

April 2, 2007

Mr. David A. Christian
Senior Vice President
and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: SURRY POWER STATION, UNIT NOS. 1 AND 2, ISSUANCE OF
AMENDMENTS REGARDING MAIN CONTROL ROOM AND EMERGENCY
SWITCHGEAR ROOM AIR CONDITIONING SYSTEM (TAC NOS. MD2501
AND MD2502)

Dear Mr. Christian:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 252 to Renewed Facility Operating License No. DPR-32 and Amendment No. 251 to Renewed Facility Operating License No. DPR-37 for the Surry Power Station, Unit Nos. 1 and 2, respectively. The amendments change the Technical Specifications (TSs) in response to your application dated July 5, 2006, as supplemented by letters dated September 21 and November 20, 2006.

These amendments revise the main control room and emergency switchgear room air conditioning system TSs to reflect the completion of permanent modifications to the equipment and associated power supply configurations.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Siva P. Lingam, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-280 and 50-281

Enclosures:

1. Amendment No. 252 to DPR-32
2. Amendment No. 251 to DPR-37
3. Safety Evaluation

cc w/encls: See next page

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VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-280

SURRY POWER STATION, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 252

Renewed License No. DPR-32

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Virginia Electric and Power Company (the licensee) dated July 5, 2006, as supplemented by letters dated September 21 and November 20, 2006, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Renewed Facility Operating License No. DPR-32 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 252, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. DPR-32
and the Technical Specifications

Date of Issuance: April 2, 2007

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-281

SURRY POWER STATION, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 251
Renewed License No. DPR-37

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Virginia Electric and Power Company (the licensee) dated July 5, 2006, as supplemented by letters dated September 21 and November 20, 2006, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Renewed Facility Operating License No. DPR-37 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 251, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes License No. DPR-37
and the Technical Specifications

Date of Issuance: April 2, 2007

ATTACHMENT

TO LICENSE AMENDMENT NO. 252

RENEWED FACILITY OPERATING LICENSE NO. DPR-32

DOCKET NO. 50-280

AND

TO LICENSE AMENDMENT NO. 251

RENEWED FACILITY OPERATING LICENSE NO. DPR-37

DOCKET NO. 50-281

Replace the following pages of the Licenses and the Appendix A Technical Specifications (TSs) with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

License

License No. DPR-32, page 3
License No. DPR-37, page 3

TSs

3.23-1
3.23-2
3.23-3
3.23-4
-
3.10-4
3.10-4a
3.10-6
3.14-2
3.14-3

Insert Pages

License

License No. DPR-32, page 3
License No. DPR-37, page 3

TSs

3.23-1
3.23-2
3.23-3
3.23-4
3.23-5
3.10-4
3.10-4a
3.10-6
3.14-2
3.14-3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 252 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-32

AND

AMENDMENT NO. 251 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-280 AND 50-281

1.0 INTRODUCTION

By letter dated July 5, 2006 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML061860730), as supplemented by letters dated September 21 (ADAMS Accession No. ML062650200) and November 20, 2006 (ADAMS Accession No. ML063250180), Virginia Electric and Power Company (the licensee) submitted a request for changes to the Surry Power Station, Unit Nos. 1 and 2 (Surry 1 and 2), Technical Specifications (TSs). The requested changes would revise the main control room (MCR) and emergency switchgear room (ESGR) air conditioning system (ACS) TSs to reflect the completion of permanent modifications to the equipment and associated power supply configurations.

The licensee submitted the application for an amendment to the plants' TSs due to recently completed plant modifications and calculation reviews. These plant modifications and calculation reviews resulted in lower heat loads for the MCR pressure envelope. In brief, the proposed amendments to the TSs: (1) reflect single failure issues, (2) allow greater operational flexibility in the event two air handling units (AHUs) are out of service, (3) add MCR and ESGR ACS requirements during refueling operations and irradiated fuel movement in the fuel building, and (4) add clarity to the existing TSs.

The purpose of the Nuclear Regulatory Commission (NRC) staff's review is to evaluate the licensee's assessment of the impact of the proposed TS changes on design-basis analyses. The NRC staff evaluated the licensee's application and supplements.

The licensee's supplements dated September 21 and November 20, 2006, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on September 26, 2006 (71 FR 56193).

