

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

- A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2546 megawatts (thermal).

- B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 260 , are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

- C. Reports

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

- D. Records

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

- E. Deleted by Amendment 65

- F. Deleted by Amendment 71

- G. Deleted by Amendment 227

- H. Deleted by Amendment 227

- I. Fire Protection

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

- R. As discussed in the footnote to Technical Specifications 3.23.C.2.a.1 and 3.23.C.2.b.1, the use of temporary 45-day and 14-day allowed outage time extensions to permit replacement of the Main Control Room and Emergency Switchgear Room Air Conditioning System chilled water piping shall be in accordance with the basis, risk evaluation, equipment unavailability restrictions, and compensatory actions provided in the licensee's submittal dated February 26, 2007 (Serial No. 07-0109) and in the associated supplemental transmittals, as approved by the NRC Safety Evaluation.
- S. Upon implementation of Amendment No. 260 adopting TSTF-448, Revision 3, the determination of Main Control Room/Emergency Switchgear Room (MCR/ESGR) envelope unfiltered air leakage as required by TS SR 4.18 in accordance with TS 6.4.R.3.a, the assessment of MCR/ESGR envelope habitability as required by Specification 6.4.R.3.b, and the measurement of MCR/ESGR envelope pressure as required by Specification 6.4.R.4, shall be considered met. Following implementation:
- (1) The first performance of SR 4.18, in accordance with Specification 6.4.R.3.a, shall be within the specified frequency of 6 years plus the 18-month allowance of SR 4.0.2, as measured from January 18, 2004, the date of the most recent successful tracer gas test, as stated in the April 22, 2004 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.
 - (2) The first performance of the periodic assessment of MCR/ESGR envelope habitability, Specification 6.4.R.3.b, shall be within 3 years, plus the 9-month allowance of SR 4.0.2, as measured from January 18, 2004, the date of the most recent successful tracer gas test, as stated in the April 22, 2004 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.
 - (3) The first performance of the periodic measurement of MCR/ESGR envelope pressure, Specification 6.4.R.4, shall be within 18 months, plus the 138 days allowed by SR 4.0.2, as measured from January 19, 2007, the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.
4. This renewed license is effective as of the date of issuance and shall expire at midnight on May 25, 2032.

FOR THE NUCLEAR REGULATORY COMMISSION

original signed by:
Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Attachment: Appendix A, Technical Specifications

Date of Issuance: March 20, 2003

Renewed License No. DPR-32
Amendment No. 260

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

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

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2546 megawatts (thermal).

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 260, are hereby incorporated in this renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. Reports

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

D. Records

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

E. Deleted by Amendment 54

F. Deleted by Amendment 59 and Amendment 65

G. Deleted by Amendment 227

H. Deleted by Amendment 227

- (3) Actions to minimize release to include consideration of:
- a. Water spray scrubbing
 - b. Dose to onsite responders
- R. As discussed in the footnote to Technical Specifications 3.23.C.2.a.1 and 3.23.C.2.b.1, the use of temporary 45-day and 14-day allowed outage time extensions to permit replacement of the Main Control Room and Emergency Switchgear Room Air Conditioning System chilled water piping shall be in accordance with the basis, risk evaluation, equipment unavailability restrictions, and compensatory actions provided in the licensee's submittal dated February 26, 2007 (Serial No. 07-0109) and in the associated supplemental transmittals, as approved by the NRC Safety Evaluation.
- S. Upon implementation of Amendment No. 260 adopting TSTF-448, Revision 3, the determination of Main Control Room/Emergency Switchgear Room (MCR/ESGR) envelope unfiltered air inleakage as required by TS SR 4.18 in accordance with TS 6.4.R.3.a, the assessment of MCR/ESGR envelope habitability as required by Specification 6.4.R.3.b, and the measurement of MCR/ESGR envelope pressure as required by Specification 6.4.R.4, shall be considered met. Following implementation:
- (1) The first performance of SR 4.18, in accordance with Specification 6.4.R.3.a, shall be within the specified frequency of 6 years plus the 18-month allowance of SR 4.0.2, as measured from January 18, 2004, the date of the most recent successful tracer gas test, as stated in the April 22, 2004 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.
 - (2) The first performance of the periodic assessment of MCR/ESGR envelope habitability, Specification 6.4.R.3.b, shall be within 3 years, plus the 9-month allowance of SR 4.0.2, as measured from January 18, 2004, the date of the most recent successful tracer gas test, as stated in the April 22, 2004 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.
 - (3) The first performance of the periodic measurement of MCR/ESGR envelope pressure, Specification 6.4.R.4, shall be within 18 months, plus the 138 days allowed by SR 4.0.2, as measured from January 19, 2007, the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.
4. This renewed license is effective as of the date of issuance and shall expire at midnight on January 29, 2033.

