

From: [Sayoc, Emmanuel](mailto:Sayoc.Emmanuel)
To: "Daniel.g.stoddard@dominionenergy.com"
Cc: [Paul Aitken](#); "[Eric A Blocher](#)"; [Tony Banks](#); [Oesterle, Eric](#); [Tran, Tam](#); [Beasley, Benjamin](#); [Erwin, Kenneth](#); [Wu, Angela](#); [Anderson, Shaun](#); [Bloom, Steven](#); [Wittick, Brian](#)
Subject: REQUESTS FOR CONFIRMATION OF INFORMATION FOR THE SAFETY REVIEW OF THE SURRY POWER STATION, UNITS 1 AND 2 SUBSEQUENT LICENSE RENEWAL APPLICATION (L-2018-RNW-0023/000951) - (ATTACHMENT 4D)
Date: Wednesday, June 12, 2019 9:07:53 AM
Attachments: [Surry SLRA - Requests for Confirmation of Information - V8.docx](#)
Importance: High

Dear Mr. Stoddard,

By letter dated October 15, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18291A842), as supplemented by letters dated January 29, 2019 (ADAMS Accession No. ML19042A137), and April 2, 2019 (ADAMS Accession No. ML19095A666), 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* Parts 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," for subsequent license renewal and 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

Between February 4 and April 25, 2019, the U.S. Nuclear Regulatory Commission (NRC) staff conducted audits of Dominion's records to confirm information submitted in the Surry license renewal application. During the audit, the staff reviewed documents that contain information which will likely be used in conclusions documented in the Safety Evaluation Report. To the best of the staff's knowledge, this information is not on the docket. Any information used to reach a conclusion in the SER must be included on the docket by the applicant. Therefore, we request that you submit confirmation that the information gathered from audit and listed in the enclosure is correct or provide the associated correct information.

These requests for confirmation of information were discussed with Paul Aitken of your staff, and a mutually agreeable date for the response is within 37 days from the date of this e-mail.

If you have any questions on this matter, please contact me for the safety review by telephone at 301-415-4084 or via e-mail at Emmanuel.Sayoc@nrc.gov or Tam Tran for the environmental review by telephone at 301-415-3617 or via e-mail at Tam.Tran@nrc.gov.

Sincerely,

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

50-280 and 50-281

Enclosure:
Requests for Confirmation of Information
cc w/encl: Listserv

ADAMS Accession No.

OFFICE	PM:MRPB:DMLR	PM:MRPB:DMLR	PM:MRPB:DMLR
NAME	AWu	ESayoc	TTran
DATE	5/30/19	6/5/19	6/10/19
OFFICE	BC:MENB:DMLR	BC:MRPB:DMLR	PM:MRPB:DMLR
NAME	KErwin	EOesterle	ESayoc
DATE	6/10/19	6/5/19	6/12/19

**SURRY POWER STATION, UNITS 1 AND 2 (SURRY)
SUBSEQUENT LICENSE RENEWAL APPLICATION (SLRA)**

REQUESTS FOR CONFIRMATION OF INFORMATION

SAFETY AND ENVIRONMENTAL

Regulatory Basis:

Part 54 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," is designed to elicit application information that will enable the U.S. Nuclear Regulatory Commission (NRC) staff to perform an adequate safety review and the Commission to make the necessary findings. Reliability of application information is important and advanced by requirements that license applications be submitted in writing under oath or affirmation and that information provided to the NRC by a license renewal applicant or required to be maintained by NRC regulations be complete and accurate in all material respects. Information that must be submitted in writing under oath or affirmation includes the technical information required under 10 CFR 54.21(a) related to assessment of the aging effects on structures, systems, and components subject to an aging management review. Thus, both the general submission requirements for license renewal applications and the specific technical application information requirements require that submission of information material to NRC's safety findings (see 10 CFR 54.29 standards for issuance of a renewed license) be submitted by an applicant as part of the application.

Part 54.23 of 10 CFR, "Contents of Application – Environmental Information," states that each application must include a supplement to the environmental report that complies with the requirements of Subpart A of 10 CFR Part 51, "National Environmental Policy Act – Regulations Implementing Section 102(2)."

Part 51 of Title 10 of the *Code of Federal Regulations*, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," is designed to elicit application information that will enable the NRC staff to perform an adequate environmental review and the Commission to make the necessary findings. Reliability of application information is important and advanced by requirements that license applications be submitted in writing under oath or affirmation and that information provided to the NRC by a license renewal applicant or required to be maintained by NRC regulations be complete and accurate in all material respects. Information that must be submitted in writing under oath or affirmation includes the technical information as may be useful in aiding the Commission in complying with Section 102(2) of the National Environmental Policy Act.

Background:

By letter dated October 15, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18291A842), as supplemented by letters dated January 29, 2019 (ADAMS Accession No. ML19042A137), and April 2, 2019 (ADAMS Accession No. ML19095A666), 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 10 CFR Parts 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," for subsequent

Enclosure

license renewal and 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

Between February 4 and April 25, 2019, the NRC staff conducted audits of Dominion's records to confirm information submitted in the Surry license renewal application.

Request:

During the audit, the staff reviewed several documents that contain information which will likely be used in conclusions documented in the Safety Evaluation Report (SER). To the best of the staff's knowledge, this information is not on the docket. Any information used to reach a conclusion in the SER must be included on the docket by the applicant. We request that you submit confirmation that the information gathered from the documents and listed below is correct or provide the associated corrected information.

Requests for Confirmation of Information (RCIs)

RCI No. 1:

The staff reviewed Table 6.1-1, "Augmented Inspections," Item 2.2.1, "Containment and Recirculation Spray Piping," from the Technical Requirements Manual and noted that: (a) six nine-inch square patches will be examined by visual (VT-1) and surface examination; and (b) at least 25 percent of the inspection locations are inspected in each one-third portion of each inservice inspection 10-year interval. This input will be used in SER Section 3.2.2.2.4.

RCI No. 2:

Based on the review of calculation 11448-EA-62, Addendum 00C, "Reactor Containment Liner Fatigue Evaluation for 80-Year Plant Life, Surry Unit 1 and Unit 2," Revision 0, the staff noted that for satisfying Condition 2 – Normal Operation Pressure Fluctuation, of the ASME Code Section III (1968), Subsection N-415.1, the calculation conservatively evaluated the cumulative damage effect, due to 100 cycles of the Type A test pressure fluctuation of 50.18 psi in addition to the 2000 cycles of normal operating pressure fluctuation of 5.2 psi, to be 0.052 which is less than the cumulative fatigue damage acceptance criteria of 1.0.

RCI No. 3:

Based on the review of calculation CE-1272, Addendum 00B, "Fuel Pool Liner Fatigue Evaluation for 80 Years Plant Life, Surry Unit 1 and Unit 2," Revision 0, the staff noted that the cumulative damage due to fatigue effects (thermal cyclic loadings) for the controlling component (i.e., plate-stiffener weld) from the three design conditions described in SLRA Section 4.7.4 was calculated to be 0.75, which is less than the cumulative fatigue damage acceptance criteria of 1.0.

RCI No. 4:

Based on the review of procedures ER-AA-FAC-10, "Flow-Accelerated Corrosion Program," Revision 7, and ER-AA-FAC-102, "Flow-Accelerated Corrosion (FAC) Inspection and Evaluation Activities," Revision 0, the staff noted that these procedures contain aspects of the applicant's Erosion program. The requirements in these procedures also apply to the site Erosion program.

RCI No. 5:

SLRA Table 2.3.1-1- Reactor Vessel: The intended function for the Seal Table in Reactor Vessel (SLRA Table 2.3.1-1, page 2-57) is for “Structural Support.” This is due to the seal table being welded to the thimble tube conduits, which is not wetted, and does not perform a pressure boundary function, but does provide support to the thimble tube conduits.

RCI No. 6:

SLRA Table 2.3.1-2- Reactor Vessel Internals: The following components: diffuser plate, head and vessel alignment pins, head cooling spray nozzles, and upper instrumentation conduit and support (tubes, conduits, flange base, locking caps and support tubes) are now categorized as “no additional measures” components and requires “no additional measures” for aging management.

RCI No. 7:

SLRA Table 2.3.1-3- Reactor Coolant-Heat Exchanger (Tube): The intended function for Heat exchanger (reactor coolant pump motor upper bearing oil cooler – tubes and tube sheet) is only specified as “Pressure Boundary” but not added with “Heat Transfer.” This is due to the reactor coolant pump lubricating oil heat exchangers not being required to remove heat, but to perform the pressure boundary function for the license renewal.

RCI No. 8:

SLRA Table 2.3.1-3- Reactor Coolant-Pressurizer (Thermal Sleeve): The intended function for both Pressurizer (spray nozzle thermal sleeve) and Pressurizer (surge nozzle thermal sleeve) is to “Limit Thermal Cycling” and not “Pressure Boundary.”

RCI No. 9:

SLRA Table 2.3.2-1- Containment Spray - Flow Element: The intended function for containment spray flow element is “Structural Integrity”. This is due to these flow elements and the associated piping being outdoors and functioning to provide structural support to the attached safety-related piping that connects to the refueling water storage tanks.

RCI No. 10:

It is NRC staff’s understanding that Dominion Energy inadvertently left out of SPS SLR ER RAI VAR-1 (i) response, pages 2-6 of Attachment B of the VPDES Fact Sheet.

RCI No. 11:

The staff reviewed the In-Service Internal Tank Inspection Reports for the FWSTs, 01-FP-TK-1A and 01-FP-TK-1B, and noted that:

- (a) the 2019 inspections consisted of taking tank bottom UT thickness measurements in approximately 87,000 locations for 01-FP-TK-1A and 84,000 locations for 01-FP-TK-1B;
- (b) the scanned area included the tank bottom and bottom course of the tank shell;
- (c) the nominal thickness for the bottom plates is 0.3125 inches;
- (d) the lowest observed thickness reading of the tank bottom plates for 01-FP-TK-1A was 0.2120 inches and 0.2388 inches for 01-FP-TK-1B;
- (e) an extreme value analysis was conducted, which resulted in predicted minimum thickness of 0.2111 inches for 01-FP-TK-1A and 0.2203 inches for 01-FP-TK-1B.

The reports also stated that it detected laminations in the tank bottom plates but not in the bottom course of the tank shell. The report concluded that the previous tank measurements did

not account for the fact that there were laminations and recorded the thickness of the top lamination layer and not the entire thickness of the tank bottom plates. The 2019 inspection was able to replicate the lamination data in at least one location for 01-FP-TK-1A based on a review of the thickness results from the 2008 and 2014 inspections as compared to the measured thickness of the lamination in 2019.

The minimum wall thickness measurement for the bottom course of the tank shell was 0.2550 inches for 01-FP-TK-1A and 0.3650 inches for 01-FP-TK-1B. The minimum wall thickness required is 0.115 inches.

Using the predicted minimum thickness value, the tanks have a projected useful remaining life of 55 years for 01-FP-TK-1A and 66 years for 01-FP-TK-1B.

RCI No. 12:

The staff reviewed the below work orders (WO) and noted the following regarding testing of the fire pumps [gallons per minute (gpm), total dynamic head (TDH), pounds per square inch differential (psid)]:

Year	2500 gpm TDH, psid	3050 gpm TDH, psid	WO
Diesel Driven Pump			
2019	113	106	38103851700
2018	115	107	38103756472
2016	113.5	107.5	38103679516
2015	113.5	106	38103570743
2014	114	108	38103457968
Motor Driven Pump			
2019	117	98	38103851700
2018	116	116	38103758472
2016	112.8	91.6	38103679516
2015	116.4	117	38103570743
2014	116	91	38103457968

For the diesel driven pump tests the variability of the TDH results at both the 2500 and 3050 gallons per minute test runs were not indicative of an increase in flow blockage in the fire main piping. For the motor driven pump tests there were two anomalous results, which were preceded and followed by lower system pressure and therefore not indicative of an increase in flow blockage in the fire main piping.

RCI No. 13:

During the three phases of the audit, the staff identified multiple conditions reports associated with potential buried fire water system leakage.

	Condition Report Number	Year	Brief Description
1	105806	2008	Surface water was detected near a fire hydrant adjacent to the training center parking lot. The follow-on actions noted that a tee was leaking. The tee is not in-scope. The staff reviewed WO 38102396326, associated with Condition Report (CR) 105806 and noted that the repair consisted of replacing a gasket and tightening bolting.
2	474655	2012	Surface water was detected in the vicinity of post indicating valve 1-FP-1024. The piping is not in-scope. The staff reviewed WO 038103256391 associated with CR 474655 and noted that the repair consisted of replacing gaskets, o-rings, and fasteners.
3	504380	2013	Surface water was detected in the vicinity of 1-FP-1027. A hydrant and gate valve were replaced. Neither is in-scope. The staff reviewed WO 38103115596 associated with CR 504380 and noted that the repair consisted of replacing a hydrant and two isolation valves. The hydrant and valve degradation were not associated with the pressure boundary (e.g., stem damage).
4	556008	2014	Surface water was detected in the vicinity of 1-FP-535. Closed to a work order in planning. The work order was subsequently closed because a walkdown revealed that there were no indications of leakage.
5	580443	2015	Surface water was detected in the vicinity of 1-FP-542. Closed to a work order in planning. There is no in-scope piping in the vicinity. WO 38103627995 closed based on followup inspection that did not reveal any leakage.
6	1086752	2017	Surface water was detected in the vicinity of 1-FP-379; by the training center. Closed to a work order in planning. The valve is not in-scope. WO 102939749 closed based on followup inspection that did not reveal any leakage.
7	1019199	2015	Surface water was detected in the vicinity of 1-FP-321. Work order in planning. The cause of the surface water indications was a failure of the upper valve plate (on 1-FP-326) to isolate the drain ring. The valve is not in-scope.
8	329250	2009	Surface water was detected at the north east corner of a construction site laydown area within 100 feet of 1-FP-1046. The work order was closed because follow-on inspections did not detect a leak.
9	345000	2009	Surface water was detected in the vicinity of post indicating valve 01-FP-86. The work order was closed because follow-on inspections did not detect a leak.
10	477285	2012	Surface water was detected in the vicinity of hose house 29. A follow-on inspection could not recreate the conditions.
11	553533	2014	Surface water was detected in the vicinity of hose house 13. The work order was closed because follow-on inspections did not detect a leak.

	Condition Report Number	Year	Brief Description
12	1079710	2017	Surface water was detected in and around fire hose house 31; less than one gallon per hour. The work order was closed because follow-on inspections did not detect a leak.
13	330747	2009	Surface water was detected in the vicinity of the station training center. A concrete kicker moved, allowing the pipe to slide out of the tee.
14	456235	2011	Surface water was detected in the vicinity of fire hydrant 1-FP-708. The hydrant flange joint was leaking, not the pressure boundary. Retightened fittings and conducted a 6-hour leak check.
15	470098	2012	Surface water was detected in the vicinity of 1-FP-100. Closed to work order to repair a packing leak.
16	497754	2012	Surface water was detected in the vicinity of curb box valve 1-FP-1010. The cause was an out of position valve.
17	498946	2012	Surface water was detected in the vicinity of post indicating valve 1-FP-49. The leak was caused by a packing leak.
18	510828	2013	Surface water was detected in the vicinity of post indicating valve 1-FP-35. The stuffing flange was broken causing a packing leak.
19	538837	2014	Surface water was detected in the vicinity of the curb box near 1-FP-70. The leak was caused by a packing leak.
20	1087963	2018	Surface water was detected between 1-FP-124 and 1-FP-519. Leak was actually in the domestic water system, not fire water system. This portion of the domestic water system is not in-scope.

