UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 9, 2018

Mr. Daniel G. Stoddard
Senior Vice President and Chief Nuclear Officer
Innsbrook Technical Center
5000 Dominion Blvd.
Glenn Allen, VA 23060-6711

SUBJECT: SURRY POWER STATION, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENTS REGARDING LICENSE AMENDMENT REQUEST TO REVISE RESIDUAL HEAT REMOVAL AND COMPONENT COOLING SYSTEM TECHNICAL SPECIFICATIONS REQUIREMENTS AND ADDITION OF SURVEILLANCE REQUIREMENT (CAC NOS. MF9124 AND MF9125; EPID L-2017-LLA-0166)

Dear Mr. Stoddard:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 291 to Renewed Facility Operating License No. DPR-32 and Amendment No. 291 to Renewed Facility Operating License No. DPR-37 for the Surry Power Station, Unit Nos. 1 and 2, respectively. The amendments revise the Technical Specifications (TSs) in response to your application dated January 20, 2017, as supplemented by letter dated September 7, 2017.

These amendments revise the TS 3.5, "Residual Heat Removal (RHR) System," requirements as well as the TS 3.13, "Component Cooling System," RHR support requirements for the consistency with the design basis of the RHR system. In addition, an RHR surveillance requirement is added in TS Table 4.1-2A, "Minimum Frequency for Equipment Tests," to test the RHR system in accordance with the inservice testing program, since a TS surveillance does not currently exist for this system.

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,

Karen Cotton Gross

Karen Cotton Gross, 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. 291 to DPR-32
2. Amendment No. 291 to DPR-37
3. Safety Evaluation

cc: Listserv

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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. 291
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 January 20, 2017, as supplemented by letter dated September 7, 2017, 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. 291, 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 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Michael T. Markley, 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: February 9, 2018

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-281

SURRY POWER STATION, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 291
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 January 20, 2017, as supplemented by letter dated September 7, 2017, 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. 291, 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 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Michael T. Markley, 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: February 9, 2018

ATTACHMENT

SURRY POWER STATION, UNIT NOS. 1 AND 2

LICENSE AMENDMENT NO. 291

RENEWED FACILITY OPERATING LICENSE NO. DPR-32

DOCKET NO. 50-280

AND

LICENSE AMENDMENT NO. 291

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	Insert Pages
License	License
License No. DPR-32, page 3	License No. DPR-32, page 3
License No. DPR-37, page 3	License No. DPR-37, page 3
TSs	TSs
TS 3.5-1	TS 3.5-1
TS 3.5-2	TS 3.5-2
TS 3.13-1	TS 3.13-1
TS 3.13-2	TS 3.13-2
TS 4.1.9b	TS 4.1.9b

3. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

   A. Maximum Power Level

      The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2587 megawatts (thermal).

   B. Technical Specifications

      The Technical Specifications contained in Appendix A, as revised through Amendment No. 291 are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

   C. Reports

      The licensee shall make certain reports in accordance with the requirements of the Technical Specifications.

   D. Records

      The licensee shall keep facility operating records in accordance with the requirements of the Technical Specifications.

   E. Deleted by Amendment 65

   F. Deleted by Amendment 71

   G. Deleted by Amendment 227

   H. Deleted by Amendment 227

   I. Fire Protection

      The licensee shall implement and maintain in effect the provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report and as approved in the SER dated September 19, 1979, (and Supplements dated May 29, 1980, October 9, 1980, December 18, 1980, February 13, 1981, December 4, 1981, April 27, 1982, November 18, 1982, January 17, 1984, February 25, 1988, and

E. Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such by product and special nuclear materials as may be produced by the operation of the facility.

3. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power Levels not in excess of 2587 megawatts (thermal)

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 291 are hereby incorporated in this renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. Reports

The licensee shall make certain reports in accordance with the requirements of the Technical Specifications.

D. Records

The licensee shall keep facility operating records in accordance with the Requirements of the Technical Specifications.

E. Deleted by Amendment 54

F. Deleted by Amendment 59 and Amendment 65

G. Deleted by Amendment 227

H. Deleted by Amendment 227

3.5 RESIDUAL HEAT REMOVAL SYSTEM

Applicability

Applies to the operational status of the Residual Heat Removal System.

