VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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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
REMOVAL OF MAIN CONTROL ROOM BOTTLED AIR SYSTEM REQUIREMENTS

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) requests amendments, in the form of changes to the Technical Specifications (TS) to Facility Operating License Numbers DPR-32 and DPR-37 for Surry Power Station Units 1 and 2, respectively. The proposed change removes the Main Control Room (MCR) Bottled Air System requirements from the TS. This change is consistent with the assumptions of the current Alternate Source Term (AST) dose analysis of record (AOR), performed in accordance with 10 CFR 50.67, and the results of non-pressurized Main Control Room/Emergency Switchgear Room envelope boundary tracer gas testing. The AST AOR does not credit the MCR Bottled Air System for dose mitigation in the event of a design basis accident, nor is the system required for the mitigation of toxic chemical releases or smoke migration. Associated TS Basis sections will also be revised to delete discussion of the MCR Bottled Air System. A discussion of the proposed change is provided in Attachment 1. The marked-up and typed proposed TS pages are provided in Attachments 2 and 3, respectively.

We have evaluated the proposed amendment 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. NRC approval of the proposed license amendment is requested by October 15, 2009 with a 60-day implementation period.

ADD1
NRR

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

Sincerely,

L. N. Hartz
Vice President – Nuclear Support Services

Attachments
1. Discussion of Change
2. Proposed Technical Specifications Pages (Mark-Up)
3. Proposed Technical Specifications Pages (Typed)

Commitments made in this letter: None

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President – Nuclear Support Services, of Virginia Electric and Power Company. She has affirmed before me that she 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 her knowledge and belief.

Acknowledged before me this 9TH day of October, 2008.

My Commission Expires: May 30, 2010.

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Notary Public
Commonwealth of Virginia
140542
My Commission Expires May 31, 2010

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ATTACHMENT 1

DISCUSSION OF CHANGE

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

DISCUSSION OF CHANGE

1. SUMMARY DESCRIPTION

Virginia Electric and Power Company (Dominion) proposes a change to the Surry Power Station Units 1 and 2 Technical Specifications (TS) pursuant to 10 CFR 50.90. The proposed change revises the TS for consistency with the assumptions of the current Alternate Source Term (AST) dose analysis of record (AOR), performed in accordance with 10 CFR 50.67, and the results of non-pressurized Main Control Room/Emergency Switchgear Room (MCR/ESGR) envelope boundary tracer gas testing. The AST AOR does not credit the MCR Bottled Air System for dose mitigation in the event of a design basis accident (DBA), nor is the system required for the mitigation of toxic chemical releases or smoke migration. Consequently, the proposed change will remove the MCR Bottled Air System requirements from the TS. Associated TS Basis sections will also be revised to delete discussion of the MCR Bottled Air System.

The AST AOR continues to credit the following features: 1) the MCR/ESGR envelope automatic isolation function on a safety injection signal, 2) manual isolation of the MCR/ESGR envelope in the event of a fuel handling accident (FHA), and 3) manual actuation of filtered makeup air by the MCR/ESGR Emergency Ventilation System (EVS) at about 1 hour for certain DBAs. Operability of the manual actuation switches used for isolation of the MCR/ESGR envelope in the event of a FHA was previously assured by the MCR Bottled Air System TS 3.19 and the associated surveillance requirements included in TS Table 4.1-2A, Item 15. Since the MCR Bottled Air System requirements are being removed from the TS, the operability and surveillance requirements for the manual actuation switches used to isolate the MCR/ESGR envelope in the event of a FHA are being incorporated into TS 3.7, *Instrumentation Systems*, and 4.1, *Operational Safety Review*, respectively.

The proposed TS change has been reviewed, and it has been determined that no significant hazards consideration exists as defined in 10 CFR 50.92. In addition, it has been determined that the change qualifies for categorical exclusion from an environmental assessment as set forth in 10 CFR 51.22(c)(9); therefore, no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed TS change.

2. DETAILED DESCRIPTION

2.1 Proposed Change

The following specific changes to the Surry Units 1 and 2 TS are proposed:

- *TS Table of Contents* – Delete Specification 3.19, *Main Control Room Bottled Air System*, from the TS Table of Contents. Operation of the MCR Bottled Air System

will be controlled by a licensee controlled document (e.g., Updated Final Safety Analysis Report) and 10 CFR 50.59.

- TS 3.7 *Instrumentation Settings*
  - Add new TS 3.7.F, *MCR/ESGR Envelope Isolation Actuation Instrumentation*, to provide operability requirements for the manual initiation of the MCR/ESGR Envelope Isolation Actuation Instrumentation.
  - Add new TS 3.7 Basis section, *MCR/ESGR Envelope Isolation Actuation Instrumentation.*

- TS 3.10 *Refueling* – Replace existing TS 3.10.A.12 and TS 3.10.B.5, which include operability requirements for the MCR Bottled Air System during REFUELING OPERATIONS and irradiated fuel movement, respectively, with TS operability requirements for manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation during these conditions. Capitalize the word "operable" in the TS Basis since it is a defined TS term.

- TS 3.19 *Main Control Room Bottled Air System* - Delete TS 3.19 in its entirety.

- TS 3.21 *Main Control Room and Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS)* - Revise the TS 3.21 Basis to delete references to the MCR Bottled Air System and the Emergency Habitability System (EHS). The EHS is defined in the TS as consisting of the MCR Bottled Air System and MCR/ESGR EVS. Since the MCR Bottled Air System requirements are being removed from the TS, the EHS discussion is no longer applicable.

- TS 4.1 *Operational Safety Review*

  - TS 4.1 Basis – Replace TS 4.1 Basis section, *Control Room Bottled Air System,* with new section, *MCR/ESGR Envelope Isolation Actuation Instrumentation.*

  - TS 4.1 Table 4.1-2A, Minimum Frequency for Equipment Tests – Replace existing Item 15, *Control Room Bottled Air Test*, with new Item 15, *MCR/ESGR Envelope Isolation Actuation Instrumentation – Manual* surveillance requirements.

- TS 6.4.R *Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Habitability Program* - Revise TS 6.4.R to delete references to the MCR Bottled Air System and the EHS.

2.2 Background

As discussed in greater detail below, adoption of the AST as the design and licensing bases for Surry Power Station has obviated the need for the one hour MCR/ESGR envelope pressurization provided by the MCR Bottled Air System, since the system is

no longer credited in the Surry accident analysis. Prior to implementation of the AST for Surry, the AOR credited the MCR Bottled Air System, as well as MCR/ESGR envelope isolation, for dose mitigation. However, the AST AOR no longer credits the MCR Bottled Air System for dose mitigation, but continues to assume automatic isolation of the MCR/ESGR envelope on a Safety Injection (SI) signal and manual isolation for a FHA. In addition, a tracer gas test for the MCR/ESGR envelope boundary was performed in the non-pressurized mode, and the results were well within the AST analyzed dose acceptance criteria for unfiltered inleakage. Therefore, since the MCR Bottled Air System is no longer credited in the accident analysis, or as a success path for the mitigation of any DBA, the TS requirements associated with the MCR Bottled Air System may be deleted from the TS. Appropriate requirements are retained in the Surry TS to ensure that the MCR/ESGR envelope can be manually isolated when necessary.

2.3 Licensing Basis

The original Surry TS, issued March 17, 1972, included TS 3.19, titled *Main Control Room Ventilation System.* TS 3.19 required a bottled air bank to pressurize the MCR/ESGR envelope to a positive pressure; however, there were no action statements included as part of the TS requirements. The original Surry TS also included TS Table 4.1-2A, Item 15, to test the ability to maintain positive pressure for one hour using a volume of air equivalent to or less than that stored in the bottled air supply on a refueling interval (approximately every 12 - 18 months) frequency. TS Amendments 1/1, dated September 23, 1974 (Ref. 1), incorporated the remedial action to be taken in the event of a loss of bottled air in the MCR ventilation system (i.e., 8 hours to HOT SHUTDOWN and after 48 hours to COLD SHUTDOWN). However, no time frame for achieving COLD SHUTDOWN was included.

In a December 9, 1981 letter (Ref. 2), in response to NUREG-0737, Item III.D.3.4, *Control Room Habitability*, a commitment was made to provide redundancy in the MCR Bottled Air System. Consequently, a redundant train of bottled air was installed in 1983 with no associated TS revision. TS Amendments 92/91, issued on January 17, 1984 (Ref. 3), revised the terminology in the specification from the *Main Control Room Ventilation System* to the *Main Control Room Bottled Air System* and extended the 8 hours to HOT SHUTDOWN action statement to 24 hours provided tests performed during the 8 hour period demonstrated that the MCR/ESGR EVS is functional. The frequency of the TS Table 4.1-2A, Item 15, Bottled Air System surveillance was changed from each refueling interval (approximately every 12 – 18 months) to once every 18 months by TS Amendments 213/213 dated June 11, 1998 (Ref. 4). TS Amendments 223/223, dated March 9, 2001 (Ref. 5), revised the TS to reflect the MCR Bottled Air System configuration of two redundant trains. These amendments also added a remedial action time of 7 days for one inoperable train and established the 8 hour remedial action to place both units in HOT SHUTDOWN if both trains are inoperable. The remedial action to place both units in COLD SHUTDOWN, if these requirements are not met within 48 hours after achieving HOT SHUTDOWN, was

retained; however, a time frame to achieve COLD SHUTDOWN within the next 30 hours was added.

