

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

March 28, 2007

10CFR50.92

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

Serial No. 06-1117  
NL&OS/GDM R0  
Docket Nos. 50-280  
50-281  
License Nos. DPR-32  
DPR-37

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**SURRY POWER STATION UNITS 1 AND 2**  
**PROPOSED LICENSE AMENDMENT REQUEST**  
**CONTAINMENT SUMP INSPECTION SURVEILLANCE**  
**RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION**

In a letter dated October 3, 2006 (Serial No. 06-791), Virginia Electric and Power Company (Dominion) requested amendments, in the form of changes to the Technical Specifications (TS) to Facility Operating License Numbers DPR-32 and DPR-37 for Surry Power Station Units 1 and 2, respectively. The proposed amendment would revise the TS surveillance requirements related to inspection of the containment sump trash racks and screens, Inside Recirculation Spray (RS) pump wells, and Outside RS and Low Head Safety Injection (LHSI) pump suction inlets. The revised TS surveillance requirements are necessary to accommodate inspection of the new RS and LHSI strainer assemblies that are being installed as part of Dominion's resolution of the issues raised in NRC Generic Safety Issue 191 and Generic Letter 2004-02.

In a letter dated December 28, 2006, the NRC staff requested additional information to facilitate their review of the proposed license amendment. Dominion's response to the staff's request is included in the attachment.

The additional information provided herein does not affect the significant hazards consideration determination or environmental assessment that were previously provided in support of the proposed license amendment request.

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

Sincerely,



G. T. Bischof  
Vice President – Nuclear Engineering

Attachment

Response to NRC Request for Additional Information, Containment Sump Inspection Surveillance Requirements, License Amendment Request dated October 3, 2006 (Serial No. 06-791)

Commitments made in this letter: None

cc: U.S. Nuclear Regulatory Commission  
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COMMONWEALTH OF VIRGINIA    )  
  )  
COUNTY OF HENRICO            )

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Gerald T. Bischof, who is Vice President – Nuclear Engineering, 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 28<sup>TH</sup> day of March, 2007.

My Commission Expires: May 31, 2010.

Vicki L. Hull  
Notary Public

(SEAL)

**ATTACHMENT**

**Response to NRC Request for Additional Information**

**Containment Sump Inspection Surveillance Requirements  
License Amendment Request dated October 3, 2006 (Serial No. 06-791)**

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

**Response to NRC Request for Additional Information**  
**Containment Sump Inspection Surveillance Requirements**

**Surry Power Station Units 1 and 2**

In a letter dated October 3, 2006 (Serial No. 06-791), Virginia Electric and Power Company (Dominion) submitted a license amendment request that would revise the TS surveillance requirements related to inspection of the containment sump trash racks and screens, Inside Recirculation Spray (RS) pump wells, and Outside RS and Low Head Safety Injection (LHSI) pump suction inlets. The revised TS surveillance requirements are necessary to accommodate inspection of the new RS and LHSI strainer assemblies that are being installed as part of Dominion's resolution of the issues raised in NRC Generic Safety Issue 191 and Generic Letter 2004-02.

In a letter dated December 28, 2006, the NRC staff requested additional information to facilitate their review of the proposed license amendment. The NRC's questions and the associated Dominion responses are provided below.

1. *The language in the proposed Technical Specifications (TSs) 4.5.D and 4.11.C.5.c and their associated TS Basis discussions does not clearly identify the scope of these surveillance requirements. Specific components are referenced in the existing TSs 4.5.D and 4.11.C.5.c (i.e., pump wells, engineered safeguards suction inlets, containment sump, trash racks, and screens). The proposed TS change would replace these specific references with generic wording (i.e., containment sump components). The applicable TS Basis descriptions would also be modified to include the generic phrase "containment sump components," without identifying the specific components within the scope of the surveillance.*

*The Nuclear Regulatory Commission (NRC) staff considers it essential that the proposed TS surveillance requirements 4.5.D and 4.11.C.5.c and/or the associated TS Basis descriptions identify the specific components that are within the scope of the surveillance inspection to provide a clear and inspectable requirement. Please provide additional description within proposed TSs 4.5.D and 4.11.C.5.c and/or the associated TS Basis discussions to address the NRC staff's concern, or else provide justification for the adequacy of the generic wording of the proposed TS requirements and basis discussions in light of the discussion above.*

**Response**

The only components to inspect are the LHSI and the RS strainers. The trash racks and screens have been/will be removed since they are no longer required, and the IRS pump wells and engineered safeguards (ORS and LHSI) suction inlets are no longer open for inspection. Specifically, the IRS pump wells and the ORS and LHSI pumps' suction inlets have been hard-piped directly to their respective strainer assemblies; therefore, debris cannot enter these components because they are no longer open to the sump environment. Should these components need to be accessed in the future, they would be subject to procedurally required foreign

material exclusion (FME) controls just as any other plant component or system would be if it were opened for maintenance. Consequently, these components are no longer required to be referenced in the Surry TS. Also, the containment sump no longer provides a specific mitigation function such that it needs to be identified for inspection, since the strainers will provide the function previously provided by the sump.

