August 18, 2005 TSTF-05-12

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

SUBJECT: TSTF-448, Revision 2, "Control Room Habitability"

Dear Sir or Madam:

Enclosed for NRC consideration is Technical Specification Task Force Traveler TSTF-448, Revision 2, "Control Room Habitability." This revision was developed by the Technical Specification Task Force and the Nuclear Energy Institute (NEI) Control Room Habitability Task Force (CRHTF) and responds to the comments in the NRC's January 24, 2005 letter to the TSTF on this subject. This revision is consistent with the discussion at the May 26, 2005 public meeting between the TSTF, the NEI CRHTF, and the NRC. We look forward to discussing this revision with you and we will be requesting a suitable meeting date.

We request that NRC review of the Traveler continue to be granted a fee waiver pursuant to the provisions of 10 CFR 170.11. Specifically, the request is to support NRC generic regulatory improvements (control room habitability), in accordance with 10 CFR 170.11(a)(1)(iii). This request is consistent with the NRC letter to A. R. Pietrangelo on this subject dated January 10, 2003.

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

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Enclosure

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Technical Specification Task Force
Improved Standard Technical Specifications Change Traveler

Control Room Habitability

NUREGs Affected: ☑ 1430 ☑ 1431 ☑ 1432 ☑ 1433 ☑ 1434

Classification: 1) Technical Change Recommended for CLIIP?: Yes

Correction or Improvement: Not Applicable NRC Fee Status: Exempt

Benefit: Not Applicable

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See attached.

Revision History

OG Revision 0 Revision Status: Closed

Revision Proposed by: NEI CRH Task Force

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 29-Nov-02

Owners Group Comments:
(No Comments)

Owners Group Resolution: Approved Date: 16-Dec-02

TSTF Review Information

TSTF Received Date: 29-Nov-02 Date Distributed for Review: 29-Nov-02

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 16-Dec-02

NRC Review Information

NRC Received Date: 20-Dec-02

Date of NRC Letter: 01-Jul-03

OG Revision 0 Revision Status: Closed

Final Resolution: Superceded by Revision Final Resolution Date: 01-Jul-03

TSTF Revision 1 Revision Status: Closed

Revision Proposed by: NEI CRH Task Force

Revision Description:
On July 1, 2003, the NRC provided comments on TSTF-448, Revision 0. Based on the NRC's comments, the following changes are made:

1. A new Condition B is added to address control room inleakage. This Condition applies when one or more control room ventilation trains are inoperable due to inleakage into the control room and the requirements of the Control Room Habitability Program can still be met with compensatory measures in place. Otherwise, Condition D applies. Condition B requires compensatory actions be initiated immediately and the inleakage be within limit within 14 days.

2. Condition C requires a report be submitted to the NRC within 90 days if the Required Actions and associated Completion Times of Condition B are not met.

3. The original Condition B, now Condition D, which applies when one or more control room ventilation trains are inoperable due to an inoperable control room boundary, is modified to not apply when Condition B is entered and the original 24 hour Completion Time is restored. The Bases state that the Condition applies to significant inleakage or breaches to the control room boundary in which the requirements of the Control Room Integrity Program cannot be met even with compensatory measures in place.

4. Condition A is modified to add, "for reasons other than Condition B or D" to prevent multiple condition entry of Condition A with Condition B or D.

5. The subsequent ACTIONS are renumbered due to the insertions.

6. The inleakage Surveillance is revised to clarify the purpose and acceptance criteria for the SR. The revised wording is consistent with that proposed by the NRC in Regulatory Guide 1.196. The Bases to the Surveillance are revised to more clearly describe the relationship between the Surveillance and the Control Room Integrity Program.

7. The Control Room Integrity Program is revised to reference Regulatory Guide 1.197, Revision 0, May 2003, and to allow for NRC approved, plant-specific exceptions. The purpose of the program is expanded and the program is required to contain the limits on control room inleakage and control room configuration control, management of breaches, and preventative maintenance of the control room.

8. The description of the report is revised to be more consistent with the Required Action.

9. The Bases of NUREG-1430 (B&W) are revised to be more consistent with the content of the comparable Bases in the other ISTS NUREGs.

10. In the July 1 letter, the NRC requested that a statement be added to the Control Room Integrity Program stating that the provisions of SR 3.0.2 are not applicable. Under the ITS usage rules, the provisions of Section 3.0 are not applicable to Frequencies in Chapter 5 unless specifically stated. However, the provisions of SR 3.0.2 should apply to the Frequencies in the Control Room Integrity Program. Control room in-leakage testing is a time-consuming and elaborate test. The provisions of SR 3.0.2 are intended to allow such tests to be

TSTF Revision 1 Revision Status: Closed

scheduled efficiently and integrated into other plant activities. The Staff's comment that there is very limited data concerning control room integrity is not sufficient justification for eliminating this important planning provision. There is no demonstrated safety concern that would prohibit the use of SR 3.0.2 to schedule control room in-leakage testing in an efficient and effective manner. Therefore, a statement that SR 3.0.2 is applicable to the in-leakage testing Frequencies has been added.

An additional change, not related to the NRC's comment is made. The existing Condition B Bases state that during the period that the control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. The phrase "and physical security" is eliminated. Physical security is not an aspect of GDC 19 nor of control room habitability. Including the phrase in the Bases for this Action is confusing. Furthermore, it is unnecessary. 10 CFR 73.55 "Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage," requires compensatory measures when physical barriers are not in place. 10 CFR 73.55(g) states, "Testing and maintenance. Each licensee shall test and maintain intrusion alarms, emergency alarms, communications equipment, physical barriers, and other security related devices or equipment utilized pursuant to this section as follows: (1) All alarms, communication equipment, physical barriers, and other security related devices or equipment shall be maintained in operable condition. The licensee shall develop and employ compensatory measures including equipment, additional security personnel and specific procedures to assure that the effectiveness of the security system is not reduced by failure or other contingencies affecting the operation of the security related equipment or structures." Repeating requirements that are found in the regulations in the Technical Specification Bases is unnecessary, confusing, and contrary to the ISTS use and format guidelines.

TSTF Review Information

TSTF Received Date: 29-Jul-03 Date Distributed for Review: 29-Jul-03

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:

(No Comments)

TSTF Resolution: Approved Date: 18-Aug-03

NRC Review Information

NRC Received Date: 19-Aug-03

NRC Comments: Date of NRC Letter: 16-Dec-03

NRC provided comments in a letter dated 12/16/03. TSTF and NEI CRH Task Force preparing responses.

Final Resolution: Superceded by Revision Final Resolution Date: 16-Dec-03

TSTF Revision 2 Revision Status: Active

Revision Proposed by: TSTF & NEI CRHTF

Revision Description:
Revision 2 is a complete replacement of Revision 1. See Appendix A of the justification for a description of the changes.

