0 11/15/2007 |
| CR024842 | Industry Wide OE, Conval valves weld qualification for welds performed on pressure boundary and safety related components of Conval valves. | Revision 0 11/14/2007 |
| CR104193 | U2, Filter body pressure boundary leaks at approximately 30 drops per minute. | Revision 0 07/22/2008 |
| CR440370 | RCS Leakage (training related, clarification of definition, valves). | Revision 0 08/30/2011 |
| CR470119 | Industry OE, North Anna - Axial flaws exposed during machining and undetected during UT examinations resulted in leakage from the reactor coolant pressure boundary (North Anna). | Revision 0 04/22/2012 |
| CR569478 | U2 Type A Test (preparation, alignment, restoration programmatic request). | Revision 0 01/14/2015 |
| CR011384 | U2, Improper material selection for bolted joint that passed Type A and Type C testing. | Revision 0 04/30/2007 |
| CR1019301 | U2, During Type A pre-test of Unnit 2 walkdown observed 3 drops per minute water leakage coming out of 2-FW-33 “B” S/G. | Revision 0 11/23/2015 |
| CR540683 | U1 and U2, Discrepancies in 15-YR Type A Test Interval LAR and info provided in subsequent RAI response. | Revision 0 02/25/2014 |

| Document | Title | Revision / Date |
|-----------------|---|--------------------------|
| CR540988 | Type A/B/C Database as-found/as-left leakage results not independently reviewed, resulting in errors being carried over to docketed info. Type B/C allowable leakage limits have been exceeded. | Revision 0 02/27/2014 |
| CR547533 | U2, Electrical Penetration 18B failed type B test with leakage coming from adjustment nut on cable vault side of penetration. | Revision 0 05/03/2014 |
| CR004136 | U2, Pin-hole leak identified on OSRS piping during Type C testing of PEN 71. (Updated 11/12/06 Operable with evaluation). | Revision 0 11/08/2006 |
| CR003267 | Unit 2 RS CLR 1C Inlet CHK Valve failed type C testing with 5.0scfh > 4.5 SNSOC. | Revision 0 11/01/2006 |
| CR002736 | Unit 2, Containment Penetration 93 failed Type C Test (diaphragm is leaking). | Revision 0 10/18/2006 |
| CR1060545 | 2016 – Q4 Appendix J Scorecard Attribute Yellow – Overall color of program personnel – white, Overall color of Surry Appendix J scorecard green. | Revision 0 02/21/2017 |
| CR474991 | U1, 1-ss-tv-100a failed as found Type C test with 1.6 scfh leakage verified through valve | Revision 0 05/10/2012 |
| CR476244 | U1, 1-DG-TV-108B failed Type C test, verified leakage through valve. leakage 1.8scfh > 0.5-1.0scfh evaluation range. | Revision 0 05/22/2012 |
| CR476845 | U1, Pen 50 (1-SI-TV-101A/101B), attempted as-left test, leakage on each valve 1.1scfh > 0.5-1.0 scfh evaluation range. | Revision 0 05/28/2012 |
| CR331621 | U1, 1-SS-TV-106A failed as found Type C test, verified through valve, leakage 1.39 scfh > 0.5 scfh. | Revision 0 04/21/2009 |
| CR579317 | U1, Pen 48, As Found test IAW 1-OPT-CT-201 unsatisfactory, leakage 1.2 scfh > 0.5-1.0 evaluation range. | Revision 0 05/11/2015 |
| CR580191 | U1, 4-bolt flange between 1-SA-62 and U1 containment wall (penetration 42) leaking; LRT 13.6 scfh < 0.5 scfh acceptance criteria. | Revision 0 05/20/2015 |
| CR334236 | U1, Containment personnel hatch inner door will not operate. Attempted to enter 1-PT-11 walkdown and VT-2 inspections. | Revision 0 05/10/2009 |

| Document | Title | Revision / Date |
|-----------|---|--------------------------|
| CR1053384 | U1, Containment personnel hatch inner door pin not actuating, preventing door from opening. | Revision 0 11/09/2016 |
| CR482784 | Undesignated Unit, Rust on equipment hatch is breaking through the paint coating, decontamination times ranges from 1.5 to 3 hrs. | Revision 0 07/25/2012 |
| CR1052941 | Performed as left Type C test IAW 1-OPT-CT-201 UNSAT on Pen 33. | Revision 0 11/05/2016 |

SLRA AMP B2.1.33, Masonry Walls

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "masonry," "block," "block wall," "crack," "CMU," "mortar," "grout," and "gap."

The table below lists the documents that were reviewed by the staff and were found relevant to the Masonry Walls Program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|----------|--|-----------------|
| CR480058 | Repair observed 0.050 inch crack in masonry block | 06/27/2012 |
| CR481883 | Repair masonry wall cracks in the Condensate Polishing Building area | 07/17/2012 |
| CR335212 | Wall damage noted in normal switchgear room | 05/18/2009 |
| CR523304 | 1B battery room FP wall barrier degraded | 08/15/2013 |
| CR390852 | Crack noted in the Administration Building records | 08/10/2010 |
| CR403113 | Crack discovered in the Unit 1 Turbine Building mezzanine south block wall | 11/09/2008 |
| CR318418 | Repair cracks in the north wall of the Fire Pump House | 12/30/2008 |

SLRA AMP B2.1.34, Structures Monitoring

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “crack,” “concrete,” “leach,” “corros,” “rebar,” “rust,” “support,” “scc,” “steel,” “aluminum,” “degraded,” “leak,” “intrusion,” and “liner.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Structures Monitoring Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR023017 | Unit 1 Containment Basemat Floor Cracks | 10/22/2017 |
| CR482151 | High Level Intake Structure U1 and U2 Concrete Deterioration | 07/18/2012 |
| CR486167 | Concrete Spall and Cracks in the Unit 2 Turbine Building Basement Floor | 07/18/2012 |
| CR570016 | Exposed Rebar (Found in Auxiliary Building) | 01/20/2015 |
| CR092381 | Auxiliary Building Groundwater In-leakage | 03/05/2008 |
| CR485014 | High Influence to Auxiliary Building Piping Tunnel | 08/15/2012 |
| CR010655 | 1A Underground Fuel Oil House Rain Water Ingress | 04/15/2007 |
| CR023548 | Leakage Through Concrete Wall | 10/28/2007 |
| CR434317 | Residue on Wall of 2-CN-TK-1 | 07/14/2011 |
| CR1053286 | 1-VS-S-1B Concrete Pedestal Degradation | 11/09/2016 |
| CR1018296 | Engineering Inspection of Bottom Side of ESPH (efflorescence) | 11/13/2015 |
| CR392547 | Aging Management Inspection Do Not meet License Renewal Expectation | 08/26/2010 |
| CR099599 | Documentation of Degraded Support | 05/20/2008 |
| CR462599 | Results if Performance of O-NSP-FC-001, SFP Leakage Evaluation | 02/13/2012 |

