

July 3, 2008

TSTF-08-08
PROJ0753U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001SUBJECT: TSTF-508, Revision 0, "Revise Control Room Habitability Actions to Address
Lessons Learned from TSTF-448 Implementation"

Dear Sir or Madam:

Enclosed for NRC review is Revision 0 of TSTF-508, "Revise Control Room Habitability
Actions to Address Lessons Learned from TSTF-448 Implementation."Any NRC review fees associated with the review of TSTF-508 should be billed to the
Pressurized Water Reactors Owners Group.The TSTF requests that the Traveler be made available under the Consolidated Line Item
Improvement Process.

Should you have any questions, please do not hesitate to contact us.



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Enclosure

cc: Robert Elliott, Technical Specifications Branch, NRC
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Technical Specification Task Force Improved Standard Technical Specifications Change Traveler

Revise Control Room Habitability Actions to Address Lessons Learned from TSTF-448 Implementation

NUREGs Affected: 1430 1431 1432 1433 1434

Classification Not Classified

Recommended for CLIP?: Yes

Correction or Improvement: Improvement

NRC Fee Status: Not Exempt

Benefit: Provides Longer Completion Time

Industry Contact: Bert Yates, (314) 554-3573, gyates@ameren.com

See attached.

Revision History

OG Revision 0

Revision Status: Active

Revision Proposed by: PWROG LSC

Revision Description:

Original Issue

Owners Group Review Information

Date Originated by OG: 26-Mar-08

Owners Group Comments

(No Comments)

Owners Group Resolution: Approved Date: 05-May-08

TSTF Review Information

TSTF Received Date: 30-May-08

Date Distributed for Review 30-May-08

OG Review Completed: BWOG WOG CEOG BWROG

TSTF Comments:

(No Comments)

TSTF Resolution: Approved

Date: 03-Jul-08

NRC Review Information

NRC Received Date: 03-Jul-08

Affected Technical Specifications

5.5.18

Control Room Envelope Habitability Program

NUREG(s)- 1430 1431 1432 Only

03-Jul-08

Action 3.7.10.B	CREVS	NUREG(s)- 1430 Only
Action 3.7.10.E	CREVS	NUREG(s)- 1430 Only
Action 3.7.10.E Bases	CREVS	NUREG(s)- 1430 Only
Action 3.7.10.B	CREFS	NUREG(s)- 1431 Only
Action 3.7.10.E	CREFS	NUREG(s)- 1431 Only
Action 3.7.10.E Bases	CREFS	NUREG(s)- 1431 Only
Action 3.7.11.B	CREACS	NUREG(s)- 1432 Only
Action 3.7.11.E	CREACS	NUREG(s)- 1432 Only
Action 3.7.11.E Bases	CREACS	NUREG(s)- 1432 Only
5.5.15	Control Room Envelope Habitability Program	NUREG(s)- 1433 1434 Only
Action 3.7.4.B	[MCREC] System	NUREG(s)- 1433 Only
Action 3.7.4.F	[MCREC] System	NUREG(s)- 1433 Only
Action 3.7.4.F Bases	[MCREC] System	NUREG(s)- 1433 Only
Action 3.7.3.B	[CRFA] System	NUREG(s)- 1434 Only
Action 3.7.3.F	[CRFA] System	NUREG(s)- 1434 Only
Action 3.7.3.F Bases	[CRFA] System	NUREG(s)- 1434 Only

1.0 Description

TSTF-448, Revision 3, "Control Room Habitability," was approved by the NRC on January 17, 2007. Since its publication, over 20 sites have adopted the Traveler. Several inconsistencies and improvements to TSTF-448 have been identified. The purpose of this Traveler is to address these inconsistencies and to pursue improvements consistent with the justification in TSTF-448.

- a. TSTF-448 modified the Required Actions of the control room ventilation Specifications when the control room envelope (CRE) boundary is inoperable to require initiation of mitigating actions, verification that the mitigating actions ensure that CRE occupants are protected, and restoration of the control room boundary to Operable status within 90 days. This action applies when the plant is in the operating Modes (Modes 1-4 for pressurized water reactors (PWRs), Modes 1-3 for Boiling Water Reactors (BWRs)).

The Actions for an inoperable boundary in other Modes and specified Conditions in the Applicability (Modes 5 and 6 for PWRs and during movement of [recently] irradiated fuel assemblies in the [secondary] containment and during operations with a potential for draining the reactor vessel (OPDRVs) for BWRs) require immediate suspension of movement of [recently] irradiated fuel assemblies and, for BWRs, suspension of OPDRVs. This Action is more restrictive than the similar Actions for the operating Modes.