TSTF Review Information

TSTF Revision 2 Revision Status: Active

TSTF Received Date: 13-Jul-05 Date Distributed for Review: 13-Jul-05

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 17-Aug-05

NRC Review Information

NRC Received Date: 18-Aug-05

Affected Technical Specifications

Bkgnd 3.7.10 Bases	CREVS	NUREG(s)- 1430 Only
S/A 3.7.10 Bases	CREVS	NUREG(s)- 1430 Only
LCO 3.7.10 Bases	CREVS	NUREG(s)- 1430 Only
Appl. 3.7.10 Bases	CREVS	NUREG(s)- 1430 Only
Ref. 3.7.10 Bases	CREVS	NUREG(s)- 1430 Only
Action 3.7.10.A	CREVS	NUREG(s)- 1430 Only
Action 3.7.10.A Bases	CREVS	NUREG(s)- 1430 Only
Action 3.7.10.B	CREVS	NUREG(s)- 1430 Only
Action 3.7.10.B Bases	CREVS	NUREG(s)- 1430 Only
Action 3.7.10.C Bases	CREVS	NUREG(s)- 1430 Only
Action 3.7.10.D Bases	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
SR 3.7.10.3 Bases	CREVS	NUREG(s)- 1430 Only
SR 3.7.10.4	CREVS	NUREG(s)- 1430 Only
	Change Description: Deleted	

SR 3.7.10.4	CREVS	NUREG(s)- 1430 Only
	Change Description: New SR	
SR 3.7.10.4 Bases	CREVS	NUREG(s)- 1430 Only
	Change Description: Deleted	
SR 3.7.10.4 Bases	CREVS	NUREG(s)- 1430 Only
	Change Description: New SR	
SR 3.7.10.5 Bases	CREVS	NUREG(s)- 1430 Only
5.5.18	Control Room Habitability Program	NUREG(s)- 1430 Only
Bkgnd 3.7.10 Bases	CREFS	NUREG(s)- 1431 Only
S/A 3.7.10 Bases	CREFS	NUREG(s)- 1431 Only
LCO 3.7.10 Bases	CREFS	NUREG(s)- 1431 Only
Appl. 3.7.10 Bases	CREFS	NUREG(s)- 1431 Only
Ref. 3.7.10 Bases	CREFS	NUREG(s)- 1431 Only
Action 3.7.10.A	CREFS	NUREG(s)- 1431 Only
Action 3.7.10.A Bases	CREFS	NUREG(s)- 1431 Only
Action 3.7.10.B	CREFS	NUREG(s)- 1431 Only
Action 3.7.10.B Bases	CREFS	NUREG(s)- 1431 Only
Action 3.7.10.C Bases	CREFS	NUREG(s)- 1431 Only
Action 3.7.10.D Bases	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
SR 3.7.10.3 Bases	CREFS	NUREG(s)- 1431 Only
SR 3.7.10.4	CREFS	NUREG(s)- 1431 Only
	Change Description: New SR	
SR 3.7.10.4	CREFS	NUREG(s)- 1431 Only
	Change Description: Deleted	
SR 3.7.10.4	CREFS	NUREG(s)- 1431 Only
SR 3.7.10.4 Bases	CREFS	NUREG(s)- 1431 Only
	Change Description: New SR	

SR 3.7.10.4 Bases	CREFS Change Description: Deleted	NUREG(s)- 1431 Only
5.5.18	Control Room Habitability Program	NUREG(s)- 1431 Only
Bkgnd 3.7.11 Bases	CREACS	NUREG(s)- 1432 Only
S/A 3.7.11 Bases	CREACS	NUREG(s)- 1432 Only
LCO 3.7.11 Bases	CREACS	NUREG(s)- 1432 Only
Appl. 3.7.11 Bases	CREACS	NUREG(s)- 1432 Only
Ref. 3.7.11 Bases	CREACS	NUREG(s)- 1432 Only
Action 3.7.11.A	CREACS	NUREG(s)- 1432 Only
Action 3.7.11.A Bases	CREACS	NUREG(s)- 1432 Only
Action 3.7.11.B	CREACS	NUREG(s)- 1432 Only
Action 3.7.11.B Bases	CREACS	NUREG(s)- 1432 Only
Action 3.7.11.C Bases	CREACS	NUREG(s)- 1432 Only
Action 3.7.11.D Bases	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
SR 3.7.11.3 Bases	CREACS	NUREG(s)- 1432 Only
SR 3.7.11.4	CREACS Change Description: Deleted	NUREG(s)- 1432 Only
SR 3.7.11.4	CREACS Change Description: New SR	NUREG(s)- 1432 Only
SR 3.7.11.4 Bases	CREACS Change Description: Deleted	NUREG(s)- 1432 Only
SR 3.7.11.4 Bases	CREACS Change Description: New SR	NUREG(s)- 1432 Only
5.5.18	Control Room Habitability Program	NUREG(s)- 1432 Only
Bkgnd 3.7.4 Bases	[MCREC] System	NUREG(s)- 1433 Only
S/A 3.7.4 Bases	[MCREC] System	NUREG(s)- 1433 Only
LCO 3.7.4 Bases	[MCREC] System	NUREG(s)- 1433 Only

Appl. 3.7.4 Bases	[MCREC] System	NUREG(s)- 1433 Only
Ref. 3.7.4 Bases	[MCREC] System	NUREG(s)- 1433 Only
Action 3.7.4.A	[MCREC] System	NUREG(s)- 1433 Only
Action 3.7.4.A Bases	[MCREC] System	NUREG(s)- 1433 Only
Action 3.7.4.B	[MCREC] System	NUREG(s)- 1433 Only
Action 3.7.4.B Bases	[MCREC] System	NUREG(s)- 1433 Only
Action 3.7.4.D Bases	[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
SR 3.7.4.3 Bases	[MCREC] System	NUREG(s)- 1433 Only
SR 3.7.4.4	[MCREC] System Change Description: New SR	NUREG(s)- 1433 Only
SR 3.7.4.4	[MCREC] System Change Description: Deleted	NUREG(s)- 1433 Only
SR 3.7.4.4 Bases	[MCREC] System Change Description: New SR	NUREG(s)- 1433 Only
SR 3.7.4.4 Bases	[MCREC] System Change Description: Deleted	NUREG(s)- 1433 Only
5.5.15	Control Room Habitability Program	NUREG(s)- 1433 Only
Bkgnd 3.7.3 Bases	[CRFA] System	NUREG(s)- 1434 Only
S/A 3.7.3 Bases	[CRFA] System	NUREG(s)- 1434 Only
LCO 3.7.3 Bases	[CRFA] System	NUREG(s)- 1434 Only
Appl. 3.7.3 Bases	[CRFA] System	NUREG(s)- 1434 Only
Action 3.7.3.A	[CRFA] System	NUREG(s)- 1434 Only
Action 3.7.3.A Bases	[CRFA] System	NUREG(s)- 1434 Only
Action 3.7.3.B	[CRFA] System	NUREG(s)- 1434 Only
Action 3.7.3.B Bases	[CRFA] System	NUREG(s)- 1434 Only
Action 3.7.3.D Bases	[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
SR 3.7.3.3 Bases	[CRFA] System	NUREG(s)- 1434 Only
SR 3.7.3.4	[CRFA] System Change Description: Deleted	NUREG(s)- 1434 Only
SR 3.7.3.4	[CRFA] System Change Description: New SR	NUREG(s)- 1434 Only
SR 3.7.3.4 Bases	[CRFA] System Change Description: New SR	NUREG(s)- 1434 Only
SR 3.7.3.4 Bases	[CRFA] System Change Description: Deleted	NUREG(s)- 1434 Only
Ref. 3.7.3.4 Bases	[CRFA] System	NUREG(s)- 1434 Only
5.5.15	Control Room Habitability Program	NUREG(s)- 1434 Only