2.0 REGULATORY EVALUATION

The regulatory requirements which the NRC staff applied in its review of the application include:

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix A, General Design Criteria (GDC) 4, "Environmental and dynamic effects design bases," requires in part that structures, systems, and components (SSCs) important to safety be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents.

GDC 5, "Sharing of structures, systems, and components [SSCs]," requires that SSCs important to safety not be shared among nuclear power units unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units.

NUREG-1431, "Standard Technical Specifications Westinghouse Plants," TS 3.7.11 specifies the limiting conditions for operation (LCO) for the control room emergency air temperature control system during movement of [recently] irradiated fuel assemblies.

GDC 17, "Electric power systems," requires, in part, that nuclear power plants have an onsite and offsite electric power system to permit the functioning of SSCs important to safety. The onsite system is required to have sufficient independence, redundancy and testability to perform its safety function, assuming a single failure, and the offsite system is required to be supplied by two independent circuits. In addition, this criterion requires provisions to minimize the probability of losing electric power from the remaining electric power supplies as the result of loss of power from the unit, the offsite transmission network, or the onsite power supplies.

GDC-18, "Inspection and testing of electric power systems," requires that electric power systems that are important to safety must be designed to permit appropriate periodic inspection and testing.

Section 50.36, "Technical specifications," requires licensees to establish LCO and surveillance requirements (SR) for equipment that is required for safe operation of the facility. Specifically, Section 50.36(c)(3) stipulates the SR.

3.0 TECHNICAL EVALUATION

3.1 Synopsis of Technical Specification Changes

Recent plant modifications and calculation reviews performed by the licensee resulted in a lower heat load for the MCR and ESGR. Replacement of the plant computer system and associated electrical equipment reduced the actual heat load by several tons. The combination of the actual and calculated reductions in heat loads, as well as the higher-capacity AHUs, once again permit normal operation with one chiller and four AHUs to satisfy the cooling requirements of the MCR pressure envelope. The envelope consists of four zones: 1) the Unit 1 side of the control room (including the Unit 1 air conditioning equipment and computer rooms), 2) the Unit 2 side of the control room (including the annex area, the Unit 2 air

conditioning equipment and computer rooms), 3) the Unit 1 ESGR and relay room (referred to as the Unit 1 ESGR), and 4) the Unit 2 ESGR and relay room (including mechanical equipment room -3 (MER-3)), referred to as the Unit 2 ESGR.

The proposed change revises the MCR and ESGR ACS portion of TS 3.23 to reflect the completion of permanent modifications to the equipment and associated power supply configuration and deletes the interim specification footnote. No changes to the chiller requirements and action statements are needed. Requirements and action statements are added in TS 3.23 for AHUs, addressing 1) inoperability of two or more AHUs on a unit, and 2) AHUs powered from an H emergency bus. The proposed change also adds MCR and ESGR ACS requirements during refueling operations and irradiated fuel movement in the fuel building in TS 3.10 to parallel requirements in the Improved Standard Technical Specifications (ISTSS).

3.2 Technical Specification 3.23.C.1 – Footnote

The licensee proposes to delete the footnote associated with TS 3.23.C.1 which reads:

- * This interim specification is necessary until the air conditioning system modifications are completed. Following completion of the permanent modifications, a revised air conditioning system specification will be submitted.

This footnote was added to TS 3.23.C.1 with the issuance of Amendment Numbers 129 to both DPR-32 and DPR-37, dated May 30, 1989. The issuance of these amendments was predicated on the premise that permanent modifications to the ACS would be implemented in Surry 1 and 2. At that point in time, a revised ACS TS would be submitted.

The NRC staff acknowledges that permanent modifications to the ACS have been implemented and finds the deletion of this footnote to TS 3.23.C.1 acceptable.

3.3 Technical Specifications 3.23.C.2.a and 3.23.C.2.b

TS 3.23.C.2 reads currently as:

2. Air Handling Units (AHUs)
 - a. Unit 1 air handling units, 1-VS-AC-1, 1-VS-AC-2, 1-VS-AC-6, and 1-VS-AC-7, must be OPERABLE whenever Unit 1 is above COLD SHUTDOWN.
 1. If one Unit 1 AHU becomes inoperable, return the inoperable AHU to OPERABLE status within seven (7) days or bring Unit 1 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
 - b. Unit 2 air handling units, 2-VS-AC-8, 2-VS-AC-9, 2-VS-AC-6, and 2-VS-AC-7 must be OPERABLE whenever Unit 2 is above COLD SHUTDOWN.