FOR THE NUCLEAR REGULATORY COMMISSION

original signed by:
Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Attachment: Appendix A, Technical Specifications

Date of Issuance: March 20, 2003

Renewed License No. DPR-37
Amendment No. 260

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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. 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.
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.

7. Eight air handling units (AHUs) shall be OPERABLE in accordance with the operability requirements of Specification 3.23.C. With two AHUs inoperable on either unit, ensure that one AHU is OPERABLE in each unit's main control room and emergency switchgear room, and restore an inoperable AHU to OPERABLE status within 7 days, or comply with Specification 3.10.C. With more than two AHUs inoperable on a unit, comply with Specification 3.10.C.
- C. If any one of the specified limiting conditions for refueling is not met, REFUELING OPERATIONS or irradiated fuel movement in the Fuel Building shall cease and irradiated fuel shall be placed in a safe position, work shall be initiated to correct the conditions so that the specified limit is met, and no operations which increase the reactivity of the core shall be made.
 - D. After initial fuel loading and after each core refueling operation and prior to reactor operation at greater than 75% of rated power, the movable incore detector system shall be utilized to verify proper power distribution.
 - E. The requirements of 3.0.1 are not applicable.

Basis

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

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

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

The containment airlocks, which are also part of the containment pressure boundary, provide a means for personnel access during periods when CONTAINMENT INTEGRITY is required. Each airlock has a door at both ends. The doors are normally interlocked to prevent simultaneous opening. During periods of unit shutdown when containment closure is not required, the door interlock mechanism may be disabled, allowing both doors to remain open for extended periods when frequent containment entry is necessary. During REFUELING OPERATIONS, containment closure does not have to be maintained, but airlock doors may need to be closed to establish containment closure. Therefore, the door interlock mechanism may remain disabled, but one airlock door must be capable of being closed.

Containment penetrations that terminate in the Auxiliary Building or Safeguards and provide direct access from containment atmosphere to outside atmosphere must be isolated or capable of being closed by at least one barrier during REFUELING OPERATIONS. The other containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated by at least one barrier during REFUELING OPERATIONS. Isolation may be achieved by an OPERABLE isolation valve, a closed valve, a blind flange, or by an equivalent isolation method. Equivalent isolation methods must be evaluated and may include use of a material that can provide a temporary, atmospheric pressure ventilation barrier.

For the personnel airlock, equipment access hatch, and other penetrations, 'capable of being closed' means the openings are able to be closed; they do not have to be sealed or meet the leakage criteria of TS 4.4. Station procedures exist that ensure in the event of a fuel handling accident, that the open personnel airlock and other penetrations can and will be closed. Closure of the equipment hatch will be accomplished in accordance with station procedures and as allowed by dose rates in containment. The radiological analysis of the fuel handling accident does not take credit for closure of the personnel airlock, equipment access hatch or other penetrations.