1.0 Description

In NRC Generic Letter 2003-01 (Reference 1), licensees were alerted to findings at facilities that existing technical specification surveillance requirements for the Control Room Emergency Filtration System (CREFS[1]) may not be adequate. Specifically, the results of tracer gas tests at facilities indicated that the differential pressure surveillance is not a reliable method for demonstrating control room integrity.

The Technical Specification Task Force (TSTF) and the Nuclear Energy Institute (NEI) Control Room Habitability Task Force (CRHTF) have developed proposed changes to the Improved Standard Technical Specifications (ISTS) (NUREGs 1430 through 1434) to replace the differential pressure surveillance with a tracer gas surveillance and to institute a Control Room Habitability Program that will ensure that control room habitability is maintained.

2.0 Proposed Change

The following changes are proposed to:

NUREG-1430, TS 3.7.10, "Control Room Emergency Ventilation System (CREVS);"
NUREG-1431, TS 3.7.10, "Control Room Emergency Filtration System (CREFS);"
NUREG-1432, TS 3.7.11, "Control Room Emergency Air Cleanup System (CREACS);"
NUREG-1433, TS 3.7.4, "[Main Control Room Environmental Control (MCREC)] System;" and
NUREG-1434, TS 3.7.3, "[Control Room Fresh Air (CRFA)] System."

- Condition A is revised from "One CREFS train inoperable" to "One CREFS train inoperable for reasons other than Condition B."

- In NUREG-1430, 1431, and 1432, Condition B is revised from "Two CREFS trains inoperable due to inoperable control room boundary in MODE 1, 2, 3, or 4" to "One or more CREFS trains inoperable due to inoperable control room boundary in MODE 1, 2, 3, or 4."

- In NUREG-1433 and 1434, Condition B is revised from "Two CREFS subsystems inoperable due to inoperable control room boundary in MODE 1, 2, or 3" to "One or more CREFS subsystems inoperable due to inoperable control room boundary in MODE 1, 2, or 3."

- Condition B is revised by adding a new Required Action B.1 which states, "Initiate action to implement mitigating actions" with a Completion Time of "Immediately."

[1] Note: The name for the system that provides filtered air to the control room following an accident varies between plants and in the Improved Standard Technical Specifications (ISTS) for each plant design. For the purposes of this document, the term CREFS is used generically.

- In NUREG-1430, 1431, and 1432, Condition E is revised by adding a new Condition, which states, "One or more CREFS trains inoperable due to an inoperable control room boundary [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies."

- In NUREG-1433 and 1434, Condition F is revised by adding a new Condition. In NUREG-1433 it states, "One or more [MCREC] subsystems inoperable due to an inoperable control room boundary during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVS." In NUREG-1434 it states, "One or more [CRFA] subsystems inoperable due to an inoperable control room boundary during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVS."

- SR 3.7.[X].4 is deleted, where [X] is 10, 11, 4, or 3 depending on the ISTS NUREG affected.

- A new Surveillance is added labeled SR 3.7.[X].4, where [X] is 10, 11, 4, or 3 depending on the ISTS NUREG affected. The new SR states, "Perform required control room unfiltered air inleakage testing in accordance with the Control Room Habitability Program." The Frequency is "In accordance with the Control Room Habitability Program."

- NUREG-1430, Conditions D and E are revised. These Conditions in NUREG-1431 and NUREG-1432 contain the phrase "[in MODES 5 and 6, or]" so that the Condition is consistent with the Applicability. This phrase was missing from NUREG-1430 and is added to correct this omission.

The Bases of these Specifications are also revised. Corrections are made to the NUREG-1430, Specification 3.7.10 Bases. SR 3.7.10.5 has been in NUREG-1430 since Revision 0, but the NUREG has never contained Bases for the SR. Therefore, Bases are provided. Also, the Bases are revised to provide a level of detail and organization comparable to the other ISTS NUREGs.

A new Administrative Controls program is added to the ISTS entitled, "Control Room Habitability Program." In NUREG-1430, 1431, and 1432, this program is 5.5.18. In NUREG-1433 and NUREG-1434 the program is 5.5.15. The program describes the programmatic and testing requirements necessary to maintain control room habitability. It addresses definitions, maintaining integrity, assessing habitability, inleakage testing, positive pressure testing, inleakage limits, and degraded or nonconforming conditions

Plants that rely on toxic gas monitors to automatically isolate the control room and that have relocated those monitors outside of the Technical Specifications during conversion to the Improved Technical Specifications should consider the advantages of adding the toxic gas monitors to the plant-specific equivalent of NUREG-1431 LCO 3.3.7, "CREFS Actuation Instrumentation.

3.0 Background

In NRC Generic Letter 2003-01, licensees were alerted to findings at facilities that existing technical specification surveillance requirements for the CREFS may not be adequate. Specifically, the results of tracer gas tests at facilities indicated that the differential pressure surveillance is not a reliable method for demonstrating control room integrity. Licensees were requested to provide a basis for a conclusion that the differential pressure surveillance remains adequate to demonstrate control room integrity. If a licensee concluded that the differential pressure surveillance was not adequate, licensees were requested to provide a schedule for revising the surveillance requirement in technical specifications to reference an acceptable surveillance methodology, and make any necessary modifications so that compliance can be demonstrated with the revised technical specification.

Note that the ISTS CREFS requirements are based on a positive pressure control room design. Since this Traveler proposes changes to the ISTS, the information provided only addresses positive pressure control rooms. These changes may or may not be applicable to plants with differing designs.

The TSTF created TSTF-448 to address the surveillance requirement issue and provided Revision 0 to the NRC on December 30, 2002 (Reference 2). The industry drafted TSTF-448 prior to the issuance of Generic Letter 2003-01. The industry had been working closely with the NRC since 1999 to address issues associated with control room habitability so Revision 0 was considered to address the NRC's concerns, as understood at the time.