1. If one Unit 2 AHU becomes inoperable, return the inoperable AHU to OPERABLE status within seven (7) days or bring Unit 2 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.

The licensee proposes to revise TS 3.23.C.2 to include action statements for inoperability of two or more AHUs. The amended TS 3.23.C.2 will read:

2. Air Handling Units (AHUs)

- a. Unit 1 air handling units, 1-VS-AC-1, 1-VS-AC-2, 1-VS-AC-6, and 1-VS-AC-7 must be OPERABLE whenever Unit 1 is above COLD SHUTDOWN.
 1. If either any single Unit 1 AHU or two Unit 1 AHUs on the same chilled water loop (1-VS-AC-1 and 1-VS-AC-7 or 1-VS-AC-2 and 1-VS-AC-6) become inoperable, restore operability of the one inoperable AHU or two inoperable AHUs within seven (7) days or bring Unit 1 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
 2. If two Unit 1 AHUs on different chilled water loops and in different air conditioning zones (1-VS-AC-1 and 1-VS-AC-6 or 1-VS-AC-2 and 1-VS-AC-7) become inoperable, restore operability of the two inoperable AHUs within seven (7) days or bring Unit 1 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
 3. If two Unit 1 AHUs in the same air conditioning zone (1-VS-AC-1 and 1-VS-AC-2 or 1-VS-AC-6 and 1-VS-AC-7) become inoperable, restore operability of at least one Unit 1 AHU in each air conditioning zone (1-VS-AC-1 or 1-VS-AC-2 and 1-VS-AC-6 or 1-VS-AC-7) within one (1) hour or bring Unit 1 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
 4. If more than two Unit 1 AHUs become inoperable, restore operability of at least one Unit 1 AHU in each air conditioning zone (1-VS-AC-1 or 1-VS-AC-2 and 1-VS-AC-6 or 1-VS-AC-7) within one (1) hour or bring Unit 1 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
- b. Unit 2 air handling units, 2-VS-AC-8, 2-VS-AC-9, 2-VS-AC-6, and 2-VS-AC-7, must be OPERABLE whenever Unit 2 is above COLD SHUTDOWN.
 1. If either any single Unit 2 AHU or two Unit 2 AHUs on the same chilled water loop (2-VS-AC-7 and 2-VS-AC-9 or 2-VS-AC-6 and 2-VS-AC-8)

become inoperable, restore operability of the one inoperable AHU or two inoperable AHUs within seven (7) days or bring Unit 2 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.

2. If two Unit 2 AHUs on different chilled water loops and in different air conditioning zones (2-VS-AC-7 and 2-VS-AC-8 or 2-VS-AC-6 and 2-VS-AC-9) become inoperable, restore operability of the two inoperable AHUs within seven (7) days or bring Unit 2 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
3. If two Unit 2 AHUs in the same air conditioning zone (2-VS-AC-8 and 2-VS-AC-9 or 2-VS-AC-6 and 2-VS-AC-7) become inoperable, restore operability of at least one Unit 2 AHU in each air conditioning zone (2-VS-AC-8 or 2-VS-AC-9 and 2-VS-AC-6 or 2-VS-AC-7) within one (1) hour or bring Unit 2 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
4. If more than two Unit 2 AHUs become inoperable, restore operability of at least one Unit 2 AHU in each air conditioning zone (2-VS-AC-8 or 2-VS-AC-9 and 2-VS-AC-6 or 2-VS-AC-7) within one (1) hour or bring Unit 2 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.

Amended TS 3.23.C.2.a would apply to Unit 1 AHUs while amended TS 3.23.C.2.b would apply to Unit 2 AHUs. These two TSs parallel each other due to the symmetry of the redundant loops with respect to chilled water supplies, areas served, and back-up emergency power supplies. Therefore, the technical and regulatory evaluations for the changes of both TS 3.23.C.2.a and TS 3.23.C.2.b will be analyzed in parallel.

Technical and Regulatory Evaluation:

The licensee's proposed change revises the MCR and ESGR ACS AHUs portion of TS 3.23 to specify conditions and allowed outage times for one or more AHUs out of service.