The fuel building ventilation exhaust and containment ventilation purge exhaust may be diverted through charcoal filters whenever refueling is in progress. However, there is no requirement for filtration since the Fuel Handling Accident analysis takes no credit for these filters. At least one flow path is required for cooling and mixing the coolant contained in the reactor vessel so as to maintain a uniform boron concentration and to remove residual heat.

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% $\Delta k/k$ 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 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.

References

UFSAR Section 5.2	Containment Isolation
UFSAR Section 6.3	Consequence Limiting Safeguards
UFSAR Section 9.12	Fuel Handling System
UFSAR Section 9.13	Auxiliary Ventilation Systems
UFSAR Section 11.3	Radiation Protection
UFSAR Section 13.3	Table 13.3-1
UFSAR Section 14.4.1	Fuel Handling Accidents
FSAR Supplement:	Volume I: Question 3.2

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.

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).

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.

TS 3.19.B.3 and 5

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.

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)

3.21 MAIN CONTROL ROOM/EMERGENCY SWITCHGEAR ROOM (MCR/ESGR)
EMERGENCY VENTILATION SYSTEM (EVS)

Applicability

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

Objective

To specify the functional requirements for the MCR/ESGR EVS.

Specifications

- A. Two MCR/ESGR EVS trains shall be OPERABLE whenever the unit is above COLD SHUTDOWN.

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

- B. If one required MCR/ESGR EVS train is inoperable for reasons other than Specification 3.21.C, restore the MCR/ESGR EVS train to OPERABLE status within 7 days.
- C. If one or more required MCR/ESGR EVS trains are inoperable due to an inoperable MCR/ESGR envelope boundary, then perform the following:
1. Immediately initiate action to implement mitigating actions.
 2. Within 24 hours, verify mitigating actions ensure MCR/ESGR envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.
 3. Within 90 days, restore MCR/ESGR envelope boundary to OPERABLE status.
- D. If the requirements of Specifications 3.21.B or 3.21.C are not met, the unit shall be placed in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- E. If two required MCR/ESGR EVS trains are inoperable for reasons other than TS 3.21.C, the unit shall be placed in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

BASES

BACKGROUND - The 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 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 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 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 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 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 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.

Each MCR/ESGR EVS train is considered OPERABLE when the individual components necessary to limit MCR/ESGR envelope occupant exposure are OPERABLE in the two required trains of the MCR/ESGR EVS, one train of which is from the other unit. A MCR/ESGR EVS train is OPERABLE when the associated:

- a. Fan is OPERABLE;
- b. HEPA filters and charcoal adsorbers are not excessively restricting flow, and are capable of performing their filtration functions; and
- c. Ductwork, valves, and dampers are OPERABLE, and air flow can be maintained.

In order for the MCR/ESGR EVS trains to be considered OPERABLE, the MCR/ESGR envelope boundary must be maintained such that the MCR/ESGR envelope occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequence analyses for DBAs, and that MCR/ESGR envelope occupants are protected from hazardous chemicals and smoke.

The LCO is modified by a Note allowing the MCR/ESGR envelope boundary to be opened intermittently under administrative controls. This Note 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.

APPLICABILITY - In REACTOR OPERATION conditions above COLD SHUTDOWN, the MCR/ESGR EVS must be OPERABLE to ensure that the MCR/ESGR envelope will remain habitable during and following a DBA.

ACTIONS

3.21.B

When one required 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.

3.21.C

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.

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.

3.21.D

In REACTOR OPERATION conditions above COLD SHUTDOWN, if the inoperable MCR/ESGR EVS train or the MCR/ESGR envelope boundary cannot be restored to OPERABLE status within the Allowed Outage Time, the unit must be placed in a REACTOR OPERATION condition that minimizes accident risk. To achieve this status, the unit must be placed in at least HOT SHUTDOWN within 6 hours and in COLD SHUTDOWN within the following 30 hours. The allowed 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.

