VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 21, 2006

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

Serial No. 06-387A
SPS/LIC-CGL R1
Docket Nos. 50-280/281
License Nos. DPR-32/37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
PROPOSED TECHNICAL SPECIFICATIONS CHANGE
REVISION OF MAIN CONTROL ROOM AND EMERGENCY SWITCHGEAR ROOM AIR CONDITIONING SYSTEM REQUIREMENTS
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

By letter dated July 5, 2006 (Serial No. 06-387), Virginia Electric and Power Company (Dominion) requested amendments to Facility Operating License Numbers DPR-32 and DPR-37 for Surry Power Station Units 1 and 2. The proposed change will revise the Main Control Room (MCR) and Emergency Switchgear Room (ESGR) Air Conditioning System (ACS) Technical Specifications (TS) to reflect the completion of permanent modifications to the equipment and associated power supply configuration.

During an August 30, 2006 phone call with the NRC staff to discuss the proposed TS change, the staff requested additional information pertaining to the electrical loading associated with the MCR and ESGR ACS modifications reflected in the TS change request. As part of that discussion, Dominion explained that the permanent modifications to the MCR and ESGR ACS were completed by the mid-1990s and that TS Amendments 182/182, approved September 1, 1993, considered the permanent modifications (i.e., replacement of AHUs, addition of two safety-related chillers, and changes in power supply configuration). Although the TS change request that was approved by TS Amendments 182/182 did not specifically include electrical loading information, the electrical loading associated with the permanent modifications completed was satisfactorily controlled by the Dominion design change process. The attachment provides information in response to the NRC request.

Also discussed during the August 30, 2006 phone call, the NRC Region II Component Design Bases Inspection was conducted at Surry from January 9 to February 10, 2006, and reviewed the MCR and ESGR ACS. Inspection Report 05000280/2006006 and 05000281/2006006, dated March 8, 2006, concluded that no findings of significance were identified with respect to this aspect of the inspection and stated the following:

"The team reviewed chiller specifications, vendor technical manuals, documentation of chiller condenser service water pump 1-VS-P-1A and chilled water pump 1-VS-P-2A in-service testing, system performance analyses, and maintenance of chiller equipment to verify this equipment was capable of removing design heat loads for the control room and emergency switchgear equipment spaces. This included service water flow to the chiller condensers, chilled water flow to the air handling units (AHUSs), unit fan capacity, and chiller performance testing. Additionally, chiller design changes, maintenance, and corrective action histories were reviewed to assess potential degradation of design margin or performance capability. This included the potential impact on electrical loading and system protective features due to installation of additional chiller units. The team reviewed the potential for common cause failure mechanisms associated with loss of chilled water or service water flow including rotating strainer, Y-strainer, and other potential flow path blockage or degradation."

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

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

Very truly yours,

Gerald T. Bischof
Vice President – Nuclear Engineering

Attachment: Response to Request for Additional Information - Impact of MCR and ESGR ACS Modifications on the Electrical Distribution System

Commitments made in this letter: None

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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 21st day of September, 2006.

My Commission Expires: May 31, 2010.

Vicki L. Hull
Notary Public

(SEAL)

Attachment

Proposed Technical Specifications Change
Revision of Main Control Room and Emergency Switchgear Room Air Conditioning System Requirements

Response to Request for Additional Information
Impact of MCR and ESGR ACS Modifications on the Electrical Distribution System

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

Response to Request for Additional Information
Impact of the MCR and ESGR ACS Modifications
on the Electrical Distribution System

Introduction/Request for Additional Information

An August 30, 2006 phone call was held between the NRC staff and Dominion to discuss the staff's request for additional information with respect to the impact of the MCR and ESGR ACS modifications on the onsite EDG loading, the offsite loading, and the alternate AC power system. The staff's inquiry also requested voltage drop, short circuits, cable size, and breaker settings, as well as supporting calculations and a single line diagram.

As part of that discussion, Dominion stated that the TS change request, submitted July 5, 2006 (by letter Serial No. 06-387), reflects earlier completion of permanent modifications to the MCR and ESGR ACS. It was explained that the permanent modifications were completed by the mid-1990s and that TS Amendments 182/182, approved September 1, 1993, considered the permanent modifications (i.e., replacement of AHUs, addition of two safety-related chillers, and changes in power supply configuration). Although the TS change request that was approved by TS Amendments 182/182 did not specifically include electrical loading information, the electrical loading associated with the permanent modifications was satisfactorily controlled by the Dominion design change process. The following information is provided in response to the NRC request.