Objective

To define the limiting conditions for operation that are necessary to remove decay heat from the Reactor Coolant System in normal shutdown situations.

Specification

A. The following components shall be OPERABLE, as specified in Specifications 3.1.A.1.d, 3.10.A.4, 3.10.A.5, and 3.13.C, as applicable:

   1. Residual heat removal pumps.

   2. Residual heat exchangers.

   3. System piping and valves required to establish a flow path to and from the above components.

   4. Component Cooling System piping and valves required to establish a flow path to and from the above components.

B. The requirements of Specification A may be modified as specified in Specification 3.1.A.1.d, 3.10.C, or 3.13.D, as applicable, and immediate action shall be taken to restore operability/operation of the out of service equipment.

Basis

The Residual Heat Removal System is required to bring the Reactor Coolant System from conditions of approximately 350°F and pressures between 400 and 450 psig to cold shutdown conditions. Heat removal at greater temperatures is by the Steam and Power Conversion System. The Residual Heat Removal System is provided with two pumps and two heat exchangers. If one of the two pumps and/or one of the two heat exchangers is not operative, safe operation of the unit is not affected; however, the time for cooldown to cold shutdown conditions is extended.

The NRC requires that the series motorized valves in the line connecting the RHRS and RCS be provided with pressure interlocks to prevent them from opening when the reactor coolant system is at pressure.

Management of gas voids is important to RHR System operability. Based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations, as supplemented by system walk downs, the RHR System is not susceptible to gas intrusion, except primarily from Safety Injection Accumulator line back leakage through the RHR discharge motor operated valves. If this condition were to occur, it would be identified and mitigated prior to placing the system in service. Once placed in service, RHR System velocities during normal cooldown are sufficient to sweep any gas voids that may have remained in local high points. Controlling RHR System operating flow rates, with the consideration to limiting inlet conditions and RCS level, prevents vortexing and air ingestion into the operating RHR pump and piping. Thus, the piping in the RHR System will remain sufficiently full of water during standby and normal system operation, and periodic monitoring for gas accumulation or intrusion is not required.

References

FSAR Section 9.3 - Residual Heat Removal System

3.13 COMPONENT COOLING SYSTEM

Applicability

Applies to the operational status of all subsystems of the Component Cooling System. The Component Cooling System consists of the Component Cooling Water Subsystem, Chilled Component Water Subsystem, Chilled Water Subsystem, and Neutron Shield Tank Cooling Water Subsystem.

Objective

To define limiting conditions for each subsystem of the Component Cooling System necessary to assure safe operation of each reactor unit of the station during startup, POWER OPERATION, or cooldown.

Specifications

A. When a unit's Reactor Coolant System temperature and pressure exceed 350°F and 450 psig, respectively, or when a unit's reactor is critical operating conditions for the Component Cooling Water Subsystem shall be as follows:

1. For one unit operation, two component cooling water pumps and heat exchangers shall be OPERABLE.

2. For two unit operation, three component cooling water pumps and heat exchangers shall be OPERABLE.

B. During POWER OPERATION, Specification A.1 or A.2 above may be modified to allow one of the required components to be inoperable provided immediate attention is directed to making repairs. If the system is not restored within 24 hours to the requirements of Specification A.1 or A.2, an operating reactor shall be placed in HOT SHUTDOWN within the next 6 hours. If the repairs are not completed within an additional 48 hours, the affected reactor shall be placed in COLD SHUTDOWN within the following 30 hours.

C. When the average reactor coolant loop temperature is less than or equal to 350°F, the Component Cooling Water Subsystem shall be OPERABLE for immediate supply of cooling water to the residual heat removal heat exchangers, if required.

D. If the requirements of Specification C are not satisfied resulting in Residual Heat Removal System inoperability, immediate attention shall be directed to making repairs and the requirements in Specification 3.1.A.1.d, 3.10.A.4, or 3.10.A.5, as applicable, shall be satisfied.

