VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

January 24, 2014 10 CFR 50.90

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Serial No.: 13-435A
SPS-LIC/CGL: R1'
Docket Nos.: 50-280
50-281
License Nos.: DPR-32
DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION FOR PROPOSED LICENSE AMENDMENT REQUEST
PERMANENT FIFTEEN-YEAR TYPE A TEST INTERVAL

In a letter dated August 12, 2013 (Serial No. 13-435), Virginia Electric and Power Company (Dominion) requested license amendments in the form of changes to the Technical Specifications, for facility Operating License Numbers DPR-32 and DPR-37 for Surry Power Station Units 1 and 2, respectively. The proposed amendments revise Surry Power Station Units 1 and 2 Technical Specification (TS) 4.4.B, "Containment Leakage Rate Testing Requirements," by replacing the reference to Regulatory Guide (RG) 1.163 with a reference to Nuclear Energy Institute (NEI) topical report NEI 94-01, Revision 3-A, as the implementation document used to develop the Surry performance-based leakage testing program in accordance with Option B of 10 CFR 50, Appendix J. Revision 3-A of NEI 94-01 describes an approach for implementing the optional performance-based requirements of Option B, including provisions for extending the Type A primary containment integrated leak rate test (ILRT) intervals to fifteen years and the Type C local leak rate test intervals to 75 months, and incorporates the regulatory positions stated in RG 1.163.

In a December 12, 2013 e-mail from Ms. Karen Cotton Gross (NRC Project Manager) to Mr. Gary Miller (Dominion Corporate Licensing), the NRC staff requested additional information regarding the proposed permanent fifteen-year Type A test interval. The attachment to this letter provides the requested information.

The information provided in this letter does not affect the conclusion of the significant hazards consideration discussed in the August 12, 2013 Dominion letter (Serial No. 13-435).

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Dominion continues to request approval of the proposed license amendments by July 31, 2014.

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

Sincerely,

Mark D. Sartain
Vice President – Nuclear Engineering and Development

Commitments contained in this letter: None

Attachment: Response to NRC Request for Additional Information dated December 12, 2013

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Mr. Mark D. Sartain, who is Vice President – Nuclear Engineering and Development, of Virginia Electric and Power Company. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 24th day of January, 2014.

My Commission Expires: 12/31/16

Craig D Sly
Notary Public

CRAIG D SLY
Notary Public
Commonwealth of Virginia
Reg. # 7518653
My Commission Expires December 31, 2016

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NRC Senior Resident Inspector
Surry Power Station

Attachment

Response to NRC Request for Additional Information dated December 12, 2013

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

**REQUEST FOR ADDITIONAL INFORMATION (RAI)
FROM MECHANICAL AND CIVIL ENGINEERING BRANCH (EMCB)
REGARDING THE LICENSE AMENDMENT REQUEST (LAR) FOR
REVISION OF TS 4.4.B FOR ADOPTION OF NEI 94-01, REVISION 3-A,
AS IMPLEMENTING DOCUMENT FOR 10 CFR 50 APPENDIX J, OPTION B,
CONTAINMENT LEAK RATE TESTING PROGRAM,
VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION),
SURRY POWER STATION, UNITS 1 AND 2
DOCKET NOS. 50-280/281**

References:

1. Letter Serial No. 13-435, From Eugene S. Grecheck, Vice President – Nuclear Engineering and Development, Virginia Electric and Power Company, to U. S. Nuclear Regulatory Commission, Document Control Desk, "Proposed License Amendment Request Permanent Fifteen Year Type A Test Interval," August 12, 2013. (ML13232A042)
2. Nuclear Energy Institute Topical Report NEI 94-01, Revision 3-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," July 2012. (ML12221A202)

SURRY – ILRT LAR – EMCB RAI-1:

The table in Section 4.4 of Reference 1 lists the planned visual inspections of exterior surfaces of the containment. The Unit 1 table lists one examination prior to the last Type A test, and then two examinations between the last Type A test and the next scheduled Type A test. The Unit 2 table lists two examinations between the last Type A test and the next scheduled Type A test.