The TSTF received comments on TSTF-448, Revision 0, on July 1, 2003 (Reference 3). On July 11, 2003, the NRC, the TSTF, and the NEI CRHTF met to discuss TSTF-448. TSTF-448 was revised to address the comments in the letter and those raised at the meeting. Revision 1 to TSTF-448 was submitted to the NRC on August 19, 2003 (Reference 4).

In a letter dated December 16, 2003 (Reference 5), the NRC requested additional information to support their review of TSTF-448, Revision 1. Responses to the NRC's questions were developed by the TSTF and the NEI CRHTF. The responses were submitted to the NRC on March 8, 2004 (Reference 6). In developing the responses, the TSTF and the CRHTF identified beneficial revisions to TSTF-448. The TSTF provided a resolution consistent with the NRC's comments, with a few minor exceptions, and proposed draft technical specification changes that clarified and simplified the presentation. If the NRC agreed with the proposed changes, the TSTF indicated that a formal revision to TSTF-448 would be provided.

During the Summer and Fall of 2004, the NRC reviewed plant-specific license amendments that resulted in the NRC requesting changes to the requesting plant's CREFS technical specifications. The technical specification changes requested by the NRC were significantly different from those in TSTF-448 or the model technical

specifications in the Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors," dated May 2003 (Reference 7).

On January 24, 2005, the NRC provided a letter (Reference 8) documenting their disposition of the TSTF's March 8, 2004 letter. This letter included model Technical Specifications illustrating the NRC's comments.

The TSTF and the NEI CRHTF evaluated the NRC's letter and developed a description of the significant differences between the NRC's letter and model Technical Specifications and the industry position. The industry shared this document with the NRC prior to a meeting between the TSTF, the NEI CRHTF, and the NRC, which was held on May 26, 2005 (Reference 9). At that meeting the industry and the NRC agreed on conceptual approaches for many of the differences between the industry and NRC proposals. Revision 2 of TSTF-448 implements these discussions.

As the understanding of the issues and the relative positions of the NRC and the industry has increased, the proposed approach to addressing the control room habitability concerns has changed. As a result, this revision of TSTF-448 is substantially different than previous revisions of this Traveler and from the NRC's model Technical Specifications. Appendix A of this document describes and explains the differences between TSTF-448, Revision 2, the NRC's model TS (Reference 8) and the TSTF's model TS (Reference 6).

4.0 Technical Analysis

TSTF-448, Revision 2, was developed based on three key principles. These principles are discussed below.

Key Principles

1. When unfiltered air inleakage into the control room envelope is greater than assumed in the licensing basis analysis but it can be shown that occupant dose resulting from a design basis accident is within the guidance of GDC 19 and protection is provided from toxic gas and smoke, the CREFS is OPERABLE but degraded or nonconforming. The CREFS is considered OPERABLE but degraded or nonconforming until unfiltered air inleakage is brought within the licensing basis analysis assumptions or the licensing basis analysis is revised. The CREFS is considered inoperable when unfiltered air inleakage into the control room envelope is greater than assumed in the licensing basis analysis and control room occupant dose resulting from a design basis accident is not within the guidance of GDC 19 or protection is not provided from toxic gas or smoke.

   Discussion: If occupant dose resulting from a design basis accident is within the guidance of GDC-19 and protection is provided from toxic gas and smoke, the control room boundary is OPERABLE. Therefore, no Required Actions are needed for this condition. If the boundary is degraded or nonconforming in some aspect, such that compensatory measures, temporary configuration changes, temporary

barriers, or temporary analytical methods must be used to demonstrate that the operator protection requirements are met, existing NRC guidance must be followed. NRC Inspection Manual 9900, "Resolution of Degraded and Nonconforming Conditions," (Reference 10) defines degraded and nonconforming conditions. Section 4.7, "Evaluation of Compensatory Measures," makes several points that are particularly relevant to TSTF-448:

> "Reliance on a compensatory measure for operability should be an important consideration in establishing the 'reasonable time frame' to complete the corrective action process. NRC would normally expect that conditions that require interim compensatory measures to demonstrate operability would be resolved more promptly than conditions that are not dependent on compensatory measures to show operability, because such reliance suggests a greater degree of degradation. Similarly, if an operability determination is based upon operator action, NRC would expect the nonconforming condition to be resolved expeditiously."

Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors," (Reference 7) Section 2.7.3, "Degraded and Nonconforming Conditions," endorses NEI 99-03, "Control Room Habitability Assessment Guidance" (Reference 11), Section 8.4, "Methods Available to Address Degraded or Nonconforming Conditions" with some exceptions and additional requirements for some of the methods used to address degraded or nonconforming conditions. The Regulatory Guide took no exception to the principle expressed in Section 8.4.1 that control room unfiltered air inleakage greater than that assumed in the analyses may be considered a degraded or nonconforming condition and that compensatory measures may be used to consider the system OPERABLE provided there is a reasonable assurance of safety until final corrective actions are complete.

This approach is also consistent with NRC guidance on this subject. In a letter to the NRC, NEI proposed that licensees could use dose calculations utilizing the alternative source term to demonstrate that a control room with unfiltered inleakage higher than assumed in the accident analysis was OPERABLE (Reference 12). A response from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2005, "NEI Draft White Paper, Use of the Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability" (Reference 13), stated, "In summary, NRC staff finds that, subject to the limitations described below, if control room envelope inleakage is greater than the amount assumed in the licensing basis radiological consequence analysis, the licensee may use AST analytical methods in performing its OPERABILITY determination to verify that the control room ventilation system can accomplish its specified safety function."

If there is no reasonable assurance of safety (e.g., the limits on control room occupant dose are not met or protection from toxic gas and smoke is not provided), the control room ventilation system is considered inoperable, because the Technical Specification definition of OPERABILITY is not met (i.e., the required safety

function cannot be performed). In this condition, Required Action B is entered, actions must be initiated to implement mitigating actions immediately, and the situation must be resolved within 24 hours or a plant shutdown is required.

2. There will be a limit on how long temporary compensatory measures may be used to consider the control room boundary OPERABLE when it is degraded or nonconforming.

   Discussion: The NRC has expressed concern that 10 CFR 50, Appendix B, Criterion XVI and the regulatory guidance on timely resolution of degraded or nonconforming conditions is not sufficient to prevent licensees from operating for an excessive period of time while relying on compensatory measures to provide control room operator protection when unfiltered air inleakage into the control room is greater than assumed in the licensing basis. As stated in the NRC's summary of the May 26, 2005 meeting between the TSTF, the NEI CRHTF, and the NRC (Reference 9), "The NRC staff's proposal to require a shutdown stems from a safety concern about burdening plant operators with mitigating actions during accident conditions. The longer the facility operates during mitigating actions, the greater the chance of this happening." At the meeting, the industry agreed to provide limits in the technical specifications on how long temporary compensatory measures may be used to consider the control room OPERABLE but degraded or nonconforming until bringing the control room boundary back into full qualification.

