VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

January 20, 2017

10CFR50.90

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

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Docket Nos.:	50-280
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License Nos.:	DPR-32
	DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
PROPOSED LICENSE AMENDMENT REQUEST
REVISION OF RESIDUAL HEAT REMOVAL AND COMPONENT COOLING SYSTEMS REQUIREMENTS AND ADDITION OF SURVEILLANCE REQUIREMENT

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) requests a revision to the Technical Specifications (TS) for Surry Power Station Units 1 and 2. The proposed change revises the TS 3.5 Residual Heat Removal (RHR) System requirements, as well as the TS 3.13 RHR support requirements for the Component Cooling (CC) System, for consistency with the design basis of the RHR System. In addition, an RHR surveillance requirement is added in TS Table 4.1-2A to test the RHR System in accordance with the Inservice Testing Program since a TS surveillance does not currently exist for this system.

Attachment 1 provides a discussion and evaluation of the proposed change. The marked-up and proposed pages for the TS are provided in Attachments 2 and 3, respectively.

We have evaluated the proposed amendment request and have determined that it does not involve a significant hazards consideration as defined in 10 CFR 50.92. The basis for this determination is included in Attachment 1. We have also determined that operation with the proposed change will not result in any significant increase in the amount of effluents that may be released offsite or any significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed amendment is eligible for categorical exclusion from an environmental assessment as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change. The proposed TS change has been reviewed and approved by the Facility Safety Review Committee.

A001
NRR

Dominion requests approval of the proposed change by January 31, 2018 with a 60-day implementation period.

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

Respectfully,

Mark D. Sartain
Vice President – Nuclear Engineering and Fleet Support

Commitments contained in this letter: None

Attachments:

1. Discussion of Change
2. Marked-up Technical Specifications Pages
3. Proposed Technical Specifications Pages

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Mr. Mark D. Sartain, who is Vice President – Nuclear Engineering and Fleet Support, 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 20th day of January, 2017.

My Commission Expires: 12/31/20.

CRAIG D SLY
Notary Public
Commonwealth of Virginia
Reg. # 7518653
My Commission Expires December 31, 2020

Notary Public

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NRC Senior Resident Inspector
Surry Power Station

Attachment 1

DISCUSSION OF CHANGE

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

DISCUSSION OF CHANGE

1.0 INTRODUCTION

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) requests a revision to the Technical Specifications (TS) for Surry Power Station Units 1 and 2. The proposed change revises the TS 3.5 Residual Heat Removal (RHR) System requirements, as well as the TS 3.13 RHR support requirements for the Component Cooling (CC) System, for consistency with the design basis of the RHR System. In addition, an RHR surveillance requirement in accordance with the Inservice Testing Program is added in TS Table 4.1-2A since a TS surveillance does not currently exist.

2.0 PROPOSED CHANGE

The following TS 3.5, TS 3.13, and TS Table 4.1-2A specific revisions are proposed. The revisions are indicated by bold italic text and bold italic strikeout text.

3.5 RESIDUAL HEAT REMOVAL SYSTEM

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:*** ***~~The reactor shall not be made critical unless:~~***

1. ***~~Two r~~R***esidual heat removal pumps. ***~~are operable.~~***
2. ***~~Two r~~R***esidual heat exchangers. ***~~are operable.~~***
3. ***~~All s~~S***ystem 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 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.*** ***~~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.~~

3.13 COMPONENT COOLING SYSTEM

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.

   ~~***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 or A.2*** ~~***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 or A.2,*** ~~***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. 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. ~~C.~~ Whenever the component cooling water radiation monitor is inoperable, the surge tank vent valve shall remain closed.

TABLE 4.1-2A MINIMUM FREQUENCY FOR EQUIPMENT TESTS

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

3.0 TECHNICAL EVALUATION

As indicated in Section 9.3 of the Surry Updated Final Safety Analysis Report (UFSAR), 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°F and the reactor coolant pressure is between 400 and 450 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 both RHR trains in operation. With one 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.

A two-train RHR System is provided for each unit. One RHR pump and heat exchanger are sufficient to perform the decay heat transfer functions for the unit. During unit cooldown and after the RCS temperature has been reduced to approximately 350°F and the RCS pressure is between 400 and 450 psig, further system cooling is initiated by aligning the RHR pumps to take suction from the reactor coolant hot leg and discharge through the tube side of the RHR heat exchangers into the reactor coolant cold leg. The inlet line to the RHR System is located in the hot leg of reactor coolant loop A between the main loop stop valve and the reactor vessel. The return line connects to the B and C RCS loops through the safety injection system. The heat loads are transferred by the RHR heat exchangers to the component cooling water in the CC System. It should be noted that the Surry RHR System does not serve a Low Head Safety Injection function.