TS Amendments 230/230, dated March 8, 2002 (Ref. 6), revised the MCR Bottled Air System TS Basis based on implementation of the AST in accordance with 10 CFR 50.67. Based on the AST analysis, the 10 CFR 50, Appendix A, General Design Criteria (GDC) 19, *Control Room*, acceptance criteria were met for the limiting accident [Loss of Cooling Accident (LOCA)] assuming a total unfiltered MCR/ESGR envelope inleakage of 500 cfm. In response to NRC Generic Letter (GL) 2003-01, *Control Room Habitability*, dated June 12, 2003 (Ref. 7), a tracer gas test of the Surry MCR/ESGR envelope was performed in January 2004 to verify that the actual inleakage was less than that assumed in the AST analysis. Dominion provided the tracer gas test results to the NRC by letter dated April 22, 2004 (Ref. 8) and confirmed that the measured inleakage value was well below that assumed in the AST analysis. Consequently, the integrity of the MCR/ESGR envelope boundary was confirmed to be acceptable without crediting MCR/ESGR envelope pressurization.

TS amendments 260/260 dated July 7, 2008 (Ref. 9) modified the Surry TS requirements related to MCR/ESGR envelope habitability. The changes were consistent with the NRC-approved Industry/Technical Specification Task Force (TSTF) Traveler TSTF-448, Revision 3, *Control Room Habitability* (Ref. 10). The availability of the TS improvement was published in the Federal Register on January 17, 2007 (Ref. 11), as part of the consolidated line item improvement process (CLIIP). The amendments included a revision to the MCR Bottled Air System TS requirements contained in TS 3.19 to include the actions to be taken for an inoperable MCR/ESGR envelope boundary similar to those included for the MCR/ESGR EVS.

3. TECHNICAL EVALUATION

The Surry Units 1 and 2 MCR/ESGR envelope consists of a common MCR, two separate ESGRs located directly beneath the MCR, and four battery rooms (two in each ESGR). To minimize the infiltration of unfiltered outside air, poured concrete walls, floors, and ceilings; door and penetration seals; pressurization systems; and certain system components outside the MCR/ESGR envelope (e.g., emergency supply fans and associated ductwork) are provided.

Fresh air supply and exhaust for normal and accident conditions are provided for the MCR/ESGR envelope by separate and independent systems. During normal operation, fresh air is supplied to the MCR/ESGR envelope by a non-safety related fan unit (1-VS-AC-4). Two safety-related isolation dampers are located in series in the supply duct just inside the MCR/ESGR envelope (1-VS-MOD-103A and C). Downstream of the dampers, the duct splits into two paths, one supplying the MCR, the other supplying the ESGRs. Ductwork from the MCR and ESGRs combines into a single exhaust duct containing two safety related isolation dampers located in series just inside the MCR/ESGR envelope boundary (1-VS-MOD-103B and D). The supply and exhaust isolation dampers are spring-loaded and will fail to the closed position, which is the fail-

safe position, on faulted or loss-of-power conditions. A non-safety related exhaust fan (1-VS-AC-15) provides exhaust from the MCR/ESGR envelope. An excess of supply over exhaust is maintained. The normal ventilation supply and exhaust fans are located outside the MCR/ESGR envelope boundary.

The MCR Bottled Air System was designed to provide bottled, compressed, dry air of breathing quality to the MCR/ESGR envelope to maintain a positive interior pressure for a period of one hour following a DBA to ensure outward leakage when the outside air is contaminated. The system consists of two trains of bottled air banks, including their associated piping, valves and instrumentation. Each bank is sufficient for one hour of MCR/ESGR envelope pressurization. Bottled air can be released either automatically or manually from the MCR.

Currently, during a DBA, the MCR/ESGR EVS and the MCR Bottled Air System provide fresh air and minimize unfiltered inleakage into the MCR/ESGR envelope. When the compressed air provided by the MCR Bottled Air System is depleted, four EVS supply fans and associated HEPA/charcoal filter assemblies are available to provide filtered outside air and to pressurize the MCR/ESGR envelope indefinitely. Each unit's EVS fans are powered from a different emergency bus, and only one fan is required to be operating for sufficient MCR/ESGR envelope ventilation. The EVS fan ductwork is completely separate from that of the normal ventilation supply/exhaust system described above. The fan/filter assemblies are located in the Turbine Building, just outside the MCR/ESGR envelope boundary, and each fan pulls outside air from the turbine building through a separate duct. Each duct includes a safety related isolation damper, located just inside the MCR/ESGR envelope boundary.

SI Signal Initiation – Currently, an SI signal stops the normal ventilation supply/exhaust fans and closes the isolation dampers, shuts down non-safety related ventilation systems in adjacent areas, and initiates discharge of the MCR Bottled Air System.

Upon receipt of an SI signal, the following actions occur automatically:

1. The normal ventilation supply and exhaust dampers (MODs) to the MCR/ESGR are closed (1-VS-MOD-103A/B/C/D).

2. Upon automatic closure of dampers 1-VS-MOD-103A and/or 103C, the non-safety related normal ventilation supply fan 1-VS-AC-4 shuts down and the following non-safety related adjacent area fans also shut down:

   - 1/2-VS-F-28A through C (Turbine Building supply fans),
   - 1/2-VS-F-29A through H (Turbine Building exhaust fans),
   - 1-VS-AHU-1/2 and 1-VS-RAF-1/2 (Cable Tray Room air handling unit fans),
   - 1/2-VS-F-16 (Cable Tunnel exhaust fans), and

- 1/2-VS-F-HV-2 (Cable Vault heating and vent units' fans).

3. Upon automatic closure of dampers 1-VS-MOD-103B and/or 103D, the non-safety related normal ventilation exhaust fan 1-VS-F-15 shuts down.

4. Air from compressed air bottles in MER-3 and the cable tunnel is automatically released. Closure of damper 1-VS-MOD-103A actuates the MER-3 air bottles and closure of damper 1-VS-MOD-103B actuates the cable tunnel air bottles.

After approximately one hour following a design basis accident (DBA), during which the MCR Bottled Air System is used, the EVS is placed in service. This system, taking suction from the Turbine Building through HEPA and charcoal filters, continues the supply of breathing and pressurization air indefinitely upon depletion of the bottled air supply.

Manual Initiation – Manual initiation of the MCR Bottled Air System is currently required in the event of a FHA and accomplishes the same actions as noted above for initiation by SI actuation in addition to pressurizing the MCR/ESGR envelope. Upon deletion of the MCR Bottled Air System requirements, isolation of the MCR/ESGR envelope will be accomplished by the MCR/ESGR Envelope Isolation Actuation Instrumentation.

Separately, a manual control switch for 1-VS-AC-4 (ON-OFF) is located on the Unit 2 ventilation panel (VNT-2). A separate control switch, 1-VS-43-VS103X, is also located on the VNT-2 panel and allows for manual shutdown of the non-safety related fans noted above that automatically shut down upon closure of 1-VS-MOD-103A or 1-VS-MOD-103C. Dampers 1-VS-MOD-103B and 1-VS-MOD-103C are powered by the 1H1 emergency bus and constitute the 'A' train, and dampers 1-VS-MOD-103A and 1-VS-MOD-103D are powered by the 1J1 and the 2J1 emergency buses, respectively, and constitute the 'B' train. On faulted or loss-of-power conditions, the spring-loaded dampers will fail to the closed position, which is the fail-safe position that ensures control room isolation. These two trains provide the necessary redundancy to ensure manual isolation of the MCR/ESGR envelope when required.

MCR/ESGR Envelope Pressurization Testing Results - The Surry MCR/ESGR envelope was designed to be pressurized to prevent unfiltered inleakage. The original analyses assumed 0 cubic feet/minute (cfm) unfiltered in-leakage. The accidents analyzed were the LOCA, FHA, Steam Generator Tube Rupture (SGTR), Main Steam Line Break (MSLB), Locked Rotor Accident (LRA), Waste Gas Decay Tank Rupture (WGDTR), and Volume Control Tank Rupture (VCTR). The WGDTR and VCTR accidents were evaluated for Exclusion Area Boundary (EAB) dose only. In the late 1980's, the analyses were revised to include 10 cfm inleakage to account for normal ingress/egress of the MCR/ESGR envelope.

Following issuance of NUREG-1465, *Accident Source Terms for Light-Water Nuclear Power Plants*, Dominion reanalyzed the DBAs for Surry using AST methods included in

the NUREG and changed the design and licensing bases to adopt AST as the AOR. The analyses performed to demonstrate the radiological consequences of various DBAs using the NUREG-1465 methods are described in Surry's AST license amendment submittal dated April 11, 2000 (Reference 12). The accidents analyzed included the LOCA and the FHA, which constituted full implementation of the AST. Subsequently, the SGTR, MSLB and LRA were reanalyzed using AST assumptions, and the UFSAR was revised in accordance with 10 CFR 50.59. As previously, the WGDTR and VCTR were analyzed for EAB dose only. Based on the AST analyses results, the 10 CFR 50 Appendix A GDC 19 acceptance criteria were met for the limiting accident (LOCA) assuming a MCR/ESGR envelope total unfiltered inleakage of 500 cfm.

