

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

October 13, 2010

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

Serial No. 10-623
SPS-LIC/CGL R0
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
ANNUAL SUBMITTAL OF TECHNICAL SPECIFICATIONS BASES CHANGES
PURSUANT TO TECHNICAL SPECIFICATION 6.4.J

Pursuant to Technical Specification 6.4.J, "Technical Specifications (TS) Bases Control Program," Dominion hereby submits the changes to the Bases of the Surry TS implemented between October 1, 2009 and September 30, 2010.

TS Bases changes that were submitted to the NRC for information along with the associated License Amendment Request transmittals, submitted pursuant to 10CFR50.90, were reviewed and approved by the Facility Safety Review Committee. These changes have been implemented with the respective License Amendments. A summary of these changes is provided in Attachment 1.

Current TS Bases pages reflecting the changes discussed in Attachment 1 are provided in Attachment 2.

If you have any questions regarding this transmittal, please contact Mr. Barry A. Garber at (757) 365-2725.

Very truly yours,



B. L. Stanley
Director Station Safety and Licensing
Surry Power Station

Attachments:

1. Summary of TS Bases Changes Associated with License Amendments
2. Current TS Bases Pages

Commitments made in this letter: None.

ADD
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**Attachment 1
Serial No. 10-623**

Summary of TS Bases Changes Associated with License Amendments

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

SUMMARY OF TS BASES CHANGES
ASSOCIATED WITH LICENSE AMENDMENTS

Removal of Main Control Room Bottled Air System Requirements (TS Basis Pages TS 3.7-9, TS 3.7-9a, TS 3.7-9b, TS 3.7-9c, TS 3.10-8, TS 3.10-9, TS 3.21-2*, TS 3.21-3*, and TS 4.1-5*)

These Basis changes were associated with amendments that revised the Technical Specifications (TS) to remove the Main Control Room (MCR) Bottled Air System TS requirements and to incorporate TS requirements for the MCR/Emergency Switchgear Room Envelope Isolation Actuation Instrumentation.

These Basis changes were included for information in an October 9, 2008 letter (Serial No. 08-0411) and were incorporated into the TS Bases as part of the December 18, 2009 implementation of License Amendments 266/265 issued on October 29, 2009. The asterisked pages were issued in the NRC correction letter dated December 3, 2009.

**Attachment 2
Serial No. 10-623**

Current TS Bases Pages

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

Non-Essential Service Water Isolation System

The operability of this functional system ensures that adequate intake canal inventory can be maintained by the Emergency Service Water Pumps. Adequate intake canal inventory provides design service water flow to the recirculation spray heat exchangers and other essential loads (e.g., control room area chillers, charging pump lube oil coolers) following a design basis loss of coolant accident with a coincident loss of offsite power. This system is common to both units in that each of the two trains will actuate equipment on each unit.

Clarification of Operator Actions

The Operator Actions associated with Functional Units 10 and 16 on Table 3.7-1 require the unit to be reduced in power to less than the P-7 setpoint (10%) if the required conditions cannot be satisfied for either the P-8 or P-7 permissible bypass conditions. The requirement to reduce power below P-7 for a P-8 permissible bypass condition is necessary to ensure consistency with the out of service and shutdown action times assumed in the WCAP-10271 and WCAP-14333P risk analyses by eliminating the potential for a scenario that would allow sequential entry into the Operator Actions (i.e., initial entry into the Operator Action with a reduction in power to below P-8, followed by a second entry into the Operator Action with a reduction in power to below P-7). This scenario would permit sequential allowed outage time periods that may result in an additional 72 hours that was not assumed in the risk analysis to place a channel in trip or to place the unit in a condition where the protective function was not necessary.

Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Isolation Actuation Instrumentation

BACKGROUND - The MCR/ESGR Envelope Isolation Function provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity. During normal operation, the Service Building Ventilation System and the Main Control Room (MCR) and Emergency Switchgear Room (ESGR) Air Conditioning System (ACS) provide unfiltered makeup air and cooling, respectively, for the MCR/ESGR envelope. Upon receipt of a MCR/ESGR Envelope Isolation Actuation signal from either unit's Safety Injection (SI) signal or from manual actuation, the following actions occur: 1) the MCR/ESGR envelope normal ventilation intake and exhaust ducts are isolated to prevent unfiltered makeup air from entering the MCR/ESGR envelope, 2) the normal ventilation supply and exhaust fans are shut down, and 3) adjacent area ventilation fans are shut down. The MCR/ESGR Emergency Ventilation System (EVS) can then be placed into service when required to provide a source of filtered makeup air to the MCR/ESGR envelope. The MCR/ESGR EVS is described in the Bases for TS 3.21, "Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS)."