The current Surry TS 3.5, as well as the original Surry TS 3.5, dated March 17, 1972, requires RHR System operability prior to the reactor being made critical. The proposed change revises the TS 3.5 RHR System requirements, as well as the TS 3.13 RHR support requirements for the CC System, for consistency with the design basis of the RHR System (i.e., to be placed in operation when the reactor coolant temperature is ~ 350°F and reactor coolant pressure is between 400 and 450 psig). 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 (IST) since a TS surveillance does not currently exist for this system.

The Surry Units 1 and 2 IST Program Relief Request (RR) P-2 addresses the test frequency for the RHR pumps 1-RH-P-1A, 1-RH-P-1B, 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 ISTB-3400-1. The NRC approved IST RR P-2 for the Surry Units 1 and 2 IST fifth intervals on April 25, 2014 [ADAMS Accession No. ML14113A346].

4.0 NO SIGNFICANT HAZARDS CONSIDERATION

Virginia Electric and Power Company (Dominion) requests a revision to the Technical Specifications (TS) for Surry Power Station Units 1 and 2. The proposed change revises TS 3.5 - Residual Heat Removal System and TS 3.13 - Component Cooling System. The change revises the Residual Heat Removal (RHR) System requirements, as well as the RHR support requirements for the Component Cooling (CC) System, for consistency with the design basis of the RHR System (i.e., to be placed in operation when the reactor coolant temperature is ~350°F and reactor coolant pressure is between 400 and 450 psig). Specifically, the proposed change revises TS 3.5 to refer to the existing operability requirements for the RHR System in TS 3.1.A.1.d, TS 3.10.A.4, and TS 3.10.A.5, as well as to the TS 3.13 CC System operability requirements to supply cooling water to the RHR heat exchangers. Also, for consistency with the RHR System design basis, the TS 3.13 CC System requirement related to RHR is revised to be applicable when the average reactor coolant loop temperature is less than or equal to 350°F. 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.

Dominion has reviewed the requirements of 10 CFR 50.92 as they relate to the proposed changes to the Surry Power Station Units 1 and 2 TS and has determined that a significant hazards consideration does not exist. The basis for this determination is provided as follows:

1. Does the proposed license amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed change revises the TS requirements for consistency with the design basis of the RHR System. The proposed change has no impact on the design function of any structures, systems, or components (SSCs), including the RHR System. The proposed change does not impact plant operation and does not change any of the previously evaluated accidents in the Updated Final Safety

Analysis Report (UFSAR). Thus, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed license amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed change does not involve a physical change to any SSCs (i.e., no new or different type of equipment will be installed) and does not impact plant operation. Furthermore, the proposed change does not impose any new or different requirements that could initiate an accident and does not affect initiators of analyzed events. Therefore, the proposed change does not introduce any new failures that could create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

   Response: No.

   The proposed change does not adversely affect any current plant safety margins or the reliability of the equipment assumed in the safety analysis. There are no changes being made to any safety analysis assumptions, safety limits, or limiting safety system settings that would adversely affect plant safety as a result of the proposed change. The RHR System has no accident mitigation function and its operation is not assumed in any safety analyses. Thus, the proposed change does not impact the condition or performance of SSCs relied upon for accident mitigation or any safety analysis assumptions. Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

5.0 ENVIRONMENTAL ASSESSMENT

This amendment request meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) as follows:

(i) The amendment involves no significant hazards consideration.

As described above, the proposed TS change does not involve a significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The proposed TS change does not a) involve the installation of any new equipment, b) make a physical change to any structures, systems, or components (SSCs), or

c) impact current plant operation at Surry Power Station. Therefore, there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed TS change does not involve physical plant changes and does not impact current plant operation. Therefore, there is no significant increase in individual or cumulative occupational radiation exposure.

Based on the above assessment, Dominion concludes that the proposed change meets the criteria specified in 10 CFR 51.22 for a categorical exclusion from the requirements of 10 CFR 51.22 relative to requiring a specific environmental assessment or impact statement by the Commission.