In response to GL 2003-01, a tracer gas test of the Surry MCR/ESGR envelope was performed in January 2004 to verify that actual inleakage was less than that assumed in the AST analyses. Although the design/licensing basis for Surry was a pressurized MCR/ESGR envelope, the test was performed in a non-pressurized alignment, and the adjacent area ventilation was placed in the post-accident alignment (i.e., secured) since it would be bounding for unfiltered inleakage. The acceptance criterion for the test was the inleakage assumed in the AST LOCA analyses, i.e., 500 cfm. The test data results for the MCR/ESGR envelope boundary indicated an actual unfiltered inleakage rate of 120 $\pm$ 5 cfm in the non-pressurized alignment. Tracer gas testing of the emergency supply fan suction ducts indicated a maximum inleakage of 27 $\pm$ 2 cfm (for the worst of the four EVS fans). Thus, it was determined that total unfiltered MCR/ESGR envelope inleakage is bounded by a worst-case value of 147 $\pm$ 6 cfm (statistically summed). Since the inleakage measured in this conservative alignment was well below that assumed in the AST analyses, the integrity of the MCR/ESGR envelope was confirmed to be acceptable without pressurization. In summary, the actual data from the tracer gas testing indicated that unfiltered inleakage was well below the value assumed in the safety analyses.

Toxic Gas and Smoke Protection - Hazardous chemical events are evaluated on the basis of no action being taken by the control room operator (i.e., no ventilation changes). The nominal flow provided by either the normal supply or the MCR/ESGR EVS is approximately twice that of the unfiltered inleakage allowed for radiological events. Therefore, the unfiltered inleakage for a toxic gas event is not the limiting value. In addition, self-contained breathing apparatus (SCBA) are required by the Fire Protection program to be available for the control room operators but are not necessary for protective action following a toxic gas event or radiological event. However, they are readily available as a contingency for protection against prolonged exposure to smoke and/or noxious vapors if deemed necessary by the operations staff. Also, the MCR/ESGR envelope can be manually isolated to prevent introduction of smoke or toxic gases into the MCR/ESGR envelope.

4. REGULATORY EVALUATION

TS 3.10, 3.19 and 4.1 include operability requirements, action statements and/or surveillance requirements for the MCR Bottled Air System. However, as delineated

above, this system is no longer credited in the accident analyses and is therefore not considered a success path for mitigating a DBA. Additionally, the MCR Bottled Air System TS do not meet any of the four (4) criteria of 10 CFR 50.36(c)(2)(ii) for inclusion in the TS as indicated below.

4.1 Applicable Regulatory Requirements/Criteria

4.1.1 Comparison to 10 CFR 50.36 Criteria for TS Inclusion

As discussed in detail below, the MCR Bottled Air System requirements that are being deleted from the TS do not meet any of the four 10 CFR 50.36 criteria for inclusion in the TS.

- Criterion 1

  Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

  The affected TS ensure the operability of the MCR Bottled Air System. These TS do not address installed instrumentation that is used to detect, and indicate in the control room, a significant degradation of the reactor coolant pressure boundary. This system is not credited in the accident analyses and is therefore not considered a success path for mitigating a DBA. Therefore, the MCR Bottled Air System TS do not satisfy Criterion 1.

- Criterion 2

  A process variable, design feature, or operating restriction that is an initial condition of a DBA or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

  The affected TS ensure the operability of the MCR Bottled Air System, which is not credited in the plant accident analyses. These TS do not address a process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, the MCR Bottled Air System TS do not satisfy Criterion 2.

- Criterion 3

  A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

The AST analyses do not assume or credit the availability/operation of the MCR Bottled Air System with providing any dose mitigation for MCR operators during a DBA. This consideration provides the basis for removing the MCR Bottled Air System requirements from the TS. Thus, the MCR Bottled Air System TS do not cover a system, structure, or component (SSC) that is part of the primary success path which functions or actuates to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, the MCR Bottled Air System TS do not satisfy Criterion 3.

- Criterion 4

  A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

  The MCR Bottled Air System screened out of the Surry Probabilistic Risk Assessment (PRA) model due to its low risk significance. Furthermore, the subject system is not credited to ensure radiological dose criteria for the EAB, Low Population Zone (LPZ), or MCR are met. The MCR Bottled Air System TS requirements do not cover an SSC that requires risk review/unavailability monitoring. Also, operating experience has not shown the system to be significant to public health and safety. Therefore, the MCR Bottled Air System does not satisfy Criterion 4.

4.1.2 Conformance with 10 CFR 50 Appendix A GDC

Surry was designed prior to issuance of the draft General Design Criteria (GDC) published in 1966. Construction permits for Units 1 and 2 (CPPR 43 and 44, respectively) were issued June 25, 1968. The GDC, Appendix A to 10 CFR 50, were published February 20, 1971. The Safety Evaluation Report for the Surry Operating Licenses was issued in February 1972; consequently, these units were not subject to GDC requirements. (Reference SECY-92-223 dated September 18, 1992.) However, the plant was designed to meet the intent of the draft GDC. Specific conformance with the applicable 10 CFR 50 Appendix A, GDC 1, 2, 3, 4, 5 and 19 without the MCR Bottled Air System is discussed below:

- <u>GDC 1 - Quality Standards and Records</u>

  The Surry SSCs that support Control Room Habitability (CRH) have been designed, fabricated, erected, tested and maintained as safety related. The MCR, ESGRs and associated CRH systems are located within a Seismic Category 1 building. Portions of the normal ventilation system associated with the control room isolation function are classified and maintained as safety related, as well as the emergency filtration systems and cooling systems. Safety related SSCs are designed, constructed, operated and maintained in accordance with the Dominion Quality Assurance Program Manual.

Therefore, Surry is considered to be in full compliance with GDC 1.

- GDC 2 - Protection Against Natural Phenomena

The Surry SSCs important to safety have been designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, seiches, and floods, as described in Chapters 2 and 3 of the UFSAR. Tsunamis are not applicable to the Surry site. The MCR, ESGRs and battery rooms are in Seismic Class 1 and tornado missile-protected structures. The MCR/ESGR Air Conditioning System (ACS) and EVS are designed to remain functional following a seismic event. The MCR/ESGR ACS chiller rooms (Mechanical Equipment Rooms 3 and 5) are located in Seismic Class 1 and missile-protected areas.

Therefore, Surry is considered to be in full compliance with GDC 2.

- GDC 3 - Fire Protection

Surry conforms to the guidance of Appendix A to Branch Technical Position (BTP) APCSB 9.5-1 as described in NRC's Fire Protection Safety Evaluation Report dated September 19, 1979, and complies with the applicable sections of 10 CFR 50 Appendix R.

SSCs important to safety are designed and located to minimize the fire hazard. Fire Protection systems are designed to minimize the effects of fires on SSCs important to safety, and adequate means are available to fight the fire hazard encountered in each plant area.

Non-combustible and fire resistant materials are used wherever practical throughout the MCR/ESGR envelope, three-hour rated fire barriers are used to isolate the MCR/ESGR envelope from other areas, and evaluations are performed for other materials. Penetrations of fire barriers, such as doorways, cable trays or conduit penetrations, and ventilation penetrations are protected as required. Three-hour rated dampers and fire doors are installed in ventilation ducts and doorway penetrations of fire barriers, respectively. Cable tray penetrations of fire barriers also have a three-hour fire rating, and piping and conduit penetrations are sealed around the piping and conduit to prevent smoke migration. Conduits penetrating fire barriers are sealed internally if the conduit terminates within 5 feet of the fire barrier. Conduits that penetrate the MCR/ESGR envelope pressure boundary are sealed internally in accordance with original plant design specifications and current procedures. Materials used for air sealing of the MCR/ESGR envelope boundary were selected to be compatible with applicable fire barrier requirements.

Furthermore, the Surry MCR is equipped with portable fire extinguishers, and each ESGR is protected with a manually-actuated total flooding Halon fire suppression system. The Unit 1 and Unit 2 EVS fans are located in different fire areas.

For Surry, "Alternate Shutdown" is generally intended to describe that series of manual actions that are taken independently of the control room to achieve safe shutdown for a postulated exposure fire in the control room. Procedures are provided for alternate shutdown of either unit using the respective Alternate Shutdown Panels in each ESGR. Appropriate procedures and equipment are available and staged for use by the station fire brigade in coping with a fire in either the MCR or the ESGRs.

Therefore, Surry is considered to be in full compliance with GDC 3.