Explain how this meets the requirements in Section 9.2.3.2 of Reference 2, which states that a general visual examination of accessible exterior surfaces of the containment "must be conducted prior to each Type A test and during at least three other outages before the next Type A test if the interval for the Type A test has been extended to 15 years."

DOMINION RESPONSE TO EMCB RAI-1:

The table in Section 4.4 of Dominion letter Serial No. 13-435, dated August 12, 2013, is duplicated below with the following augmentation noted in italicized text:

1) Clarification that the existing columns identifying the dates of General Visual Examination of Accessible Exterior Surface and General Visual Examination of Accessible Interior (Liner) Surface are the IWL and IWE examination dates, respectively.

2) Addition of a column that identifies the dates of refueling outages (RFO) during which General Visual Examination of Accessible Interior and Exterior Surfaces have been or will be performed. This general visual examination is conducted in accordance with approved plant procedures to satisfy the requirements of the 10CFR50 Appendix J Testing Program.

This augmented information demonstrates that the requirements in Section 9.2.3.2 of NEI 94-01, Revision 3-A, which states that a general visual examination of accessible exterior surfaces of the containment "must be conducted prior to each Type A test and during at least three other outages before the next Type A test if the interval for the Type A test has been extended to 15 years," will be satisfied.

Unit 1				
Calendar Year	**Type A Test (ILRT)**	**General Visual Examination of Accessible Exterior Surface *(IWL)***	**General Visual Examination of Accessible Interior (Liner) Surface *(IWE)***	***General Visual Examination of Accessible Interior and Exterior Surfaces (RFO)***
2005				
2006	**05/16/2006**	**05/07/2006**		***05/2006***
2007			**11/21/2007**	***10/2007***
2008				
2009			**05/27/2009**	***05/2009***
2010				***10/2010***
2011		**08/31/2011**		
2012				***05/2012***
2013			**10/2013**	***10/2013***
2014				
2015				***Spring 2015***
2016		**08/2016**	**10/2016**	***Fall 2016***
2017				
2018				***Spring 2018***
2019			**10/2019**	***Fall 2019***
2020				
2021	**04/2021**	**08/2021**		***Spring 2021***

Unit 2				
Calendar Year	Type A Test (ILRT)	General Visual Examination of Accessible Exterior Surface *(IWL)*	General Visual Examination of Accessible Interior (Liner) Surface *(IWE)*	*General Visual Examination of Accessible Exterior Surface (RFO)*
2000	10/26/2000		10/07/2000	*10/2000*
2001				
2002				*05/2002*
2003			10/29/2003	*10/2003*
2004				
2005			05/16/2005	*05/2005*
2006		12/31/2006	10/27/2006	*10/2006*
2007				
2008				*05/2008*
2009			11/24/2009	*10/2009*
2010				
2011		08/31/2011	05/16/2011	*05/2011*
2012				*10/2012*
2013				
2014			04/2014	*Spring 2014*
2015	10/2015			*Fall 2015*
2016		08/2016		

SURRY – ILRT LAR – EMCB RAI-2:

Section 4.3 of Reference 1 provides the maximum and minimum pathway leak rate summary totals for the last three refueling outages with Type A tests; however, no information is provided from recent refueling outages. In order for the NRC staff to assess the proper and effective implementation of the Type B and Type C local leak rate testing program, please provide the following for both Units:

1. *A summary table of recent local leak rate testing (LLRT) results of those containment penetrations (including their test schedule intervals) that have not demonstrated acceptable performance history in accordance with the containment leakage testing program and a discussion of the causes and corrective actions taken.*

2. *A summary of the combined leakage results from Type B and Type C tests since the last Type A test. If any of the results did not meet the acceptance criteria, discuss the cause and any corrective actions taken.*

DOMINION RESPONSE TO EMCB RAI-2 ITEMS 1 AND 2:

The following tables and related footnotes provide the information requested by Items 1 and 2 in EMCB RAI-2:

Type B and C Penetration Test Results since Unit 1 2006 Type A Test

Date	Type B&C As-found Leakage Min-Path (scfh)[1]	Type B&C As-left Leakage Max-Path (scfh)[2]	As-found / As-left Leakage as Percent of 0.6La[3]	Valves Requiring Increased Test Frequency[4]	Corrective Actions Required
05/2006	10.72	16.41	6 / 9	7	7
10/2007	4.36	18.45	3 / 11	5	5
05/2009	4.6	16.04	3 / 9	4	4
10/2010	8.01	22.00	5 / 13	5	5
05/2012	12.8	12.76	7 / 7	5	5
10/2013	10.13	18.12	6 / 10	4	4[5]

1. Per ANSI/ANS 56.8 - 1994 and NEI 94-01, "the combined As-Found leakage rates, determined on a minimum pathway leakage rate basis, for all newly tested penetrations when summed with the As-Left minimum pathway leakage rate for all other penetrations not tested shall be less than 0.6 La when Containment Integrity is required."

2. Per ANSI/ANS 56.8 - 1994 and NEI 94-01, "the combined As-Left leakage rates determined on a maximum pathway leakage rate basis for all penetrations shall be less than 0.6 La prior to entering a mode where Containment Integrity is required following an outage or shutdown that included Type B & C testing. These combined leakage rate determinations shall be done with the latest leakage rate test data available, and shall be kept as a running summation of the leakage rates."

3. La = 290 scfh and 0.6 La = 174 scfh.

4. Type B and C leakage results have not exceeded the 0.6 La acceptance criteria. Administrative limits for leakage rates in the test procedure are established and documented for each Type B and C component prior to performance of local leakage rate test. The administrative limit assigned to each component is specified such that it is an indicator of potential valve or penetration degradation. In accordance with the Performance Based Containment Leakage Rate Program, exceeding the administrative

limit triggers increased testing for each individual valve or penetration until two successful As-Found Type B or C tests are completed. Administrative limits are specific to individual penetrations or valves and are not the surveillance acceptance criteria for Type B and C tests.

5. The Surry Periodic Test Procedure for Containment Isolation Valve Local Leak Rate Testing (Type C Containment Testing) specifies that any valve exceeding the maximum leakage acceptance criterion shall be repaired/replaced or evaluated/approved by the Facility Safety Review Committee. During the Unit 1 Fall 2013 refueling outage, four Containment Isolation Valves had Local Leakage Rate Test results with a measured leakage greater than the maximum leakage acceptance criteria of the Periodic Test Procedure. The corrective action taken to address these four valves is discussed in the following paragraphs.

   - Penetration 70, Valve 01-RS-MOV-156B

     As-found measured leakage: 7.0 scfh (Administrative limit = 4.5 scfh)

     Resolution: Limit switch adjustments were performed and the seating torque was increased to address the leakage. However, these actions did not reduce the leakage to an acceptable value, so the valve seat was also replaced. Consistent with Note 4 above, valve 01-RS-MOV-156B will require testing each refueling outage until two successful leakage rate tests are recorded.

     As-left measured leakage: 0.0 scfh

   - Penetration 90, Valves 01-VS-MOV-100C, 100D, 101

     As-found measured leakage: 4.1 scfh (Administrative limit = 3.5 scfh)

     Resolution: An engineering evaluation was performed and provided the technical basis for accepting the measured Type C leakage for Penetration 90. It was determined that the as-left leakage of the Penetration 90 containment isolation valves 01-VS-MOV-100C, 100D, 101 is acceptable, and repair or replacement of the leaking containment isolation valves may be deferred to the next Unit 1 refueling outage. This deferral is acceptable since the total as-left Type B and C leakage (including the as-left leakage for Penetration 90) for the Unit 1 Fall 2013 refueling outage is below the maximum allowable Type B and C leakage value of 174 scfh (0.6 La), and sufficient margin exists to 0.6 La. Consistent with Note 4 above, valves 01-VS-MOV-100C, 100D, 101 will require testing each refueling outage until two successful leakage rate tests are recorded.