3.21.E

If both MCR/ESGR EVS trains are inoperable in REACTOR OPERATION conditions above COLD SHUTDOWN for reasons other than an inoperable MCR/ESGR envelope boundary (i.e., TS 3.21.C), the MCR/ESGR EVS may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, the unit must be placed in at least HOT SHUTDOWN within 6 hours and in COLD SHUTDOWN within the following 30 hours.

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)

3.23 MAIN CONTROL ROOM AND EMERGENCY SWITCHGEAR ROOM AIR
CONDITIONING SYSTEM

Applicability

Applies to the Main Control Room (MCR) and Emergency Switchgear Room (ESGR) Air Conditioning System.

Objective

To specify requirements to ensure the proper function of the Main Control Room and Emergency Switchgear Room Air Conditioning System.

Specification

A. The Main Control Room and Emergency Switchgear Room Air Conditioning System shall be OPERABLE as delineated in the following:

1. Chiller Refrigeration Units

- a. Three main control room and emergency switchgear room chillers must be OPERABLE whenever either unit is above COLD SHUTDOWN.
- b. The three OPERABLE chillers are required to be powered from three of the four emergency buses with one of those chillers capable of being powered from the fourth emergency bus.
- c. If one of the OPERABLE chillers becomes inoperable or is not powered as required by Specification 3.23.A.1.b, return an inoperable chiller to OPERABLE status within seven (7) days or bring both units to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
- d. If two of the OPERABLE chillers become inoperable or are not powered as required by Specification 3.23.A.1.b, return an inoperable chiller to OPERABLE status within one (1) hour or bring both units to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.

2. If two Unit 2 AHUs on different chilled water loops and in different air conditioning zones (2-VS-AC-7 and 2-VS-AC-8 or 2-VS-AC-6 and 2-VS-AC-9) become inoperable, restore operability of the two inoperable AHUs within seven (7) days or bring Unit 2 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
 3. If two Unit 2 AHUs in the same air conditioning zone (2-VS-AC-8 and 2-VS-AC-9 or 2-VS-AC-6 and 2-VS-AC-7) become inoperable, restore operability of at least one Unit 2 AHU in each air conditioning zone (2-VS-AC-8 or 2-VS-AC-9 and 2-VS-AC-6 or 2-VS-AC-7) within one (1) hour or bring Unit 2 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
 4. If more than two Unit 2 AHUs become inoperable, restore operability of at least one Unit 2 AHU in each air conditioning zone (2-VS-AC-8 or 2-VS-AC-9 and 2-VS-AC-6 or 2-VS-AC-7) within one (1) hour or bring Unit 2 to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the following 30 hours.
- c. Both Unit 1 AHUs or both Unit 2 AHUs powered from the respective H buses (1-VS-AC-1 and 1-VS-AC-7 or 2-VS-AC-6 and 2-VS-AC-8) must be OPERABLE whenever both units are above COLD SHUTDOWN.
1. If one or two AHUs on each unit powered from an H bus is inoperable, restore operability of the inoperable AHU(s) on one unit within one (1) hour or bring both units to HOT SHUTDOWN within the next six (6) hours and be in COLD SHUTDOWN within the next 30 hours.

Basis

The MCR and ESGR Air Conditioning System (ACS) cools the MCR/ESGR envelope. From an ACS perspective, the envelope consists of four zones: 1) the Unit 1 side of the control room (including the Unit 1 air conditioning equipment and computer rooms), 2) the Unit 2 side of the control room (including the annex area, the Unit 2 air conditioning equipment and computer rooms), 3) the Unit 1 ESGR and relay room (referred to as the Unit 1 ESGR), and 4) the Unit 2 ESGR and relay room (including MER-3), referred to as the Unit 2 ESGR. The design basis of the MCR and ESGR ACS is to maintain the MCR/ESGR envelope temperature within the equipment design limits for 30 days of continuous occupancy after a design basis accident (DBA). The ACS includes five chillers (1-VS-E-4A, 4B, 4C, 4D, and 4E). Chillers 4A, 4B, and 4C are located in MER-3, in the Unit 2 ESGR. Chillers 4D and 4E are located in MER-5, in the Unit 2 Turbine Building. The chillers supply chilled water to eight air handling units (AHUs), arranged in two independent and redundant chilled water loops. Each chilled water loop provides redundant 100% heat removal capacity per unit. Each loop contains four AHUs (one AHU in each unit's air conditioning zones), the necessary power supplies, the associated valves, piping (from the supply header to return header), instrumentation, and controls. Each AHU has 100% capacity for cooling its zone.