The proposed change revises the Actions of the control room ventilation specification to apply the same actions in all Modes and other specified conditions. If these Actions are not completed in the included Modes or other specified conditions, the existing Action is applicable.

- b. Required Action B.2 states, "Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits." This wording is incorrect in that it refers to limits for chemical and smoke hazards but these hazards do not have quantifiable limits. The Required Action is revised to state, "Verify mitigating actions ensure CRE occupant radiological exposures will not exceed limits, and CRE occupants are protected from chemical and smoke hazards."
- c. The Control Room Envelope Habitability Program, paragraph d, requires pressure testing at a Frequency of [18] months on a STAGGERED TEST BASIS. The last sentence of the paragraph states, "The results shall be trended and used as part of the [18] month assessment of the CRE boundary." This statement is incorrect as the assessment being referenced is required by Regulatory Guide 1.197 to be performed every 36 months, not every 18 months. This error was identified shortly before the final approval of TSTF-448 and acknowledged by the NRC and the industry. The sentence is revised to state, "The results shall be trended and used as part of the periodic assessment of the CRE boundary."

2.0 Proposed Change

The Technical Specification and Bases markups for this Traveler are shown on pages modified to incorporate the NRC-approved changes in TSTF-448-A, Revision 3, "Control Room Habitability."

a. Conditions B and E of the following Specifications are revised:

- NUREG-1430, Specification 3.7.10, "Control Room Emergency Ventilation System (CREVS),"
- NUREG-1431, Specification 3.7.10, "Control Room Emergency Filtration System (CREFS),"
- NUREG-1431, Specification 3.7.11, "Control Room Emergency Air Cleanup System (CREACS),"
- NUREG-1433, Specification 3.7.4, "[Main Control Room Environmental Control (MCREC)] System, and
- NUREG-1434, Specification 3.7.3, "[Control Room Fresh Air (CRFA)] System."

Condition B is revised to delete the Mode restriction. For example, NUREG-1430 is revised from "One or more CREVS trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4" to delete the phrase "in MODE 1, 2, 3, or 4." This change applies Condition B in all Modes and other specified conditions in the Applicability.

PWR Condition E contains two conditions joined with an OR logical connector. The first states, "Two [CREVS/CREFS/CREACS] trains inoperable [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies." This is changed to add "for conditions other than Condition B." The second Condition states, "One or more CREACS trains inoperable due to an inoperable CRE boundary [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies." This condition is revised to state, "Required Actions and associated Completion Times of Condition B not met [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies." This becomes the default action for Condition B.

BWR Condition F is similar to PWR Condition E. Condition F contains two conditions joined with an OR logical connector. The first states, "Two [MCREC/CRFA] subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [secondary/primary or secondary containment] or during OPDRVs." This is changed to add "for conditions other than Condition B." The second Condition states, "One or more [MCREC/CRFA] subsystems inoperable due to an inoperable CRE boundary during movement of [recently] irradiated fuel assemblies in the [secondary/primary or secondary] containment or during OPDRVs." This condition is revised to state, "Required Actions and associated Completion

Times of Condition B not met during movement of [recently] irradiated fuel assemblies in the [secondary/primary or secondary] containment or during OPDRVs." This becomes the default action for Condition B.

No changes to the Bases of Condition B are required. The Condition E Bases are revised to be consistent with the revised condition.

- b. Required Action B.2 is revised from, "Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits," to "Verify mitigating actions ensure CRE occupant radiological exposures will not exceed limits, and CRE occupants are protected from chemical and smoke hazards."
- c. PWR Specification 5.5.18 and BWR Specification 5.5.15, "Control Room Envelope Habitability Program," paragraph d, last sentence is changed from, "The results shall be trended and used as part of the [18] month assessment of the CRE boundary," to "The results shall be trended and used as part of the periodic assessment of the CRE boundary."

3.0 Background

TSTF-448, Revision 3, "Control Room Habitability," was approved by the NRC on January 17, 2007. Since its publication, over 20 sites have adopted the Traveler. Several inconsistencies and improvements to TSTF-448 have been identified. The purpose of this Traveler is to address these inconsistencies and to pursue improvements consistent with the justification in TSTF-448.

Under TSTF-448-A, Revision 3, licensees are required to perform periodic CRE inleakage testing and periodically evaluate the condition of the CRE boundary. Should the CRE boundary inleakage exceed that assumed in the accident analysis, the Actions require implementing mitigating actions, verification that the mitigating actions will protect the CRE occupants from radiological, chemical, and smoke hazards, and restoration of the CRE boundary to Operable status within 90 days. The 90 day Completion Time was considered reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE 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 Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary. In the shutdown Modes, the control room ventilation Required Actions require immediately suspending movement of [recently] irradiated fuel assemblies. This action is overly restrictive in that mitigating actions can be taken that will assure protection of the CRE occupants should an event occur.