SLRA AMP B2.1.35, Inspection of Water-Control Structures Associated with Nuclear Power Structures

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “concrete,” “steel,” “crack,” “corros,” “bolt,” “spall,” “leakage,” “loss of material,” “liner,” and “degrad.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Inspection of Water-Control Structures Associated with Nuclear Power Plants. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR009735 | Intake canal liner damage and accumulation of sand, silt, shell, and debris | 03/30/2007 |
| CR452182 | Annual intake canal liner visual inspection, minor spalling and cracking identified at or just below the water line | 11/10/2011 |
| CR385887 | One nut missing on one of two grating hinges above 1-FS-RK-8C | 06/25/2010 |
| CR1060254 | Annual intake canal liner visual inspection, cracking, settling, and broken panels; spalling at expansion joints; and expansion joint sealant degradation | 02/16/2017 |
| CR502147 | Annual intake canal liner visual inspection, minor spalling and cracking identified at or just below the waterline | 01/10/2013 |
| CR396593 | Intake canal liner panel degraded at waterline | 09/27/2010 |
| CR534897 | Annual intake canal liner visual inspection, minor spalling and cracking identified at or near the expansion joint | 12/11/2013 |
| CR428830 | Minor repairs in Unit 2 Discharge Canal | 05/27/2011 |
| CR1069666 | Repair of degraded concrete in the high level intake | 05/24/2017 |
| CR1067871 | High level intake liner panel crack near 2A intake bay | 05/08/2017 |
| CR1067879 | High level intake bay 2A concrete degradation | 05/08/2017 |

| Document | Title | Revision / Date |
|-----------|--|-----------------|
| CR1089118 | Concrete repair in the Unit 2 "C" and "D" high level intake bay | 01/31/2018 |
| CR494158 | Unit 2 high level intake structure concrete cracks | 11/01/2012 |
| CR578732 | Damaged concrete found in the "C" high level intake | 05/05/2015 |
| CR578527 | 1C CW intake structure concrete/rebar degradation | 05/02/2015 |
| CR1016709 | Degrading concrete in the Unit 2B intake bay | 11/02/2015 |
| CR425435 | CW discharge tunnel joint 2 concrete spall | 05/02/2011 |
| CR482151 | High level intake structure U1 and U2 concrete deterioration | 07/18/2012 |
| CR1067871 | High level intake liner panel crack near 2A intake bay | 05/08/2017 |
| CR1044049 | Degraded support foundations for high level intake structure control panel | 08/05/2016 |
| CR002335 | Intake canal void areas under concrete liner | 10/10/2006 |
| CR502147 | Results of 0-STP-70.7, annual intake canal liner visual inspection | 01/10/2013 |
| CR534897 | Results of 0-STP-70.7, annual intake canal liner visual inspection | 12/11/2013 |
| CR567031 | Results of 0-STP-70.7, annual intake canal liner visual inspection | 12/09/2014 |
| CR1059273 | Additional guidance for the inspection of ASR in concrete | 02/02/2017 |

SLRA AMP B.2.1.36, Protective Coating Monitoring and Maintenance

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "blister," "coat," "delamin," "lined," "lining," "peel," and "perforat."

The table below lists the documents that were reviewed by the staff and were found relevant to the Protective Coating Monitoring and Maintenance Program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR4208070 | Unit 2 containment liner blistered paint. | 05/21/2011 |
| CR477437 | GSI-191 items found during Unit 1 walkdown with NRC. | 06/01/2012 |
| CR356642 | Coatings Inspection of Unit 2 containment liner. | 11/05/2009 |
| CR370892 | Evaluation of polyethylene protective wrapping for GSI-191 concerns. | 03/03/2010 |
| CR002777 | Loose coatings on B RCP motor. | 10/19/2006 |
| CR458977 | Coating cracking and peeling. | 01/12/2012 |
| CR1068099 | U2 Containment Coating Assessment 2R27 | 05/10/2017 |
| CR1051619 | U1 Containment Coating Assessment 1R27 | 10/25/2016 |
| CR480271 | Various Areas of U1 Containment Liner require Coating Repairs | 06/28/2012 |
| CR003020 | Heavy external corrosion on CC pipe at penetration #4 | 10/22/2006 |

SLRA AMP B2.1.37, Electrical Insulation for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “cable,” “embrittlement,” “cracking,” “discoloration,” “melting,” “swelling,” “surface contamination,” “insulation,” and “adverse localized,” and searching by system EP (electrical power).

The table below lists the documents that were reviewed by the staff and were found relevant to the B2.1.37, Electrical Insulation for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR1016223 | Degraded insulation found on cable in MCC (480V). Cable was repaired or replaced. | 10/31/2015 |

| Document | Title | Revision / Date |
|-----------|--|-----------------|
| CR021741 | Motor Leads and Field Cable for Spent Fuel Pit Pump 1A show signs of degradation. Cable insulation is age-hardened up to the conductor. Replaced cable. | 10/05/2007 |
| CR527992 | Emergency Turbine Lube Oil Pump positive ground indication. Degraded connection or cable jacket/insulation. Cable replaced. | 10/01/2003 |
| CR388637 | Aging Management General Condition Monitoring. Evaluate compliance with Technical Report LF-1766/LR-2766. General Condition Monitoring Activities | 07/21/2010 |
| CR098889 | Generate Work Order to Inspect Unit 2 Containment Air Recirculation Fan Motor Leads. Visual inspection of cable splice/connectors for evidence of overheating (discoloration, swell, crack, etc.) | 05/13/2008 |
| CR099209 | Generate Work Order to Inspect Unit 2 Containment Air Recirculation Fan Motor Leads. Visual inspection of cable splice/connectors for evidence of overheating (discoloration, swell, crack, etc.) | 05/15/2008 |
| CR1076769 | Generate programmatic work order for replacement of U1/U2 Containment Air Recirculation Fan power circuit cables. Replace power circuit cables between load center breaker and containment penetration. Evidence of extreme degradation, severe cracking of cable jacket, reduction in insulation resistance, oozing black sticky liquid due to polymer breakdown. | 08/29/2017 |
| CR1009639 | Neutral conductor found in lighting panel with insulation damage. Neutral was near hinge and caused rubbing. | 09/04/2015 |
| CR327669 | 1-CW-P-1D (circulating water pump 1D) Motor feeder cable degrading. Polarization index results are consistent with insulation starting to degrade. Replace cable. | 03/19/2009 |
| CR1035707 | License Renewal non-EQ Cable W/D item – Cable exposed through flexible conduit | 04/27/2016 |
| CR1035716 | License Renewal non-EQ Cable W/D item – Cables covered with paper and red tape | 04/27/2016 |