The combination of five chillers and two chilled water loops affords considerable flexibility in meeting the cooling requirements. Two chillers are powered from single emergency buses (1-VS-E-4C from 2H, 1-VS-E-4E from 1H). The remaining three chillers can be powered from either of two emergency buses (1-VS-E-4A from 1J or 2J, 1-VS-E-4B from 1J or 2H, and 1-VS-E-4D from 1H or 2J). The AHUs are powered from the four emergency buses in pairs. For example, the Unit 1 MCR and ESGR AHUs 1-VS-AC-1 and 1-VS-AC-7 are powered from the 1H bus; the redundant Unit 1 MCR and ESGR AHUs 1-VS-AC-2 and 1-VS-AC-6 are powered from the 1J bus. Control of the ACS is by manual action.

The chillers are procedurally aligned by power supply to meet TS 3.23.A.1.b, and the AHU pairs are normally aligned to match the power supplies of the OPERABLE chillers. For example, chiller 1-VS-E-4E and AHUs 1-VS-AC-1 and 1-VS-AC-7 are powered from the 1H emergency bus. However, due to the number of emergency diesel generators (EDGs) and the chiller/AHU piping layout, only one chiller and AHU pair can be powered from each emergency bus at a time. Also, if chilled water is needed in both chilled water loops, two chillers must be operated. Only one chiller can be operated on each chilled water loop at a time, and the 4D and 4E chillers cannot be operated simultaneously. The combinations of OPERABLE chillers/AHUs allowed by procedure ensure that sufficient cooling capacity is available during a DBA with a coincident loss of offsite power (LOOP) and single failure of an EDG, a chiller, or an AHU.

4.18 MAIN CONTROL ROOM/EMERGENCY SWITCHGEAR ROOM (MCR/ESGR)
EMERGENCY VENTILATION SYSTEM (EVS) TESTING

- A. Operate each MCR/ESGR EVS train for ≥ 15 minutes once every 31 days.
- B. Perform required Control Room Air Filtration System Testing in accordance with TS 4.20.
- C. Perform required MCR/ESGR envelope unfiltered air inleakage testing in accordance with the MCR/ESGR Envelope Habitability Program.

BASES

SURVEILLANCE REQUIREMENTS (SR)

SR 4.18.A

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not too severe, testing each train once every month provides an adequate check of this system. Systems without heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system. The 31 day frequency is based on the reliability of the equipment and the two train redundancy. Operation of the MCR/ESGR EVS trains shall be initiated manually from the MCR.

SR 4.18.B

This SR verifies that the required Control Room Air Filtration System testing is performed in accordance with Specification 4.20. Specification 4.20 includes testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum flow rate, and the physical properties of the activated charcoal. Specific test frequencies and additional information are discussed in detail in TS 4.20.

SR 4.18.C

This SR verifies the OPERABILITY of the MCR/ESGR envelope boundary by testing for unfiltered air inleakage past the MCR/ESGR envelope boundary and into the MCR/ESGR envelope. The details of the testing are specified in the MCR/ESGR Envelope Habitability Program (TS 6.4.R).

The MCR/ESGR envelope is considered habitable when the radiological dose to MCR/ESGR envelope occupants calculated in the licensing basis analyses of DBA consequences is no more than 5 rem TEDE, and the MCR/ESGR envelope occupants are protected from hazardous chemicals and smoke. This SR verifies that the unfiltered air leakage into the MCR/ESGR envelope is no greater than the flow rate assumed in the licensing basis analyses of DBA consequences. When unfiltered air leakage is greater than the assumed flow rate, Specification 3.21.C must be entered. Specification 3.21.C.3 allows time to restore the MCR/ESGR envelope boundary to OPERABLE status provided mitigating actions can ensure that the MCR/ESGR envelope remains within the licensing basis habitability limits for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. 1) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 2). These compensatory measures may also be used as mitigating actions as required by Specification 3.21.C.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 3). Options for restoring the MCR/ESGR envelope boundary to OPERABLE status include changing the licensing basis DBA consequence analysis, repairing the MCR/ESGR envelope boundary, or a combination of these actions. Depending upon the nature of the problem and the corrective action, a full scope leakage test may not be necessary to establish that the MCR/ESGR envelope boundary has been restored to OPERABLE status.

REFERENCES

1. Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors"
2. NEI 99-03, "Control Room Habitability Assessment," June 2001
3. 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)

8. The procedure for iodine removal efficiency tests shall follow ASTM D3803. The test conditions shall be in accordance with those listed in Specification 4.20.B.4.
9. The pressure drop across the HEPA filter and adsorber banks shall be checked:
 - a. Initially;
 - b. Once per 18 months; and
 - c. After each complete or partial replacement of filters or adsorbers.

B. Acceptance Criteria

1. Fan flow tube test shall show a flow rate through any single filter train of 1000 ± 10 percent cfm.
2. In-place cold DOP tests on HEPA filters shall show greater than or equal to 99.5 percent DOP removal. Leaking sources shall be identified, repaired and retested. Any HEPA filter found defective shall be replaced.
3. In-place halogenated hydrocarbon leakage tests on charcoal adsorber banks shall show greater than or equal to 99 percent halogenated hydrocarbon removal. Leakage sources shall be identified, repaired and retested.

4. Laboratory analysis on new charcoal adsorbent shall show the methyl iodide penetration less than or equal to 14 percent, when tested in accordance with ASTM D3803-1989 (with the exception of face velocity which is to be at 24.4 M/min), with the relative humidity equal to 95 percent, and the temperature equal to 30°C (86°F).
5. The pressure drop across filter cells and adsorbers shall not exceed 5.0 inches W.G. at design flow rate. If this condition cannot be met, new filter cells shall be installed.

Basis

Ventilation system filter components are not subject to rapid deterioration, having lifetimes of many years. The tests outlined above provide assurance of filter reliability and will ensure timely detection of conditions which could cause filter degradation.

A pressure drop across the combined HEPA filters and charcoal adsorbers of less than 5 inches of water will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter.

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.

4. Measurement, at designated locations, of the MCR/ESGR envelope pressure relative to all external areas adjacent to the MCR/ESGR envelope boundary during the pressurization mode of operation by one train of the MCR/ESGR EVS, operating at the flow rate required by TS 4.20, at a Frequency of 18 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the assessment of the MCR/ESGR envelope boundary.
5. The quantitative limits on unfiltered air leakage into the MCR/ESGR envelope. These limits shall be stated in a manner to allow direct comparison to the unfiltered air leakage measured by the testing described in paragraph 3. The unfiltered air leakage limit for radiological challenges is the leakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air leakage limits for hazardous chemicals must ensure that exposure of MCR/ESGR envelope occupants to these hazards will be within the assumptions in the licensing basis.
6. The provisions of SR 4.0.2 are applicable to the Frequencies for assessing MCR/ESGR envelope habitability, determining MCR/ESGR envelope unfiltered leakage, and measuring MCR/ESGR envelope pressure and assessing the MCR/ESGR envelope boundary as required by paragraphs 3 and 4, respectively.