   The proposed limitations on the use of compensatory measures to consider a system OPERABLE, but degraded or nonconforming, are unique in the Technical Specifications and other regulatory requirements. 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," states, "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management." These controls are considered adequate for all other systems in the plant, including systems with substantially greater contribution to risk than the control room boundary. However, in order to respond to the NRC's concern, the Traveler includes limits in the technical specifications on the use of compensatory measures to consider the control room boundary OPERABLE when it is degraded or nonconforming.

   These limitations are placed in the Technical Specifications Administrative Controls section, in the new Control Room Habitability Program. This location is appropriate for two reasons. First, in this condition the CREFS is OPERABLE and, therefore, the Actions of the CREFS Technical Specification are not applicable. Second, 10 CFR 50.36 (c)(5) states that the Administrative Controls are provisions related to

"organization and management ... necessary to assure operation of the facility in a safe manner."

Paragraph g of the Control Room Habitability Program addresses three levels of degraded or nonconforming conditions that affect the control room boundary integrity and result in unfiltered air inleakage into the control room envelope greater than the inleakage assumed in the licensing basis analyses.

First, paragraph g states that degraded or nonconforming conditions that affect the control room boundary should be resolved in a time frame commensurate with the safety significance of the conditions. This is applicable to any condition that affects the control room boundary and is consistent with 10 CFR 50, Appendix B, Criterion XVI. However, other regulatory requirements, such as 10 CFR 50.59 and 10 CFR 50.65, may impose additional limitations on the use of compensatory measures. Paragraph g goes on to address two specific conditions and to provide a specific definition of what constitutes safety significance and an appropriate time frame for those conditions.

Second, the length of time that compensatory measures may be credited to consider the CREFS OPERABLE due to degraded or nonconforming conditions that affect the control room boundary are limited when those compensatory measures adversely affect the ability of the control room occupants to respond to an accident. Examples of these types of compensatory measures are personal air filtration or air supply systems. These compensatory measures are discussed in NEI 99-03, Appendix F and Regulatory Guide 1.196, Section 2.7.3. These types of compensatory measures may only be credited until the next entry into MODE 2 following a refueling outage or for a maximum of 12 months, which ever is greater.

Limiting the use of these types of compensatory measures until the startup following the next refueling is consistent with the guidance in the NRC Inspection Manual, Part 9900, " Resolution of Degraded and Nonconforming Conditions," Section 4.3, which states, "The NRC expects time frames longer than the next refueling outage to be explicitly justified by the licensee as part of the deficiency tracking documentation. If the licensee does not resolve the degraded or nonconforming condition at the first available opportunity or does not appropriately justify a longer completion schedule, the staff would conclude that corrective action has not been timely and would consider taking enforcement action." The limit on the use of compensatory measures which could adversely affect the ability of the control room occupants to respond to an accident establishes that the only justification for continuing the use of this type of compensatory action is insufficient time between the discovery of the condition and the end of the next refueling outage. The program contains an alternative minimum allowed time of 12 months. The alternative 12 month time limit may be required when, for example, design changes are required to resolve the condition and there is insufficient time to plan, approve, purchase, install, and test the modification prior to the end of the refueling outage. The alternative 12 month time limit may also be needed at multiple unit sites with shared control

rooms. At those sites, the average time between refueling outages is typically 9 months. Another consideration is that the alternative 12 month time limit is sufficient time to develop, request, and obtain NRC approval of an extension of the time limit, if such an extension can be justified, using the normal amendment process.

Third, the length of time that compensatory measures may be credited to consider the CREFS OPERABLE due to degraded or nonconforming conditions that affect the control room boundary are limited when those compensatory measures may complicate the response of the control room occupants to an accident. Such measures may only be credited for 36 months. Examples of these types of compensatory measures are the use of potassium iodine, temporary system configurations, or manual actions. If the degraded or nonconforming condition does not adversely affect the control room occupant's ability to respond to an accident, but may complicate their response (e.g., affect the number of available operators, add additional actions consistent with other actions the control room occupants take to respond to an accident), a longer limit of 36 months (which is equivalent to two fuel cycles for most plants) is provided to eliminate the use of the compensatory measure. Note that the overall requirement to correct the condition in "a time frame commensurate with the safety significance of the condition" still applies, and the 36 month period is a maximum limit, not an allowance.

These time periods are appropriate given the safety significance of the issue. In this condition, the CREFS is OPERABLE and capable of performing its safety function. The primary safety concern is the increased risk of operator error due to the imposition of the compensatory measures. Regulatory Guide 1.196 and NEI 99-03 provide guidance on the use of compensatory measures that will minimize the increased risk of an operator error. The low likelihood of an event that would challenge control room habitability combined with the very small increased risk of an operator error supports the proposed time. Air inleakage can be very hard to detect. Standard tracer gas testing can quantify inleakage amounts and, for specific applications, additional testing may indicate possible leakage sources, but it does not specifically identify the exact leakage locations. Currently, there are only three vendors available to perform inleakage testing. Industry experience is that testing dates have to be scheduled at least six months in advance due to vendor availability. As discussed above, by its very nature, identification and repair of the air leaks cannot be assured. Thus, it cannot be assured that the repair and retest would be successful either. Therefore, the repair and testing may have to be repeated. As a result, given the minimal plant risk, the compensatory measures which assure operator protection, and the complexity of the repair, the proposed limitations are reasonable.

3. The differential pressure Surveillance Requirement does not meet the 10 CFR 50.36 definition of a Surveillance and is being eliminated. However, the differential pressure test will be retained in the administrative controls program.

Discussion: Generic Letter 2003-01 stated that the differential pressure test surveillance is not a reliable indicator of control room habitability. The industry agrees. 10 CFR 50.36 states that the purpose of Surveillances is to demonstrate that the LCO is met. ISTS SR 3.0.1 states that failure to meet a surveillance shall be considered failure to meet the LCO. If the differential pressure test is not a reliable indicator of control room habitability, it should not be a Surveillance. Therefore, the Surveillance Requirement is deleted.

The industry agrees that differential pressure measurements may be useful in indicating changes in the control room boundary configuration. NEI 99-03, Section 9.3, "Periodic Evaluations," recommends periodic evaluation of the control room boundary integrity, including comparison to previous assessments, to examine the performance history. However, as pointed out in Generic Letter 2003-01, the usefulness of differential pressure measurements is very limited and the importance of data from these measurements should not be overemphasized. Therefore, the Control Room Habitability Program requires measuring differential pressure every [18] months on a STAGGERED TEST BASIS in a manner similar to the current requirement in the Technical Specifications. The results will be trended and compared to positive pressure measurements taken, or to be taken, during control room inleakage testing. These evaluations will be used as part of an assessment of control room boundary integrity between control room inleakage tests. This approach balances the desire to assess control room habitability between the performance of inleakage tests with the complexities inherent in the interpretation of differential pressure measurements.