In addition, the need for corrections to Required Action B.2 and the Control Room Envelope Habitability Program paragraph d, has been identified.

4.0 Technical Analysis

- a. The CRE provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke. In the operating Modes, the threats to the CRE occupants are the same or significantly larger than in the shutdown Modes. For example, the threat of fire or toxic chemicals is unchanged but the source term for radiological threats is significantly greater than in the shutdown Modes when the most significant radiological threat is a fuel handling accident.

The current action, which requires the immediate suspension of movement of [recently] irradiated fuel assemblies, is an overly restrictive and unnecessary action. First, suspension of fuel movement is unnecessary if Required Action B.2 verifies that the required mitigating actions protect the CRE occupants, just as is required in the operating Modes. Second, the proposed change is more restrictive in that the existing action to suspend [recently] irradiated fuel assemblies does nothing to mitigate the effects of a chemical or smoke hazard. Third, suspension of fuel movement can disrupt a carefully planned refueling schedule and increases the risk of a human performance error. If the Required Actions of Condition B cannot be met (i.e., if cannot be verified that the mitigating actions ensure CRE occupants are protected from radiological, chemical, and smoke hazards) the existing action to suspend movement of [recently] irradiated fuel assemblies applies. This parallels the Actions for the operating Modes. Therefore, there is an improvement in the protection provided by the Required Actions while providing additional flexibility and reducing the possibility of human performance errors.

- b. During development of Revision 3 to TSTF-448, it was agreed that smoke requirements were qualitative rather than quantitative, and the concept of smoke limits was therefore deleted from the Section 5.5 Habitability Program, item e. In the NRC meeting minutes that agreed to this change to Section 5.5 (see ADAMS accession number ML061310293, page 2 of minutes dated May 12, 2006), it was noted that this was acceptable, because general qualitative requirements for protecting CRE occupants from smoke challenges are retained in the first paragraph of the proposed Administrative Controls Control Room Envelope Habitability Program, along with a licensing basis discussion in the "Applicable Safety Analyses" section of the Bases. Together these adequately address the licensing basis requirements for protecting CRE occupants from smoke. To be consistent with this concept, Required Action B.2 is revised to refer to limits for radiological hazards, but does not include a reference to limits for smoke. The proposed wording in Required Action B.2 with respect to smoke is consistent with the words used in Evaluation No. 2 of the NRC model safety evaluation; and with the words in the Bases for Required Action B.2.

The explicit reference to limits on chemical hazards has also been removed from Required Action B.2. The proposed wording of Required Action B.2 with respect to chemicals is consistent with the words used in the NRC model safety evaluation, Evaluation No. 2, and with the words in the Bases for Required Action B.2.

This change has been approved by the NRC for several plants, including Beaver Valley (see ADAMS #ML080370178) and Perry (see ADAMS #ML080310794).

- c. In order to be consistent with paragraph c of the Control Room Envelope Habitability Program, the last sentence of paragraph d is revised to use the term "periodic" in lieu of the bracketed phrase "18 month." The model TS indicates that periodic CRE relative pressure measurements shall "be trended and used as part of the [18 month] assessment of the CRE boundary." However, the only periodic assessment required by the TSTF-448 model TS occurs at intervals specified in Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Section C.1, as specified by paragraph c. This assessment is normally performed every 36 months, but the 36 month frequency appears only in the Regulatory Guide and does not appear in the TS. In discussions between the NRC and the TSTF, it was determined that the inclusion of the phrase "18 months" in this sentence was an error. Therefore, to be consistent with the remainder of the program, the bracketed phrase "[18 months]" is replaced with the word "periodic." This substitution resolves the inconsistency between these two requirements in a manner consistent with the published regulatory guidance.

5.0 Regulatory Analysis

5.1 No Significant Hazards Consideration

The TSTF has evaluated whether or not a significant hazards consideration is involved with the proposed generic change by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No.

The proposed changes do not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or configuration of the facility. The proposed changes do 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. This is a revision to the Technical Specifications for the control room ventilation system which is a mitigation system designed to minimize unfiltered air leakage into the control room envelope (CRE) and to filter the CRE atmosphere to protect the CRE occupants following accidents previously analyzed. An important part of the system is the CRE boundary. The CRE ventilation system is not an initiator or precursor to any accident previously evaluated. Therefore, the probability of any accident previously evaluated is not increased. The consequences of an accident during the proposed Actions are not significantly increased as the Actions require verification that the CRE occupants are protected by the required mitigating actions.