There are two independent and redundant trains of manual actuation instrumentation for MCR/ESGR Envelope Isolation. Each manual actuation train consists of two damper actuation switches and the interconnecting wiring to the actuation circuitry as follows: 1) normal ventilation dampers 1-VS-MOD-103A (supply) and 1-VS-MOD-103D (exhaust), and 2) normal ventilation dampers 1-VS-MOD-103C (supply) and 1-VS-MOD-103B (exhaust). Automatic actuation of the MCR/ESGR Envelope Isolation Function is addressed as part of the SI system in Table 3.7-2, "Engineered Safeguards

Action Instrument Operating Conditions,” Functional Unit No. 1.

APPLICABLE SAFETY ANALYSES - The MCR/ESGR envelope must be kept habitable for the operators stationed there during accident recovery and post accident operations. The MCR/ESGR Envelope Isolation Actuation Instrumentation automatically acts to terminate the supply of unfiltered outside air on an SI signal and is manually actuated for a Fuel Handling Accident (FHA).

In REACTOR OPERATION conditions where T_{avg} exceeds 200°F, the safety analyses for a Loss of Coolant Accident, Main Steam Line Break, and a Steam Generator Tube Rupture assume automatic isolation of the MCR/ESGR envelope on an SI signal and manual initiation of filtered air flow provided by the MCR/ESGR EVS within 1 hour. No credit is taken for the pressurization provided by the MCR/ESGR EVS. The safety analysis for a FHA assumes manual isolation of the MCR/ESGR envelope upon indication that a FHA has occurred and manual initiation of the MCR/ESGR EVS to supply filtered air flow within 1 hour. MCR/ESGR envelope isolation is not credited for a Locked Rotor Accident. Total ventilation inflow of 1500 cfm is assumed: 1000 cfm of filtered emergency supply fan flow plus 500 cfm of unfiltered inleakage.

During the movement of irradiated fuel, the accident analysis assumes manual isolation of the MCR/ESGR envelope upon indication that a FHA has occurred and manual initiation of the MCR/ESGR EVS to supply filtered air flow within 1 hour.

Normal ventilation is assumed during a toxic gas or smoke incident. MCR/ESGR envelope isolation and manual initiation of filtered air from the MCR/ESGR EVS is at the discretion of the MCR operators to mitigate the consequences of these events.

The MCR/ESGR Envelope Isolation Actuation Instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LIMITING CONDITIONS FOR OPERATION (LCO) - The LCO requirements ensure that instrumentation necessary to initiate MCR/ESGR envelope isolation is OPERABLE.

1. Manual Actuation

The LCO requires two trains to be OPERABLE. The operator can initiate MCR/ESGR envelope isolation at any time by closing dampers 1-VS-MOD-103A (supply) and 1-VS-MOD-103D (exhaust) [Train A] or 1-VS-MOD-103C (supply) and 1-VS-MOD-103B (exhaust) [Train B] from the MCR. This action will cause actuation of components in the same manner as the automatic actuation signal, i.e., isolate the normal ventilation supply and exhaust ducts, trip the normal ventilation supply and exhaust fans, and trip the adjacent non-safety-related Turbine/Service Building ventilation fans.

The LCO for manual actuation ensures the proper amount of redundancy is maintained in the manual actuation circuitry to ensure the operator has manual initiation capability. Each train consists of two damper control switches and the interconnecting wiring to the actuation circuitry.

2. Safety Injection

Refer to Table 3.7-2, "Engineered Safeguards Action Instrument Operating Conditions," Functional Unit No. 1, for all automatic initiating functions and requirements.

APPLICABILITY - The MCR/ESGR Envelope Isolation Function must be OPERABLE in REACTOR OPERATION conditions where T_{avg} exceeds 200°F to provide the required MCR/ESGR envelope isolation assumed in the applicable safety analyses. In COLD SHUTDOWN and REFUELING OPERATION, when no fuel movement involving irradiated fuel is taking place, there are no requirements for MCR/ESGR Envelope Isolation Actuation Instrumentation operability consistent with the safety analyses assumptions applicable in these REACTOR OPERATION conditions.