One difference between TSTF-448, Revision 2, and earlier revisions is the replacement of references to GDC 19 with a description of the applicable portions of GDC 19. As discussed in NEI 99-03, Section 2.2, licensees have different levels of commitment to GDC 19. Not all plants are licensed to the requirement, but may have similar commitments defining acceptable operator radiological exposure. However, for most plants the operator dose criterion limit is 5 rem whole body or its equivalent to any part of the body for any postulated design basis accident, or 5 rem Total Effective Dose Equivalent (TEDE) for licensees that have implemented the Alternative Source Term (AST). Stating the specific requirement instead of referencing GDC 19 increases standardization between plants and avoids various, plant-specific variations in the adoption of TSTF-448. There is an additional consideration. The GDC are design, not operating, criteria. It is inconsistent with the remainder of the ISTS to impose a GDC as an OPERABILITY limit. Stating the specific requirement instead of referencing the GDC avoids any possible confusion.

Discussion of the specific changes are given below.

<u>Technical Specification 3.7.10 (NUREG-1430, 1431), 3.7.11 (NUREG-1432), 3.7.4 (NUREG-1433), and 3.7.3 (NUREG-1434)</u>

Condition A is changed from "One CREFS train inoperable" to "One CREFS train inoperable for reasons other than Condition B." This change is necessary due to a

change to Condition B from "Two trains inoperable..." to "One or more trains inoperable...".

Condition B is changed from "Two CREFS trains inoperable due to inoperable control room boundary in MODE 1, 2, 3, or 4" to "One or more CREFS trains inoperable due to inoperable control room boundary in MODE 1, 2, 3, or 4." (In NUREGs 1433 and 1434, the MODES are 1, 2, and 3.) During the development of TSTF-448 it was pointed out that in some cases, such as leaking duct work or dampers, an inoperable boundary may only affect one CREFS train.

A new Required Action B.1 is added, which states, "Initiate action to implement mitigating actions" with a Completion Time of "Immediately." The ISTS Bases for the existing Required Action B.1 requires a licensee commitment to implement compensatory measures. Therefore, adding this Required Action does not change the actions taken in the plant but provides clearer direction to the operator. The existing Required Action B.1 is renamed Required Action B.2. The phrasing, "Initiate action to ..." is used for Required Actions with an "Immediately" Completion Time as described in the TSTF-GG-05-01, "Writer's Guide for Plant-Specific Improved Technical Specifications," Section 4.1.6.j.

Condition E in NUREG-1430, 1431, and 1432 and Condition F in NUREG-1433 and 1434 are modified to apply when one or more CREFS trains are inoperable due to an inoperable control room boundary. These conditions apply in MODES and other specified Conditions in the Applicability other than MODES 1, 2, 3, and 4 for NUREG-1430, 1431, and 1432 and MODES 1, 2, 3 for NUREG-1433 and 1434. This ACTION is appropriate to prevent accidents that could challenge control room habitability.

SR 3.7.[X].4 (where [X] is 10, 11, 3, or 4 depending on the ISTS NUREG), which requires verification that one CREFS train can maintain a positive pressure relative to the adjacent [turbine building] during pressurization mode of operation, is eliminated. As discussed in Generic Letter 2003-01, the positive pressure test is inadequate to verify the CREFS is OPERABLE. However, a positive pressure test is added to the Control Room Habitability Program testing requirements.

A new Surveillance is substituted for the deleted SR 3.7.[X].4 (where [X] is 10, 11, 3, or 4 depending on the ISTS NUREG). The new SR states, " Perform required control room unfiltered air inleakage testing in accordance with the Control Room Habitability Program." The Frequency is "In accordance with the Control Room Habitability Program." The format of the requirement is consistent with similar Surveillances which implement testing requirements described in an Administrative Controls Program, such as those SRs that reference the Ventilation Filter Testing Program.

Technical Specification 5.5.18 (NUREG-1430, 1431, and 1432) and 5.5.15 (NUREG-1433 and NUREG-1434)

The introductory paragraph addresses the purpose of the program and uses, to the extent possible, the wording of GDC 19. It provides the relationship between control room habitability and OPERABILITY of the CREFS. As discussed above, the wording of GDC 19 was used instead of referencing GDC 19.

The required program elements are divided into seven parts: definitions, maintaining integrity, assessing habitability, inleakage testing, positive pressure testing, inleakage limits, and degraded or nonconforming conditions.

Paragraph a requires that the program contain the definition of the control room envelope and the control room boundary.

Paragraph b requires the program to describe how control room boundary integrity is maintained, including configuration control, management of breaches, and preventive maintenance.

Paragraph c states the program shall require assessing control room habitability at the frequencies specified in Regulatory Guide 1.197, Revision 0 (Reference 14).

Paragraph d states the program shall require unfiltered air inleakage testing in accordance with Regulatory Guide 1.197, Revision 0. Paragraph d also provides the format for an optional list of plant-specific exceptions to Regulatory Guide 1.197.

Paragraph e requires measurement of control room envelope positive pressure as part of an assessment program to evaluate control room boundary integrity between inleakage test measurements.

Paragraph f describes the basis and format for the quantitative limits on control room inleakage in the licensee's program.

Paragraph g describes limitations on considering a control room OPERABLE when the control room barrier is degraded or nonconforming. This paragraph addresses an NRC concern that licensees may operate for an extended period of time with the control room boundary integrity degraded or nonconforming, as discussed above.

The last paragraph states that the provisions of SR 3.0.2 are applicable to the control room inleakage testing frequencies. This statement is needed to avoid confusion. SR 3.0.2 is applicable to the Surveillance that references the testing in the Control Room Habitability Program. However, SR 3.0.2 is not applicable to Administrative Controls unless specifically invoked. Providing this statement in the program eliminates any confusion regarding whether SR 3.0.2 is applicable.

Bases Changes

The Bases are revised to use the terms "control room envelope" and "control room boundary" instead of the ambiguous term "control room." The definition of "control room envelope" and "control room boundary" are added to the Background section of the Bases.

The Bases are revised to refer to control room "occupants" instead of control room "operators" because the control room habitability requirements in GDC 19 apply to all occupants in the control room.

The Bases of the Conditions are revised to reflect the changes made to the Specifications. The Bases of SR 3.7.[X].4 (where [X] is 10, 11, 4, or 3 depending on the ISTS NUREG affected) are deleted to reflect the deletion of the SR. Bases for the new SR are added.

Reference 4, "NUREG-0800" is deleted from NUREG-1431 and NUREG-1432. The reference is only used in the deleted SR Bases.

The Background and LCO sections state that the CREFS is designed to limit control room occupant dose to 5 rem whole body dose or its equivalent to any part of the body. The Bases are revised to include, as a bracketed option, "[5 rem TEDE] for those plants that have adopted the Alternative Source Term (AST).