Therefore, it is concluded that this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

This revision will not impact the accident analysis. The changes will not alter the requirements of the CRE ventilation system or its function during accident conditions. No new or different accidents result from performing the new surveillance or following the new program. The changes do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a significant change in the methods governing normal plant operation. The changes do not alter assumptions made in the safety analysis. The proposed changes are consistent with the safety analysis assumptions and current plant operating practice.

Therefore, it is concluded that this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No.

The proposed changes do not alter the manner in which safety limits, limiting safety system settings or limiting conditions for operation are determined. The safety analysis acceptance criteria are not affected by these changes. The proposed changes will not result in plant operation in a configuration outside the design basis for an unacceptable period of time without compensatory measures. The proposed changes do not adversely affect systems that respond to safely shutdown the plant and to maintain the plant in a safe shutdown condition.

Therefore, it is concluded that this change does not involve a significant reduction in a margin of safety.

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

5.2 Applicable Regulatory Requirements/Criteria

The proposed change to the Improved Standard Technical Specifications will ensure that compliance with requirements equivalent to 10 CFR 50, Appendix A, GDC 19 is maintained. Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the

Commission's regulations, and (3) the approval of the proposed change will not be inimical to the common defense and security or to the health and safety of the public.

6.0 Environmental Consideration

A review has determined that the proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

7.0 References

1. Notice of Availability for TSTF-448, Revision 3, "Control Room Habitability," Federal Register / Vol. 72, No. 10 / Wednesday, January 17, 2007, page 2022.

3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Ventilation System (CREVS)

LCO 3.7.10 Two CREVS trains shall be OPERABLE.

-----NOTE-----

The control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6],
[During movement of [recently] irradiated fuel assemblies].

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREVS train inoperable for reasons other than Condition B.	A.1 Restore CREVS train to OPERABLE status.	7 days
B. One or more CREVS trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions.	Immediately
	<u>AND</u>	
	B.2 Verify mitigating actions ensure CRE occupant radiological exposures to radiological, chemical, and smoke hazards will not exceed limits, <u>and CRE occupants are protected from chemical and smoke hazards.</u>	24 hours
	<u>AND</u>	
	B.3 Restore CRE boundary to OPERABLE status.	90 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. [Required Action and associated Completion Time of Condition A not met [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.</p>	<p>D.1 -----NOTE----- Place in emergency mode if automatic transfer to emergency mode is inoperable. ----- Place OPERABLE CREVS train in emergency mode.</p> <p><u>OR</u></p> <p>D.2 Suspend movement of [recently] irradiated fuel assemblies.</p>	<p>Immediately</p> <p>Immediately]</p>
<p>E. [Two CREVS trains inoperable [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies <u>for reasons other than Condition B.</u></p> <p><u>OR</u></p> <p><u>Required Actions and associated Completion Times of Condition B not met One or more CREVS trains inoperable due to an inoperable CRE boundary</u> [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.</p>	<p>E.1 Suspend movement of [recently] irradiated fuel assemblies.</p>	<p>Immediately]</p>
<p>F. Two CREVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.</p>	<p>F.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

5.5 Programs and Manuals

5.5.17 Battery Monitoring and Maintenance Program

This Program provides for battery restoration and maintenance, based on [the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," or of the battery manufacturer] including the following:

- a. Actions to restore battery cells with float voltage < [2.13] V, and
- b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.

5.5.18 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Ventilation System (CREVS), CRE 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 CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of [5 rem whole body or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)] for the duration of the accident. The program shall include the following elements:

- a. The definition of the CRE and the CRE boundary.
- b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.
- c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE 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 (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

[The following are exceptions to Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0:

1. ;and]

- d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the CREVS, operating at the flow rate required by the VFTP, at a Frequency of [18] months on a STAGGERED

TEST BASIS. The results shall be trended and used as part of the periodic ~~[18] month~~ assessment of the CRE boundary.

- e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air leakage measured by the testing described in paragraph c. 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 CRE occupants to these hazards will be within the assumptions in the licensing basis.
 - f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered leakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.
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No Change Required

BASES

ACTIONS

A.1

With one CREVS train inoperable, for reasons other than an inoperable CRE boundary, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREVS train is adequate to perform the CRE occupant protection function. However, the overall reliability is reduced because a failure in the OPERABLE CREVS train could result in loss of CREVS function. The 7 day Completion 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.