- GDC 4 - Environmental and Missile Design Bases

The MCR and ESGRs are located within the MCR/ESGR envelope, which is designed for missile impact. In addition, MCR entrances are protected by missile barriers. Concrete walls and slabs surrounding the MCR are at least 24 inches thick and also serve as radiation shielding. With the exception of the emergency supply fans and filters, the CRH systems are protected against missiles through similar building design features. Both MCR and ESGR emergency supply fans and filters are located in the Turbine Building, just outside the MCR/ESGR envelope wall. The MCR fan/filter assemblies are located on the mezzanine level. The ESGR fans are located on the next level below. The MCR emergency supply fans are approximately 50 feet apart horizontally. The ESGR emergency supply fans are about 110 feet apart.

During any postulated DBA, the safety related MCR/ESGR ACS maintains the MCR/ESGR envelope temperature and humidity within limits for both emergency equipment operability and personnel occupancy. The system design is based on the combined Unit 1 and Unit 2 heat gain from safety related MCR/ESGR envelope equipment, occupancy, wall transmission, and lighting load.

The effects of various pipe breaks outside containment on the MCR/ESGR envelope and associated facilities are discussed in Appendix 14B of the Surry UFSAR. In each case, the MCR/ESGR envelope will remain habitable and provide the capability for safe shutdown and cooldown of the plant.

Therefore, Surry is considered to be in full compliance with GDC 4.

- GDC 5 - Sharing of Structures, Systems and Components

Surry Units 1 and 2 share a common MCR. The ESGRs, although within the MCR/ESGR envelope and adjacent to each other, are separate rooms and fire areas and have separate air handling units (AHUs) for air cooling and recirculation. The MCR and ESGRs share a common normal supply/exhaust ventilation system. This system is not needed for accident mitigation and automatically isolates the MCR/ESGR envelope on an SI signal from adjacent areas post-accident. However, the normal supply/exhaust ducts (within the MCR/ESGR envelope) are not

automatically isolated in the event of a FHA. The station procedure for responding to a FHA requires manual isolation of the MCR/ESGR envelope.

Finally, each of the four major areas in the MCR/ESGR envelope (Unit 1 MCR, Unit 2 MCR, Unit 1 ESGR, and Unit 2 ESGR) is equipped with an emergency supply fan/filter system. Only one of these fan/filter assemblies is required to be operating for the entire MCR/ESGR envelope following radiological events.

Therefore, Surry is considered to be in full compliance with GDC 5.

- GDC 19 - Control Room

The Surry MCR is common to both units. CRH systems include radiation shielding, redundant emergency air filtering and air conditioning systems, radiation monitoring, lighting, and fire protection equipment. Shielding (concrete walls and ceiling/roof slabs), radiation monitoring, emergency filtration, and separate and independent MCR isolation systems provide radiation protection. Sanitary facilities and potable water are located within the MCR/ESGR envelope, and food can be brought to the MCR as needed.

The MCR is designed to operate the nuclear power units safely under normal conditions and to maintain them in a safe condition under accident conditions. Adequate radiation protection has been provided to ensure that radiation exposures to personnel occupying the MCR during the 30-day period following a DBA will not exceed 5 rem TEDE. The Large Break LOCA (LBLOCA) is the limiting radiological event. The DBAs, dose analyses, and consequences are described in Chapter 14 of the UFSAR.

In addition, evaluations of the LBLOCA and FHA using the AST demonstrate that Surry meets the GDC 19 criterion of 5 rem TEDE with 500 cfm of unfiltered inleakage. The evaluations illustrate that the thyroid portion of the TEDE dose is the limiting concern for unfiltered inleakage in excess of design basis assumptions. The UFSAR was revised under 10 CFR 50.59 to include AST for the MSLB, SGTR and LRA with at least 500 cfm of unfiltered inleakage assumed for these accidents.

Therefore, Surry is considered to be in full compliance with GDC 19.

4.1.3 Conformance with Regulatory Guide (RG) 1.183

Regulatory Position C.1.1.1, "Safety Margins," to RG 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," states:

The proposed uses of an AST and the associated proposed facility modifications and changes to procedures should be evaluated to determine whether the proposed

changes are consistent with the principle that sufficient safety margins are maintained, including a margin to account for analysis uncertainties....

Operation of the MCR Bottled Air System and MCR/ESGR envelope inleakage was previously accounted for in the Surry safety analysis by assuming a MCR/ESGR inleakage of 10 cfm (for door openings). This was based on maintaining pressure in the control room at 0.05 inches of water. At no time was the MCR Bottled Air System flow rate or pressure explicitly credited in the safety analysis. The 10 cfm inleakage was an assumption in the analysis not a measured value. Surry now measures MCR/ESGR envelope inleakage in accordance with TS 4.18, *Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS) Testing*, and TS 6.4.R, *Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Habitability Program*, with an acceptance criterion of 500 cfm for LOCAs and FHAs in a non-pressurized alignment. The inleakage acceptance criterion is based on the NRC approved AST analysis, which is consistent with the applicable codes and standards, and provides adequate margin to account for measurement uncertainties associated with the test method required to establish the MCR/ESGR inleakage limit. As noted in Section 3 above, the last measured tracer gas test result was 147 $\pm$ 6 cfm with the MCR/ESGR envelope in a non-pressurized mode. With the deletion of the MCR Bottled Air System TS requirements, the safety analysis and the TS will be consistent. Therefore, deletion of MCR Bottled Air System TS requirements does not adversely affect the margin of safety. The existing plant design and operation provide sufficient safety margin to ensure the operator's dose will not exceed the approved safety analysis or any NRC dose limit.

Consequently, the proposed deletion of the MCR Bottled Air System TS requirements is consistent with the principle that sufficient safety margin, including margin to account for analysis uncertainties, is maintained. Therefore, the proposed change is in conformance with the RG 1.183 guidance regarding Regulatory Position C.1.1.1, "Safety Margins."

Regulatory Position C.1.1.2, "Defense in Depth," to RG 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," states:

The proposed uses of an AST and the associated proposed facility modifications and changes to procedures should be evaluated to determine whether the proposed changes are consistent with the principle that adequate defense in depth is maintained to compensate for uncertainties in accident progression and analysis data. Consistency with the defense-in-depth philosophy is maintained if system redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties. In all cases, compliance with the General Design Criteria in Appendix A to 10 CFR Part 50 is essential. Modifications proposed for the facility generally should not create a need for compensatory programmatic activities, such as reliance on manual operator actions.

Proposed modifications that seek to downgrade or remove required engineered safeguards equipment should be evaluated to be sure that the modification does not invalidate assumptions made in facility PRAs and does not adversely impact the facility's severe accident management program.

The following justification demonstrates that Dominion maintains conformance with the guidance of RG 1.183, Regulatory Position C.1.1.2, "Defense in Depth."

- *A reasonable balance among prevention of core damage, prevention of containment failure, and consequence mitigation is preserved.*

  Elimination of the MCR Bottled Air System TS requirements does not increase the likelihood of any accident, nor create the probability of any new accident. Dose mitigation capability is maintained because the MCR/ESGR envelope, the MCR/ESGR Envelope Isolation Actuation Instrumentation and the MCR/ESGR EVS are required to be OPERABLE. Operability of these systems will continue to ensure that operator dose remains within the safety analysis limits.

- *Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided.*

  The MCR/ESGR envelope, the MCR/ESGR Envelope Isolation Actuation Instrumentation and the MCR/ESGR EVS design will continue to provide adequate mitigation of operator dose without reliance on programmatic activities. No additional programmatic activities (manual actions) are necessary as a result of the proposed change. Manual actions are still required to isolate the MCR/ESGR envelope for a FHA and to initiate EVS trains to provide filtered makeup air to the MCR/ESGR envelope.

- *Whether there are appropriate restrictions in place to preclude simultaneous equipment outages that would erode the principles of redundancy and diversity...*

  The TS limit the outages of redundant trains of safety-related equipment and Surry's Maintenance Rule (a)(4) program ensures that simultaneous equipment outages are controlled such that the principles of redundancy and diversity are not eroded.

- *Defenses against potential common cause failures are maintained and the potential for introduction of new common cause failure mechanisms is assessed.*

  No new common cause failure vulnerabilities were identified in the deletion of the MCR Bottled Air System TS requirements. The remaining mitigation systems will continue to be operated in the same manner without the introduction of any new common cause failure mechanisms.

- *Independence of physical barriers is not degraded.*

  No physical barriers will be degraded by the proposed TS change. The MCR/ESGR envelope and the MCR/ESGR EVS are not degraded by the proposed change. MCR/ESGR operation with inleakage below the analyzed limit will ensure that operator dose remains below the acceptance criteria.

- *Defenses against human errors are maintained.*

  No new potential human errors are expected. The proposed TS change only eliminates the need for the MCR Bottled Air System. The MCR/ESGR Envelope Isolation Actuation Instrumentation and the MCR/ESGR EVS will ensure that the operators are adequately protected. There are no additional automatic or manual actions required as a result of this proposed change.

- *The intent of the General Design Criteria in Appendix A to 10 CFR Part 50 is maintained.*

  The intent of the General Design Criteria (GDC) is satisfied by the proposed TS change. The remaining mitigation systems (i.e., MCR/ESGR envelope, MCR/ESGR Envelope Isolation Actuation Instrumentation and MCR/EGSR EVS) continue to meet the intent of the GDC.