The LCO section is revised to clarify that control room boundary integrity is a requirement for CREFS train OPERABILITY.

The LCO section is revised to clarify that the LCO Note exception only applies to openings in the control room boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. This clarifies the original intention of the Note, which has been a source of confusion since it's addition to the ISTS by TSTF-287.

The Bases of Required Actions B.1 and B.2 are revised. Bases are provided for the added Required Action B.1, which requires initiation of action to implement mitigating actions immediately. The Bases are consistent with the actions required under the commitment added to the Bases by TSTF-287.

A correction is made to the Bases of SR 3.7.[X].3 (where [X] is 10, 11, 4, or 3 depending on the ISTS NUREG affected). The Bases state that the [18] month Frequency for verifying that each CREFS train actuates on an actual or simulated actuation signal is specified in Regulatory Guide 1.52. This is incorrect. Regulatory Guide 1.52 does not discuss testing the actuation signal. The Regulatory Guide addresses filter and heater testing and recommends an 24 month Frequency. The Bases are revised to state, "The Frequency of [18] months is based on industry operating experience and is consistent with the typical refueling cycle." This eliminates the only reference to Regulatory Guide 1.52. The References section is revised accordingly.

Bases are provided for NUREG-1430, SR 3.7.10.5. SR 3.7.10.5 has been in NUREG-1430 since Revision 0, but the NUREG has never contained Bases for the SR.

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) from performing 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 inleakage into the control room and to filter the control room atmosphere to protect the control room occupants following accidents previously analyzed. An important part of the system is the control room boundary. The control room ventilation system is not an initiator or precursor to any accident previously evaluated. Therefore, the probability of any accident previously evaluated is not increased. Performing tests and implementing programs that verify the integrity of the control room boundary and control room habitability ensure that the mitigation features are capable of performing the assumed function. Therefore, the consequences of any accident previously evaluated are not increased.

   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 control room 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 effluents 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. NRC Generic Letter 2003-01, "Control Room Habitability," dated June 12, 2003.

2. Letter from Anthony R. Pietrangelo, NEI, to Dr. William Beckner, NRC, dated December 30, 2002, "Forwarding of TSTF."

3. Letter from Dr. William Beckner, NRC, to Anthony R. Pietrangelo, NEI, dated July 1, 2003.

4. Letter from the Technical Specifications Task Force to Dr. William Beckner, NRC, dated August 19, 2003, "TSTF-448, Revision 1," (TSTF-03-03).

5. Letter from Thomas Boyce, NRC, to the Technical Specifications Task Force dated December 16, 2003.

6. Letter from the Technical Specifications Task Force to Dr. William Beckner, NRC, dated March 8, 2004, "Response to NRC Request for Additional Information Regarding TSTF-448, Revision 1, ‘Control Room Habitability’", (TSTF-04-02).

7. Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors," dated May 2003.

8. Letter from Patrick Hiland, NRC, to the Technical Specifications Task Force, dated January 24, 2005.

9. Letter from C. Craig Harbuck, NRC, to Alex Marion, NEI, dated June 23, 2005, "Summary of Meeting Held May 26, 2005 Between NRC Staff and Industry on TSTF-448, Control Room Habitability, Revision 1."

10. NRC Inspection Manual, Part 9900, "Resolution of Degraded and Nonconforming Conditions," dated October 8, 1997.

11. NEI 99-03, Revision 1, "Control Room Habitability Assessment Guidance" dated March 2003.

12. Letter from James Davis (NEI) to Eric J. Leeds (NRC) dated June 16, 2004, "NEI Final White Paper, Use of Generic Letter 91-18 Process and Alternative Source Term in the Context of Control Room Habitability."

13. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2005, "NEI Draft White Paper, Use of the Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability."

14. Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003.

Appendix A

Description and Explanation of Differences Between TSTF-448, Revision 2, and the TSTF's and NRC's Proposed Technical Specifications

Differences between TSTF-448, Revision 2, and the model TS provided in the TSTF's letter to the NRC dated March 8, 2004 (Reference 6) (TSTF model TS) and the model TS provided by the NRC in their letter dated January 24, 2005 (Reference 8) (NRC model TS) are discussed below. The purpose of this discussion is to facilitate the NRC and Industry review of this Revision 2 of TSTF-448.

TS 3.7.10 (NUREG-1430 and 1431), TS 3.7.11 (NUREG-1432), TS 3.7.4 (NUREG-1433), and TS 3.7.3 (NUREG-1434)

1. The TSTF model TS and the NRC model TS contain a revised Condition B which address two situations. If the operator protection objectives of the Administrative Controls program could be met using mitigating actions (e.g., operator radiation exposure in the event of a design basis accident would be less than 5 Rem and toxic gas and smoke protection is provided), the boundary must be restored within a specified Completion Time. In the TSTF model TS, restoration must be within 14 days or a report must be submitted to the NRC. In the NRC model TS, restoration must be within 30 days or the plant must shut down. In both the TSTF and NRC model TS, if the operator protection objectives of the Administrative Controls program cannot be met, the boundary must be restored within 24 hours or a plant shutdown is required. TSTF-448, Revision 2, does not contain Required Actions if the operator protection requirements can be met with mitigating actions. The ISTS Revision 3 Required Actions are retained which means that the boundary must be restored within 24 hours if the operator protection requirements cannot be met.

   If the operator protection requirements can be met, the control room boundary is OPERABLE. Therefore, no Required Actions are needed for this condition. If the boundary is degraded or nonconforming in some aspect, such that compensatory measures, temporary configuration changes, or temporary analytical methods must be used to demonstrate that the operator protection requirements are met, existing NRC guidance must be followed. Section 4.0 of the Traveler, Key Principle #1, describes this difference.

2. Both the TSTF model TS and the NRC model TS retained the positive pressure Surveillance Requirement. The NRC model TS revised the surveillance and Frequency. As described in Section 4.0, Key Principle #3, the positive pressure SR is eliminated from the CREFS specification but a positive pressure test is added to the Control Room Habitability Program.

3. Both the TSTF model TS and the NRC model TS eliminated ISTS Condition F in NUREG-1430, 1431, and 1432 and Condition E in NUREG-1433 and NUREG-1434. These Conditions apply when two CREFS trains are inoperable in MODE 1, 2, 3, or 4 (MODES 1, 2, or 3 for NUREG-1433 and 1434) for reasons other than Condition B and the Required Action requires entering LCO 3.0.3 immediately. Both the TSTF and NRC model TS modified Condition C to include this Condition. Condition C requires a plant shutdown. This change was not adopted because Risk Informed Technical Specification Task Force (RITSTF) Initiatives 6b & 6c address

conditions which explicitly require entering LCO 3.0.3. The lead Traveler for those Initiatives, TSTF-426, modifies this Condition (F or E) based on a risk analysis of two trains inoperable for reasons other than an inoperable boundary. Therefore, it is preferable to not combine the conditions of two trains inoperable due to an inoperable boundary and two trains inoperable for other reasons.