B.1, B.2, and B.3

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE 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 CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion 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 Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE 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 Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

BASES

ACTIONS (continued)

[D.1 and D.2

[In MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies, if the inoperable CREVS train cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CREVS train must immediately be placed in the emergency mode. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action D.1 is to immediately suspend activities that could release radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

Required Action D.1 is modified by a Note indicating to place the system in the emergency mode if automatic transfer to the emergency mode is inoperable.]

[E.1

[In MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies, when two CREVS trains are inoperable for reasons other than Condition B or with the Required Actions and associated Completion Times of Condition B not met, one or more CREVS trains inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.]

F.1

If both CREVS trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable CRE boundary (i.e., Condition B), the CREVS may not be capable of performing the intended function and the unit is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately.

3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Filtration System (CREFS)

LCO 3.7.10 Two CREFS trains shall be OPERABLE.

-----NOTE-----

The control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6],
During movement of [recently] irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREFS train inoperable for reasons other than Condition B.	A.1 Restore CREFS train to OPERABLE status.	7 days
B. One or more CREFS trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions.	Immediately
	<u>AND</u>	
	B.2 Verify mitigating actions ensure CRE occupant <u>radiological</u> exposures to radiological, chemical, and smoke hazards will not exceed limits, <u>and CRE occupants are protected from chemical and smoke hazards.</u>	24 hours
	<u>AND</u>	
	B.3 Restore CRE boundary to OPERABLE status.	90 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Required Action and associated Completion Time of Condition A not met [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.</p>	<p>D.1 -----NOTE----- [Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable.] -----</p> <p>Place OPERABLE CREFS train in emergency mode.</p> <p><u>OR</u></p> <p>D.2 Suspend movement of [recently] irradiated fuel assemblies.</p>	<p>Immediately</p> <p>Immediately</p>
<p>E. Two CREFS trains inoperable [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies <u>for reasons other than Condition B.</u></p> <p><u>OR</u></p> <p><u>Required Actions and associated Completion Times of Condition B not met One or more CREFS trains inoperable due to an inoperable CRE boundary [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.</u></p>	<p>E.1 Suspend movement of [recently] irradiated fuel assemblies.</p>	<p>Immediately</p>
<p>F. Two CREFS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.</p>	<p>F.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

5.5 Programs and Manuals

5.5.16 Containment Leakage Rate Testing Program (continued)

1. Containment leakage rate acceptance criterion is $\leq 1.0 L_a$. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $< 0.60 L_a$ for the Type B and C tests and [$< 0.75 L_a$ for Option A Type A tests] [$\leq 0.75 L_a$ for Option B Type A tests].
2. Air lock testing acceptance criteria are:
 - a) Overall air lock leakage rate is $\leq [0.05 L_a]$ when tested at $\geq P_a$.
 - b) For each door, leakage rate is $\leq [0.01 L_a]$ when pressurized to $[\geq 10 \text{ psig}]$.
- e. The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.
- f. Nothing in these Technical Specifications shall be construed to modify the testing Frequencies required by 10 CFR 50, Appendix J.

5.5.17 Battery Monitoring and Maintenance Program

This Program provides for battery restoration and maintenance, based on [the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," or of the battery manufacturer] including the following:

- a. Actions to restore battery cells with float voltage $< [2.13] \text{ V}$, and
- b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.

5.5.18 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Filtration System (CREFS), CRE 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 CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of [5 rem whole body or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)] for the duration of the accident. The program shall include the following elements:

- a. The definition of the CRE and the CRE boundary.

- b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.
- c. Requirements for (i) determining the unfiltered air leakage past the CRE boundary into the CRE 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 (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

[The following are exceptions to Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0:

1. ;and]

- d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the CREFS, operating at the flow rate required by the VFTP, at a Frequency of [18] months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the ~~periodic [18]-month~~ assessment of the CRE boundary.
 - e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air leakage measured by the testing described in paragraph c. 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 CRE occupants to these hazards will be within the assumptions in the licensing basis.
 - f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered leakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.
-
-

No Changes Required

BASES

ACTIONS (continued)

B.1, B.2, and B.3

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE 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 CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion 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 Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE 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 Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

BASES

ACTIONS (continued)

E.1

[In MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies, with two CREFS trains inoperable for reasons other than Condition B or with the Required Actions and associated Completion Times of Condition B not met, one or more CREFS trains inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

E.1

If both CREFS trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable CRE boundary (i.e., Condition B), the CREFS may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE
REQUIREMENTSSR 3.7.10.1

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. Monthly heater operations dry out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥ 10 continuous hours with the heaters energized. 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.