E. Whenever the component cooling water radiation monitor is inoperable, the surge tank vent valve shall remain closed.

Basis

The Component Cooling System is an intermediate cooling system which serves both reactor units. It transfers heat from heat exchangers containing reactor coolant, other radioactive liquids, and other fluids to the Service Water System. The Component Cooling System is designed to (1) provide cooling water for the removal of residual and sensible heat from the Reactor Coolant System during shutdown, cooldown, and startup, (2) cool the containment recirculation air coolers and the reactor coolant pump motor coolers, (3) cool the letdown flow in the Chemical and Volume Control System during POWER OPERATION, and during residual heat removal for continued purification, (4) cool the reactor coolant pump seal water return flow, (5) provide cooling water for the neutron shield tank and (6) provide cooling to dissipate heat from other reactor unit components.

The Component Cooling Water Subsystem has four component cooling water pumps and four component cooling water heat exchangers. Each of the component cooling water heat exchangers is designed to remove during normal operation the entire heat load from one unit plus one half of the heat load common to both units. Thus, one component cooling water pump and one component cooling water heat exchanger are required for each unit which is at POWER OPERATION. Two pumps and two heat exchangers are normally operated during the removal of residual and sensible heat from one unit during cooldown. Failure of a single component may extend the time required for cooldown but does not effect the safe operation of the station.

References

UFSAR Section 5.3, Containment Systems
UFSAR Section 9.4, Component Cooling System
UFSAR Section 15.5.1.2, Containment Design Criteria

TABLE 4.1-2A
MINIMUM FREQUENCY FOR EQUIPMENT TESTS

	DESCRIPTION	TEST	FREQUENCY	FSAR SECTION REFERENCE
1.	Control Rod Assemblies	Rod drop times of all full length rods at hot conditions	Prior to reactor criticality: a. For all rods following each removal of the reactor vessel head b. For specially affected individual rods following any maintenance on or modification to the control rod drive system which could affect the drop time of those specific rods c. SFCP	7
2.	Control Rod Assemblies	Partial movement of all rods	SFCP	7
3.	Refueling Water Chemical Addition Tank	Functional	SFCP	6
4.	Pressurizer Safety Valves	Setpoint	Per the Inservice Testing Program	4
5.	Main Steam Safety Valves	Setpoint	Per the Inservice Testing Program	10
6.	Containment Isolation Trip	* Functional	SFCP	5
7.	Refueling System Interlocks	* Functional	Prior to refueling	9.12
8.	Service Water System	* Functional	SFCP	9.9
9.	Residual Heat Removal System	Functional	Per the Inservice Testing Program	9.3
10.	Deleted			
11.	Diesel Fuel Supply	* Fuel Inventory	SFCP	8.5
12.	Deleted			
13.	Main Steam Line Trip Valves	Functional (Full Closure)	Before each startup (TS 4.7) The provisions of Specification 4.0.4. are not applicable	10

UNITED STATES
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 291 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-32

AND

AMENDMENT NO. 291 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 January 20, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17026A174), and supplemented by letter dated September 7, 2017 (ADAMS Accession No. ML17255A221), Virginia Electric and Power Company (the licensee) submitted a request for changes to the Surry Power Station, Unit Nos. 1 and 2 (Surry 1/2), Technical Specifications (TSs). The supplement, dated September 7, 2017, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on March 14, 2017 (82 FR 13672).

The proposed changes would revise TS 3.5, "Residual Heat Removal (RHR) System," and TS 3.13, "Component Cooling System," for consistency with the design basis of the RHR system. In addition, an RHR surveillance requirement (SR) is added to TS Table 4.1-2A, "Minimum Frequency for Equipment Tests," to test the RHR system in accordance with the inservice testing program, since an SR does not currently exist for this system.

2.0 REGULATORY EVALUATION

The NRC staff considered the following regulatory requirements, guidance, and licensing information during its review of the proposed changes:

Paragraph 50.36(c) of Title 10 of the *Code of Federal* Regulations (10 CFR) requires TSs to include the following categories: (1) safety limits, limiting safety systems settings, and control settings; (2) limiting conditions for operation; (3) SRs; (4) design features; (5) administrative controls; (6) decommissioning; (7) initial notification; and (8) written reports.

The regulation in 10 CFR 50.36(c)(2) states, in part, that: "[l]imiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met."