| Document | Title | Revision / Date |
|-----------|--|-----------------|
| CR1035737 | License Renewal non-EQ Cable W/D item – Cable investigation/evaluation requested. Outer cable jacket anomalies. Did walkdown for environmental conditions and tested cables. | 04/27/2016 |

SLRA AMP B.2.1.38, Electrical Insulation for Electrical Cables and Connections Not Subject to 10.CFR 50.49 Environment Qualification Requirements used in Instrumentation Circuits.

Audit Activities. The staff conducted an independent search of dominion’s operating experience database using keywords: “nuclear instrumentation,” “blistering,” “electrical cables,” “radiation monitoring,” “high voltage circuit,” “radiation monitor,” “calibration check,” “instrumentation,” and “calibration.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Electrical Insulation for Electrical Cables and Connections Not Subject to 10.CFR 50.49 Environment Qualification Requirements used in Instrumentation Circuits Program. These documents were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|----------|---|-----------------|
| CR024076 | While performing calibrations on N-44 Power Range drawer for refueling it was discovered that insulation worn off of two wires of cable P-312. Noticed supervision and engineering; engineering created a work order to repair. No function or indication of the drawer were affected. | 11/2/2007 |
| CR386686 | Surry, Unit 2 intermediate range channel N36 Control Power Fuse opening after the installation of the new RC filter, the N36 drawer was removed from the NIS cabinet for troubleshooting. An inspection of the cabling revealed the high voltage and signal cable outer jackets where frayed approximately 12 inches from the triax connector. WO created to repair the outer jacket. | 07/02/2010 |
| CR578511 | Nuclear Instrumentation cables missing insulation. While removing ground wires IAW work order 38103480618 in unit 1 Nuclear Instrumentation Cabinet #1 the existing cables 1VB170 and 1 VB171 were found to have a section of insulation removed. | 05/02/2015 |
| CR376587 | As part of License Renewal application the station has a commitment concerning NI cables (UFSAR table 18-1 item | 01/17/2010 |

| Document | Title | Revision / Date |
|----------|---|-----------------|
| | 19). The station commitment for aging management of NI cables is to monitor the cables IAW the channel calibration procedures | |
| CR007930 | 4 cables in the Unit 2 Doghouse behind the north west door labels "Turbine Instruments Inside" have cracked insulation and exposed bare wires. The SRO was notified and a work order issued requesting repair. | 02/23/2007 |
| CR538148 | The insulation surrounding the electric wiring to 1-MA-RM-190 (Unit #1 A N-16) is degrading. The degradation appears to be caused by vibration and is located where the cables exit the detector and enter the conduit. | 06/16/2015 |

SLRA AMP B2.1.39, Electrical Insulation for Inaccessible Medium-Voltage Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "cable," "manhole," "submerge," "insulation," "sump pump," "tan delta," "degraded cable," and "vault."

The table below lists the documents that were reviewed by the staff and were found relevant to the Electrical Insulation for Inaccessible Medium-Voltage Power Cable Not Subject to 10 CFR 50.49 EQ Requirements Program. These documents were provided by Dominion or were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|----------|---|-----------------|
| CR021436 | When the cover for MH 0-SE-MH-21 was removed to locate a conduit, water was found in the manhole. The water level was within 12" of the top of the manhole. CR is being submitted to identify this condition. | 10/02/2007 |
| CR102577 | This CR is submitted to initiate a program work order to NSS to implement Design Change Package (DCP) 08-019 upon an issue. This DCP will direct the installation of a sump pump into manholes 1-EP-MH-1 and 1-EP-MH-2 to keep manholes in a dewatered state. This will eliminate the potential for future cable submergence. This DCP was scheduled to be issued 10/30/2008. | 06/30/2008 |
| CR438662 | While performing security and electrical manhole inspection Work Order 38102819108, electrical cables were found submerged in 0-SE-MH-6, 9, 10, 11, 12, and 13. | 08/19/2011 |
| CR523506 | CR241526 and Work Order 38103367178 require investigation into the EDG#1 Diesel Isolation Panel cable conductor failures that were replaced in February 2013. | 08/14/2013 |
| CR474809 | While performing the installation testing of the new Unit 1 Station Service Transformer (SST) 1B secondary feeder cable in accordance with Design Change 11-00004, one of the nine cables failed the specified Tan Delta testing requirements. The designation of the one failed cable is 1B2PH31. The remaining eight cables passed satisfactorily. | 05/11/2012 |

SLRA AMP B2.1.40, Electrical Insulation for Inaccessible Instrument and Control Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "cable," "manhole," "submerge," "insulation," "sump pump," "degraded cable," and "vault."