As noted in Section 4.1.1 above, the MCR Bottled Air System screened out of the Surry PRA model due to its low risk significance. Furthermore, the subject system is not credited to ensure radiological dose criteria for the EAB, LPZ, or MCR are met. The MCR Bottled Air System TS requirements do not cover an SSC that requires risk review/unavailability monitoring.

The major function of the MCR Bottled Air System is to ensure that the ability of operators to mitigate the consequences of an accident is not impaired. The ability of the operators to perform their required actions is measured by the reliability of their credited actions in the PRA Model. These reliability estimates are a function of environmental factors, such as MCR/ESGR habitability. The MCR/ESGR habitability is impacted by inleakage into the MCR/ESGR envelope. Based on an evaluation of the proposed changes, due to the MCR structural integrity and containment performance:

- MCR/ESGR envelope inleakage acceptability is not impacted by the proposed change, and
- The reliability of the defenses against high inleakage is not impacted.

The original LOCA analysis modeled the release of the entire core inventory at the initiation of the event and the containment was designed to return to subatmospheric pressure within one hour. The MCR Bottled Air System was designed to operate during the one hour period that the containment was above atmospheric pressure and prevent unfiltered inleakage into the control room. After implementation of the AST and as a

result of addressing GSI-191, *Assessment of Debris Accumulation on PWR Sump Performance,* it can now take up to 4 hours for the containment to return to subatmospheric pressure following a LOCA. Additionally, in the AST LOCA analysis the majority of the core release to the containment atmosphere occurs between 0.5 and 1.8 hours. Finally, Surry now measures MCR/ESGR envelope inleakage in accordance with TS 4.18, *Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS) Testing*, and TS 6.4.R, *Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Habitability Program*, in a non-pressurized alignment with an acceptance criterion of 500 cfm. The AST core inventory release timing, the significantly increased inleakage acceptance criteria and the extended period of containment pressurization have removed any MCR Bottled Air System benefit. Therefore, the MCR Bottled Air System does not add to defense in depth, since its one hour of operation is too short to effectively mitigate design basis radiological accidents.

Consequently, the proposed deletion of the MCR Bottled Air System TS requirements does not invalidate assumptions made in the Surry PRA and does not adversely impact the facility's severe accident management program. Therefore, the proposed change is in conformance with RG 1.183 guidance regarding Regulatory Position C.1.1.2, "Defense in Depth."

4.2 Precedents

FirstEnergy Nuclear Operating Company requested the elimination of the TS requirements for the control room emergency bottled air pressurization system for Beaver Valley Power Station (BVPS) Units 1 and 2 as part of their implementation of the AST. The NRC approved the request in their safety evaluation report for License Amendments 257 and 139 for BVPS Units 1 and 2, respectively, dated September 10, 2003 (Ref. 13).

Dominion Nuclear Connecticut, Inc., requested the elimination of the control room envelope pressurization system TS requirements for Millstone Power Station (MPS) Unit 3 as part of its implementation of the AST. The NRC approved their request in the safety evaluation report for License Amendment 232 for MPS Unit 3 dated September 15, 2006 (Ref. 14).

Finally, Dominion requested the elimination of the MCR/ESGR Bottled Air System TS requirements for North Anna Power Station Units 1 and 2 in a letter dated March 19, 2008 (Serial No. 08-0080) (Ref. 15).

4.3 Significant Hazards Consideration

Virginia Electric and Power Company (Dominion) has reviewed the requirements of 10 CFR 50.92, relative to the proposed change to the Surry Units 1 and 2 Technical Specifications (TS) and determined that a significant hazards consideration is not involved. The proposed change to the Surry Units 1 and 2 TS will remove the Main Control Room (MCR) Bottled Air System requirements from the TS, since the Alternate

Source Term (AST) accident analysis implemented for Surry Power Station does not credit the MCR Bottled Air System as a success path for dose mitigation in the event of a design basis accident (DBA). Dominion determined that a significant hazards consideration is not involved with the proposed TS change by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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 does not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or configuration of the facility. The proposed change does not alter or prevent the ability of structures, systems, and components (SSCs) to perform their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits. The MCR Bottled Air System is not an initiator or precursor to any accident previously evaluated, and is not credited as a success path for dose mitigation in the event of a DBA. MCR/ESGR envelope isolation and emergency ventilation continue to be available consistent with accident analyses assumptions. Therefore, the proposed TS 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 alter the requirements for MCR/ESGR envelope isolation or the MCR/ESGR Emergency Ventilation System during accident conditions. No physical modifications to the plant are being made (i.e., no new or different type of equipment will be installed), and no significant changes in the methods governing normal plant operation are being implemented. Also, the proposed change does not alter assumptions made in the safety analysis and is consistent with those assumptions. Therefore, the proposed TS change does not 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 TS change does not alter the manner in which safety limits, limiting safety system settings or limiting conditions for operation are determined, and the dose analysis acceptance criteria are not affected. The proposed change does not result in plant operation in a configuration outside the analyses or design basis and

does not adversely affect systems that respond to safely shutdown the plant and to maintain the plant in a safe shutdown condition. Therefore, the proposed TS change does not involve a significant reduction in a margin of safety.

Based on the above, Dominion concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusion

The proposed deletion of the MCR Bottled Air System TS requirements does not impact plant equipment that is credited to function to mitigate the consequences of a DBA. Additionally, the MCR Bottled Air System requirements contained in the current TS do not meet any of the 10 CFR 50.36(c)(2)(ii) criteria regarding items for which TS must be established. Furthermore, the MCR/ESGR envelope and associated systems meet the applicable requirements of GDC 1, 2, 3, 4, 5 and 19 without the MCR Bottled Air System. Therefore, the proposed change to delete TS 3.19 and the associated TS and Bases text that discuss the MCR Bottled Air System (i.e., TS 3.10.A.12 and B.5; TS Table 4.1-2A, Item 15; TS 6.4.R and TS 3.23 and TS 4.1 Bases discussion) and to implement MCR/ESGR Envelope Isolation Actuation Instrumentation requirements is consistent with regulations and is considered safe.

5. ENVIRONMENTAL CONSIDERATION

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

(i) The proposed change involves no significant hazards consideration.

As described in Section 4.3 above, the proposed change involves no 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 change does not involve the installation of any new equipment or the modification of any equipment that may affect the types or amounts of effluents that may be released offsite. Therefore, there is no 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 occupation radiation exposure.

The proposed change does not involve plant physical changes or introduce any new modes of plant operation. MCR/ESGR envelope occupants will continue to

be protected during DBA conditions with personnel dose maintained within regulatory limits. Therefore, there is no significant increase in individual or cumulative occupational radiation exposure.

Based on the above, Dominion concludes that the proposed TS 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 by the Commission.

6. REFERENCES

1. Letter from K. R. Goller of the USAEC to Virginia Electric and Power Company dated September 23, 1974. (Issued Surry TS Amendments 1/1.)

2. Letter from Virginia Electric and Power Company to the USNRC dated December 9, 1981, "Virginia Electric and Power Company, Revision 2 to NUREG-0737 Response."

3. Letter from the USNRC to Virginia Electric and Power Company dated January 17, 1984. (Issued Surry TS Amendments 92/91.)

4. Letter from the USNRC to Virginia Electric and Power Company dated June 11, 1998, "Subject: Surry Units 1 and 2 – Issuance of Amendments Re: Clarification of Refueling Interval Surveillance Frequency (TAC Nos. MA0364 and MA0365)." (Issued Surry TS Amendments 213/213.)

5. Letter from the USNRC to Virginia Electric and Power Company dated March 9, 2001 (Serial No. 01-162), "Subject: Surry Units 1 and 2 – Issuance of Amendments Re: Main Control Room Bottled Air System (TAC Nos. MA8588 and MA8589)." (Issued Surry TS Amendments 223/223.)