SR 3.7.10.2

This SR verifies that the required CREFS testing is performed in accordance with the [Ventilation Filter Testing Program (VFTP)]. The [VFTP] 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 the [VFTP].

3.7 PLANT SYSTEMS

3.7.11 Control Room Emergency Air Cleanup System (CREACS)

LCO 3.7.11 Two CREACS trains shall be OPERABLE.

-----NOTE-----

The control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6,]
During movement of [recently] irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREACS train inoperable for reasons other than Condition B.	A.1 Restore CREACS train to OPERABLE status.	7 days
B. One or more CREACS trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions.	Immediately
	<u>AND</u>	
	B.2 Verify mitigating actions ensure CRE occupant <u>radiological</u> exposures to radiological, chemical, and smoke hazards will not exceed limits, <u>and CRE occupants are protected from chemical and smoke hazards.</u>	24 hours
	<u>AND</u>	
	B.3 Restore CRE boundary to OPERABLE status.	90 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Required Action and associated Completion Time of Condition A not met [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.</p>	<p>D.1 -----NOTE----- Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. -----</p> <p>Place OPERABLE CREACS train in emergency radiation protection mode.</p> <p><u>OR</u></p> <p>D.2 Suspend movement of [recently] irradiated fuel assemblies.</p>	<p>Immediately</p> <p>Immediately</p>
<p>E. Two CREACS trains inoperable [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies <u>for reasons other than Condition B.</u></p> <p><u>OR</u></p> <p><u>Required Actions and associated Completion Times of Condition B not met One or more CREACS trains inoperable due to an inoperable CRE boundary</u> [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.</p>	<p>E.1 Suspend movement of [recently] irradiated fuel assemblies.</p>	<p>Immediately</p>

5.5 Programs and Manuals

5.5.17 Battery Monitoring and Maintenance Program

This Program provides for battery restoration and maintenance, based on [the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," or of the battery manufacturer] including the following

- a. Actions to restore battery cells with float voltage < [2.13] V, and
- b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.

5.5.18 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Air Cleanup System (CREACS), CRE 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 CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of [5 rem whole body or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)] for the duration of the accident. The program shall include the following elements:

- a. The definition of the CRE and the CRE boundary.
- b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.
- c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE 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 (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

[The following are exceptions to Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0:

1. ;and]

- d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the CREACS, operating at the flow rate required by the VFTP, at a Frequency of [18] months on a STAGGERED

TEST BASIS. The results shall be trended and used as part of the periodic ~~[18] month~~ assessment of the CRE boundary.

- e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air leakage measured by the testing described in paragraph c. 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 CRE occupants to these hazards will be within the assumptions in the licensing basis.
 - f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered leakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.
-

No Changes Required

BASES

ACTIONS

A.1

With one CREACS train inoperable, for reasons other than an inoperable CRE boundary, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREACS train is adequate to perform the CRE occupant protection function. However, the overall reliability is reduced because a failure in the OPERABLE CREACS train could result in loss of CREACS function. The 7 day Completion 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.

B.1, B.2, and B.3

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE 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 CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion 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 Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE 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 Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

BASES

ACTIONS (continued)

D.1 and D.2

[In MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies, if Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE CREACS train must be immediately placed in the emergency mode of operation. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel assemblies to a safe position.

Required Action D.1 is modified by a Note indicating to place the system in the toxic gas protection mode if the automatic transfer to the toxic gas protection mode is inoperable.

E.1

When [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies, with two CREACS trains inoperable or with the Required Actions and associated Completion Times of Condition B not met, one or more CREACS trains inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

E.1

If both CREACS trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable CRE boundary (i.e., Condition B), the CREACS may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

3.7 PLANT SYSTEMS

3.7.4 [Main Control Room Environmental Control (MCREC)] System

LCO 3.7.4 Two [MCREC] subsystems shall be OPERABLE.