The table below lists the documents that were reviewed by the staff and were found relevant to the Electrical Insulation for Inaccessible Instrument and Control Cables Not Subject to 10 CFR 50.49 EQ Requirements Program. These documents were provided by Dominion or were identified in the staff's search of Dominion operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR021611 | On 10/04/2007, when cover from manhole 0-SE-MH-21 was removed to gain access to remove cable from a conduit, water was found in the manhole. The water was approximately 48" deep. CR 21436 was previously submitted to identify that the manhole to be de-watered on 09/06/2007. | 10/04/2007 |
| CR102577 | This CR is submitted to initiate a program work order to NSS to implement Design Change Package (DCP) 08-019 upon an issue. This DCP will direct the installation of a sump pump into manholes 1-EP-MH-1 and 1-EP-MH-2 to keep manholes in a dewatered state. This will eliminate the potential for future cable submergence. This DCP was scheduled to be issued 10/30/2008. | 06/30/2008 |
| CR438662 | While performing security and electrical manhole inspection Work Order 38102819108, electrical cables were found submerged in 0-SE-MH-6, 9, 10, 11, 12, and 13. | 08/19/2011 |
| CR421104 | During a review of license renewal commitment and activities, it has been determined that the manhole that includes the medium voltage cable (34.5 kV) that supplies 01-EP-RST-C is not periodically inspected for water collection. | 04/06/2011 |

SLRA AMP B2.1.41, Electrical Insulation for Inaccessible Low-Voltage Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “cable,” “manhole,” “submerge,” “insulation,” “sump pump,” “tan delta,” “degraded cable,” and “vault.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Electrical Insulation for Inaccessible Low-Voltage Power Cables Not Subject to 10 CFR 50.49 EQ Requirements Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR021611 | On 10/04/2007, when cover from manhole 0-SE-MH-21 was removed to gain access to remove cable from a conduit, water was found in the manhole. The water was approximately 48" deep. CR 21436 was previously submitted to identify that the manhole to be de-watered on 09/06/2007. | 10/04/2007 |
| CR102577 | This CR is submitted to initiate a program work order to NSS to implement Design Change Package (DCP) 08-019 upon an issue. This DCP will direct the installation of a sump pump into manholes 1-EP-MH-1 and 1-EP-MH-2 to keep manholes in a dewatered state. This will eliminate the potential for future cable submergence. This DCP was scheduled to be issued 10/30/2008. | 06/30/2008 |
| CR438662 | While performing security and electrical manhole inspection Work Order 38102819108, electrical cables were found submerged in manholes 0-SE-MH-6, 9, 10, 11, 12, and 13. | 08/19/2011 |
| CR421104 | During a review of license renewal commitment and activities, it has been determined that the manhole that includes the medium voltage cable (34.5 kV) that supplies 01-EP-RST-C is not periodically inspected for water collection. | 04/06/2011 |

SLRA AMP B2.1.42, Metal Enclosed Bus

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "metal enclosed bus," "gasket," "MEB," "bus," "bus pitting," "bus corrosion," and "connection."

The table below lists the documents that were reviewed by the staff and were found relevant to the Metal Enclosed Bus Program. These documents were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR421824 | Transfer Bus E maintenance – Perform inspection of bus bolted connections inside switchgear cubicle 15E1. | 04/11/2011 |
| CR002212 | C Reserve Station Service Transformer/1F Transfer Bus Bar Damage. Cleaned and buffed bus bar. | 10/08/2016 |

SLRA AMP B2.1.43, Electrical Cable Connections Not Subject to 10 CFR50.49 Environmental Qualification Requirements

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “thermal cycling,” “thermography,” “ohmic heating,” “chemical contamination,” “corrosion,” “vibration,” “cable connection,” “increased resistance,” “loose connection,” “oxidation,” and “discoloration.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Electrical Cable Connections Not Subject to the 10 CFR 50.49 Environmental Qualification Requirements Program. These documents were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR354894 | EDG # 2 Cable connection torque values were 73 in-lb in contrast with the battery charger procedure (0-ECM-0104-03) that calls for 54 in-lb. CR 358757 was initiated to replace bolting hardware. | 10/26/2009 |
| CR451209 | During walkdown it was noticed that only a thin layer of No-Ox grease has been applied. Procedure 0-ECM-0104-03 will be updated to clarify. | 11/03/2011 |
| CR494789 | Cable connection for the potential transformer for EP-BKR-25A2 is degraded. Wires also showed signs of corrosion. Initiated work order to repair. | 11/04/2012 |
| CR497701 | Inspect cable connections for NI power range 02-NI-42A-DETECT. Closed to work order. | 11/29/2012 |
| CR106586 | Found loose connection during 10 year PM on fuses F301, 302, 303 in 1A1-UPS-BC. Procedure: 0-ECM-0103-02. Work Order: 38075774601 | 08/20/2008 |

| Document | Title | Revision / Date |
|----------|---|-----------------|
| CR333964 | During performance of protective relay maintenance, loose connections were found at the fuse pull box. Work Order 381021888261 generated for repairs. | 05/07/3013 |
| CR531986 | While performing motor PM, signs of connection overheating were noticed. Repairs were completed per WO 38103241127. | 11/08/2013 |

SLRA AMP B2.1.44, High-Voltage Insulators

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using keywords: "thermal cycling," "thermography," "ohmic heating," "chemical contamination," "corrosion," "vibration," "cable connection," "increased resistance," "loose connection," "oxidation," and "discoloration."

The table below lists the documents that were reviewed by the staff and were found relevant to the High-Voltage Insulators Program. These documents were identified in the staff's search of Dominion's operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|----------|--|-----------------|
| CR114400 | Thermography camera was found to be inaccurate by 7 degrees F. Purchased new camera and this camera will no longer be used for absolute temperature measurements. | 10/16/2008 |
| CR412063 | High-voltage bushing failure caused transformer fire at Indian Point. Corrective actions assigned to Control Ops to review and determine any immediate actions. | 01/31/2011 |
| CR111589 | Thermography predictive analysis activities was not performed as recommended. | 09/29/2008 |
| CR531295 | Arcing was discovered on B phase of unit 2 generator 500 kV line at the vertical insulators while raining. This was determined to be due to contamination build up during dry season which gets washed away by rain. | 11/02/2013 |

SLRA AMP B3.1, Fatigue Monitoring

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “fatigue,” “cycl,” “transient,” “design cycle,” “fatigue cracking,” “CUF,” and “usage factor.” No significant plant-specific operating experience associated with the Fatigue Monitoring Program was noted by the staff during its review.

SLRA AMP B3.2, Neutron Fluence Monitoring

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using these keywords: “flux,” “fluence,” “dosi,” “rpv,” “rv,” and “vessel.” The staff also reviewed condition reports and associated corrective action reports (if any) referenced in the audit portal for SLRA AMP B3.2, “Neutron Fluence Monitoring.”

The staff did not identify any operating experience associated with SLRA AMP B3.2 based on the keyword search performed by the staff.

