

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**RICHMOND, VIRGINIA 23261**

November 8, 1999

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Serial No.: 99-154  
NL&OS/GDM: R2'  
Docket Nos.: 50-280,281  
License Nos.: DPR-32, 37

Gentlemen:

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**SURRY POWER STATION UNITS 1 AND 2**  
**ELIMINATION OF TYPE C TESTING FOR CERTAIN WATER-FILLED**  
**PENETRATIONS**

This letter is provided to advise you of a change in a previous commitment regarding Type C testing being performed for certain valves associated with containment penetrations that are water-filled and normally in operation or isolated during a design basis accident (DBA). The penetrations of interest are numbers 7, 15, 21, 23, 46, 60, 61, 62, 66, 67 68, 69 and 113, as specified in Tables 5.2-1 and 2 of the Updated Final Safety Analysis Report (UFSAR). The valves/functions associated with each of these penetrations are listed in the attachment. Specifically, these valves are being deleted from consideration as containment isolation valves that are subject to Type C testing as defined in 10 CFR 50, Appendix J. The basis for this determination is discussed below.

**Background**

By letters dated February 29, August 15 and August 31, 1988 (Serial Nos. 87-707A, 87-707C and 87-707D, respectively), Virginia Electric and Power Company (Virginia Power) provided an evaluation of certain containment penetrations to demonstrate that they are water-filled and normally operating during a DBA. The purpose of this evaluation was to provide justification for excluding the Type C leakage test results associated with these penetrations from the overall containment integrated leak rate, as well as concluding that these penetrations are not required to be vented and drained during Type A testing. The evaluation was provided in response to an unresolved item identified in NRC Inspection Report 50-281/86-36 that questioned why certain Type C test results were being excluded from the containment integrated leak rate. In addition, the evaluation supported an August 12, 1988 (Serial No. 88-278) request for exemption from the Type A test schedule requirements specified in 10 CFR 50, Appendix J.

Specifically, we had requested a one-time exemption from the accelerated testing schedule for performing Type A tests required by 10 CFR 50 Appendix J, paragraph III.A.6(b), to allow Surry Unit 2 to resume a normal Type A test schedule in accordance with Section III.D. As part of the basis for the exemption request, we noted that previous Surry Unit 2 Type A test failures experienced in the early to mid-1980s could be attributed in part to leakage penalty additions from Type C local leak rate testing of

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certain containment isolation valves. The valves of concern were in systems that are normally filled with water and operating during a DBA. We noted that the design of the water-filled penetrations is such that it precludes leakage of the containment atmosphere through the penetrations during a design basis accident, thus making it unnecessary to add the associated Type C leakage rates to the Type A integrated leak rate. In our discussion of the basis for the one-time exemption, we noted that the valves in these penetrations would continue to be Type C tested, and that their leakage rates would continue to be added to the total of all local leak rates.

The NRC approved Virginia Power's exemption request in a letter dated November 21, 1988, and noted in their safety evaluation report that,

"Therefore, the staff finds that the designs of these systems assure 1) a supply of high pressure water to penetrations 7, 15, 21, 23, 46, 60, 61, 62, and 113 for at least 30 days after the onset of a LOCA including a worst-case single active failure (e.g., a loss of a pump or diesel generator), and 2) a water seal of the subject valves thereby precluding containment atmosphere leakage through the closed valve disks. However, most of the subject valves are oriented in such a way that valve packing/stem leakage of each of the valves located outside containment is not precluded by this water seal, thus providing a potential leak path out of the containment. For all of these valves except the one in penetration 60, a water leg (pipe loop) exists between the valve and its penetration. For penetration 60, there is a horizontal run of pipe between the valve and its penetration which acts in a manner similar to a water leg. Considering 1) the presence of the water legs, 2) the fact that periodic Type C tests on all of the valves of concern include the possible packing/stem leak paths so that such leakage is maintained low, and 3) that the Surry subatmospheric containment is designed to reduce containment pressure below subatmospheric pressure one hour after the onset of a LOCA, significant packing/stem leakage is not likely...."

"Penetrations 66, 67, 68, and 69 are containment recirculation sump suction paths for the recirculation spray and safety injection pumps. The containment recirculation sump will be filled with water during a LOCA and will remain water filled throughout the accident. Therefore, the staff finds that the recirculation sump penetrations are not potential containment atmosphere leak paths..."

### Discussion

Virginia Power has reconsidered the need for Type C testing the valves associated with containment penetrations 7, 15, 21, 23, 46, 60, 61, 62, 66, 67, 68, 69, and 113. These valves 1) are not required to provide containment isolation during a DBA, 2) are associated with containment penetrations that are water-filled during a DBA and thus provide no credible leakage path to the atmosphere and 3) would be either maintained open or cycled in support of system operation during a DBA to facilitate accident mitigation and recovery.

Furthermore, American National Standard ANSI/ANS-56.8-1994, "Containment System Leakage Test Requirements," paragraph 3.3.1 states, "Primary containment boundaries not requiring Type B or Type C testing include: Boundaries that do not constitute potential primary containment atmospheric pathways during and following a DBA." The subject valves meet this criterion as affirmed in the SER quoted above.

As noted in the SER excerpt above, an adequate basis exists and has previously been accepted by the NRC that demonstrates that the subject penetrations are not subject to containment leakage during normal operation or a DBA. However, in the one-time exemption, the NRC credited Type C testing for ensuring that the valve packing/stem leakage was maintained low. Since we are no longer planning to Type C test the subject penetration valves, assurance of low packing/stem leakage must be demonstrated by other means. This assurance is provided through the performance of existing station procedures that require walkdowns of the subject valves/penetrations outside containment to assess leakage and to ensure that any identified leakage is maintained low (i.e., within procedural acceptance criteria and leakage limits specified in the UFSAR). If leakage from any component does not meet the procedural acceptance criteria limits, a priority work order is issued to address the component leakage. This approach adequately addresses the issue of valve packing/stem leakage and provides assurance that the subject valves are not likely to experience excessive packing/stem leakage in the event of a DBA.

Therefore, because the valves associated with the subject penetrations do not provide a containment isolation function and are not required to be Type C tested, they are being removed from the Appendix J Type C testing program and will no longer be considered containment isolation valves. The valves will continue to 1) be tested in accordance with the requirements of the station testing program to ensure that they are capable of performing their intended design function, and 2) be subjected to external leakage inspections in accordance with station procedures.

A revision to the UFSAR was prepared to document this change and has been approved by the Station Nuclear Safety and Operating Committee. The change will be provided to the NRC in a future revision of the UFSAR in accordance with the requirements of 10 CFR 50.71(e).

If you have any questions or require further information, please contact us.

Very truly yours,

A handwritten signature in cursive script, reading "David A. Christian".

David A. Christian  
Vice President - Nuclear Operations

Commitment Summary - There are no new commitments being made in this letter.

cc: U.S. Nuclear Regulatory Commission  
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Atlanta Federal Center  
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Mr. R. A. Musser  
NRC Resident Inspector  
Surry Power Station

**Attachment**

**Water-Filled Containment Penetrations and Associated Valves No Longer  
Subjected to Type C Testing  
Surry Power Station Units 1 and 2**

<u>Penetration Nos.</u>	<u>Valve Mark Nos.</u>	<u>Function</u>
7	1(2)-SI-150 01-SI-MOV-1867C and D 02-SI-MOV-2867C and D	HHSI to Cold Leg
15	1(2)-CH-309 01-CH-MOV-1289A 02-CH-MOV-2289A	Normal Charging
21	01-SI-MOV-1842 02-SI-MOV-2842	HHSI to Cold Leg
23	01-SI-MOV-1869B 02-SI-MOV-2869B	HHSI to Hot Legs
46	01-CH-FCV-1160 02-CH-FCV-2160	Loop Fill to Cold Legs
60	01-SI-MOV-1890A 02-SI-MOV-2890A	LHSI to Hot Legs
61	01-SI-MOV-1890C 02-SI-MOV-2890C	LHSI Pump Discharge to Cold Legs
62	01-SI-MOV-1890B 02-SI-MOV-2890B	LHSI Pump Discharge to Hot Leg
66, 67	01-RS-MOV-155A & B 02-RS-MOV-255A & B	Outside Recirculation Spray Pump Suction from Containment Sump
68, 69	01-SI-MOV-1860A & B 02-SI-MOV-2860A & B	LHSI Pump Suction From Containment Sump
113	1(2)-SI-174 01-SI-MOV-1869A 02-SI-MOV-2869A	HHSI to Hot Leg