The NRC staff reviewed both Unit's proposed conditions of inoperability stipulated in both TS 3.23.C.2.a and TS 3.23.C.2.b. The NRC staff reviewed the impact on loss of redundancy of safety-related cooling capacity for the four air conditioning zones that comprise the control room pressure envelope. This consisted of a review of the design requirements as set forth in the licensee's docketed correspondence supporting the license amendment request (ADAMS Accession Nos. ML061860730, ML062650200 and ML063250180). The NRC staff reviewed the allowed outage times (AOTs) for the restoration of inoperable AHUs against the relevant AOTs of "Standard Technical Specifications Westinghouse Plants" (i.e., NUREG-1431) and against Amendment No. 182 to Facility Operating License Number DPR-32 and Amendment No. 182 to Facility Operating License Number DPR-37 (ADAMS Accession Nos. ML0127400371 and ML0127400911).

Conditions 1 and 2 of TS 3.23.C.2.a and TS 3.23.C.2.b, which have 7-day AOTs, are acceptable because there is redundant AHU capability in each of the four air conditioning

zones. The loss of redundancy of safety-related cooling capacity is acceptable for the period of time (i.e., 7 days) because adequate backup safety-related cooling capacity exists to maintain the control room pressure envelope air temperature within design limits for continued plant operations. The licensee's inability to restore the initial loss of redundancy (i.e., conditions 1 and 2) within 7 days will result in the applicable Unit being brought into HOT SHUTDOWN within the next 6 hours and placed in COLD SHUTDOWN within 30 hours. These proposed TS changes are bounded by the LCO requirements of LCO 3.7.11 contained in "Standard Technical Specifications Westinghouse Plants" (i.e., NUREG-1431). Based on this, the NRC staff finds appropriate the proposed TS changes for Conditions 1 and 2 of TS 3.23.C.2.a and TS 3.23.C.2.b.

Conditions 3 and 4 of TS 3.23.C.2.a and TS 3.23.C.2.b, which have 1-hour AOTs, are reasonable since there would be no redundant AHU capacity for one or more of the air conditioning zones. The loss of cooling from two AHUs in the same air conditioning zone on either Unit or the loss of cooling from two or more AHUs on either Unit places the respective Unit outside its design bases with respect to the capability of maintaining the temperature of the control room pressure boundary within design limits. Restoring operability of the inoperable AHU(s) on the respective unit within 1 hour or bringing the respective Unit to HOT SHUTDOWN within the next 6 hours and being in COLD SHUTDOWN within the next 30 hours parallels the LCO requirements of LCO 3.0.3 contained in "Standard Technical Specifications Westinghouse Plants" (i.e., NUREG-1431).

The proposed changes of TS 3.23.C.2.a and TS 3.23.C.2.b provide reasonable assurance that an AHU will be available to provide cooling to each of the four air conditioning zones of the pressure envelope or that timely action will be taken to bring the plant to an orderly shutdown. As such the NRC staff finds the proposed changes acceptable with no impact on public health and safety.

Based on these conclusions, the NRC staff finds the changes to TS 3.23.C.2.a and TS 3.23.C.2.b acceptable.

3.4 Technical Specification 3.23.C.2.c

Currently TS 3.23.C.2 does not contain a subpart 3.23.C.2.c. The licensee proposes to revise TS 3.23.C.2 to include a subpart 3.23.C.2.c with action statements for AHUs powered from an H emergency bus. The amended TS 3.23.C.2.c will read:

- c. Both Unit 1 AHUs or both Unit 2 AHUs powered from the respective H buses (1-VS-AC-1 and 1-VS-AC-7 or 2-VS-AC-6 and 2-VS-AC-8) must be OPERABLE whenever both units are above COLD SHUTDOWN.
 - 1. If one or two AHUs on each unit powered from an H bus is inoperable, restore operability of the inoperable AHU(s) on one unit within one (1) hour or bring both units to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the next 30 hours.

Technical and Regulatory Evaluation:

From the application of July 5, 2006 the licensee submits (Ref. Attachment 1, page 8) that:

“The requirements and action statements for the AHUs powered from an H emergency bus eliminate the potential for complex operator actions in certain instances of two inoperable AHUs. The swing [emergency diesel generator] EDG can supply either J bus, but not both. With an AHU powered from the H bus inoperable on each unit, a [design basis accident] DBA with a [loss of offsite power] LOOP and no single failure would result in one air conditioning zone with no AHU available. In this case, in order to ensure power is available to an AHU in each air conditioning zone, operators would have to procedurally realign the swing diesel and cross-connect emergency buses. By prohibiting the simultaneous inoperability of an H-bus powered AHU on each unit, cross-connect of the emergency buses will not be necessary. Realignment of the swing diesel is still required, and procedures direct the operators to realign the swing EDG (from the MCR) as necessary to ensure that there is an operating AHU in the MCR and ESGR air conditioning zones of each unit.”