In addition, the Manual Actuation function of the MCR/ESGR Envelope Isolation Actuation Instrumentation is required to be OPERABLE when moving irradiated fuel.

ACTIONS

3.7.F.1.a

This TS requirement applies to the failure of one manual MCR/ESGR Envelope Isolation Actuation Instrumentation train.

If one train is inoperable, seven (7) days are permitted to restore it to OPERABLE status. In this condition, the remaining required OPERABLE manual MCR/ESGR Envelope Isolation Actuation Instrumentation train is adequate to perform the MCR/ESGR envelope isolation function. However, the overall reliability is reduced because a failure in the OPERABLE train could result in loss of MCR/ESGR envelope isolation function. The 7 day Allowed Outage Time is based on the low probability of a DBA occurring during this time period, and the ability of the remaining train to provide the required capability.

If the train cannot be restored to OPERABLE status, the normal ventilation to the MCR/ESGR envelope must be isolated. This accomplishes the manual MCR/ESGR envelope isolation function and places the unit in a conservative mode of operation. If the Required Action and associated Allowed Outage Time for Action Statement 3.7.F.1.a have not been met and T_{avg} exceeds 200°F, the unit must be brought to a REACTOR OPERATION condition in which the LCO requirements are not applicable. To achieve this status, the unit must be brought to at least HOT SHUTDOWN within 6 hours and COLD SHUTDOWN within the following 30 hours. The completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

3.7.F.1.b

This TS requirement applies to the failure of two manual MCR/ESGR Envelope Isolation Actuation Instrumentation trains.

The Required Action is to isolate the normal ventilation to the MCR/ESGR envelope immediately. This accomplishes the manual MCR/ESGR envelope isolation function that may have been lost and places the unit in a conservative mode of operation. If the

Required Action and associated Allowed Outage Time for Action Statement 3.7.F.1.b have not been met and T_{avg} exceeds 200°F, the unit must be brought to a REACTOR OPERATION condition in which the LCO requirements are not applicable. To achieve this status, the unit must be brought to at least HOT SHUTDOWN within 6 hours and COLD SHUTDOWN within the following 30 hours. The completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

3.7.F.2.a

This TS requirement applies to the failure of one manual MCR/ESGR Envelope Isolation Actuation Instrumentation train when irradiated fuel assemblies are being moved. Either the normal ventilation to MCR/ESGR envelope must be isolated or movement of irradiated fuel assemblies must be suspended within 7 days to reduce the risk of accidents that would require manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation.

3.7.F.2.b

This TS requirement applies to the failure of two manual MCR/ESGR Envelope Isolation Actuation Instrumentation trains when irradiated fuel assemblies are being moved. Either the normal ventilation to MCR/ESGR envelope must be isolated or movement of irradiated fuel assemblies must be suspended immediately to reduce the risk of accidents that would require manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation.

References

- (1) UFSAR - Section 7.5
- (2) UFSAR - Section 14.5
- (3) UFSAR - Section 14.3.2
- (4) UFSAR - Section 9.13
- (5) UFSAR - Section 14.4.1

The requirements in this specification for the Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS) and the MCR and ESGR Air Conditioning System (chillers and air handling units) apply to the shutdown unit. If any of the specified limiting conditions is not met, the requirements appropriately suspend activities that could result in a release of radioactivity that might require isolation of the MCR/ESGR envelope and place irradiated fuel in a safe position without delay and in a controlled manner. The requirements applicable to the operating unit are contained in Specifications 3.21 and 3.23.

During REFUELING OPERATIONS and during the movement of irradiated fuel assemblies, the MCR/ESGR EVS and the manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation must be OPERABLE to ensure that the MCR/ESGR envelope will remain habitable during and following a Design Basis Accident.

Specifically, during REFUELING OPERATIONS and during movement of irradiated fuel assemblies, the MCR/ESGR EVS and the manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation must be OPERABLE to respond to the release from a fuel handling accident.