     As-left measured leakage: 4.1 scfh

Type B and C Penetration Test Results since Unit 2 2000 Type A Test

Date	Type B&C As-found Leakage Min-Path (scfh)[1]	Type B&C As-left Leakage Max-Path (scfh)[2]	As-found / As-left Leakage as Percent of 0.6La[3]	Valves Requiring Increased Test Frequency[4]	Corrective Actions Required
10/2000	2.8	11.41	2 / 7	6	6
05/2002	39.2	22.82	23 / 13	5	5
10/2003	12.82	11.06	7 / 6	4	4
05/2005	5.68	16.23	3 / 9	5	5
10/2006	7.19	10.55	4 / 6	2	2
05/2008	6.89	6.62	4 / 4	4	4
10/2009	13.75	15.33	8 / 9	3	3
05/2011	6.7	10.3	4 / 6	2	2
10/2012	16.88	12.2	10 / 7	2	2[5]

1. Per ANSI/ANS 56.8 - 1994 and NEI 94-01, "the combined As-Found leakage rates, determined on a minimum pathway leakage rate basis, for all newly tested penetrations when summed with the As-Left minimum pathway leakage rate for all other penetrations not tested shall be less than 0.6 La when Containment Integrity is required."

2. Per ANSI/ANS 56.8 - 1994 and NEI 94-01, "the combined As-Left leakage rates determined on a maximum pathway leakage rate basis for all penetrations shall be less than 0.6 La prior to entering a mode where Containment Integrity is required following an outage or shutdown that included Type B and C testing. These combined leakage rate determinations shall be done with the latest leakage rate test data available, and shall be kept as a running summation of the leakage rates."

3. La = 290 scfh and 0.6 La = 174 scfh.

4. Type B and C leakage results have not exceeded the 0.6 La acceptance criteria. Administrative limits for leakage rates in the test procedure are established and documented for each Type B and C component prior to performance of local leakage rate test. The administrative limit assigned to each component is specified such that it is an indicator of potential valve or penetration degradation. In accordance with the

Performance Based Containment Leakage Rate Program, exceeding the administrative limit triggers increased testing for each individual valve or penetration until two successful As-Found Type B or C tests are completed. Administrative limits are specific to individual penetrations or valves and are not the surveillance acceptance criteria for Type B and C tests.

5. The Surry Periodic Test Procedure for Containment Isolation Valve Local Leak Rate Testing (Type C Containment Testing) specifies that any valve exceeding the maximum leakage acceptance criterion shall be repaired/replaced or evaluated/approved by the Facility Safety Review Committee. During the Unit 2 Fall 2012 refueling outage, two Containment Isolation Valves had Local Leakage Rate Test results with a measured leakage greater than the maximum leakage acceptance criteria of the Periodic Test Procedure. The corrective action taken to address these two valves is discussed in the following paragraphs.

   - Penetration 56A, Valve 02-SS-TV-206A

     As-found measured leakage: 10.4 scfh (Administrative limit = 1.0 scfh)

     Resolution: To address the leakage, a new gasket, plug, and spring were installed, and the valve seats were lapped. Consistent with Note 4 above, valve 02-SS-TV-206A will require testing each refueling outage until two successful leakage rate tests are recorded.

     As-left measured leakage: 0.9 scfh

   - Penetration 56A, Valve 02-SS-TV-206B

     As-found measured leakage: 13.6 scfh (Administrative limit = 1.0 scfh)

     Resolution: To address the leakage, a new plug was installed, and the valve seats were lapped. However, these actions did not reduce the leakage to an acceptable level, so an engineering evaluation was performed and provided the technical basis for accepting the measured Type C leakage for valve 02-SS-TV-206B. It was determined that the as-left leakage of valve 02-SS-TV-206B is acceptable, and repair or replacement of the leaking valve may be deferred to the next Unit 2 refueling outage. This deferral is acceptable since the total as-left Type B and C leakage (including the as-left leakage forvalve 02-SS-TV-206B) for the Unit 2 Fall 2012 refueling outage is below the maximum allowable Type B and C leakage value of 174 scfh (0.6 La), and sufficient margin exists to 0.6 La. Consistent with Note 4 above, valve 02-SS-TV-206B will require testing each refueling outage until two successful leakage rate tests are recorded.