-----NOTE-----
 The main control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,
 During movement of [recently] irradiated fuel assemblies in the [secondary] containment,
 During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One [MCREC] subsystem inoperable for reasons other than Condition B.	A.1 Restore [MCREC] subsystem to OPERABLE status.	7 days
B. One or more [MCREC] subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1 Initiate action to implement mitigating actions.	Immediately
	<u>AND</u>	
	B.2 Verify mitigating actions ensure CRE occupant radiological exposures to radiological, chemical, and smoke hazards will not exceed limits, <u>and CRE occupants are protected from chemical and smok hazards.</u>	24 hours
<u>AND</u>		
	B.3 Restore CRE boundary to OPERABLE status.	90 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3.	12 hours
	<u>AND</u> C.2 Be in MODE 4.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Required Action and associated Completion Time of Condition A not met during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs.</p>	<p>-----NOTE----- LCO 3.0.3 is not applicable. -----</p> <p>D.1 -----NOTE----- [Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable.] -----</p> <p>Place OPERABLE [MCREC] subsystem in [pressurization] mode.</p> <p><u>OR</u></p> <p>D.2.1 Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment.</p> <p><u>AND</u></p> <p>D.2.2 Initiate action to suspend OPDRVs.</p>	<p>Immediately</p> <p>Immediately</p> <p>Immediately</p>
<p>E. Two [MCREC] subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.</p>	<p>E.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F. Two [MCREC] subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs <u>for reasons other than Condition B.</u></p> <p><u>OR</u></p> <p><u>Required Actions and associated Completion Times of Condition B not met One or more [MCREC] subsystems inoperable due to an inoperable CRE boundary</u> during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs.</p>	<p>-----NOTE----- LCO 3.0.3 is not applicable. -----</p> <p>F.1 Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment.</p> <p><u>AND</u></p> <p>F.2 Initiate action to suspend OPDRVs.</p>	<p>Immediately</p> <p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.4.1 Operate each [MCREC] subsystem for ≥ 10 continuous hours with the heaters operating or (for systems without heaters) ≥ 15 minutes].</p>	<p>31 days</p>
<p>SR 3.7.4.2 Perform required [MCREC] filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].</p>	<p>In accordance with the [VFTP]</p>
<p>SR 3.7.4.3 Verify each [MCREC] subsystem actuates on an actual or simulated initiation signal.</p>	<p>[18] months</p>

5.5 Programs and Manuals

5.5.14 Battery Monitoring and Maintenance Program

This Program provides for battery restoration and maintenance, based on [the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," or of the battery manufacturer] of the following:

- a. Actions to restore battery cells with float voltage < [2.13] V, and
- b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.

5.5.15 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE [Main Control Room Environmental Control (MCREC)] System, CRE 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 CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of [5 rem whole body or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)] for the duration of the accident. The program shall include the following elements:

- a. The definition of the CRE and the CRE boundary.
- b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.
- c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE 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 (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

[The following are exceptions to Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0:

1. ;and]

- d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one subsystem of the [MCREC] System, operating at the flow rate required by the VFTP, at a Frequency of [18] months on a

STAGGERED TEST BASIS. The results shall be trended and used as part of the ~~periodic [18]-month~~ assessment of the CRE boundary.

- e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.
 - f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.
-

No Change Required

BASES

ACTIONS (continued)

B.1, B.2, and B.3

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE 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 CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion 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 Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE 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 Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

C.1 and C.2

In MODE 1, 2, or 3, if the inoperable [MCREC] subsystem or the CRE boundary cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 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.

BASES

ACTIONS (continued)

During movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs, if the inoperable [MCREC] subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE [MCREC] subsystem may be placed in the pressurization mode. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

[Required Action D.1 is modified by a Note alerting the operator to [place the system in the toxic gas protection mode if the toxic gas protection mode automatic transfer capability is inoperable.]

An alternative to Required Action D.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk.

If applicable, movement of [recently] irradiated fuel assemblies in the [secondary] containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

E.1

If both [MCREC] subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable CRE boundary (i.e., Condition B), the [MCREC] System may not be capable of performing the intended function and the unit is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

F.1 and F.2

The Required Actions of Condition F are modified by a Note indicating that LCO 3.0.3 does not apply. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of [recently] irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

BASES

ACTIONS (continued)

During movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs, with two [MCREC] subsystems inoperable for reasons other than Condition B or with the Required Actions and associated Completion Times of Condition B not met one or more [MCREC] subsystems inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk.

If applicable, movement of [recently] irradiated fuel assemblies in the [secondary] containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. If applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE
REQUIREMENTSSR 3.7.4.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Monthly heater operation dries out any moisture that has accumulated in the charcoal as a result of humidity in the ambient air. [Systems with heaters must be operated for ≥ 10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system.] Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

SR 3.7.4.2

This SR verifies that the required [MCREC] testing is performed in accordance with the [Ventilation Filter Testing Program (VFTP)]. The [VFTP] includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test Frequencies and additional information are discussed in detail in the [VFTP].

3.7 PLANT SYSTEMS

3.7.3 [Control Room Fresh Air (CRFA)] System

LCO 3.7.3 Two [CRFA] subsystems shall be OPERABLE.