RCI No. 14:

The staff reviewed the Sprinkler Operating Experience Summary and noted the following:

Condition Report Number	Year	Brief Description	Summary of Conditions
002099	2006	A sprinkler head at the west end of the unit 2 condenser was found to be leaking at 40 drops per minute (dpm). The work order was cancelled.	Sprinkler was replaced with the minor maintenance process and no work order generated.
007510	2007	A sprinkler head in the laundry building was found to be spraying a fine mist. Closed to a work order.	Heating unit in the building failed, which allowed ice to build up on the sprinkler head. This is event driven, not aging.
485731	2012	Corrosion was detected on a sprinkler in the chemistry primary hot lab. No follow-on information was provided.	A walkdown was conducted and the sprinkler head was determined to be functional.
496505	2012	A sprinkler head in the turbine building was found to be leaking at 10 dpm. A subsequent condition report, 497330, stated that the leak had increased to 2 dps. A follow-on inspection noted that the fuse was missing.	CRs documented the same condition adverse to quality. Leakage occurred due to a broken fuse, not an aging effect. Significant outage work was being conducted in the vicinity when the damage occurred.
497330	2012	A sprinkler head was found to be leaking in the unit 2 turbine building at 2 dps. A follow-on inspection noted that the fuse was missing.	
497373	2012	Sprinkler head failed, previously leaking at 10 dpm.	
503979	2013	A unit 2 turbine building sprinkler head was found to be spraying water. A follow-on inspection noted that the fuse was missing.	Sprinkler head fuse assembly was missing. Not an aging issue.
1080715 [1080728 was a possible typo in the Operating Experience Audit Report]	2017	A sprinkler head above the unit 2 air ejector failed. No follow-on information was provided.	WO documented that sprinkler head internals were missing. Not an aging effect.

RCI No. 15:

The staff reviewed the Main Drain Operating Experience Summary and noted the following:

Condition Report Number	Year	Brief Description	Summary of Condition
380377	2010	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.	The plugged line was a 3/8-inch test connection at the end of the header resulting in a collection point for rust. The function of the downstream sprinklers was never affected.
393845	2010	A drain on unit 1 south side turbine building is clogged. A subsequent condition report, 398027 (10/06/2010), confirmed that blockage was not downstream of the drain valve.	The test connection is a tee off of the main header and based on configuration it is a low point where rust debris could accumulate. The test line was not functional until the line was cleared; however, the function of the downstream sprinklers was never affected.
398027	2010	Approximately one inch of rusty debris blocked line	The test connection is a tee off of the main header and based on configuration it is a low point where rust debris could accumulate. The test line was not functional until the line was cleared; however, the function of the downstream sprinklers was never affected.
463714	2012	Approximately one inch of rusty debris blocked line	The test connection is a tee off of the main header and based on configuration it is a low point where rust debris could accumulate. The test line was not functional until the line was cleared; however, the function of the downstream sprinklers was never affected.
496837	2012	The strainer downstream of an inspector test valve is clogged with debris and damaged beyond repair.	The strainers were replaced because they were constructed of too fine of a mesh for use with well water applications.
1044047	2016	Clogged fire water line.	The blockage occurred because the vent line weldolet was not installed correctly and the corrective action was to drill through the piping/weldolet to allow flow when required.