

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

May 20, 2014

10 CFR 50.55a

United States Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Serial No. 14-244  
SPS-LIC/CGL R2  
Docket No. 50-280  
License No. DPR-32

**VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)**  
**SURRY POWER STATION UNIT 1**  
**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**  
**REGARDING RELIEF REQUEST S1-I5-ISI-02**  
**PRESSURIZER SURGE NOZZLE INNER RADIUS**

By a letter dated November 26, 2013 (Serial No. 13-611), Virginia Electric and Power Company (Dominion) submitted the Unit 1 Fifth 10-year Interval Inservice Inspection (ISI) Program and Alternative Requests, including Relief Request (RR) S1-I5-ISI-02, "Pressurizer Surge Nozzle Inner Radius."

On April 18, 2014, the NRC requested additional information regarding RR S1-I5-ISI-02. The response to the NRC's request for additional information is provided in the attachment.

If you have further questions or require additional information, please contact Mr. Gary D. Miller at (804) 273-2771.

Sincerely,



Mark D. Sartain  
Vice President – Nuclear Engineering

Attachment: Response to Request for Additional Information Regarding Relief Request S1-I5-ISI-02 - Pressurizer Surge Nozzle Inner Radius

Commitments made by this letter: None

A047  
LRR

cc: U.S. Nuclear Regulatory Commission, Region II  
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**Attachment**

**Response to Request for Additional Information**  
**Regarding Relief Request S1-I5-ISI-02 –**  
**Pressurizer Surge Nozzle Inner Radius**

**Virginia Electric and Power Company**  
**(Dominion)**  
**Surry Power Station Unit 1**

**Response to Request for Additional Information**  
**Regarding Relief Request S1-I5-ISI-02 –**  
**Pressurizer Surge Nozzle Inner Radius**  
**Surry Power Station Unit 1**

By letter dated November 26, 2013 (Serial No. 13-611) [Agencywide Document Access and Management System (ADAMS) Accession Number ML13336A142], Dominion submitted a request for relief from certain requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI. This request is in relation to the pressurizer surge nozzle inner radius examination.

On April 18, 2014, the NRC staff requested additional information to complete their review. The NRC questions and the Dominion responses are provided herein.

- 1. The request states that the dose estimate for disconnection and removal of heater cables is 56 man-rem. Please provide the assumptions and basic calculations for this estimate.*

**Dominion Response:** As stated in Relief Request (RR) RR S1-I5-ISI-02, access to the pressurizer surge line nozzle is obstructed by insulation and the cables for the pressurizer heaters. The majority, possibly all, of the heater cables would have to be disconnected and repositioned to allow the necessary access to remove insulation. The ceramic connectors that the heater cables attach to on the heater assemblies are easily damaged, and it would be expected that heater cable and heater damage would occur during removal of the heater cables and insulation. The 56 man-rem dose estimate is for removal and replacement of the insulation, preparation for and performing the examination, as well as the removal and replacement of 78 pressurizer heaters (factored in as an expected contingency). The breakdown of the 56 man-rem dose estimate is provided in the following table.

<b>TASK</b>	<b>NUMBER OF HOURS</b>	<b>NUMBER OF PEOPLE</b>	<b>PERSON-HOURS</b>	<b>DOSE RATE</b>	<b>TOTAL DOSE</b>
Remove insulation skirt on pressurizer	0.5	3	1.50	0.080	0.120
Remove insulation on surge line	0.33	2	0.66	0.300	0.198
Remove insulation from nozzle area	0.5	2	1.00	0.800	0.800
Outside support for removal activities	3.0	2	6.00	0.025	0.150

Contingency for heater removal and replacement (78 heaters)	39.0	2	78.00	0.650	50.700
Preparation for ultrasonic testing	0.5	1	0.50	0.450	0.225
Ultrasonic testing of radius near nozzle to vessel are	1.5	2	3.00	0.550	1.650
Replace insulation from nozzle area	0.75	2	1.50	0.800	1.200
Replace insulation on surge line	0.5	2	1.00	0.300	0.300
Replace insulation skirt on pressurizer	0.75	3	2.25	0.080	0.180
Outside support for replacement activities	5.0	2	10.00	0.025	0.250
<b>TOTAL</b>	<b>52.33</b>		<b>105.41</b>		<b>55.773</b>

2. *The requests states that the Cumulative Usage Factor for the nozzle inner radius is 0.29 (inside surface) and 0.11 (outside surface).*

a. *Are these estimates of the current cumulative usage or the estimated usage at end of life for Surry Unit?*

Dominion Response: The cumulative usage factor estimates are based upon the number of design basis cycles for the pressurizer, which is 200 cycles. The number of cycles is tracked over the lifetime of the plant. As noted in Surry UFSAR Section 4.1.4, the 200 cycle estimate has been retained for the 60-year renewed operating license period.

b. *Where is this evaluation documented?*

Dominion Response: The evaluation is documented in Dominion Technical Report: LR-1020/LR-2020, titled "License Renewal Project Time-Limited Aging Analyses Review" and in Westinghouse WCAP-15607, titled "Evaluation of Pressurizer Insurge/Outsurge for Surry and North Anna" (Proprietary Class 2).