6. Letter from the USNRC to Virginia Electric and Power Company dated March 8, 2002 (Serial No. 02-170), "Subject: Surry Units 1 and 2 – Issuance of Amendments Re: Alternative Source Term (TAC Nos. MA8649 and MA8650)." (Issued Surry TS Amendments 230/230.) [ML020710159]

7. NRC Generic Letter 2003-01, *Control Room Habitability*, dated June 12, 2003.

8. Letter from Virginia Electric and Power Company to USNRC dated April 22, 2004 (Serial No. 03-373C), "Virginia Electric and Power Company, Surry Power Station Units 1 and 2, Generic Letter 2003-01 – Control Room Habitability, Control Room Testing and Technical Information Submittal." [ML041130386]

9. Letter from the USNRC to Virginia Electric and Power Company dated July 7, 2008 (Serial No. 08-0427), "Subject: Surry Power Station, Unit Nos. 1 and 2, Issuance of Amendments Regarding Control Room Habitability (TAC Nos. MD6139 and MD6140)." [ML081750690]

6. REFERENCES (cont'd)

10. NRC-approved Industry/Technical Specification Task Force (TSTF) Traveler TSTF-448, Revision 3, *Control Room Habitability.*

11. Federal Register Vol. 72, No. 10 / Wednesday, January 17, 2007 /Notices.

12. Letter From Virginia Electric and Power Company to USNRC dated April 11, 2000 (Serial No. 00-123), "Virginia Electric And Power Company, Surry Power Station Units 1 and 2, Proposed Technical Specifications and Bases Change – Alternate Source Term Implementation." [ML003704270]

13. Letter from the USNRC to FirstEnergy Nuclear Operating Company dated September 10, 2003, "Subject: Beaver Valley Power Station, Unit Nos. 1 and 2 - Issuance of Amendment Re: Selective Implementation of Alternate Source Term and Control Room Habitability Technical Specification Changes (TAC Nos. MB5303 and MB5304)." [ML032530204]

14. Letter from the USNRC to Dominion Nuclear Connecticut, Inc., dated September 15, 2006 (Serial No. 06-814), "Subject: Millstone Power Station, Unit No. 3 - Issuance of Amendment Re: Alternate Source Term (TAC No. MB3333)." [ML061990135]

15. Letter from Virginia Electric and Power Company to USNRC dated March 19, 2008 (Serial No. 08-0080), "Virginia Electric and Power Company, North Anna Power Station Units 1 and 2, Proposed License Amendment Request, Deletion of TS 3.7.13 – Main Control Room/Emergency Switchgear Room Bottled Air System from Technical Specifications." [ML080800364]

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATIONS PAGES (MARK-UP)

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

TECHNICAL SPECIFICATION
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SECTION	TITLE	PAGE
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3.18	MOVABLE INCORE INSTRUMENTATION	TS 3.18-1
3.19	DELETED ~~MAIN CONTROL ROOM BOTTLED AIR SYSTEM~~	~~TS 3.19-1~~
3.20	SHOCK SUPPRESSORS (SNUBBERS)	TS 3.20-1
3.21	MAIN CONTROL ROOM/EMERGENCY SWITCHGEAR ROOM (MCR/ESGR) EMERGENCY VENTILATION SYSTEM (EVS)	TS 3.21-1
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4.13	RCS OPERATIONAL LEAKAGE	TS 4.13-1
4.14	DELETED	

2. With less than the minimum number of explosive gas monitoring instrumentation channels OPERABLE, take the action shown in Table 3.7-5(a). Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, prepare and submit a Special Report to the Commission (Region II) to explain why the inoperability was not corrected in a timely manner.

E. Prior to the Reactor Coolant System temperature and pressure exceeding 350°F and 450 psig, respectively, the accident monitoring instrumentation listed in Table 3.7-6 shall be OPERABLE in accordance with the following:

1. With one required channel inoperable, either restore the inoperable channel to OPERABLE status within 30 days or submit a report to the NRC within the next 14 days. The report shall outline the cause of inoperability and the plans and schedule for restoring the inoperable channel to OPERABLE status.

2. With two required channels inoperable, either:

   a. Restore an inoperable channel(s) to OPERABLE status within 7 days or initiate the preplanned alternate method of monitoring the appropriate function and submit a report to the NRC within the next 14 days. The report shall outline the preplanned alternate method of monitoring the function, the cause of inoperability, and the plans and schedule for restoring an inoperable channel to OPERABLE status.

   b. If no preplanned alternate method of monitoring the function is available, restore an inoperable channel(s) to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours.

INSERT 1

INSERT 1 (TS 3.7)

F. Two manual actuation trains of the Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Isolation Actuation Instrumentation shall be OPERABLE whenever:

- T_{avg} (average Reactor Coolant System (RCS) temperature) exceeds 200°F, or
- During movement of irradiated fuel.

Note: Automatic actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation is addressed as part of the Safety Injection Instrument Operating Conditions included in TS Table 3.7-2, "Engineered Safeguards Action Instrument Operating Conditions," Functional Unit No. 1.

1. For unit operation when T_{avg} exceeds 200°F:

   a. With one train inoperable, isolate the MCR/ESGR envelope normal ventilation within seven (7) days or be in at least HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.

   b. With two trains inoperable, isolate the MCR/ESGR envelope normal ventilation immediately or be in at least HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.

2. During the movement of irradiated fuel assemblies:

   a. With one train inoperable, within seven (7) days either isolate the MCR/ESGR envelope normal ventilation or suspend movement of irradiated fuel assemblies.

   b. With two trains inoperable, immediately isolate the MCR/ESGR envelope normal ventilation or immediately suspend movement of irradiated fuel assemblies.

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.

INSERT 2

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

INSERT 2 (TS 3.7)

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 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 Tavg 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.

10. A spent fuel cask or heavy loads exceeding 110 percent of the weight of a fuel assembly (not including fuel handling tool) shall not be moved over spent fuel, and only one spent fuel assembly will be handled at one time over the reactor or the spent fuel pit.

    This restriction does not apply to the movement of the transfer canal door.

11. Two Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS) trains shall be OPERABLE.

    a. With one required train inoperable for reasons other than an inoperable MCR/ESGR envelope boundary, restore the inoperable train to OPERABLE status within 7 days. If the inoperable train is not returned to OPERABLE status within 7 days, comply with Specification 3.10.C.

    b. If two required trains are inoperable or one or more required trains are inoperable due to an inoperable MCR/ESGR envelope boundary, comply with Specification 3.10.C.

INSERT 3

12. Two Main Control Room Bottled Air System trains shall be OPERABLE.

    a. With one train inoperable for reasons other than an inoperable MCR/ESGR envelope boundary, restore the inoperable train to OPERABLE status within 7 days. If the inoperable train is not returned to OPERABLE status within 7 days, comply with Specification 3.10.C.

    b. If two trains are inoperable or one or more trains are inoperable due to an inoperable MCR/ESGR envelope boundary, comply with Specification 3.10.C.

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

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

B. During irradiated fuel movement in the Fuel Building the following conditions are satisfied:

1. The fuel pit bridge area monitor and the ventilation vent stack 2 particulate and gas monitors shall be OPERABLE and continuously monitored to identify the occurrence of a fuel handling accident.

2. A spent fuel cask or heavy loads exceeding 110 percent of the weight of a fuel assembly (not including fuel handling tool) shall not be moved over spent fuel, and only one spent fuel assembly will be handled at one time over the reactor or the spent fuel pit.

   This restriction does not apply to the movement of the transfer canal door.

3. A spent fuel cask shall not be moved into the Fuel Building unless the Cask Impact Pads are in place on the bottom of the spent fuel pool.

4. Two MCR/ESGR EVS trains shall be OPERABLE.

   a. With one required train inoperable for reasons other than an inoperable MCR/ESGR envelope boundary, restore the inoperable train to OPERABLE status within 7 days. If the inoperable train is not returned to OPERABLE status within 7 days, comply with Specification 3.10.C.

   b. If two required trains are inoperable or one or more required trains are inoperable due to an inoperable MCR/ESGR envelope boundary, comply with Specification 3.10.C.

INSERT 3

5. Two Main Control Room Bottled Air System trains shall be OPERABLE.

   a. With one train inoperable for reasons other than an inoperable MCR/ESGR envelope boundary, restore the inoperable train to OPERABLE status within 7 days. If the inoperable train is not returned to OPERABLE status within 7 days, comply with Specification 3.10.C.

   b. If two trains are inoperable or one or more trains are inoperable due to an inoperable MCR/ESGR envelope boundary, comply with Specification 3.10.C.

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

INSERT 3 (TS 3.10.A.12 and 3.10.B.5)

Manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation shall be OPERABLE as specified in TS 3.7.F.

The requirements in this specification for the Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS), ~~Main Control Room (MCR) Bottled Air System,~~ 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 ~~3.19,~~ 3.21, and 3.23.

During REFUELING OPERATIONS and during the movement of irradiated fuel assemblies, the MCR/ESGR EVS and the ~~MCR Bottled Air System~~ 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 ~~MCR Bottled Air System~~ 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% Δk/k in the COLD SHUTDOWN condition with all control rod assemblies inserted. This includes a 1% Δk/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.

manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation

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

When one MCR/ESGR EVS ~~or MCR Bottled Air System~~ 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 ~~or MCR Bottled Air System~~ 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 ~~or MCR Bottled Air System~~ train could result in loss of MCR/ESGR EVS ~~or MCR Bottled Air System~~ 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 ~~or MCR Bottled Air System~~ train cannot be restored to OPERABLE status within the required Allowed Outage Time, or two required MCR/ESGR EVS ~~or MCR Bottled Air System~~ trains are inoperable or with one or more required MCR/ESGR EVS ~~or MCR Bottled Air System~~ 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.

Delete

3.19 MAIN CONTROL ROOM BOTTLED AIR SYSTEM

Applicability

The following Specifications are applicable whenever either unit is above COLD SHUTDOWN.

Objective

To specify functional requirements for the main control room bottled air system.

Specification

A. Requirements

Two trains of bottled air shall be OPERABLE and each shall be capable of pressurizing the Main Control Room/Emergency Switchgear Room (MCR/ESGR) envelope to a positive differential pressure with respect to adjoining areas of the auxiliary, turbine, and service buildings for one hour. A minimum positive differential pressure of 0.05 inches of water must be maintained when the MCR/ESGR envelope is isolated under accident conditions. This capability shall be demonstrated by the testing requirements delineated in Technical Specification 4.1.