3.10.A.7 and 8

During refueling, the reactor refueling water cavity is filled with approximately 220,000 gal of water borated to at least 2,300 ppm boron. The boron concentration of this water, established by Specification 3.10.A.7, is sufficient to maintain the reactor subcritical by at least 5% $\Delta k/k$ in the COLD SHUTDOWN condition with all control rod assemblies inserted. This includes a 1% $\Delta k/k$ and a 50 ppm boron concentration allowance for uncertainty. This concentration is also sufficient to maintain the core subcritical with no control rod assemblies inserted into the reactor. Checks are performed during the reload design and safety analysis process to ensure the K-effective is equal to or less than 0.95 for each core. Periodic checks of refueling water boron concentration assure the proper shutdown margin. Specification 3.10.A.8 allows the Control Room Operator to inform the manipulator operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

3.10.A.11 and 12 and 3.10.B.4 and 5

When one MCR/ESGR EVS train is inoperable, for reasons other than an inoperable MCR/ESGR envelope boundary, action must be taken to restore OPERABLE status within 7 days. In this condition, the remaining required OPERABLE MCR/ESGR EVS train is adequate to perform the MCR/ESGR envelope occupant protection function. However, the overall reliability is reduced because a failure in the OPERABLE MCR/ESGR EVS train could result in loss of MCR/ESGR EVS function. The 7 day Allowed Outage Time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

During REFUELING OPERATIONS or during movement of irradiated fuel assemblies, if the required inoperable MCR/ESGR EVS train cannot be restored to OPERABLE status within the required Allowed Outage Time, or two required MCR/ESGR EVS trains are inoperable or with one or more required MCR/ESGR EVS trains inoperable due to an inoperable MCR/ESGR envelope boundary, action must be taken to suspend activities that could result in a release of radioactivity that might require isolation of the MCR/ESGR envelope. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

In addition to the above safeguards, interlocks are used during refueling to assure safe handling of the fuel assemblies. An excess weight interlock is provided on the lifting hoist to prevent movement of more than one fuel assembly at a time. The spent fuel transfer mechanism can accommodate only one fuel assembly at a time.

Upon each completion of core loading and installation of the reactor vessel head, specific mechanical and electrical tests will be performed prior to initial criticality.

The fuel handling accident has been analyzed based on the methodology outlined in Regulatory Guide 1.183. The analysis assumes 100% release of the gap activity from the assembly with maximum gap activity after a 100-hour decay period following operation at 2605 MWt.

Detailed procedures and checks insure that fuel assemblies are loaded in the proper locations in the core. As an additional check, the movable incore detector system will be used to verify proper power distribution. This system is capable of revealing any assembly enrichment error or loading error which could cause power shapes to be peaked in excess of design value.

BASES

BACKGROUND - The MCR/ESGR Emergency Ventilation System (EVS) provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke.

The MCR/ESGR EVS consists of four full capacity trains that supply filtered air to the MCR/ESGR envelope and a MCR/ESGR envelope boundary that limits the inleakage of unfiltered air. Each MCR/ESGR EVS train consists of a prefilter, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves, dampers, doors, barriers, and instrumentation also form part of the system. One EVS train is capable of performing the safety function of providing outside filtered air for pressurization. Two independently powered EVS trains are required for independence and redundancy.

The MCR/ESGR envelope is the area within the confines of the MCR/ESGR envelope boundary that contains the spaces that control room occupants inhabit to control the unit during normal and accident conditions. This area encompasses the common Main Control Room and the Emergency Switchgear Rooms, and may encompass other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident. The MCR/ESGR envelope is protected during normal operation, natural events, and accident conditions. The MCR/ESGR envelope boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the MCR/ESGR envelope. The OPERABILITY of the MCR/ESGR envelope boundary must be maintained to ensure that the inleakage of unfiltered air into the MCR/ESGR envelope will not exceed the inleakage assumed in the licensing basis analysis of design basis accident (DBA) consequences to MCR/ESGR envelope occupants. The MCR/ESGR envelope and its boundary are defined in the MCR/ESGR Envelope Habitability Program (TS 6.4.R).

Upon receipt of the actuating signal(s), normal air supply to and exhaust from the MCR/ESGR envelope is isolated. Two dampers in series in both the MCR/ESGR envelope supply and exhaust ducts close to isolate the MCR/ESGR envelope. Approximately 60 minutes after the isolation of the MCR/ESGR envelope, the MCR/ESGR EVS is manually actuated. Each MCR/ESGR EVS train provides filtered air from the Turbine Building to the MCR/ESGR envelope through HEPA filters and charcoal adsorbers. Prefilters remove any large particles in the air to prevent excessive loading of the HEPA filters and charcoal adsorbers.