The regulation in 10 CFR 50.36(c)(3) states that: "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

The regulations in 10 CFR Section 50.55a(f), "Inservice testing requirements," requires, in part, that the Inservice Testing Program of certain American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components must meet the requirements of the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM) Code and applicable addenda except where alternatives have been authorized by the NRC pursuant to paragraphs (z)(3)(i) or (z)(3)(ii).

3.0 TECHNICAL EVALUATION

3.1 Description of Associated Structure, Systems, and Components

Residual Heat Removal

In its letter dated January 20, 2017, the licensee provided description of the residual heat removal system.

The RHR system is designed to remove residual and sensible heat from the core and reduce the temperature of the reactor coolant system (RCS) during the second phase of unit cooldown. During the first phase of cooldown, the temperature of the RCS is reduced by transferring heat from the RCS to the steam and power conversion system.

The RHR system is designed to be placed in operation when the reactor coolant temperature has been reduced to approximately 350 degrees Fahrenheit (°F) and the reactor coolant pressure is between 400 and 450 pounds per square inch gauge (psig). These conditions are assumed to occur approximately 4 hours after reactor shutdown. The RHR system is designed to reduce the temperature of the reactor coolant from 350 °F to 140 °F over a period of 16 hours. With one RHR pump in service, the RHR system can reduce the temperature of the reactor coolant from 350 °F to 200 °F within 26 hours, and from 200 °F to 140 °F prior to beginning refueling operations.

Component Cooling System

Surry Power Station UFSAR Section 9.4 provides the system description for the following systems:

1. component cooling water (CCW) system
2. chilled CCW system
3. chilled water system

4. neutron shield tank cooling water system

5. charging pump cooling water system

These systems are used separately or in combination to supply cooling water for heat removal from various station components. A common supply of CCW serves both units to provide cooling water to remove residual and sensible heat from the RCS during unit shutdown and cooldown, among other functions. The maximum heat load occurs during the initial stages of RHR during a reactor unit cooldown. The component cooling water system is designed to reduce the temperature of the reactor coolant to 140 °F based on a river water temperature of 100 °F. During normal full-power operation, one component cooling pump and one component cooling heat exchanger can accommodate the heat removal loads for each reactor unit.

3.2 Proposed Technical Specifications Changes and Technical Evaluation

3.2.1 Proposed Changes to TS 3.5, "Residual Heat Removal System"

Technical Specification (TS) 3.5 applies to the operational status of the RHR system and its objective is to define the limiting conditions for operations that are necessary to remove decay heat from the RCS in normal shutdown situations.

Current TS 3.5 states:

A. The reactor shall not be made critical unless:

   1. Two residual heat removal pumps are operable.

   2. Two residual heat exchangers are operable.

   3. All system piping and valves, required to establish a flow path to and from the above components, are operable.

   4. All Component Cooling System piping and valves, required to establish a flow path to and from the above components, are operable.

B. The requirements of Specification A may be modified to allow one of the following components (including associated valves and piping) to be inoperable at any one time. If the system is not restored to meet the requirements of Specification A within 14 days, the reactor shall be shutdown.

   1. One residual heat removal pump may be out of service, provided immediate attention is directed to making repairs.

   2. One residual heat removal heat exchanger may be out of service, provided immediate attention is directed to making repairs.

Revised TS 3.5 would state:

A. The following components shall be OPERABLE, as specified in Specifications 3.1.A.1.d, 3.10.A.4, 3.10.A.5, and 3.13.C, as applicable:

1. Residual heat removal pumps.

2. Residual heat exchangers.

3. System piping and valves required to establish a flow path to and from the above components.

4. Component Cooling System piping and valves required to establish a flow path to and from the above components.

B. The requirements of Specification A may be modified as specified in Specification 3.1.A.1.d, 3.10.C, or 3.13.D, as applicable, and immediate action shall be taken to restore operability/operation of the out of service equipment.

3.2.1.1 NRC Evaluation of Changes to TS 3.5.A

Specification 3.1.A.1.d requires, in part, a minimum of two non-isolated loops, consisting of any combination of reactor coolant loops or RHR loops to be operable. The proposed change to the specific value requirements has no effect on Specification 3.1.A.1.d.1 since Specification 3.1.A.1.d.1 has specific configuration requirements between reactor coolant loops and RHR loops.

Specification 3.10.A.4 requires at least one RHR pump and heat exchanger to be operable to circulate reactor coolant. It also allows the required RHR loop to be removed from operation for up to 1 hour per 8-hour period during the performance of core alterations or reactor vessel surveillance inspections. The proposed change to the specific value requirements has no effect on Specification 3.10.A.4 since Specification 3.10.A.4 continues to contain the specific value requirement of at least one RHR pump and heat exchanger during refueling.

Specification 3.10.A.5 requires two RHR pumps and heat exchangers to be operable to circulate reactor coolant when the water level above the top of the reactor pressure vessel flange is less than 23 feet. The proposed change to the specific value requirements has no effect on Specification 3.10.A.5 since Specification 3.10.A.5 also requires two RHR loops and heat exchangers to be operable.

New Specification 3.13.C requires that when the average reactor coolant loop temperature is less than or equal to 350 °F, the CCW subsystem must be operable for immediate supply of cooling water to the RHR heat exchangers, if required. The proposed change to the specific value requirements has no effect on Specification 3.13.C since Specification 3.13.C provides the requirements for CCW and not RHR.

The NRC concludes proposed change is acceptable because the RHR system is designed to be placed in operation when the reactor coolant temperature has been reduced to approximately 350 °F and the reactor coolant pressure is between 400 and 450 psig. In addition, 3.1.A.1.d, 3.10.A.4, 3.10.A.5, and 3.13.C that are referred to by the proposed TS 3.5.A contain their own

mode of applicability for the RHR system.

3.2.1.2 NRC Evaluation of Changes to TS Specification 3.5.A.1, 3.5.A.2, 3.5.A.3, and 3.5.A.4

The licensee proposed to delete the specific value requirements of components required to be operable under TS 3.5 Specification A. Specifically, the licensee proposed to change the following requirements:

- RHR pumps; instead of two RHR pumps;
- RHR heat exchangers; instead of two RHR heat exchangers;
- System piping and valves, required to establish a flow path to and from the above components; instead of all system piping and valves, required to establish a flow path to and from the above components; and,
- CCW piping and valves, required to establish a flow path to and from the above components; instead of all CCW piping and valves, required to establish a flow path to and from the above components

The deletion of the word "all" in Specification 3.5.A.3 and 3.5.A.4 is editorial in nature since the Specifications continue to require the operability of piping and valves necessary to establish a flow path to and from the specified components.

The NRC staff concludes that the proposed changes to TS Specification 3.5.A.1, 3.5.A.2, 3.5.A.3, and 3.5.A.4 are acceptable. The referenced specifications under revised TS 3.5.A establish their own applicable operability requirements for RHR pumps and heat exchangers.

3.2.1.3 NRC Evaluation of Changes to TS 3.5.B

Current TS 3.5.B states:

> The requirements of Specification A may be modified to allow one of the following components (including associated valves and piping) to be inoperable at any one time. If the system is not restored to meet the requirements of Specification A within 14 days, the reactor shall be shutdown.

Revised TS 3.5.B would state:

> The requirements of Specification A may be modified as specified in Specification 3.1.A.1.d, 3.10.C, or 3.13.D, as applicable, and immediate action shall be taken to restore operability/operation of the out of service equipment.

Current TS 3.5.B provides a terminal action if Specification A requirements are not met within 14 days. The terminal action required is a reactor shutdown. Revised TS 3.5.B would replace the terminal action with a reference to three Specifications: 3.1.A.1.d, 3.10.C, or 3.13.D. These specifications contain their own terminal actions if the conditions within those specifications are not met.

Specification 3.1.A.1.d states:

> When the average reactor coolant loop temperature is less than or equal to 350 °F, the following conditions shall be met:
>
> 1. A minimum of two non-isolated loops, consisting of any combination of reactor coolant loops or residual heat removal loops, shall be OPERABLE, except as specified below:
>
>   a) One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.
>
>   b) During REFUELING OPERATIONS the residual heat removal loop may be removed from operation as specified in TS 3.10.A.4.

Specification 3.1.A.1.d is applicable when the average reactor coolant loop temperature is less than or equal to 350 °F, therefore, the reactor shutdown is maintained upon entry into TS 3.1.A.1.d.

Specification 3.10.C states:

> 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.

Specification 3.10.C provides the terminal action for Specifications 3.10.A.4 and 3.10.A.5 and requires cessation of refueling operations or irradiated fuel movement if Specifications 3.10.A.4 or 3.10.A.5 are not met.

The new proposed Specification 3.13.D states:

> If the requirements of Specification C are not satisfied resulting in Residual Heat Removal System inoperability, immediate attention shall be directed to making repairs and the requirements in Specification 3.1.A.1.d, 3.10.A.4, or 3.10.A.5, as applicable, shall be satisfied.

The new proposed Specification 3.13.D would provide the terminal action for Specification 3.13.C by referring to the Specifications containing the RHR TS requirements.

In its letter dated September 7, 2017, in response to the NRC staff's request for additional information dated August 9, 2017 (ADAMS Accession No. ML17193A199), the licensee stated, in part, that:

> In summary, the proposed revision to TS 3.5.B retains the current action in TS 3.5.B to take immediate action to restore operability/operation of out of service RHR equipment and references the existing requirements/actions in TS 3.1.A.1.d and TS 3.10.C for the RHR System. The existing referenced requirements/actions are applicable only when the reactor is already shut down.

Thus, the deletion of the shutdown requirement in TS 3.5.B is essentially replaced with the existing requirements/actions that are applicable when the reactor is shut down. In conclusion, the action contained in the proposed revision to TS 3.5.B, along with the references to the requirements/actions in the other specifications, is appropriate and consistent with the RHR System design basis.

Based on the above, the NRC staff concludes that the deletion of current TS 3.5.B is acceptable. The referred specifications contain their own equivalent terminal actions.

3.2.1.4 NRC Evaluation of Changes to TS 3.5.B.1 and TS 3.5.B.2

The current requirements in TS 3.5.B.1 and TS 3.5.B.2 allow an RHR pump or RHR heat exchanger to be out of service provided immediate attention is directed to making repairs. The proposed TS 3.5.A requirements refer to other specifications, which contain RHR TS requirements. These specifications referred to by TS 3.5.A contain similar allowances to those in TS 3.5.B.1 and TS 3.5.B.2. In addition, new TS 3.5 continues to require immediate action to be taken to restore operability/operation of any out-of-service RHR equipment.

Therefore, the NRC staff concludes that the proposed changes are acceptable since they remove redundancy and maintain the necessary required actions.

3.2.2 Proposed Changes to TS 3.13, "Component Cooling System"

Current TS 3.13 states:

A. When a unit's Reactor Coolant System temperature and pressure exceed 350°F and 450 psig, respectively, or when a unit's reactor is critical operating conditions for the Component Cooling Water Subsystem shall be as follows:

   1. For one unit operation, two component cooling water pumps and heat exchangers shall be OPERABLE.

   2. For two unit operation, three component cooling water pumps and heat exchangers shall be OPERABLE.

   3. The Component Cooling Water Subsystem shall be OPERABLE for immediate supply of cooling water to the following components, if required:

      a. Two OPERABLE residual heat removal heat exchangers.

B. During POWER OPERATION, Specification A-1, A-2, or A-3 above may be modified to allow one of the required components to be inoperable provided immediate attention is directed to making repairs. If the system is not restored within 24 hours to the requirements of Specification A-1, A-2 or A-3, an operating reactor shall be placed in HOT SHUTDOWN within the next 6 hours. If the repairs are not completed within an additional 48 hours, the affected reactor shall be placed in COLD SHUTDOWN within the following 30 hours.

C. Whenever the component cooling water radiation monitor is inoperable, the surge tank vent valve shall remain closed.

Revised TS 3.13 would state:

A. When a unit's Reactor Coolant System temperature and pressure exceed 350°F and 450 psig, respectively, or when a unit's reactor is critical operating conditions for the Component Cooling Water Subsystem shall be as follows:

1. For one unit operation, two component cooling water pumps and heat exchangers shall be OPERABLE.

2. For two unit operation, three component cooling water pumps and heat exchangers shall be OPERABLE.

B. During POWER OPERATION, Specification A.1 or A.2 above may be modified to allow one of the required components to be inoperable provided immediate attention is directed to making repairs. If the system is not restored within 24 hours to the requirements of Specification A.1 or A.2, an operating reactor shall be placed in HOT SHUTDOWN within the next 6 hours. If the repairs are not completed within an additional 48 hours, the affected reactor shall be placed in COLD SHUTDOWN within the following 30 hours.