Response to Request for Additional Information

In the 1986 to 1988 time frame, the A, B, and C chillers were replaced with the same model number compressors. The nameplate data for the original chillers was 120 amps, and the nameplate data for the replacement chillers was 160 amps (full load amps (FLA)), with 750 amps (lock rotor amps (LRA)). The running load was reflected as 111.90 KW and 127.16 KVA, based on the replacement chiller nameplate data. This electrical load increase was evaluated at that time and was determined to be acceptable. In the 1993 to 1994 time frame, the D and E chillers were added, and the A, B, and C chillers were repowered for additional operational flexibility and to provide redundancy for maintenance. The nameplate data for the D and E chillers was 178 amps (FLA), with 860 amps (LRA). The running load was reflected as 123.40 KW and 141.82 KVA, based on nameplate data. This electrical load increase was evaluated at that time and was determined to be acceptable. Additionally, in the 1990 to 1991 time frame, the eight 10 HP MCR and ESGR AHUs were replaced - six of the eight were replaced with higher HP motors (two with 15 HP and four with 20 HP). The running load for the 20 HP units was 17.53 KW and 19.92 KVA, for the 15 HP units was 14.02 KW and 15.93 KVA, and for the 10 HP units was 9.81 KW and 11.15 KVA, based on nameplate data. Consistent with the design control program, the electrical load increase for the higher HP motors was evaluated at that time and was determined to be acceptable.

Since 1994, the plant equipment and actual loading has not changed, however, an assumption in the loading calculation has changed. Prior to 2000, it was assumed that two chillers would be operating during accident scenarios. In 2000, it was determined that under certain accident scenarios, assuming the worst case single failure, there may only be one chiller available. In-plant testing was performed in the 2002 to 2004 time frame to measure chiller parameters at a heat load considered to be bounding for normal unit operation and single chiller accident conditions. Actual test data was used to determine worst case loading for the equipment and has since been used as the electrical loading values for the electrical loading calculations. The following values are currently being used for electrical loading:

- A, B, and C chillers = 105.24 KW and 119.59 KVA (based on worst case single chiller operations)

- D and E chillers = 124.73 KW and 141.74 KVA (based on worst case single chiller operations)

- The loading for the AHUs has not changed since installation of the new AHUs

Following completion of the single chiller testing, a Breaker and Cable Sizing Calculation was performed to validate the adequacy of the breakers and cables for the A, B, C, D and E chillers (and their auxiliary loads) for single chiller operating conditions. Measured load data taken during single chiller testing (for A, B, C, and E chillers) has been documented in this calculation. The D and E chillers have identical compressors and auxiliary pumps, so the E chiller data is applicable to the D chiller. This calculation evaluates the suitability of installed equipment under degraded voltage conditions. The calculation demonstrates that breakers and cables for the A, B, C, D, and E chillers (and their associated auxiliary loads) are acceptable for the single chiller operation mode. The sizing of the breaker and cable that serve as the alternate power feed to the D or E chiller (both located in MER-5) from the alternate AC diesel for the Unit 2 ESGR Appendix R scenario was reviewed and determined to be acceptable. The calculation also included voltage drop determinations from the motor control centers (MCCs) to the loads. Since the chiller distribution circuit components are acceptable for the single chiller operation mode, the two chiller operation mode is also acceptable (since individual chiller loading is less with two chillers operating).

The Station Electrical Load List Calculation and the Emergency Diesel Load Calculation were also updated with the loading values for the A, B, C, D and E chillers, following completion of the single chiller testing. These loading values are considered conservative, since each of the emergency buses is analyzed with a chiller operating in the single chiller operation mode. If more than one chiller is operating, the individual loading on each chiller will be less. Chiller loading under all operating scenarios has been evaluated to be acceptable and within the capabilities of the emergency diesel generators and the MCCs.

The Surry Voltage Profile Calculation was revised in 1994 to include the D and E chillers. The Surry offsite voltage profiles assume that there is a chiller operating on each of four emergency buses. There are currently only two chillers operating under normal conditions on any two emergency buses. The results of the calculation were acceptable. The Surry Voltage Profile Calculation models the chillers based on loading from the Station Electrical Load List Calculation. The Station Electrical Load List Calculation has been updated to reflect measured chiller electrical loading. The load modeled in the Surry Voltage Profile Calculation is adequate for emergency buses 1H and 2J. While the loading for the chillers supplied from emergency buses 1J and 2H is lower than the measured values, this difference is insignificant and is adequately bounded by conservative modeling of other loads. Further, a small addition of running, non-starting, load does not have a significant impact on the calculation results.

The Safety-Related 480-Volt Load Center Coordination Calculation verified proper coordination between the chiller feeder circuit breakers and the 480-volt load center circuit breakers.

The new MCCs installed in the 1993 to 1994 time frame, which power the A, B, D and E chillers, have a bus bar bracing rating of 42 KA, and the branch circuit breakers have a short circuit rating of 25 KA. The power source for the C chiller was not changed. Based on the fault current at the source of power feeding the new MCCs, the worst case fault current on these MCCs is 19,808 amps, which is within the rating of the equipment.

Conclusion

As detailed above, the impact on the Electrical Distribution System, including the electrical loading, as a result of the permanent MCR and ESGR ACS modifications (completed by the mid-1990s and reflected in our July 5, 2006 TS change request) was satisfactorily controlled by the Dominion design change process and is determined to be acceptable.