Pressurization of the MCR/ESGR envelope, although not required by the accident analyses, limits infiltration of unfiltered air from the surrounding areas adjacent to the MCR/ESGR envelope.

A single train of the MCR/ESGR EVS will pressurize the MCR/ESGR envelope to about 0.05 inches water gauge relative to external areas adjacent to the MCR/ESGR envelope boundary. The MCR/ESGR EVS operation in maintaining the MCR/ESGR envelope habitable is discussed in the UFSAR, Section 9.13 (Ref. 3).

Redundant MCR/ESGR EVS supply trains provide pressurization and filtration should one train fail to start or should an excessive pressure drop develop across the operating filter train. Isolation dampers are arranged in series pairs so that the failure of one damper to shut will not result in a breach of isolation. The MCR/ESGR EVS is designed in accordance with Seismic Category I requirements.

The MCR/ESGR EVS is designed to maintain a habitable environment in the MCR/ESGR envelope for 30 days of continuous occupancy after a Design Basis Accident (DBA) without exceeding a 5 rem total effective dose equivalent (TEDE).

APPLICABLE SAFETY ANALYSES - The MCR/ESGR EVS components are arranged in redundant, safety related ventilation trains. The MCR/ESGR EVS provides airborne radiological protection for the MCR/ESGR envelope occupants, as demonstrated by the MCR/ESGR envelope occupant dose analyses for the most limiting design basis accident fission product release presented in the UFSAR, Chapter 14 (Ref. 4).

The MCR/ESGR EVS provides protection from smoke and hazardous chemicals to the MCR/ESGR envelope occupants. An evaluation of hazardous chemical releases demonstrates that the toxicity limits for chemicals are not exceeded in the MCR/ESGR envelope following a hazardous chemical release (Refs. 1 and 5) or that ample time is available for MCR/ESGR envelope occupants to isolate the MCR/ESGR envelope. The evaluation of a smoke challenge demonstrates that it will not result in the inability of the MCR/ESGR envelope occupants to control the reactor either from the MCR or from the remote shutdown panel (Ref. 2).

The worst case single active failure of a component of the MCR/ESGR EVS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function.

The MCR/ESGR EVS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LIMITING CONDITIONS FOR OPERATION (LCO) - Two independent and redundant MCR/ESGR EVS trains are required to be OPERABLE to ensure that at least one is available to pressurize and to provide filtered air to the MCR/ESGR envelope assuming a single active failure disables one of the two required trains. Due to electrical power considerations, one train must be from the other unit. Total system failure, such as from a loss of both ventilation trains or from an inoperable MCR/ESGR envelope boundary, could result in exceeding a dose of 5 rem TEDE to the MCR/ESGR envelope occupants in the event of a large radioactive release.

The refueling water storage tank is sampled weekly for Cl^- and/or F^- contaminations. Weekly sampling is adequate to detect any inleakage of contaminated water.

Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Isolation Actuation Instrumentation

The MCR/ESGR Envelope Isolation Actuation function provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity. A functional check of the Manual Actuation function is performed every 18 months. The test frequency is based on the known reliability of the function and the redundancy available and has been shown to be acceptable through operating experience. The Surveillance Requirement will ensure that the two trains of the MCR/ESGR envelope isolation dampers close upon manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation and that the supply and exhaust fans in the normal ventilation system for the MCR/ESGR envelope shut down, as well as adjacent area ventilation fans. Automatic actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation is confirmed as part of the Logic Channel Testing for the Safety Injection system.

Pressurizer PORV, PORV Block Valve, and PORV Backup Air Supply

The safety-related, seismic PORV backup air supply is relied upon for two functions - mitigation of a design basis steam generator tube rupture accident and low temperature overpressure protection (LTOP) of the reactor vessel during startup and shutdown. The surveillance criteria are based upon the more limiting requirements for the backup air supply (i.e. more PORV cycles potentially required to perform the mitigation function), which are associated with the LTOP function.

The PORV backup air supply system is provided with a calibrated alarm for low air pressure. The alarm is located in the control room. Failures such as regulator drift and air leaks which result in low pressure can be easily recognized by alarm or annunciator action. A periodic quarterly verification of air pressure against the surveillance limit supplements this type of built-in surveillance. Based on experience in operation, the minimum checking frequencies set forth are deemed adequate.