C. When the average reactor coolant loop temperature is less than or equal to 350°F, the Component Cooling Water Subsystem shall be OPERABLE for immediate supply of cooling water to the residual heat removal heat exchangers, if required.

D. If the requirements of Specification C are not satisfied resulting in Residual Heat Removal System inoperability, immediate attention shall be directed to making repairs and the requirements in Specification 3.1.A.1.d, 3.10.A.4, or 3.10.A.5, as applicable, shall be satisfied.

E. Whenever the component cooling water radiation monitor is inoperable, the surge tank vent valve shall remain closed.

The purpose of TS 3.13 is to define limiting conditions for each subsystem of the Component Cooling System necessary to assure safe operation of each reactor unit of the station during startup, power operation, or cooldown.

3.2.2.1 NRC Evaluation of Changes to TS 3.13.A.3

The licensee proposed to delete Technical Specification 3.13.A.3 which provides requirements for the CCW subsystem to be operable for immediate supply of cooling water, if required, for two operable RHR heat exchangers. Technical Specification TS 3.13.A continues to specify applicability for when a unit's RCS temperature and pressure exceed 350 °F and 450 psig, respectively, or when a unit's reactor is critical.

The proposed change is acceptable because the RHR system is designed to be placed in operation when the reactor coolant temperature has been reduced to approximately 350 °F and

the reactor coolant pressure is between 400 and 450 psig and because Specification 3.13.A.1 and 3.13.A.2 are retained.

3.2.2.2 NRC Evaluation of Changes to TS 3.13.B

As a result of the deletion of TS 3.13.A.3, the licensee made conforming changes to TS 3.13.B which referred to TS 3.13.A.3. The NRC staff concludes that these conforming changes are editorial in nature and are, therefore, acceptable.

3.2.2.3 NRC Evaluation of the Addition of TS 3.13.C

The licensee proposed to add new TS 3.13.C which requires the CCW subsystem to be operable for immediate supply of cooling water to the RHR heat exchangers if required, when average reactor coolant loop temperature is less than or equal to 350 °F. The addition of TS 3.13.C provides the requirement contained in the deleted TS 3.13.A.3. The staff concludes that the requirement of immediate supply of cooling water is maintained and is, therefore, acceptable.

3.2.2.4 NRC Evaluation of the Addition of TS 3.13.D

The licensee proposed to add new TS 3.13.D which requires immediate attention be directed to making repairs if the requirements of TS 3.13.C are not satisfied resulting in RHR system inoperability. It also directs the requirements located in Specifications 3.1.A.1.d, 3.10.A.4, and 3.10.A.5 to be satisfied as applicable. The addition of TS 3.13.D provides the terminal action for new Specification 3.13.C by referring to the specifications containing the RHR TS requirements.

Before the proposed change, the terminal action for CCW's function of providing an immediate supply of cooling water to the RHR heat exchangers (new TS 3.13.C) was contained in Specification 3.13.B which stated:

> If the system is not restored within 24 hours to the requirements of Specification A-1, A-2, or A-3, an operating reactor shall be placed in HOT SHUTDOWN within the next 6 hours. If the repairs are not completed within an additional 48 hours, the affected reactor shall be placed in COLD SHUTDOWN within the following 30 hours.

The NRC staff concludes that this new TS 3.13.D provides an acceptable the new terminal action for new TS 3.13.C and is, therefore, acceptable.

3.2.2.5 NRC Evaluation of Changes to TS 3.13.E

As a result of the addition of new Specifications TS 3.13.C and TS 3.13.D, the licensee made conforming changes to current TS 3.13.C by naming it TS 3.13.E. These conforming changes are editorial in nature and are, therefore, acceptable.

3.2.2.6 Conclusion of Changes to TS 3.5 and TS 3.13

The NRC staff concludes that the proposed changes to TS 3.5 and TS 3.13 support clarification of RHR design bases requirements and are, therefore, acceptable.