-----NOTE-----
The control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,
During movement of [recently] irradiated fuel assemblies in the [primary or secondary containment],
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One [CRFA] subsystem inoperable for reasons other than Condition B.	A.1 Restore [CRFA] subsystem to OPERABLE status.	7 days
B. One or more [CRFA] subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1 Initiate action to implement mitigating actions.	Immediately
	<u>AND</u> B.2 Verify mitigating actions ensure CRE occupant radiological exposures to radiological, chemical, and smoke hazards will not exceed limits, <u>and CRE occupants are protected from chemical and smoke hazards.</u>	24 hours
	<u>AND</u> B.3 Restore CRE boundary to OPERABLE status.	90 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Required Action and associated Completion Time of Condition A not met during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs.</p>	<p>-----NOTE----- LCO 3.0.3 is not applicable. -----</p> <p>D.1 -----NOTE----- [Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable.] -----</p> <p>Place OPERABLE [CRFA] subsystem in [isolation] mode.</p> <p><u>OR</u></p> <p>D.2.1 Suspend movement of [recently] irradiated fuel assemblies in the [primary and secondary containment].</p> <p><u>AND</u></p> <p>D.2.2 Initiate action to suspend OPDRVs.</p>	<p>Immediately</p> <p>Immediately</p> <p>Immediately</p>
<p>E. Two [CRFA] subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.</p>	<p>E.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F. Two [CRFA] subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs <u>for reasons other than Condition B.</u></p> <p><u>OR</u></p> <p><u>Required Actions and associated Completion Times of Condition B not met One or more [CRFA] subsystems inoperable due to inoperable CRE boundary</u> during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs.</p>	<p>-----NOTE----- LCO 3.0.3 is not applicable. -----</p>	Immediately
	<p>F.1 Suspend movement of [recently] irradiated fuel assemblies in the [primary and secondary containment].</p> <p><u>AND</u></p> <p>F.2 Initiate action to suspend OPDRVs.</p>	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.3.1 Operate each [CRFA] subsystem for ≥ 10 continuous hours with the heaters operating or (for systems without heaters) ≥ 15 minutes].	31 days
SR 3.7.3.2 Perform required [CRFA] filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].	In accordance with the [VFTP]
SR 3.7.3.3 Verify each [CRFA] subsystem actuates on an actual or simulated initiation signal.	[18] months

5.5.15 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE [Control Room Fresh Air (CRFA)] System, CRE 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 CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of [5 rem whole body or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)] for the duration of the accident. The program shall include the following elements:

- a. The definition of the CRE and the CRE boundary.
- b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.
- c. Requirements for (i) determining the unfiltered air leakage past the CRE boundary into the CRE 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 (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

[The following are exceptions to Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0:

1. ;and]

- d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one subsystem of the [CRFA] System, operating at the flow rate required by the VFTP, at a Frequency of [18] months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the ~~periodic [18]-month~~ assessment of the CRE boundary.
- e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air leakage measured by the testing described in paragraph c. 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 CRE occupants to these hazards will be within the assumptions in the licensing basis.
- f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered leakage, and

No Changes Required

BASES

APPLICABILITY (continued)

- a. During operations with a potential for draining the reactor vessel (OPDRVs) and
- b. During movement of [recently] irradiated fuel assemblies in the [primary or secondary containment]. [Due to radioactive decay, the CRFA System is only required to be OPERABLE during fuel handling involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days).]

ACTIONS

A.1

With one [CRFA] subsystem inoperable for reasons other than an inoperable CRE boundary, the inoperable [CRFA] subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE [CRFA] subsystem is adequate to perform the CRE occupant protection function. However, the overall reliability is reduced because a failure in the OPERABLE subsystem could result in loss of [CRFA] System function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and that the remaining subsystem can provide the required capabilities.

B.1, B.2, and B.3

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE 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 CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion 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 Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE 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 Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

BASES

ACTIONS (continued)

E.1

If both [CRFA] subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable CRE boundary (i.e., Condition B), the [CRFA] System may not be capable of performing the intended function and the unit is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

F.1 and F.2

The Required Actions of Condition F are modified by a Note indicating that LCO 3.0.3 does not apply. If moving [recently] irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of [recently] irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

During movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs, with two [CRFA] subsystems inoperable for reasons other than Condition B or with the Required Actions and associated Completion Times of Condition B not met one or more [CRFA] subsystems inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk.

If applicable, movement of [recently] irradiated fuel assemblies in the [primary and secondary containment] must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. If applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE
REQUIREMENTSSR 3.7.3.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems