

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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United States Nuclear Regulatory Commission
Attention: Document Control Desk
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Docket Nos.: 50-280
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License Nos.: DPR-32
DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
SUBSEQUENT LICENSE RENEWAL APPLICATION
RESPONSE TO NRC REQUESTS FOR CONFIRMATION OF INFORMATION

References:

1. Letter from Virginia Electric and Power Company to the US Nuclear Regulatory Commission dated October 15, 2018 (Serial No. 18-340), "Virginia Electric and Power Company, Surry Power Station Units 1 and 2, Application for Subsequent Renewed Operating Licenses," [Agencywide Documents Access and Management System (ADAMS) Accession No. ML18291A842]
2. Email from Emmanuel Sayoc of the US Nuclear Regulatory Commission to Daniel G. Stoddard of Virginia Electric and Power Company dated June 12, 2019, "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)"

In Reference 1, Virginia Electric and Power Company (Dominion Energy Virginia) submitted the Subsequent License Renewal Application (SLRA) for Surry Power Station (SPS) Units 1 and 2. In Reference 2, the NRC provided requests for confirmation of information (RCIs) the staff will likely use in the conclusions documented in their Safety Evaluation Report (SER) for the SLRA, but which has not been previously docketed. The NRC RCIs and Dominion Energy Virginia's confirmation of each RCI are provided in the enclosure.

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cc: (w/o Enclosures except *)

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Enclosure

RESPONSE TO NRC REQUESTS FOR CONFIRMATION OF INFORMATION

**Virginia Electric and Power Company
(Dominion Energy Virginia)
Surry Power Station Units 1 and 2**

**Response to NRC Requests for Confirmation of Information
Subsequent License Renewal Application**

Surry Power Station Units 1 and 2

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 an application for the subsequent license renewal of Renewed Facility Operating License Nos. DPR-32 and DPR-37 for Surry Power Station (SPS) Units 1 and 2, respectively.

Between February 4 and April 25, 2019, the U.S. Nuclear Regulatory Commission (NRC) staff conducted audits of Dominion records to confirm information submitted in the SPS Subsequent License Renewal Application (SLRA). During the audits, the staff reviewed several documents that contain information that will likely be used in conclusions documented in the Safety Evaluation Report (SER), but which has not been previously submitted to the NRC on the docket. Any information used to reach a conclusion in the SER must be included on the docket by the applicant.

Therefore, in an email dated June 12, 2019, the NRC staff transmitted fifteen requests for confirmation of information (RCIs) gathered during the audits noted above. The NRC RCIs and Dominion Energy Virginia's confirmation of each RCI are provided below.

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.

Dominion Response:

This information has been confirmed to be correct as stated.

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.

Dominion Response:

This information has been confirmed to be correct as stated.

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.

Dominion Response:

This information has been confirmed to be correct as stated.

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.

Dominion Response:

This information has been confirmed to be correct as stated.

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.

Dominion Response:

This information has been confirmed to be correct as stated.

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 require “no additional measures” for aging management.

Dominion Response:

This information has been confirmed to be correct as stated.

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.

Dominion Response:

This information has been confirmed to be correct as stated with respect to the component cooling water system pressure boundary function.

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.”

Dominion Response:

This information has been confirmed to be correct as stated.

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.

Dominion Response:

This information has been confirmed to be correct as stated.

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.

Dominion Response:

This information has been confirmed to be correct as stated. NRC subsequently determined that pages 2-6 of Attachment B of the VPDES Fact Sheet were not necessary for completion of the environmental review.

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.

Dominion Response:

This information has been confirmed to be correct as stated.

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
<i>Diesel Driven Pump</i>			
2019	113	106	38103851700
2018	115	107	38103756472
2016	113.5	107.5	38103679516
2015	113.5	106	38103570743
2014	114	108	38103457968
<i>Motor Driven Pump</i>			
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.

Dominion Response:

This information has been confirmed to be correct as stated, with the exception of the 2018 Motor Driven Pump work order reference. The work order number should be the same as the work order number listed for the 2018 Diesel Driven Pump, i.e., work order number 38103758472 should be 38103756472.

RCI No. 13:

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

	<i>Condition Report Number</i>	<i>Year</i>	<i>Brief Description</i>
1	105806	2008	<i>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.</i>
2	474655	2012	<i>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.</i>
3	504380	2013	<i>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).</i>
4	556008	2014	<i>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.</i>
5	580443	2015	<i>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.</i>

	Condition Report Number	Year	Brief Description
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.
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.

	<i>Condition Report Number</i>	<i>Year</i>	<i>Brief Description</i>
19	538837	2014	<i>Surface water was detected in the vicinity of the curb box near 1-FP-70. The leak was caused by a packing leak.</i>
20	1087963	2018	<i>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.</i>

Dominion Response:

This information has been confirmed to be correct as stated.

RCI No. 14:

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

<i>Condition Report Number</i>	<i>Year</i>	<i>Brief Description</i>	<i>Summary of Conditions</i>
002099	2006	<i>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.</i>	<i>Sprinkler was replaced with the minor maintenance process and no work order generated.</i>
007510	2007	<i>A sprinkler head in the laundry building was found to be spraying a fine mist. Closed to a work order.</i>	<i>Heating unit in the building failed, which allowed ice to build up on the sprinkler head. This is event driven, not aging.</i>
485731	2012	<i>Corrosion was detected on a sprinkler in the chemistry primary hot lab. No follow-on information was provided.</i>	<i>A walkdown was conducted and the sprinkler head was determined to be functional.</i>
496505	2012	<i>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.</i>	<i>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</i>

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.	occurred.
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.

Dominion Response:

This information has been confirmed to be correct as stated.

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.

<i>Condition Report Number</i>	<i>Year</i>	<i>Brief Description</i>	<i>Summary of Condition</i>
393845	2010	<i>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.</i>	<i>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.</i>
398027	2010	<i>Approximately one inch of rusty debris blocked line</i>	<i>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.</i>
463714	2012	<i>Approximately one inch of rusty debris blocked line</i>	<i>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.</i>
496837	2012	<i>The strainer downstream of an inspector test valve is clogged with debris and damaged beyond repair.</i>	<i>The strainers were replaced because they were constructed of too fine of a mesh for use with well water applications.</i>
1044047	2016	<i>Clogged fire water line.</i>	<i>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.</i>

Dominion Response:

This information has been confirmed to be correct as stated.