3. *Volumetric examination of components exposed to similar environmental conditions would further provide assurance of the subject component structural integrity, e.g. the surge line weld to the reactor coolant hot leg.*
  - a. *Does the licensee plan any regularly scheduled or augmented inservice inspection of similar reactor coolant system components?*

Dominion Response: The weld between the surge line and the reactor coolant hot leg connection was examined during the Surry Unit 1 Refueling Outage 21, S1R21 (11/2007). The examination results were acceptable (i.e., no recordable indications). The examination was performed as required by the License Renewal Commitment Pressurizer Surge Line Weld Inspection Plan Summary (Reference Virginia Electric and Power Company letter (Serial No. 07-0349 to the NRC dated May 14, 2007, ADAMS Accession No. ML071350356). The commitment required baseline volumetric and surface examinations of the weld in the fourth inservice inspection (ISI) interval prior to entry into the period of extended operation. The examinations are also required to be performed in the period of extended operation at a frequency of once per inspection period thereafter (i.e., once every 40 months during each of the fifth and sixth ISI intervals).

As required by 10CFR50.55a(b)(2)(xxi)(A), nozzle inside radius section examinations are regularly scheduled and performed on the three pressurizer safety nozzles, the pressurizer relief nozzle, and the pressurizer spray nozzle. The License Renewal Commitment for inspection of the surge line weld to the reactor coolant hot leg is implemented by the augmented inservice inspection program and will be performed each inspection period. The scope for the Fifth Interval Risk Informed Inservice Inspection (RI-ISI) program preliminarily includes two pipe-to-pipe welds on the pressurizer surge line. The current plan for the Fifth Interval RI-ISI program will utilize the EPRI streamlined RI-ISI methodology (Code Case N-716-1) either through endorsement of this code case in Regulatory Guide 1.147 or by approved relief request. The NRC Proposed Rule for Approval of American Society of Mechanical Engineers' Code Cases, published in the Federal Register on June 24, 2013, identifies Code Case N-716-1, *Alternative Piping Classification and Examination Requirements, Section XI, Division 1*, as approved for unconditional use. Note that Code Case N-716-1 is included in the June 2013 Draft Regulatory Guide DG-1231 (Proposed Revision 17 of Regulatory Guide 1.147, dated October 2010), *Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1*.

- b. *If a thermal fatigue flaw was discovered in a surge line component other than the subject component, would the licensee take action to volumetrically examine the subject component?*

Dominion Response: The required actions of ASME XI IWB-2430 would be followed. The additional exams selected would be from welds, areas, or parts of similar material and service. In addition, the station's Corrective Action Program would require an

extent of condition review. This component would be included in the extent of condition review.

4. *When was the subject component last examined in accordance with ASME Code as conditioned by 10 CFR 50.55a, and were there any indications identified?*

Dominion Response: The pressurizer nozzle inner radius examination has been covered by an NRC approved Relief Request for the past three 10-year ISI Intervals. Visual (VT-2) inspections have been performed in lieu of a volumetric or enhanced visual inspection since the second 10-year ISI interval that began in 1982. The visual exams have been satisfactory.

INTERVAL	EXAMINATION METHOD	EXAMINATION DATE	RELIEF REQUEST
2	VT-2	04/30/1992	Relief Request SR-007 - Approved by NRC on June 27, 1986
3	VT-2	06/11/2003	Relief Request SR-003 - Approved by NRC on July 19, 1995
4	VT-2 (1)	11/02/2004 (2) 05/23/2006 (2) 12/05/2007 05/10/2009 11/28/2010 06/04/2012 11/19/2013	Relief Request CMP-001, Rev. 1 - Approved by NRC on June 5, 2007

Note (1): The statement that the VT-2 visual examinations will be performed as part of the normally scheduled Class 1 system leakage test each refueling was in Relief Request CMP-001 (Reference Virginia Electric and Power Company letter Serial No. 02-642 to the NRC dated December 12, 2002, ADAMS Accession No. ML023510289).

Note (2): Examinations were performed during completion of further research to support submittal of Relief Request CMP-001, Rev. 1 (Reference Virginia Electric and Power Company letter Serial No. 02-642A to the NRC dated December 5, 2003, ADAMS Accession No. ML033500241).