3.2.3 Addition of SR 4.1-2A.9, Item 9 RHR System Functional Test

Current TS states:

TABLE 4.1-2A, MINIMUM FREQUENCY FOR EQUIPMENT TESTS

	DESCRIPTION	TEST	FREQUENCY	FSAR SECTION FREQUENCY REFERENCE
9	*Deleted*			

Revised TS states:

TABLE 4.1-2A, MINIMUM FREQUENCY FOR EQUIPMENT TESTS

	DESCRIPTION	TEST	FREQUENCY	FSAR SECTION FREQUENCY REFERENCE
9	*Residual Heat Removal System*	*Functional*	*Per the Inservice Testing Program*	*9.3*

Considerations of Addition of SR 4.1-2A, Item 9

In the letter dated January 20, 2017, the licensee stated, in part, that:

> The Surry Units 1 and 2 IST [Inservice Testing] Program Relief Request (RR) P-2 addresses the test frequency for the RHR pumps 1-RH-P-1A, 1-RH-P-1 B, 2-RH-P-1A, and 2-RH-P-1B. ASME OM Code Table ISTB-3400-1 requires that Group A pumps, which includes the RHR pumps, be tested quarterly. As noted in RR P-2, the Surry Units 1 and 2 RHR pumps are located inside subatmospheric containments; consequently, testing of the RHR pumps during normal operation is not possible. The testing alternative included in RR P-2 is to test the RHR pumps every cold shutdown outage and every refueling outage, unless the pump has been tested within the previous three months. During back-to-back cold shutdown or refueling outages, the test period remains valid for three months following each test, and no additional periodic testing needs to be performed within this three month test period. For a cold shutdown or refueling outage that extends longer than three months, the pumps will be tested every three months in accordance with Table ISTB-3400-1.

Conclusion of Addition of SR 4.1-2A, Item 9

On April 25, 2014, the NRC granted IST RR P-2 (ADAMS Accession No. ML14113A346) for the Surry Units 1 and 2 IST fifth intervals, authorizing the alternative testing of the RHR pumps. The RHR SR was added to Table 4.1-2A, *Minimum Frequency for Equipment Tests,* in TS 4.1-1, Operational Safety Review in accordance with the Inservice Testing Program (IST) since a TS surveillance did not exist for this system. The objective of the TS is to specify the minimum frequency and type of surveillance to be applied to unit equipment and conditions.

The NRC staff concludes that the addition of the SR added to Table 4.1-2A is acceptable.

3.3 Technical Evaluation Conclusion

Based on the above, the NRC concludes that the proposed changes to TS 3.5 and 3.13 continue to maintain requirements for terminal actions to shut down the plant, if appropriate, and modification to Table 4.1-2A are acceptable. The NRC concludes that the revised TS continues to meet the requirements of 10 CFR 50.36 and is, therefore, 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 on December 1, 2017. The State official confirmed that the Commonwealth of Virginia had no comments on December 1, 2017.

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 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 (82 FR 13672; March 14, 2017). 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) there is reasonable assurance that 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.

Principal Contributor:
Caroline Tilton, NRR/DSS/STSB

Date: February 9, 2018

SUBJECT: SURRY POWER STATION, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENTS REGARDING LICENSE AMENDMENT REQUEST TO REVISE RESIDUAL HEAT REMOVAL AND COMPONENT COOLING SYSTEM TECHNICAL SPECIFICATIONS REQUIREMENTS AND ADDITION OF SURVEILLANCE REQUIREMENT (CAC NOS. MF9124 AND MF9125; EPID L-2017-LLA-0166) DATED FEBRUARY 9, 2018

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OFFICE	NRR/DORL/LPL2-1/PM	NRR/DORL/LPL2-1/LA	NRR/DSS/STSB/BC(A)	NRR/DE/EMIB/BC
NAME	KCotton	KGoldstein	JWhitman	SBailey (RWolfgang for)
DATE	11/22/2017	11/30/2017	09/22/2017	11/20/2017
OFFICE	OGC – NLO	NRR/DORL/LPL2-1/BC	NRR/DORL/LPL2-1/PM	
NAME	JGillespie	MMarkley	KCotton	
DATE	12/12/2017	02/09/2018	02/09/2018	

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