The NRC staff evaluated the licensee’s proposed change, the reason for the change, and the LCO proposed for when both Surry Units are above COLD SHUTDOWN. The NRC staff also evaluated for each unit the LCO introduced by the conditions stipulated in TS 3.23.C.2.c. The emergency bus 1H, 2H, 1J and 2J configurations with respect to the Surry 1 and 2 MCR and ESGR AHUs are displayed on the system overview diagram contained in the application of July 5, 2006 (i.e. Attachment 1, last page). The LCO and condition were evaluated for their impact on loss of redundancy of safety-related cooling capacity for the four areas that comprise the control room pressure envelope. The licensee submits, “with an AHU powered from the H bus inoperable on each unit, a design basis accident with a LOOP and no single failure would result in one air conditioning zone with no AHU available.” Thus, the loss of cooling from one or two AHUs on each Unit places both plants outside their design bases with respect to maintaining the temperature of the control room pressure boundary within design limits. Restoring operability of the inoperable AHU(s) on one Unit within 1 hour or bringing both Units to HOT SHUTDOWN within the next 6 hours and being in COLD SHUTDOWN within the next 30 hours parallels the LCO requirements of LCO 3.0.3 contained in “Standard Technical Specifications Westinghouse Plants” (i.e., NUREG-1431). Based on this, the NRC staff finds the LCO of TS 3.23.C.2.c appropriate.

The proposed change provides reasonable assurance that effective action would be taken in the 1 hour to restore the AHU to operability or begin an orderly shutdown. As such, the NRC staff finds that the proposed change is acceptable.

3.5 Technical Specification 3.10.A

The licensee proposes to add TS 3.10.A.13 and TS 3.10.A.14 for MCR and ESGR ACS chillers and AHUs during REFUELING OPERATIONS:

- A.13 Three chillers shall be OPERABLE in accordance with the power supply requirements of Specification 3.23.C. With one of the required OPERABLE chillers inoperable or not powered as required by Specification 3.23.C.1, return the inoperable chiller to OPERABLE status within 7 days or comply with Specification 3.10.C. With two of the required OPERABLE chillers inoperable or not powered as required by Specification 3.23.C.1, comply with Specification 3.10.C.

- A.14 Eight air handling units (AHUs) shall be OPERABLE in accordance with the operability requirements of Specification 3.23.C. With two AHUs inoperable on the shutdown unit, ensure that one AHU is OPERABLE in each unit's main control room and emergency switchgear room, and restore an inoperable AHU to OPERABLE status within 7 days, or comply with Specification 3.10.C. With more than two AHUs inoperable, comply with Specification 3.10.C.

Technical and Regulatory Evaluation:

The licensee's proposed changes add to TS 3.10 LCO requirements for the MCR and ESGR ACS during refueling operations. The proposed changes parallel conditions and actions of the ISTS per NUREG-1431 (i.e. TS 3.7.11).

The NRC staff reviewed the proposed additions of TS 3.10.A.13 and TS 3.10.A.14 for their impact on loss of redundancy of safety-related cooling capacity for the four areas that comprise the control room pressure envelope. Also reviewed were the AOTs for restoration of inoperable MCR and ESGR ACS chillers and AHUs. The loss of redundancy of safety-related cooling capacity is acceptable for the period of time (i.e., 7 days) because adequate backup safety-related cooling capacity exists to maintain the control room pressure envelope air temperature within design limits while refueling operations continue. Additional losses of safety-related cooling capacity or the licensee's inability to restore the initial loss of redundancy within 7 days will result in the cessation of refueling operations. The NRC staff finds these actions appropriate. Furthermore, the proposed TS changes are bounded by the LCO requirements of LCO 3.7.11 contained in "Standard Technical Specifications Westinghouse Plants" (i.e., NUREG-1431). Based on this, the NRC staff finds acceptable the proposed TS changes of TS 3.10.A.13 and TS 3.10.A.14.

The proposed changes provide reasonable assurance that there will be chiller units and AHUs available for each of the four air conditioning zones (i.e. areas) that comprise the control room pressure envelope. As such, the NRC staff finds the proposed changes acceptable.

3.6 Technical Specification 3.10.B

The licensee proposes to add TS 3.10.B.6 and TS 3.10.B.7 for MCR and ESGR ACS chillers and AHUs during irradiated fuel movement in the Fuel Building:

- B.6 Three chillers shall be OPERABLE in accordance with the power supply requirements of Specification 3.23.C. With one of the required OPERABLE chillers inoperable or not powered as required by Specification 3.23.C.1, return the inoperable chiller to OPERABLE status within 7 days or comply with Specification 3.10.C. With two of the required OPERABLE chillers inoperable or not powered as required by Specification 3.23.C.1, comply with Specification 3.10.C.
- B.7 Eight air handling units (AHUs) shall be OPERABLE in accordance with the operability requirements of Specification 3.23.C. With two AHUs inoperable on either unit, ensure that one AHU is OPERABLE in each unit's main control room and emergency switchgear room, and restore an inoperable AHU to OPERABLE

status within 7 days, or comply with Specification 3.10.C. With more than two AHUs inoperable on a unit, comply with Specification 3.10.C.

Technical and Regulatory Evaluation:

The proposed changes add to TS 3.10 LCO requirements for the MCR and ESGR ACS during irradiated fuel movement in the fuel building. The proposed changes parallel conditions and actions of ISTS per NUREG-1431 (i.e. TS 3.7.11).

The NRC staff reviewed the proposed additions of TS 3.10.B.6 and TS 3.10.B.7 for consistency with "Standard Technical Specifications Westinghouse Plants" (i.e., NUREG-1431). TS 3.10.B.6 and TS 3.10.B.7 were reviewed for their impact on loss of redundancy of safety-related cooling capacity for the four areas that comprise the control room pressure envelope. Also reviewed were the AOTs for restoration of inoperable MCR and ESGR ACS chillers and AHUs. The loss of redundancy of safety-related cooling capacity is acceptable for the period of time (i.e., 7 days) because adequate backup safety-related cooling capacity exists to maintain the control room pressure envelope air temperature within design limits while irradiated fuel movement continues in the fuel building. Additional losses of safety-related cooling capacity or the licensee's inability to restore the initial loss of redundancy within 7 days will result in the cessation of irradiated fuel movement in the fuel building. The NRC staff finds these actions appropriate. Furthermore, the proposed TS changes are bounded by the LCO requirements of LCO 3.7.11 contained in "Standard Technical Specifications Westinghouse Plants" (i.e., NUREG-1431). Based on this, the NRC staff finds acceptable the proposed TS changes of TS 3.10.B.6 and TS 3.10.B.7.

The proposed changes provide reasonable assurance that there will be chiller units and AHUs available for each of the four air conditioning zones (i.e. areas) that comprise the control room pressure envelope. As such, the NRC staff finds the proposed changes acceptable.

3.7 Technical Specification 3.10.C

TS 3.10.C currently states:

- C. If any one of the specified limiting conditions for refueling is not met, REFUELING OPERATIONS or irradiated fuel movement in the Fuel Building shall cease, work shall be initiated to correct the conditions so that the specified limit is met, and no operations which increase the reactivity of the core shall be made.

TS 3.10.C is revised as follows:

- C. If any one of the specified limiting conditions for refueling is not met, REFUELING OPERATIONS or irradiated fuel movement in the Fuel Building shall cease and irradiated fuel shall be placed in a safe position, work shall be initiated to correct the conditions so that the specified limit is met, and no operations which increase the reactivity of the core shall be made.

Technical and Regulatory Evaluation:

The NRC staff notes that the total scope of the licensee's proposed change is the addition of the words "and irradiated fuel shall be placed in a safe position". Thus the change permits continued operation until irradiated fuel reaches a safe position and enhances safety. As such, the NRC staff finds this change acceptable.

3.8 Technical Specification 3.14.C

TS 3.14 is being revised to delete TS 3.14.C (service water (SW) requirements for MCR and ESGR chiller condensers), to add TS 3.14.A.7 (SW requirements for MCR and ESGR chiller condensers), and to revise the references to TS 3.14.C in TS 3.14.D accordingly.

This will clarify the ACS SW requirements and improve consistency with TS 3.14.A. The licensee proposed TS 3.14.A.7 states:

- 3.14.A.7 Two service water flow paths to the main control room and emergency switchgear room air conditioning subsystems are OPERABLE.

Technical and Regulatory Evaluation:

The scope of the change relocates within TS 3.14 support requirements of the SW system for the MCR and ESGR air conditioning subsystems. The proposed change does not remove any existing TS requirements nor add any new TS requirements. The change adds clarity to the existing TS 3.14.C.

As such, the NRC staff finds the proposed change acceptable.

3.9 Evaluation of Impact on the Electrical Distribution System

The licensee, in its initial submittal dated July 5, 2006, requested to revise the MCR and ESGR ACS TSs to reflect permanent modifications to the equipment and associated power supply configurations. The licensee's initial submittal did not provide a discussion regarding the impact of the MCR and ESGR ACS modification on onsite, offsite and alternate ac power systems. On September 21, 2006, the licensee provided a response to the NRC staff's request for additional information. The licensee stated that 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 (locked rotor amps (LRA)). The running load was reflected as 111.90 kW and 127.16 kVA, based on replacement chiller nameplate data. This electrical load increase was evaluated at that time and was determined 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 123.4 kW and 141.82 kVA, based on nameplate data. This electrical load was evaluated at that time and was determined 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 horse power (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 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 the 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 acceptable.

Since 1994, the plant equipment and actual loading have not changed. However, an assumption in the loading calculation has changed. Prior to 2000, it was determined 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 operation)

D and E chillers - 124.73 kW and 141.74 kVA (based on worst-case single-chiller operation)

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 auxiliary loads) are acceptable for 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 alternating current (AC) diesel for the Unit 2 ESGR Appendix R scenario was reviewed and determined 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 mode, two-chiller operation mode is also acceptable for adequate motor terminal voltage. Voltage drop is dependent on the load, and a smaller load will have less voltage drop (i.e., single chiller takes more load to cool the same area compared to the two chillers operating).

The licensee stated that the station electrical load list calculation and EDG load calculation were updated with the loading values for the A, B, C, D, and E chillers following completion of single-chiller testing. These loading values are considered conservative, since each of the emergency buses is analyzed with a chiller operating in a 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 EDGs and the MCCs.

Additionally, the licensee stated that Surry 1 and 2 voltage profile calculation was revised in 1994 to include the D and E chillers. The Surry 1 and 2 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 1 and 2 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 1 and 2 voltage profile calculation is adequate for emergency buses 1H and 2J. While the loadings for chillers supplied from emergency buses 1J and 2H are 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 loads does not have a significant impact on the calculation results.

Furthermore, the safety-related 480 volt load center coordination calculations 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 of 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.

On November 20, 2006, the licensee provided additional information about the EDG loading. The licensee stated that no more than two chillers will be operated simultaneously, and there will never be more than one chiller loaded on an EDG at any given time. Current loading margin with a single chiller operating on an EDG is as follows: emergency bus 1H = 73.13 kW, emergency bus 1J = 197.75 kW; emergency bus 2H = 170.10 kW; and emergency bus 2J = 88.76 kW. Due to the power supply arrangement, the D and E chillers can only be powered by the 1H and 2J emergency buses; therefore, they are already accounted for in the EDG loading calculation for 1 H and 2J emergency buses. The D and E chillers testing demonstrate that the electrical loading is essentially nameplate loading; thus, there would be no effect on the 1H and 2J buses. The 1J and 2H emergency buses can only power the A, B, and C chillers. If the chiller nameplate data were to be used, there would be a 6.94 kW increase in EDG loading on the 1J and 2H emergency buses, which have adequate margins to accommodate the increased load. On the basis of its review, the NRC staff finds that EDGs will have adequate margins to accommodate the increase chiller loading if required.

Additionally, on November 20, 2006, the licensee provided actual voltages for starting and running conditions. The licensee stated that worst-case starting voltage for chiller motors is 420.6 volts and running voltage is 476.8 volts. On the basis of its review, the NRC staff finds that these voltages are greater than 90 percent of motor-rated voltage and hence, adequate voltage will be available for starting and running.

The NRC staff concludes that the impact of permanent MCR and ESGR ACS modifications on the electrical distribution system is acceptable for EDG loading and starting and running voltages at the equipment terminals. The NRC staff also concludes that permanent MCR and ESGR ACS modifications do not affect Surry 1 and 2 compliance with the requirements of GDC 17 and 18 as described in the Updated Final Safety Analysis Report, and, therefore, the above modifications are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Virginia State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (71 FR 56193). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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