     As-left measured leakage: 3.0 scfh

SURRY – ILRT LAR – EMCB RAI-3:

Section 4.4.2 of Reference 1 provides a high-level summary of the recent American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI (Section XI) Subsection IWL inspection results for both Units. In order for the NRC staff to assess the proper and effective implementation of the ASME Section XI, Subsection IWL containment inspection program, please provide the following for both Units:

1. *A summary discussion of the type of indications noted on Unit 1 (47 indications) and Unit 2 (44 indications) during the last ASME Section XI, Subsection IWL inspection. This should include an explanation of the type of indications noted and how it was determined which indications required excavation and further examination.*

DOMINION RESPONSE TO EMCB RAI-3 ITEM 1:

ASME Section XI, Subsection IWL inspections, performed in accordance with Dominion Fleet Procedure, "ASME Section XI Containment In-service Inspection (Concrete/IWL) Program Fleet Implementation Requirements," identified various indications on the Unit 1 and Unit 2 Containments. Most indications noted were minor spalls, pop-outs, and abandoned anchor bolts/anchor bolt holes. The inspections also noted several prior excavations awaiting cosmetic repairs. Most conditions identified were minor in nature and did not require additional excavation to perform repairs. In general, the few indications requiring additional inspection or excavation involved embedded materials and loose or hollow-sounding concrete areas. ACI-349.3, "Evaluation of Existing Nuclear Safety-Related Concrete Structures," establishes whether a repair is either code required or cosmetic. This definition is also included in the Dominion Fleet inspection procedure. The inspection program identified five code repairs. The other repairs are cosmetic.

2. *A discussion of the indications requiring ASME Section XI repairs, including the type of indication and how it was repaired.*

DOMINION RESPONSE TO EMCB RAI-3 ITEM 2:

The following paragraphs identify the type of indication and the repair for the five code repairs identified by the inspection program:

1) Unit 1 Northeast Dome– While prepping for cosmetic grout repairs to a previously excavated area, a small piece of wood was found. The wood was removed and sound material found with the new excavation area measuring 3" x 3" x 4-3/4" deep. Qualified Dominion inspectors examined the excavated area prior to performing a code repair. This established the adequacy of the exposed concrete and steel reinforcement. The repairs were done in accordance with Station procedures and applicable code requirements (ACI-349.3). A VT-1C inspection was performed on this completed code repair.

2) Unit 1 Equipment Hatch area – A raised circular protrusion at the equipment hatch displayed exposed reinforcement on the lower west side in an approximate 2' x 5' area. The reinforcement had minor degradation on the outside surface of the rebar. Concrete was found to be sound in the area. This area was excavated to sound material around the rebar to provide sufficient space to place new concrete around each exposed rebar. The maximum excavation depth was 2-7/8". Qualified Dominion inspectors examined the excavated area prior to performing a code repair. This established the adequacy of the exposed concrete and steel reinforcement. The repairs were done in accordance with Station procedures and applicable code requirements (ACI-349.3). A VT-1C inspection was performed on this completed code repair.

3) Unit 1 Southwest Dome – A small piece of embedded rubber was discovered above the spring line on the southwest face of the dome. This area (8" x 4") was excavated to sound material at a depth of 5-1/2" with no rebar exposed. Qualified Dominion inspectors examined the excavated area prior to performing a code repair. This established the adequacy of the exposed concrete. The repairs were done in accordance with Station procedures and applicable code requirements (ACI-349.3). A VT-1C inspection was performed on this completed code repair.

4) Unit 2 Southeast Dome (Hollow area) – Efflourescence was noted on the southeast quadrant of the dome. This area was investigated and a hollow area (approximately 4'x 8') was identified by sounding with a hammer. The area was excavated to sound material, which was between 3" to 8" below the surface. Qualified Dominion inspectors examined the excavated area prior to performing a code repair. This established the adequacy of the exposed concrete and steel reinforcement. The repairs were done in accordance with Station procedures and applicable code requirements (ACI-349.3). A VT-1C inspection was performed on this completed code repair.

5) Unit 2 West Dome - While performing cosmetic repairs to an area on the west side of Unit 2 Containment, suspect concrete was excavated down to the point that primary reinforcement was exposed. The area of exposed reinforcement measured 10" x 9" x 5". Qualified Dominion inspectors examined the excavated area prior to performing a code repair. This established the adequacy of the exposed concrete and steel reinforcement. The repairs were done in accordance with Station procedures and applicable code requirements (ACI-349.3). A VT-1C inspection was performed on this completed code repair.