SLRA AMP B3.3, Environmental Qualification of Electric Equipment

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “EQ,” “environmental qualification equipment,” “environmental qualification component,” and “environmental qualification – aged related degradation.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Environmental Qualification of Electric Equipment Program. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|----------|---|-----------------|
| CR113666 | <p>During the EQ self-assessment the following were identified. License Renewal Technical Report LR-1011/LR-2011, issued on 03/30/2001, evaluated all North Anna and Surry EQ program Qualified Document Review (QDR) packages for impact of license renewal to a total of 60 (40 + 20) years. To date approximately 50 QDR packages still require updating as a result of the License Renewal Project. A tracking mechanism was not identified to be in place to ensure the timely completion of the remaining QDRs. This is not an operability issue because neither Surry or North Anna have exceeded the 40 year life cycle and EQ equipment affect by the unrevised QDRs is currently qualified and managed to a 40 year life cycle. A tracking mechanism is required to avoid potential NRC findings in the first to 60 (40 + 20) years extension (Surry Unit 1 year 2012).</p> | 07/10/2010 |
| CR386970 | <p>Ambient temperature taken over a two-day period in the upper level of Units 1 and 2 main steam valve house (MSVH) were evaluated due to the high outside temperatures. A review was performed by program engineering to identify if there were any EQ related equipment in these areas and to determine if the elevated temperatures were enveloped by the current qualification documentation.</p> | 07/01/2010 |
| CR375131 | <p>It has been identified by Outage and Planning that two NAMCO limit switches were not replaced during the last Unit 1 outage. These switches should have been replaced for EQ reason before 06/08/2010 which means that the last opportunity to replace them, before their qualified life expired, was the 2009 Unit 1 Spring outage. These do not affect the switches ability to perform their design function. However, after June 8, 2010, they will not be EQ qualified without evaluation. The qualified life for the switches has been evaluated and it has been determined that it can be extended until the next 2010 Unit 1 outage. CA to Outage and Planning was to replace the switches during the next Unit 1 outage after the issuance of ET-S-10-0039. CA to engineering to track the completion of the ET-S-10-0039.</p> | 04/05/2010 |

AMR Item OE Input Not Associated with an AMP: Stainless Steel, Aluminum Alloy, and Nickel Alloy Loss of Material and Stress Corrosion Cracking

Audit Activities: The staff conducted an independent search of Dominion’s operating experience database using keywords: “crack,” “scc,” and “stress corrosion cracking.” The table below lists the documents that were reviewed by the staff and were found relevant to the TRP Title. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR099000 | Through wall stress corrosion cracking (SCC) was identified on the outlet nozzle of 2-RH-E-1A. [residual heat removal] | 05/14/2008 |
| CR402568 | Rejectable linear indications were found on a safety injection weld. | 11/05/2010 |
| CR480972 | The 10-inch stainless steel condensate supply line from 2-CN-TK2-2 to the unit 2 hotwell makeup valves has a 3 – 4-inch circumferential crack. | 07/06/2012 |
| CR523923 | There is a concentration of chlorides on service water tubing which led to SCC. | 08/22/2013 |
| CR527365 | External staining was observed on a failed service water tubing. | 09/26/2013 |
| CR535232 | SCC was observed on service water flexible tubing. | 12/16/2013 |

AMR Item OE Input Not Associated with an AMP: Transmission Conductors, Switchyard Bus, and Connections

The following four AMR items are discussed in SLRA 3.6.2.2.3 further evaluation section:

- SLRA Table 3.6.2 item corresponding to SLRA Table 3.6.1-004, “transmission conductors” composed of aluminum, and steel exposed to air-outdoor
- SLRA Table 3.6.2 item corresponding to SLRA Table 3.6.1-005, “transmission connectors” composed of aluminum, and steel exposed to air-outdoor
- SLRA Table 3.6.2 item corresponding to SLRA Table 3.6.1-006, “switchyard bus and connections” composed of aluminum, copper, bronze, stainless steel, and galvanized steel exposed to air-outdoor
- SLRA Table 3.6.2 item corresponding to SLRA Table 3.6.1-007, “transmission conductors” composed of aluminum, and steel exposed to air-outdoor

The staff conducted an independent search of Dominion’s operating experience database using keywords: “switchyard buses,” “transmission conductor,” “loss of strength,” “increased resistance,” “abrasion,” “connection,” “thermography,” and “corrosion.” The table below lists the documents that were reviewed by the staff and were found relevant to the TRP 059, “Transmission Conductors and Switchyard Buses,” SLRA further evaluation item 3.6.2.2.3. These documents were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------|---|-----------------|
| CR320285 | Thermography indication on G104 disconnect showed a delta T of 35.7 degrees F. Control Ops was notified for action. | 01/16/2009 |
| CR3567475 | While performing thermography on the 290 line, a hot spot was found on disconnect switch 24004. A and B phase delta T is 20 degrees C. Control Ops cleaned and greased switch and thermography is satisfactory. | 11/10/2009 |
| CR356822 | During maintenance activities on the “B” RSST, 34.5 kV high side disconnect switch, it was discovered that the contact resistance did not meet the 200 micro-ohm specification. The disconnect switch will be replaced per transmission SAP work order process. | 11/06/2009 |
| CR439030 | Thermography survey of switchyard bolted connections of the 500 kV and 34.5 kV lines indicated some elevated temperatures. Work order 67379411 was created to track monitoring every three months. | 08/23/2011 |
| CR527098 | Thermography hot spot observed on two bolted connections on transmission structure #4 associated with unit 1 main transformer leads connected to the switchyard. Additional scans of 230 kV structures indicated no hot spots. | 09/24/2013 |

SLRA TLA Section 4.1, Identification of Time-Limited Aging Analyses and Regulatory Exemptions

Audit Activities. Section 4.1 of the SLRA for Surry, Unit Nos. 1 and 2, provides the applicant’s results of its review of plant analyses, evaluations, calculations, or assessments (AECAs) that may qualify as time-limiting aging analyses (TLAAs) in accordance with the definition for TLAAs in 10 CFR 54.3(a) and need to be identified and evaluated in the SRLA in accordance with the requirements in

10 CFR 54.21(c)(1). SLRA Section 4.1 also includes the results of the applicant's review to identify and evaluate any regulatory exemptions that were granted in the current licensing basis (CLB) under the requirements of 10 CFR 50.12 and are based on a TLAA, as required in accordance with 10 CFR 54.21(c)(2).

Since SLRA Section 4.1 relates to identification of applicable TLAAs and regulatory exemptions in accordance with the requirements of 10 CFR 54.21(c)(1) and (c)(2), there is no operating experience associated with this section of the SLRA. As such, the staff did not perform a search for operating experience that might be related to the contents of SLRA Section 4.1.

