

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

March 13, 2014

10 CFR 50.90

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

Serial No.: 13-435B
NL&OS/GDM: R2
Docket Nos.: 50-280/281
License Nos.: DPR-32/37

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

By 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 (Surry) Units 1 and 2, respectively. The proposed amendments revise the Surry 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.

On December 12, 2013, the NRC requested additional information regarding the proposed license amendment request (LAR). Dominion responded to the NRC request for additional Information (RAI) by letter dated January 24, 2014 (Serial No. 13-435A). The Surry NRC Project Manager subsequently contacted Dominion on February 20, 2014 and noted the NRC technical review staff had identified three discrepancies between the information provided in the initial LAR submittal and the RAI response. Two of the discrepancies concerned differing values for Type B and C leakage values, while the third discrepancy concerned the number of ASME Section XI Code repairs performed on the Unit 1 and Unit 2 Containment structures.

In resolving the discrepancies in the Type B and C as-found and as-left leakage values provided in the August 12, 2013 and January 24, 2014 submittals, a validation of the penetration leakage data obtained from the specific refueling outage test reports was performed using the peer review process. An independent review of the leakage data was also performed subsequent to the validation effort. As a result of these actions, additional discrepancies were identified. The validated and independently reviewed Type B and C as-found and as-left leakage values by outage date are provided in the attachment and supersede the previously provided leakage values in the August 12, 2013 and January 24, 2014 submittals. The conclusion that neither unit's overall Type B and C leakage has approached the 0.6 La leakage limit remains unchanged. The attachment also provides a correction to the August 12, 2013 letter regarding the number of penetrations

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Attachment

Validated Type B and C Penetration Test Results
Since the Unit 1 2006 Type A Test and
the Unit 2 2000 Type A Test
and
Corrected Number of Penetrations Being Tested
at Increased Frequency due to Leakage Performance

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

Validated Type B and C Penetration Test Results
Since the Unit 1 2006 Type A Test and the Unit 2 2000 Type A Test

Validated 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 Percent (AF/AL / 0.6 La x 100)³ | Valves Requiring Increased Test Frequency⁴ | Corrective Actions Required |
|-------------|--|---|--|--|--|
| 05/2006 | 10.21 | 16.49 | 5.9 / 9.5 | 7 | 7 |
| 10/2007 | 3.19 | 18.15 | 1.9 / 10.5 | 5 | 5 |
| 05/2009 | 3.97 | 15.73 | 2.3 / 9.1 | 4 | 4 |
| 10/2010 | 6.45 | 21.99 | 3.7 / 12.7 | 5 | 5 |
| 05/2012 | 10.9 | 12.76 | 6.3 / 7.4 | 6 | 6 |
| 10/2013 | 10.13 | 18.22 | 5.9 / 10.5 | 4 | 4 ⁵ |

- 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."
- 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."
- La = 290 scfh and 0.6 La = 174 scfh.
- 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.
- 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: 5.3 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

Validated 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 Percent (AF/AL / 0.6 La x 100) ³ | Valves Requiring Increased Test Frequency ⁴ | Corrective Actions Required |
|---------|--|---|--|--|-----------------------------------|
| 10/2000 | 4.6 | 13.23 | 2.7 / 7.6 | 5 | 5 |
| 05/2002 | 37.38 | 22.65 | 21.5 / 13.1 | 5 | 5 |
| 10/2003 | 13.38 | 10.72 | 7.7 / 6.2 | 4 | 4 |
| 05/2005 | 4.67 | 16.29 | 2.7 / 9.4 | 5 | 5 |
| 10/2006 | 7.53 | 10.55 | 4.4 / 6.1 | 2 | 2 |
| 05/2008 | 5.15 | 8.17 | 3.0 / 4.7 | 4 | 4 |
| 10/2009 | 11.36 | 15.43 | 6.6 / 8.9 | 3 | 3 |
| 05/2011 | 7.53 | 11.7 | 4.4 / 6.8 | 3 | 3 |
| 10/2012 | 16.15 | 12.72 | 9.3 / 7.4 | 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 for valve 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

Corrected Number of Penetrations Being Tested at Increased Frequency due to Leakage Performance

On page 10 of 20 in Attachment 1 of the August 12, 2013 letter, it is stated that "Currently there are four (4) penetrations in Unit 2 and eight (8) in Unit 1 that are being tested at an increased frequency due to leakage performance." As a result of the validation effort and independent review, it was found that the number of penetrations being tested at an increased frequency due to leakage performance is one (1) in Unit 2 and two (2) in Unit 1.