6.0 CONCLUSION

The proposed TS change revises the RHR System requirements, as well as the RHR support requirements for the CC System, for consistency with the design basis of the RHR System. In addition, the proposed change adds a surveillance requirement for the RHR System since a TS surveillance does not currently exist.

The proposed TS change does not involve the installation of any new equipment or a physical change to any SSCs at Surry Power Station and does not alter any SSC design function. Current plant operation is not impacted by the proposed change. In addition, the proposed change does not affect initiators of analyzed events, does not impact the condition or performance of SSCs relied upon for accident mitigation, and does not impact any safety analysis assumptions. The RHR System has no accident mitigation function and its operation is not assumed in any safety analyses. It has, therefore, been concluded that this change does not have an adverse impact on safety, does not involve a significant hazards consideration, and will not endanger the health and safety of the public.

Attachment 2

MARKED-UP TECHNICAL SPECIFICATIONS PAGES

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

NO CHANGES ON THIS PAGE - PROVIDED FOR INFORMATION

3.1 REACTOR COOLANT SYSTEM

Applicability

Applies to the operating status of the Reactor Coolant System.

Objectives

To specify those limiting conditions for operation of the Reactor Coolant System which must be met to ensure safe REACTOR OPERATION.

These conditions relate to: operational components, heatup and cooldown, leakage, reactor coolant activity, oxygen and chloride concentrations, minimum temperature for criticality, and Reactor Coolant System overpressure mitigation.

A. Operational Components

Specifications

1. Reactor Coolant Pumps

    a. A reactor shall not be brought critical with less than three pumps, in non-isolated loops, in operation.

b. If an unscheduled loss of one or more reactor coolant pumps occurs while operating below 11% RATED POWER (P-7) and results in less than two pumps in service, the affected plant shall be shutdown and the reactor made subcritical by inserting all control banks into the core. The shutdown rods may remain withdrawn.

c. When the average reactor coolant loop temperature is greater than 350°F, the following conditions shall be met:

   1. At least two reactor coolant loops shall be OPERABLE.

   2. At least one reactor coolant loop shall be in operation.

d. 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.

   2. At least one reactor coolant loop or one residual heat removal loop shall be in operation, except as specified in Specification 3.10.A.4.

b. With one Reactor Vessel Head vent path inoperable; startup and/or power operation may continue provided the inoperable vent path is maintained closed with power removed from the valve actuator of both isolation valves in the inoperable vent path.

c. With two Reactor Vessel Head vent paths inoperable; maintain the inoperable vent path closed with power removed from the valve actuator of all isolation valves in the inoperable vent paths, and restore at least one of the vent paths to operable status within 30 days or be in hot shutdown within 6 hours and in cold shutdown within the following 30 hours.

Basis

Specification 3.1.A-1 requires that a sufficient number of reactor coolant pumps be operating to provide coastdown core cooling flow in the event of a loss of reactor coolant flow accident. This provided flow will maintain the DNBR above the applicable design limit.(1) Heat transfer analyses also show that reactor heat equivalent to approximately 10% of rated power can be removed with natural circulation; however, the plant is not designed for critical operation with natural circulation or one loop operation and will not be operated under these conditions.

When the boron concentration of the Reactor Coolant System is to be reduced, the process must be uniform to prevent sudden reactivity changes in the reactor. Mixing of the reactor coolant will be sufficient to maintain a uniform concentration if at least one reactor coolant pump or one residual heat removal pump is running while the change is taking place. The residual heat removal pump will circulate the equivalent of the reactor coolant system volume in approximately one half hour.

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 reactor shall not be made critical unless:~~ 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. ~~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.~~ 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.

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.

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

3.10 REFUELING

Applicability

Applies to operating limitations during REFUELING OPERATIONS or irradiated fuel movement in the Fuel Building.

Objective

To assure that no accident could occur during REFUELING OPERATIONS or irradiated fuel movement in the Fuel Building that would affect public health and safety.

Specification

A. During REFUELING OPERATIONS the following conditions are satisfied:

1. The equipment access hatch and at least one door in the personnel airlock shall be capable of being closed. For those penetrations which provide a direct path from containment atmosphere to the outside atmosphere, the containment isolation valves shall be OPERABLE or the penetration shall be closed by a valve, blind flange, or equivalent or the penetration shall be capable of being closed.