Note: The MCR/ESGR envelope boundary may be opened intermittently under administrative control.

B. Remedial Action

1. With one train of the bottled air system inoperable for reasons other than Specification 3.19.B.3, restore the inoperable train to OPERABLE status within 7 days or both units shall be placed in at least HOT SHUTDOWN within the next 8 hours.
2. With both trains of the bottled air system inoperable for reasons other than Specification 3.19.B.3, restore one train to OPERABLE status within 8 hours or both units shall be placed in at least HOT SHUTDOWN within the same 8 hours.
3. If one or more trains of the bottled air system are inoperable due to an inoperable MCR/ESGR envelope boundary, then perform the following:
   a. Immediately initiate action to implement mitigating actions;
   b. Within 24 hours, verify mitigating actions ensure MCR/ESGR envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits; and
   c. Within 90 days, restore MCR/ESGR envelope boundary to OPERABLE status.

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4. If the requirements of Specification 3.19.B.1 or 3.19.B.2 are not met within 48 hours after achieving HOT SHUTDOWN, both units shall be placed in COLD SHUTDOWN within the next 30 hours.

5. If the requirements of Specification 3.19.B.3 are not met, both units shall be placed in at least HOT SHUTDOWN within 6 hours and in COLD SHUTDOWN within the following 30 hours.

Basis

The Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Habitability System (EHS) provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke. The MCR/ESGR EHS consists of the Main Control Room (MCR) Bottled Air System and the MCR/ESGR Emergency Ventilation System (EVS) (TS 3.21).

Following a Design Basis Accident (DBA), the containment will be depressurized to 0.5 psig (Unit 1), 1.0 psig (Unit 2) in less than 1 hour and to subatmospheric pressure within 4 hours. The radiological consequences analysis demonstrates acceptable results provided the containment pressure does not exceed 0.5 psig (Unit 1) and 1.0 psig (Unit 2) for the interval from 1 to 4 hours following the DBA. Beyond 4 hours, containment pressure is assumed to be less than 0.0 psig, terminating leakage from containment. The MCR/ESGR envelope is maintained at a positive differential pressure using bottled air during the first hour, when the containment leakrate is greatest.

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 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).

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Upon receipt of the actuating signal(s), normal air supply to and exhaust from the MCR/ESGR envelope is isolated, and airflow from the MCR Bottled Air System maintains a positive pressure in the MCR/ESGR envelope. 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 actuation of the MCR Bottled Air System, 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 limits infiltration of unfiltered air from the surrounding areas adjacent to the MCR/ESGR envelope.

A single train of the MCR Bottled Air System will pressurize the MCR/ESGR envelope to ≥ 0.05 inches water gauge for at least 60 minutes. The MCR/ESGR EHS operation in maintaining the MCR/ESGR envelope habitable is discussed in the UFSAR, Section 9.13 (Ref. 3).

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

The MCR/ESGR envelope boundary may be opened intermittently under administrative control. This provision only applies to openings in the MCR/ESGR envelope boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the operators in the MCR/ESGR envelope. This individual will have a method to rapidly close the opening and to restore the MCR/ESGR envelope boundary to a condition equivalent to the design condition when a need for MCR/ESGR envelope isolation is indicated.

<u>TS 3.19.B.3 and 5</u>

If the unfiltered inleakage of potentially contaminated air past the MCR/ESGR envelope boundary and into the MCR/ESGR envelope can result in MCR/ESGR envelope occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to 5 rem TEDE), or inadequate protection of MCR/ESGR envelope occupants from hazardous chemicals or smoke, the MCR/ESGR envelope boundary is inoperable. Actions must be taken to restore an OPERABLE MCR/ESGR envelope boundary within 90 days.

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During the period that the MCR/ESGR envelope boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on MCR/ESGR envelope occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that MCR/ESGR envelope occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that MCR/ESGR envelope occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable MCR/ESGR envelope boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Allowed Outage Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 day Allowed Outage Time is reasonable based on the determination that the mitigating actions will ensure protection of MCR/ESGR envelope occupants within analyzed limits while limiting the probability that MCR/ESGR envelope occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Allowed Outage Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the MCR/ESGR envelope boundary.

REFERENCES

1. UFSAR, Section 2.1, Geography, Demography And Potential External Hazards
2. UFSAR, Section 9.10, Fire Protection
3. UFSAR, Section 9.13, Auxiliary Ventilation Systems
4. UFSAR, Chapter 14, Safety Analysis
5. Letters from B. R. Sylvia (VEPCO) to Harold R. Denton (NRC) dated January 19 and June 30, 1981, Response to Item III.D.3.4, Control Room Habitability Requirements of NUREG-0737 for Surry Power Station.
6. Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors"
7. NEI 99-03, "Control Room Habitability Assessment," June 2001
8. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694)

BASES

BACKGROUND - The MCR/ESGR Emergency ~~Habitability System (EHS)~~ 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 EHS consists of the Main Control Room Bottled Air System (TS 3.19) and the MCR/ESGR EVS.~~

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, ~~and airflow from the MCR Bottled Air System maintains a positive pressure in the MCR/ESGR envelope~~. 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, ~~and actuation of the MCR Bottled Air System,~~ 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 ~~EHS~~ 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 ~~the required~~ 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 ~~EHS~~ 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 ~~EHS~~ 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 ~~EHS~~ 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.

INSERT 4

Control Room Bottled Air System

The control room bottled air system is required to establish a positive differential pressure in the control room for one hour following a design basis accident. The ability of the system to meet this requirement is verified by: 1) checking air bottle pressurization, 2) demonstrating the capability to pressurize the control room pressure boundary, 3) functionally testing the pressure control valve(s), and 4) functionally testing the manual and automatic actuation capability. The test requirements and frequency are specified in Table 4.1-2A.

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.

TABLE 4.1-2A (CONTINUED)
MINIMUM FREQUENCY FOR EQUIPMENT TESTS

INSERT 5

	DESCRIPTION	TEST	FREQUENCY	FSAR SECTION REFERENCE
14a.	Service Water System Valves in Line Supplying Recirculation Spray Heat Exchangers	Functional	Once per 18 months	9.9
b.	Service Water System Valves Isolating Flow to Non-essential loads on Intake Canal Low Level Isolation	Functional	Once per 18 months	9.9
15.	Control Room Bottled Air System			
a.	Air Bottle Pressure	* Verify each bank pressurized to a minimum of 2350 psig	Monthly	9.13
b.	Positive Differential Pressure Capability	* Demonstrate ability to maintain positive differential pressure as required by Technical Specification 3.19 by pressurizing the boundary using either one of the ventilation system fans with orificed flow (simulating discharge of one train of bottled air) or by discharging one train of the bottled air system	Once per 18 months	9.13
c.	Pressure Control Valve(s) Functionality	* Demonstrate ability to pressurize the boundary to 0.05 inches of water for 1 hour as required by Technical Specification 3.19 by discharging each train of the bottled air system	Once per 18 months	9.13
d.	Manual Actuation Capability	* Functional	Once per 18 months	9.13
e.	Automatic Actuation Capability	* Functional	Once per 18 months	9.13
16.	Reactor Vessel Overpressure Mitigating System (except backup air supply)	Functional & Setpoint	Prior to decreasing RCS temperature below 350°F and monthly while the RCS is < 350°F and the Reactor Vessel Head is bolted	4.3
		CHANNEL CALIBRATION	Once per 18 months	
17.	Reactor Vessel Overpressure Mitigating System Backup Air Supply	Setpoint	Once per 18 months	4.3
18.	Power-Operated Relief Valve Control System	Functional, excluding valve actuation	Monthly	4.3
		CHANNEL CALIBRATION	Once per 18 months	

INSERT 4 (TS 4.1 Basis)

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.

INSERT 5 (TS Table 4.1-2A)

15.	MCR/ESGR Envelope Isolation Actuation Instrumentation – Manual	Functional	Once per 18 months	9.13

R. Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Habitability Program

A Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Habitability Program shall be established and implemented to ensure that MCR/ESGR envelope habitability is maintained such that, with an OPERABLE ~~Emergency Habitability System [i.e., the~~ MCR/ESGR Emergency Ventilation System (EVS) ~~and the Main Control Room Bottled Air System]~~, MCR/ESGR envelope occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the MCR/ESGR envelope under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

1. The definition of the MCR/ESGR envelope and the MCR/ESGR envelope boundary.
2. Requirements for maintaining the MCR/ESGR envelope boundary in its design condition including configuration control and preventive maintenance.
3. Requirements for (a) determining the unfiltered air inleakage past the MCR/ESGR envelope boundary into the MCR/ESGR envelope in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (b) assessing MCR/ESGR envelope habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

   The following is an exception to Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0:

   - 2.C.1 Licensing Bases - Vulnerability assessments for radiological, hazardous chemical and smoke, and emergency ventilation system testing were completed as documented in the UFSAR. The exceptions to the Regulatory Guides (RGs) referenced in RG 1.196 (i.e., RG 1.52, RG 1.78 and RG 1.183), which were considered in completing the vulnerability assessments, are documented in the UFSAR/current licensing basis. Compliance with these RGs is consistent with the current licensing basis as described in the UFSAR.