Based on this understanding, the TS wording provided is considered reasonable as it specifies the "...low head safety injection containment sump components" and the "...recirculation spray containment sump components," for inspection, which consist of the LHSI strainer and RS strainer, respectively. The general criteria for inspection of these components is also provided, i.e., to ensure that they are not restricted by debris and that they show no evidence of structural distress or abnormal corrosion. Specific acceptance criteria for making these determinations would be appropriately contained in the station procedures used for performing the surveillances.

Furthermore, a precedent for the wording used in the Surry TS change request exists in that identical wording for the LHSI and RS containment sump component surveillances was used in a similar TS change request submitted for North Anna Power Station Units 1 and 2 and was approved by the NRC in their Safety Evaluation Report for License Amendment Nos. 250 and 230 dated March 13, 2007 (TAC NOS. MD3197 and MD3198.)

- 2. Please identify the scope of the proposed containment sump suction inlet periodic inspection required by TS 4.5.D, including a list of the components and/or structures covered by the inspections for potential debris restrictions, structural distress, and abnormal corrosion.*

*If the proposed requirement involves a reduction in the scope of the current surveillance inspection, then justification should also be provided to support the proposed reduction in inspection scope.*

### **Response**

As noted in the response to Question 1 above, the IRS pump wells, and the ORS pumps' suction inlets have been hard-piped directly to the RS strainer assembly; therefore, debris cannot enter these components because they are no longer open to the sump environment. Should these components need to be accessed in the future, they would be subject to procedurally required FME controls just as any other plant component or system would be if it were opened for maintenance. Consequently, these components are no longer required to be referenced in the Surry TS for inspection for debris.

- 3. Please identify the scope of the proposed containment sump suction inlet periodic inspection required by TS 4.11.C.5.c, including a list of the components and/or*

*structures covered by the inspections for potential debris restrictions, structural distress, and abnormal corrosion.*

*If the proposed requirement involves a reduction in the scope of the current surveillance inspection, then justification should also be provided to support the proposed reduction in inspection scope.*

### **Response**

As noted in the response to Question 1 above, the LHSI pumps' suction inlets have been hard-piped directly to their respective strainer assembly; therefore, debris cannot enter the suction inlets because they are no longer open to the sump environment. Should the suction inlets need to be accessed in the future, they would be subject to procedurally required FME controls just as any other plant component or system would be if it were opened for maintenance. Consequently, these components are no longer required to be referenced in the Surry TS.

- 4. The submittal states that, with one subsequent modification, the current containment sump surveillance requirements (i.e., TSs 4.5.D and 4.11.C.5.c) were implemented following the identification of debris in the sump and of degraded conditions associated with the sump that are documented in Licensee Event Report (LER) 88-017-01, dated November 7, 1988. However, the submittal does not provide an indication of whether the historical results of the current sump inspections support a reduction in frequency (i.e., deletion of the requirement for performing the inspection following major maintenance activities in containment). Therefore, the NRC staff requests additional information concerning the results of past containment sump inspections performed after the completion of clean up and modification activities associated with LER 88-017-01. Specifically, the NRC staff requests a description of the types and quantities of debris or foreign materials that have been found in the containment sumps and the presumed means by which the debris or foreign materials entered sumps.*

### **Response**

Station procedure 1/2-MPT-1205-01, *Unit One/Two Containment Sump Inspection and Test Setup*, provides the inspection requirements for the containment sump, as well as the setup and restoration of the IRS system for full flow recirculation tests. The procedure documents what, if any, debris was found in the LHSI and ORS pump suction inlets and/or the IRS pump suction wells. The procedure also specifies the FME controls that are required for the IRS pump test setup and restoration activities. This procedure was reviewed for the last five years for Surry Units 1 and 2 to determine whether any debris was found during the inspections, and, if so, the likely source of the debris. No debris of significance was found during the inspections (i.e., no items greater than 3/16".)

Furthermore, NRC Inspection Report Nos. 05000280/2006006 and 05000281/2006006, dated March 8, 2006, summarized the NRC's Component Design Bases Inspection (CDBI) completed at Surry Power Station on February 10, 2006. Section 2.1.2 of the inspection report entitled, *Low Head Safety Injection (LHSI) Containment Sump Suction*, states that the "Maintenance history, Plant Issue Reports (PIs), foreign material exclusion (FME) controls and design changes were reviewed to assess the potential for flowpath obstruction and material degradation...No findings of significance were identified."

5. *The TS Basis discussion for TS 4.5 indicates that flow tests are performed for the internal recirculation spray pumps through the installation of a temporary dike and physical modifications to the pump discharge piping. Please describe whether this flow test has previously resulted in debris entering the containment sumps and what level of verification is/will be performed following this test to ensure that no debris is present downstream of the screens/replacement strainers.*

### **Response**

As noted in the response to Question 4 above, station procedure 1/2-MPT-1205-01, *Unit One/Two Containment Sump Inspection and Test Setup*, provides the inspection requirements for the containment sump, as well as the setup and restoration of the IRS system for the IRS pump full flow recirculation test. The Unit 2 test setup/restoration procedure includes the following requirements to ensure that no debris or foreign material is present following the completion of the IRS pump tests. (The Unit 1 procedure contains similar requirements.)

- An Inspection Hold is included following the installation of the dike wall that is used in support of the IRS pump test just prior to system setup for the pump test. This Hold point is to verify that any debris and foreign material have been removed from the containment sump area inside the dike wall.
- Prior to installation of the spool pieces, flanges and strainers for flow testing the IRS pump, a procedural step requires the implementation of FME Control.
- A procedural step requires wrapping a protective FME cover over the open RS piping to the RS heat exchanger.
- An installed blind flange is removed from the test loop piping and a cone strainer is installed in the test line to capture any debris that could potentially be in the piping.
- Two RS strainer header sections are removed and header blank sections are installed.
- Ten test inlet plates are removed from the containment sump strainer header to facilitate flow testing, and the associated strainer screens are inspected to



ensure that there are no gaps greater than 0.0625 inches and no obvious blockage of the screen area. If any gaps greater than 0.0625 inches are identified, Engineering is contacted and repairs are made to correct any identified discrepancy. (Note that the 0.0625 inches refers to the new strainer assemblies. The previous sump screen gap/debris criterion was 3/16" and still applies to Unit 1.)

- Following completion of the IRS pump flow test, FME Control is again implemented for the removal of the test spool pieces, flanges and strainers and the restoration of the IRS piping to its normal configuration.
- The cone strainer is removed from the test header and inspected for any damage.
- The protective FME cover is removed from RS piping to the RS heat exchanger.
- The blind flange is reinstalled on the test loop piping to preclude any foreign material from entering the test loop piping when not in use.
- The blank panels are removed from the strainer headers and the header sections are reinstalled.
- An Inspection Hold requires the re-installation of the ten inlet header test panels that were previously removed.
- A final Inspection Hold requires the removal of all debris from the containment sump area and verification that all foreign material has been removed.

(Note that the Unit 1 and Unit 2 procedures currently differ with respect to the fact that the trash racks and screens have been removed and strainer assemblies have been partially installed in Unit 2, while the trash racks and screens are still installed in Unit 1. The Unit 1 trash racks and screens will be removed and strainer assemblies will be installed during the fall 2007 refueling outage.)

Based on the extensive FME control and inspection efforts included in the procedure, no debris or foreign material of significance [i.e.<0.0625" (Unit 2) or <3/16" (Unit 1)] should be present following the completion of the IRS pump flow tests. As noted in the response to Question 4 above, a review of the test procedures for the last five years for each unit confirms this conclusion.

6. *The NRC staff noted that the potential for dynamic effects associated with the strainer replacement modification was not specifically addressed in the submittal. In particular, the submittal noted that the trash rack will be removed and that the replacement strainer will be installed on the containment floor around the existing containment sump pit. The NRC staff seeks reasonable assurance that these planned modifications have been adequately evaluated with respect to the dynamic*

*effects of a piping rupture, including jet impingement, whipping pipes, and missile impacts. Please provide additional justification to demonstrate that the proposed strainer modification satisfies NRC requirements with respect to dynamic effects.*

**Response**

The RS and LHSI strainers are located in the basement annulus area of containment. Based on a review of piping in the containment basement, there are no high energy lines in the basement that would require the ECCS system to initiate the recirculation phase, thus requiring the operability of the strainers. The strainer assemblies are not located in areas that are subject to missiles or jet impingement. The new strainers are protected from the reactor coolant system (RCS) piping and components by the RCS missile barriers. The strainer assemblies are designed to withstand the force of full debris loading in conjunction with design basis conditions without collapse or structural damage.