2. At least one source range neutron detector shall be in service at all times when the reactor vessel head is unbolted. Whenever core geometry or coolant chemistry is being changed, subcritical neutron flux shall be continuously monitored by at least two source range neutron detectors, each with continuous visual indication in the Main Control Room and one with audible indication within the containment. During core fuel loading phases, there shall be a minimum neutron count rate detectable on two operating source range neutron detectors with the exception of initial core loading, at which time a minimum neutron count rate need be established only when there are eight (8) or more fuel assemblies loaded into the reactor vessel.

3. The manipulator crane area monitors and the containment particulate and gas monitors shall be OPERABLE and continuously monitored to identify the occurrence of a fuel handling accident.

4. At least one residual heat removal pump and heat exchanger shall be OPERABLE to circulate reactor coolant. The residual heat removal loop may be removed from operation for up to 1 hour per 8-hour period during the performance of core alterations or reactor vessel surveillance inspections.

5. Two residual heat removal pumps and heat exchangers shall be OPERABLE to circulate reactor coolant when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

6. At least 23 feet of water shall be maintained over the top of the reactor pressure vessel flange during movement of fuel assemblies.

7. With the reactor vessel head unbolted or removed, any filled portions of the Reactor Coolant System and the refueling canal shall be maintained at a boron concentration which is:

   a. Sufficient to maintain K-effective equal to 0.95 or less, and

   b. Greater than or equal to 2300 ppm and shall be checked by sampling at least once every 72 hours.

8. Direct communication between the Main Control Room and the refueling cavity manipulator crane shall be available whenever changes in core geometry are taking place.

9. No movement of irradiated fuel in the reactor core shall be accomplished until the reactor has been subcritical for a period of at least 100 hours.

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.

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.

D. After initial fuel loading and after each core refueling operation and prior to reactor operation at greater than 75% of rated power, the movable incore detector system shall be utilized to verify proper power distribution.

E. The requirements of 3.0.1 are not applicable.

Basis

Detailed instructions, the above specified precautions, and the design of the fuel handling equipment, which incorporates built-in interlocks and safety features, provide assurance that an accident, which would result in a hazard to public health and safety, will not occur during unit REFUELING OPERATIONS or irradiated fuel movement in the Fuel Building. When no change is being made in core geometry, one neutron detector is sufficient to monitor the core and permits maintenance of the out-of-function instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition.

Potential escape paths for fission product radioactivity within containment are required to be closed or capable of closure to prevent the release to the environment. However, since there is no potential for significant containment pressurization during refueling, the Appendix J leakage criteria and tests are not applicable.

The containment equipment access hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of the containment. During REFUELING OPERATIONS, the equipment hatch must be capable of being closed.

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.

~~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~~ 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,~~ A.1 or A.2,

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.

~~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.

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

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.

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

4.1 OPERATIONAL SAFETY REVIEW

Applicability

Applies to items directly related to safety limits and limiting conditions for operation.

Objective

To specify the minimum frequency and type of surveillance to be applied to unit equipment and conditions.

Specification

A. Calibration, testing, and checking of instrumentation channels and interlocks shall be performed as detailed in Tables 4.1-1, 4.1-1A, and 4.1-2 and at the frequencies specified in the Surveillance Frequency Control Program, unless otherwise noted in the Tables.

B. Equipment tests shall be performed as detailed in Table 4.1-2A and at the frequencies specified in the Surveillance Frequency Control Program, unless otherwise noted in the Tables and as detailed below.

1. In addition to the requirements of the Inservice Testing Program, each Pressurizer PORV and block valve shall be demonstrated OPERABLE at the frequencies specified in the Surveillance Frequency Control Program by:

    a. Performing a complete cycle of each PORV with the reactor coolant average temperature >350°F.

    b. Performing a complete cycle of the solenoid air control valve and check valves on the air accumulators in the PORV control system.

    c. Operating each block valve through one complete cycle of travel. This surveillance is not required if the block valve is closed in accordance with 3.1.6.a, b, or c.

    d. Verifying that the pressure in the PORV backup air supply is greater than the surveillance limit.

    e. Performing functional testing and calibration of the PORV backup air supply instrumentation and alarm setpoints.

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. ~~Deleted~~ 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

Attachment 3

PROPOSED TECHNICAL SPECIFICATIONS PAGES

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

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

TABLE 4.1-2A

MINIMUM FREQUENCY FOR EQUIPMENT TESTS

DESCRIPTION	TEST	FREQUENCY	FSAR SECTION REFERENCE
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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