SLRA TLAA, Section 4.2.1, Neutron Fluence Projections

Audit Activities The staff conducted an independent search of the applicant's CR database using keywords: "aging," "break," "corrosion," etc.

No significant plant-specific operating experience associated with the Neutron Fluence Projections was noted by the staff during its review.

SLRA TLAA Section 4.2.2, Upper Shelf Energy

Audit Activities. The staff conducted an independent search of the Dominion's operating experience database using these keywords: "upper shelf energy," "USE," "RPV," and "vessel." The staff also reviewed condition reports and associated corrective action reports (if any) referenced in the audit portal for SLRA TLAA 4.2.2, "Upper-Shelf Energy."

The staff did not identify any OpE associated with SLRA TLAA 4.2.2 based on the keyword search performed by the staff.

However, the staff acknowledges that OpE related to the applicant's TLAA on RPV upper shelf energy (USE) is generated through the applicant's implementation of its reactor vessel materials surveillance program (RVMSP, refer to SLRA Section B2.1.19), which is based on the requirements 10 CFR Part 50, Appendix H. The relevant OpE and associated RPV surveillance data are summarized in RPV surveillance reports that are generated in accordance with reporting requirements specified in the §Part 50, Appendix H rule.

SLRA TLAA Section 4.2.3, Pressurized Thermal Shock

Audit Activities. The staff conducted an independent search of the Dominion's operating experience database using these keywords: "pressurized thermal shock," "PTS," "RPV," and "vessel." The staff also reviewed condition reports and associated corrective action reports (if any) referenced in the audit portal for SLRA TLAA 4.2.3, "Pressurized Thermal Shock."

The staff did not identify any OpE associated with SLRA TLAA 4.2.3 based on the keyword search performed by the staff.

However, the staff acknowledges that OpE related to the applicant's TLAA on reactor pressure vessel RPV pressurized thermal shock (PTS) is generated through the applicant's implementation of its reactor vessel materials surveillance program (RVMSP, refer to SLRA Section B2.1.19), which is based on the requirements 10 CFR Part 50, Appendix H.

The relevant OpE and associated RPV surveillance data are summarized in RPV surveillance reports that are generated in accordance with reporting requirements specified in the §Part 50, Appendix H rule.

SLRA TLAA Section 4.2.4, Adjusted Reference Temperature

Audit Activities. The staff conducted an independent search of the Dominion's operating experience database using these keywords: "RT_{NDT}," "adjusted reference temperature," "ART," "RPV," and "vessel." The staff also reviewed condition reports and associated corrective action reports (if any) referenced in the audit portal for SLRA TLAA 4.2.4, "Adjusted Reference Temperature."

The staff did not identify any OpE associated with SLRA TLAA 4.2.4 based on the keyword search performed by the staff.

However, the staff acknowledges that OpE related to the applicant's TLAA on RPV adjusted reference temperature (ART) calculations is generated through the applicant's implementation of its reactor vessel materials surveillance program (RVMSP, refer to SLRA Section B2.1.19), which is based on the requirements 10 CFR Part 50, Appendix H. The relevant OpE and associated RPV surveillance data are summarized in RPV surveillance reports that are generated in accordance with reporting requirements specified in the §Part 50, Appendix H rule.

SLRA TLAA Section 4.2.5, Pressure-Temperature Limits

Audit Activities. The staff conducted an independent search of Dominion's operating experience database using these keywords: "p-t," "pressure-temp," "curve," "ferri," "rpv," "rv," and "vessel." The staff also reviewed condition reports and associated corrective action reports (if any) referenced in the audit portal for SLRA TLAA 4.2.5, "Pressure-Temperature Limits."

The staff did not identify any OpE associated with SLRA TLAA 4.2.5 based on the keyword search performed by the staff.

However, the staff acknowledges that OpE related to the applicant's TLAA on pressure-temperature (p-t) limits is generated through the applicant's implementation of its reactor vessel materials surveillance program (RVMSP, refer to SLRA Section B2.1.19), which is based on the requirements 10 CFR Part 50, Appendix H. The relevant OpE and associated rRPV surveillance data are summarized in RPV surveillance reports that are generated in accordance with the reporting requirements in 10 CFR Part 50, Appendix H.

SLRA TLAA Section 4.2.6, Low Temperature Overpressure Protection

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using these keywords: “ltop,” “overpress,” “ferri,” “rpv,” , “rv,” and “vessel.” The staff also reviewed condition reports and associated corrective action reports (if any) referenced in the audit portal for SLRA TLAA 4.2.6, “Low Temperature Overpressure Protection.”

The staff did not identify any OpE associated with SLRA TLAA 4.2.6 based on the keyword search performed by the staff.

However, the staff acknowledges that OpE related to the applicant’s TLAA on low temperature overpressure protection (LTOP) is generated through the applicant’s implementation of its reactor vessel materials surveillance program (RVMSP, refer to SLRA Section B2.1.19), which is based on the requirements 10 CFR Part 50, Appendix H. The relevant OpE and associated RPV surveillance data are summarized in RPV surveillance reports that are generated in accordance with the reporting requirements in 10 CFR Part 50, Appendix H.

SLRA TLAA Section 4.3.1, Transient Cycle Projections for 80 Years

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “fatigue,” “cycl,” “transient,” “design cycle,” “fatigue cracking,” “CUF,” and “usage factor.” No significant plant-specific operating experience associated with the TLAA Section 4.3.1, “Transient Cycle Projections for 80 Years,” was noted by the staff during its review.

SLRA TLAA Section 4.3.2, ASME Code, Section III, Class 1 Fatigue Analyses

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “fatigue,” “cycl,” “transient,” “design cycle,” “fatigue cracking,” “CUF,” and “usage factor.” No significant plant-specific operating experience associated with the TLAA Section 4.3.2, “ASME Code, Section III, Class 1 Fatigue Analyses,” was noted by the staff during its review.

SLRA TLAA Section 4.3.3, ANSI B31.1 Allowable Stress Analyses

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “cycle,” “thermal cycle,” “cyclic,” “fatigue crack,” “cumulative,” and “CUF.” No significant plant-specific operating experience associated with the TLAA Section 4.3.3, “ANSI B31.1 Allowable Stress Analyses,” was noted by the staff during its review.

SLRA TLAA Section 4.3.4, Environmentally-Assisted Fatigue

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “environmental,” “EAF,” “fatigue cracking,” and “CUF.” No significant plant-specific operating experience associated with the TLAA Section 4.3.4, “Environmentally-Assisted Fatigue,” was noted by the staff during its review.

SLRA TLA Section 4.3.5, Reactor Vessel Internals Fatigue Analyses

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “fatigue,” “cycl,” “transient,” “design cycle,” “fatigue cracking,” “CUF,” and “usage factor.” No significant plant-specific operating experience associated with the TLA Section 4.3.5, “Reactor Vessel Internals Fatigue Analyses,” was noted by the staff during its review.

SLRA TLA Section 4.6, Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “bellows,” “containment,” “crack,” “damage,” “fatigue,” “leak,” “liner,” “penetration,” and “weld.”

No significant plant-specific operating experience associated with the SLRA Section 4.6, Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analysis, was noted by the staff during its review.

SLRA TLA 4.7.1, Crane Load Cycle Limits

Audit Activities. The staff conducted an independent search of the applicant’s operating experience database using keywords: “crane,” “bridge,” “block,” “column,” “girder,” “roller,” “fatigue of crane,” “structural support,” and “trolley.”

The table below lists the documents that were reviewed by the staff and were found relevant to the Crane Load Cycle Limits. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR0005071 | U2 manipulator crane mast barely rotates in clockwise direction | 11/30/2006 |
| CR0022590 | U1 turbine crane malfunction bridge brake lock up | 10/16/2007 |
| CR0331474 | Polar crane hook tram measurements don’t match the procedure | 04/20/2009 |
| CR0387958 | Polar crane festoon cables are degrade | 07/15/2010 |
| CR0508372 | Overhaule polar crane drive wheels | 03/18/2013 |
| CR0498759 | Polar crane drive wheel needs replacing on U2 | 12/01/2012 |
| CR0527990 | Structural bolt found missing during crane PM | 10/20/2013 |
| CR0546964 | U2 Polar crane malfunction while lowering the RX hood | 04/29/2014 |
| CR0565746 | IN 14-12 Crane & Heavy Lft Issue Identified During NRC Inspections | 11/19/2014 |

SLRA TLA Section 4.7.2, Reactor Coolant Pump Flywheel Fatigue Crack Growth Analyses

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “fatigue,” “cycl,” “transient,” “design cycle,” fatigue cracking,” “CUF,” “flywheel,” and “usage factor.” No significant plant-specific operating experience associated with the 4.7.2, “Reactor Coolant Pump Flywheel Fatigue Crack Growth Analyses,” was noted by the staff during its review.

SLRA AMP TLA Section 4.7.3, Leak-Before-Break

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “leak before break,” “LBB,” leak,” “crack,” “cast,” “rupture,” SCC,” and “leak rate.”

The table below lists the documents that were reviewed by the staff and were found relevant to TLA Section 4.7.3., Leak-Before-Break. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|------------------------------|--|-----------------|
| NSAL-11-2 | Impact of Change in Lower Radial Key Stiffness Value | 06/28/2011 |
| CR432997 | Impact of Change in Lower Radial Key Stiffness Value – NSAL-11-2 | 07/01/2011 |
| CR492143 | Additional Systems, Structures and Components Affected by the Issue Addressed by Operability Determination (OD) 000427 | 10/17/2012 |
| OD000427 | Operability Determination Regarding the Impact of Change in Lower Radial Key Stiffness Value | Revision 3 |
| Closure Request for OD000427 | Closure Request for the Non-Conforming Condition that Resulted in OD000427 | 02/19/2015 |
| CA269158 | Corrective Action Assignments to Update the Analyses in Response to OD000427 | 09/17/2013 |

SLRA Section 4.7.4, Spent Fuel Pool Liner Fatigue Analysis

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “crack,” “fatigue,” “leak,” “liner,” “fuel pool,” and “weld.”

The table below lists the documents that were reviewed by the staff and were found relevant to the SLRA Section 4.7.4, Spent Fuel Pool Liner Fatigue Analysis. These documents were provided by Dominion or were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR479595 | Request to generate work order for NDE of the Fuel Building Sump Liner Welds | 06/21/2012 |
| CR483122 | On-going Spent Fuel Pool Liner Evaluation | 07/27/2012 |
| WO38103198062 | 92 Day Frequ. PT: Spent Fuel Pool Leakage Evaluation | 07/09/2012 |
| WO38103256142 | Request to generate work order for NDE of the Fuel Building Sump Liner Welds | 07/30/2012 |

SLRA TLAA Section 4.7.6, Reactor Coolant Pump Code Case N-481

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using keywords: “stress corrosion cracking,” “fatigue,” “embrittlement,” and “pump casing.” No significant plant specific operating experience associated with the Program Title or TLAA Section 4.7.6, “Reactor Coolant Pump Code Case N-481 ” was noted by the staff during its review.

SLRA TLAA Section 4.7.7, Cracking Associated with Weld Deposited Cladding

Audit Activities. The staff conducted an independent search of the Dominion’s operating experience database using these keywords: “separations,” “cladding,” “under-clad,” “RPV,” and “vessel.” The staff also reviewed condition reports and associated corrective action reports (if any) referenced in the audit portal for SLRA TLAA 4.7.7, “Cracking Associated with Weld Deposited Cladding.”

The staff did not identify any significant OpE associated with SLRA TLAA 4.7.7 based on the keyword search performed by the staff.

However, the staff acknowledges that OpE related to this TLAA (TLAA on under-clad cracking) is summarized in TLAA References 4.8-89, 4.8-90, and 4.8-91 of the SLRA.

SLRA TLAA Section 147.08, Steam Generator Tube High Cycle Fatigue Evaluation

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using the keyword “steam generator tube.”

The table below lists the documents that were reviewed by the staff and were found relevant to the External Surfaces Monitoring of Mechanical Components Program. These documents were identified in the staff’s search of Dominion’s operating experience database. The staff will document its review of relevant operating experience in the SER.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------------------------|--|------------------------|
| CA3030765 | WCAP-18379-P – Surry Units 1 and 2 SG U-Bend Tube Vibration and Fatigue Assessment | 05/14/2016 |
| CR1028773 CR489933 CR498535 | Nuclear Safety Advisory Letter 12-7 Insufficient Insertion of Anti-Vibration Bars | 09/24/2012 |

SLRA TLA Section 147.09, Steam Generator Tube Wear Evaluation

Audit Activities. The staff conducted an independent search of Dominion’s operating experience database using the keywords “steam generator tube wear.”

No significant plant-specific operating experience associated with steam generator tube wear was noted by the staff during its review.

SLRA Scoping and Screening, Section 2.3.1.1, Reactor Vessel and Section 2.3.1.3, Reactor Coolant

Audit Activities The staff conducted an independent search of the applicant’s CR database using keywords: “aging,” “break,” “corrosion,” etc.

The table below lists the documents that were reviewed by the staff and were found relevant to the Scoping and Screening.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|---|------------------------|
| CR003285 | Steam generator tube exhibits corrosion stain at tube end | 10/16/2006 |
| CR003441 | Erosion was noted on the areas near the SG A hot leg manway | 03/26/2009 |
| CR097662 | Rust identified on new RCP main flange fasteners | 05/03/2008 |
| CR1018125 | Circ. Cracks identified in 2-RC-E-1C tubes | 11/12/2015 |
| CR424807 | S/G riser barrel in “A” SG has a hole from J-nozzle erosion | 04/28/2011 |

| | | |
|----------|--|------------|
| CR501750 | Work request to support AREVA inspection of reactor | 01/07/2013 |
| CR501754 | Work request to support AREVA inspection of reactor | 01/07/2013 |
| CR547625 | Area of deformation and areas of foreign material on Unit 2 lower core plate | 05/04/2014 |
| CR579206 | Corrosion identified on motor stand for 01-RC-P-1C | 05/09/2015 |

SLRA Scoping and Screening, Section 2.3.1.4, Steam Generator

Audit Activities The staff conducted an independent search of the applicant’s CR database using keywords: “aging,” “break,” “corrosion,” etc.

The table below lists the documents that were reviewed by the staff and were found relevant to the Scoping and Screening.

| Relevant Documents Reviewed | | |
|------------------------------------|---|------------------------|
| Document | Title | Revision / Date |
| CR456076 | License Renewal create WO to inspect piping adjacent to 01-RT-S-1A-FILTER | 12/13/2011 |

SLRA Scoping and Screening, Section 2.3.2.1, Containment Spray

Audit Activities The staff conducted an independent search of the applicant’s CR database using keywords: “aging,” “break,” “corrosion,” etc.

The table below lists the documents that were reviewed by the staff and were found relevant to the Scoping and Screening.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR418049 | 2-CS-4 body to bonnet fasteners have corrosion (rust) | 03/17/2011 |
| CR418052 | 2-CS-25 body to bonnet fasteners have corrosion (rust) | 03/17/2011 |
| CR425489 | Flange face of 2-CS-132 at 2-CS-LT-200C has radial pitting in gasket seat area | 05/02/2011 |
| CR485907 | 2-CS-MR-18 Refrigeration unit degraded concrete foundation | 08/23/2012 |
| CR534531 | As found condition, unsat body to bonnet bolting on 02-CS-30 | 12/06/2013 |
| CR567078 | Performed as found License Renewal VT-3 inspection on 1-CS-30 | 12/09/2014 |

SLRA Scoping and Screening, Section 2.3.2.2, Recirculation Spray

Audit Activities The staff conducted an independent search of the applicant's CR database using keywords: "aging," "break," "corrosion," etc.

The table below lists the documents that were reviewed by the staff and were found relevant to the Scoping and Screening.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|-----------------|--|------------------------|
| CR402181 | Degradation found on piping flanges | 11/3/2010 |
| CR444870 | License Renewal Create WO to inspect 38-02-RS-FE-257B-DETECT | 09/27/2011 |
| CR444876 | License Renewal Create WO to perform inspection of 38-01-RS-RO-110B-PIPE | 09/27/2011 |
| CR451696 | License Renewal Create WO to visually inspect of 38-01-RS-ICV-3600-VALVE | 11/07/2011 |

| | | |
|----------|--|------------|
| CR454598 | License Renewal Create WO to inspect of 38-01-RS-PP-0.75-RS-PIPE-47-ICN9 | 12/01/2011 |
| CR500599 | License Renewal Create WO to externally inspect 38-02-RS-E-2A-2-RS-PT-255A | 12/20/2012 |
| CR425084 | Surface corrosion on flange downstream of 2-RS-RO-212B-PIPE | 04/29/2011 |
| CR002809 | Support bracket for 2-RH-MOV-2700 has indications of material loss | 10/19/2006 |

SLRA Scoping and Screening, Section 2.3.2.3, Residual Heat Removal

Audit Activities The staff conducted an independent search of the applicant's CR database using keywords: "aging," "break," "corrosion," etc.

The table below lists the documents that were reviewed by the staff and were found relevant to the Scoping and Screening.

Relevant Documents Reviewed

| Document | Title | Revision / Date |
|----------|---|-----------------|
| CR002809 | Support bracket for 2-RH-MOV-2700 has indications of material loss | 10/19/2006 |
| CR099000 | NOD questions regarding stress corrosion cracking on RHR components | 05/14/2008 |
| CR475847 | Crack and voids of grout noted on 1-RH-E-1A Supports | 05/19/2012 |

SLRA Scoping and Screening, Section 2.3.2.4, Safety Injection

Audit Activities The staff conducted an independent search of the applicant's CR database using keywords: "aging," "break," "corrosion," etc.

The table below lists the documents that were reviewed by the staff and were found relevant to the Scoping and Screening.

Relevant Documents Reviewed

| Document | Description | Revision / Date |
|----------|--|-----------------|
| CR003298 | SI check valve body seat lower portion eroded on 2-SI-82 check valve | 10/22/2006 |

3. Applicant Personnel Contacted During Audit

| Participants | Affiliation |
|---------------|-----------------|
| Paul Aitken | Dominion Energy |
| Eric Blocher | Dominion Energy |
| Pratt Cherry | Dominion Energy |
| John Disosway | Dominion Energy |
| Craig Heah | Dominion Energy |
| James Johnson | Dominion Energy |
| Dan Madden | Dominion Energy |
| Keith Miller | Dominion Energy |
| John Voss | Dominion Energy |

4. Exit Meeting

An exit meeting was held with the applicant on December 19, 2018, to discuss the results of the operating experience audit. The staff may issue requests for additional information to support completion of the staff's SLRA review.