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATIONS PAGES (TYPED)

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

TECHNICAL SPECIFICATION
TABLE OF CONTENTS

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	3.18	MOVABLE INCORE INSTRUMENTATION	TS 3.18-1
	3.19	DELETED	
	3.20	SHOCK SUPPRESSORS (SNUBBERS)	TS 3.20-1
	3.21	MAIN CONTROL ROOM/EMERGENCY SWITCHGEAR ROOM (MCR/ESGR) EMERGENCY VENTILATION SYSTEM (EVS)	TS 3.21-1
	3.22	AUXILIARY VENTILATION EXHAUST FILTER TRAINS	TS 3.22-1
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	4.14	DELETED	

2. With less than the minimum number of explosive gas monitoring instrumentation channels OPERABLE, take the action shown in Table 3.7-5(a). Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, prepare and submit a Special Report to the Commission (Region II) to explain why the inoperability was not corrected in a timely manner.

E. Prior to the Reactor Coolant System temperature and pressure exceeding 350°F and 450 psig, respectively, the accident monitoring instrumentation listed in Table 3.7-6 shall be OPERABLE in accordance with the following:

1. With one required channel inoperable, either restore the inoperable channel to OPERABLE status within 30 days or submit a report to the NRC within the next 14 days. The report shall outline the cause of inoperability and the plans and schedule for restoring the inoperable channel to OPERABLE status.

2. With two required channels inoperable, either:

a. Restore an inoperable channel(s) to OPERABLE status within 7 days or initiate the preplanned alternate method of monitoring the appropriate function and submit a report to the NRC within the next 14 days. The report shall outline the preplanned alternate method of monitoring the function, the cause of inoperability, and the plans and schedule for restoring an inoperable channel to OPERABLE status.

b. If no preplanned alternate method of monitoring the function is available, restore an inoperable channel(s) to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours.

F. Two manual actuation trains of the Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Isolation Actuation Instrumentation shall be OPERABLE whenever:

- T_{avg} (average Reactor Coolant System (RCS) temperature) exceeds 200°F, or
- During movement of irradiated fuel.

Note: Automatic actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation is addressed as part of the Safety Injection Instrument Operating Conditions included in TS Table 3.7-2, "Engineered Safeguards Action Instrument Operating Conditions," Functional Unit No. 1.

1. For unit operation when T_{avg} exceeds 200°F:

a. With one train inoperable, isolate the MCR/ESGR envelope normal ventilation within seven (7) days or be in at least HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.

b. With two trains inoperable, isolate the MCR/ESGR envelope normal ventilation immediately or be in at least HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.

2. During the movement of irradiated fuel assemblies:

a. With one train inoperable, within seven (7) days either isolate the MCR/ESGR envelope normal ventilation or suspend movement of irradiated fuel assemblies.

b. With two trains inoperable, immediately isolate the MCR/ESGR envelope normal ventilation or immediately suspend movement of irradiated fuel assemblies.

Basis

Instrument Operating Conditions

During plant operations, the complete instrumentation system will normally be in service. Reactor safety is provided by the Reactor Protection System, which automatically initiates appropriate action to prevent exceeding established limits. Safety is not compromised, however, by continuing operation with certain instrumentation channels out of service since provisions were made for this in the plant design. This specification outlines the limiting conditions for operation necessary to preserve the effectiveness of the Reactor Protection System when any one or more of the channels is out of service.

Almost all Reactor Protection System channels are supplied with sufficient redundancy to provide the capability for channel calibration and test at power. Exceptions are backup channels such as reactor coolant pump breakers. The removal of one trip channel on process control equipment is accomplished by placing that channel bistable in a tripped mode (e.g., a two-out-of-three circuit becomes a one-out-of-two circuit). The Nuclear Instrumentation System (NIS) channels are not intentionally placed in a tripped mode since the test signal is superimposed on the normal detector signal to test at power. Testing of the NIS power range channel requires: (a) bypassing the dropped-rod protection from NIS, for the channel being tested, (b) placing the $\Delta T/T_{avg}$ protection channel set that is being fed from the NIS channel in the trip mode, and (c) defeating the power mismatch section of T_{avg} control channels when the appropriate NIS channel is being tested. However, the Rod Position System and remaining NIS channels still provide the dropped-rod protection. Testing does not trip the system unless a trip condition exists in a concurrent channel.

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

10. A spent fuel cask or heavy loads exceeding 110 percent of the weight of a fuel assembly (not including fuel handling tool) shall not be moved over spent fuel, and only one spent fuel assembly will be handled at one time over the reactor or the spent fuel pit.

    This restriction does not apply to the movement of the transfer canal door.

11. Two Main Control Room/Emergency Switchgear Room (MCR/ESGR) Emergency Ventilation System (EVS) trains shall be OPERABLE.

    a. With one required train inoperable for reasons other than an inoperable MCR/ESGR envelope boundary, restore the inoperable train to OPERABLE status within 7 days. If the inoperable train is not returned to OPERABLE status within 7 days, comply with Specification 3.10.C.

    b. If two required trains are inoperable or one or more required trains are inoperable due to an inoperable MCR/ESGR envelope boundary, comply with Specification 3.10.C.

12. Manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation shall be OPERABLE as specified in TS 3.7.F.

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

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

B. During irradiated fuel movement in the Fuel Building the following conditions are satisfied:

1. The fuel pit bridge area monitor and the ventilation vent stack 2 particulate and gas monitors shall be OPERABLE and continuously monitored to identify the occurrence of a fuel handling accident.

2. A spent fuel cask or heavy loads exceeding 110 percent of the weight of a fuel assembly (not including fuel handling tool) shall not be moved over spent fuel, and only one spent fuel assembly will be handled at one time over the reactor or the spent fuel pit.

   This restriction does not apply to the movement of the transfer canal door.

3. A spent fuel cask shall not be moved into the Fuel Building unless the Cask Impact Pads are in place on the bottom of the spent fuel pool.

4. Two MCR/ESGR EVS trains shall be OPERABLE.

   a. With one required train inoperable for reasons other than an inoperable MCR/ESGR envelope boundary, restore the inoperable train to OPERABLE status within 7 days. If the inoperable train is not returned to OPERABLE status within 7 days, comply with Specification 3.10.C.

   b. If two required trains are inoperable or one or more required trains are inoperable due to an inoperable MCR/ESGR envelope boundary, comply with Specification 3.10.C.

5. Manual actuation of the MCR/ESGR Envelope Isolation Actuation Instrumentation shall be OPERABLE as specified in TS 3.7.F.

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

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.

TABLE 4.1-2A (CONTINUED)
MINIMUM FREQUENCY FOR EQUIPMENT TESTS

	DESCRIPTION	TEST	FREQUENCY	FSAR SECTION REFERENCE
14a.	Service Water System Valves in Line Supplying Recirculation Spray Heat Exchangers	Functional	Once per 18 months	9.9
b.	Service Water System Valves Isolating Flow to Non-essential loads on Intake Canal Low Level Isolation	Functional	Once per 18 months	9.9
15.	MCR/ESGR Envelope Isolation Actuation Instrumentation - Manual	Functional	Once per 18 months	9.13
16.	Reactor Vessel Overpressure Mitigating System (except backup air supply)	Functional & Setpoint	Prior to decreasing RCS temperature below 350°F and monthly while the RCS is < 350°F and the Reactor Vessel Head is bolted	4.3
		CHANNEL CALIBRATION	Once per 18 months	
17.	Reactor Vessel Overpressure Mitigating System Backup Air Supply	Setpoint	Once per 18 months	4.3
18.	Power-Operated Relief Valve Control System	Functional, excluding valve actuation	Monthly	4.3
		CHANNEL CALIBRATION	Once per 18 months	

R. Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Habitability Program

A Main Control Room/Emergency Switchgear Room (MCR/ESGR) Envelope Habitability Program shall be established and implemented to ensure that MCR/ESGR envelope habitability is maintained such that, with an OPERABLE MCR/ESGR Emergency Ventilation System (EVS), MCR/ESGR envelope occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the MCR/ESGR envelope under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

1. The definition of the MCR/ESGR envelope and the MCR/ESGR envelope boundary.
2. Requirements for maintaining the MCR/ESGR envelope boundary in its design condition including configuration control and preventive maintenance.
3. Requirements for (a) determining the unfiltered air inleakage past the MCR/ESGR envelope boundary into the MCR/ESGR envelope in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (b) assessing MCR/ESGR envelope habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

   The following is an exception to Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0:

   - 2.C.1 Licensing Bases - Vulnerability assessments for radiological, hazardous chemical and smoke, and emergency ventilation system testing were completed as documented in the UFSAR. The exceptions to the Regulatory Guides (RGs) referenced in RG 1.196 (i.e., RG 1.52, RG 1.78 and RG 1.183), which were considered in completing the vulnerability assessments, are documented in the UFSAR/current licensing basis. Compliance with these RGs is consistent with the current licensing basis as described in the UFSAR.