4. The TSTF model TS modified Condition D to apply when the boundary was not restored in accordance with Condition B. Condition D required placing the OPERABLE CREFS train in emergency mode or suspending movement of [recently] irradiated fuel assemblies. TSTF-448, Revision 2, and the NRC model TS modify Condition E or F (PWR or BWR ISTS NUREGs) to address this condition instead of Condition D. This is more appropriate than Condition D as placing an OPERABLE CREFS train in emergency mode does not provide operator protection if the boundary is inoperable.

5. The NRC model TS revised the LCO from "Two CREFS trains shall be OPERABLE" to "Two CREFS trains and the CRB shall be OPERABLE" and the specification title was changed from "Control Room Emergency Filtration System (CREFS)" to "Control Room Emergency Filtration System (CREFS) and Control Room Boundary (CRB)." TSTF-448, Revision 2, does not modify the LCO or the specification title. The presentation proposed in the NRC model TS is not consistent with the remainder of the ISTS for structures, systems, or components (SSCs) with relationships similar to the CREFS and the control room boundary. In every case this construction is used in the ISTS, both systems listed in the LCO provide the same function independently but in a different manner. This is not the case for the CREFS and the control room boundary. The LCO Bases are revised to clearly describe the relationship between the CREFS and the control room boundary.

6. The NRC model TS revised the LCO Note from "The control room boundary may be opened intermittently under administrative control" to "The control room envelope may be opened intermittently under administrative control in accordance with the [Ventilation Boundary Test Program (VBTP)]." TSTF-448, Revision 2, does not modify the LCO Note. The Bases of the LCO Note are revised to address the information regarding this issue that was included in the NRC Model TS Ventilation Boundary Test Program.

Other Technical Specifications

The NRC model TS included proposed changes to other ventilation systems. At the May 26, 2005 meeting between the NRC and the industry, the NRC agreed that those changes are not required in TSTF-448, Revision 2, as inclusion of the changes would delay the completion of TSTF-448. However, the TSTF agrees to consider in the future, as a separate Traveler, NRC proposed changes to the other filtered ventilation systems.

TS 5.5.18 (NUREG-1430, 1431, and 1432), TS 5.5.15 (NUREG-1433 and 1434)

1. The NRC model TS included changes to TS for ventilation systems other than the CREFS. The NRC model program included features related to those changes. TSTF-448, Revision 2, does not include changes to those non-control room ventilation system TS and, therefore, does not include the corresponding features in the program.

2. The NRC model TS and TSTF model TS referenced GDC 19 as containing the limits on control room habitability. TSTF-448, Revision 2, uses the limits in GDC 19, but does not reference GDC 19. See Section 4, Key Principle #1 above.

3. The NRC model TS, paragraph a, states that the program shall establish control room occupant protection requirements bounded by GDC 19 and FSAR Chapter 6. This paragraph does not appear in TSTF-448, Revision 2. The reference to GDC 19 is duplicative of the introduction. The reference to FSAR Chapter 6 does not appear in TSTF-448. In general, references to the FSAR in the Technical Specifications are avoided as it introduces confusion regarding which regulatory requirement, 10 CFR 50.59 or 10 CFR 50.90, is applicable to changes to the referenced material in the FSAR.

4. TSTF-448, Revision 2, includes a requirement to assess control room habitability at the frequencies specified in Regulatory Guide 1.197. This requirement was in the TSTF model TS but did not appear in the NRC model TS.

5. The NRC model TS, paragraph d, states that the program shall maintain and control the configuration, design basis, and licensing basis of the CRE boundary. This requirement is not adopted. The TSTF-448, Revision 2, program states that the program shall define the control room envelope and control room boundary and shall contain the requirements for maintaining control room boundary integrity, including configuration control, management of breaches, and preventive maintenance. The proposed statement in the NRC model TS is beyond the scope of a TS program. The design basis and licensing basis will be controlled using the existing regulatory and licensee processes used for the entire plant and a separate, TS controlled program will not be established for the control room boundary.

    a. The design basis is defined in 10 CFR 50.2 as " Design bases means that information which identifies the specific functions to be performed by a structure, system, or component of a facility, and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. These values may be (1) restraints derived from generally accepted 'state of the art' practices for achieving functional goals, or (2) requirements derived from analysis (based on calculation and/or experiments) of the effects of a postulated accident for which a structure, system, or component must meet its functional goals." Maintaining and controlling the design basis for the control room boundary is beyond the scope of the Control Room Habitability Program. Note

that design change control is discussed in NEI 99-03, Revision 1, Section 4.3.1.4 and Regulatory Guide 1.196, Sections 2.4 and 2.7.2.

b. The licensing basis is that body of information that describes how the plant meets applicable regulations. Maintaining the licensing basis for the control room boundary is beyond the scope of the Control Room Habitability Program.

6. The NRC model TS, paragraph b.1.(b) states that testing shall be commensurate with the type and degree of modification, repair, or change in operation of an SSC that may have affected the boundary. This statement is not included in TSTF-448, Revision 2. This statement is taken directly from Regulatory guide 1.196, Section 2.7.1. The statement implies that testing is only required when the boundary has been modified, repaired, or changed. This is not true as periodic testing is required regardless of any change to the boundary. SR 3.0.1 and the SR 3.0.1 Bases state that Surveillances must be met when the LCO is Applicable. This includes establishing system OPERABILITY following modification or repair. It is unnecessary and inconsistent with the ISTS use and format rules to repeat that requirement in the program.

7. The NRC model TS, paragraph b.1.(c) states that testing shall be conducted using the configuration and alignment of SSCs that result in the greatest consequence to control room occupants, consistent with the facility's event and accident analysis. There is no equivalent statement in the TSTF model TS. This requirement is not explicitly included in TSTF-448, Revision 2. However, TSTF-448, Revision 2, requires testing to be performed in accordance with Regulatory Guide 1.197 and Regulatory Position 1 in the Regulatory Guide provides a similar requirement.

8. TSTF-448, Revision 2, contains a plant-specific option to list exceptions to Regulatory Guide 1.197, Revision 0. This option did not appear in the NRC model TS but did appear in the TSTF model TS. These exceptions must be approved by the NRC. Providing the optional place-holder statements ensures consistency in presentation of any plant-specific exceptions.

9. The NRC model TS, paragraph b.2.(c)(1) states that inleakage testing shall be performed following any change to the boundary that may have affected the boundary's OPERABILITY. This requirement is not included in TSTF-448, Revision 2. Whenever the OPERABILITY of a system is called into question, an OPERABILITY determination must be performed. See NRC Inspection Manual, Part 9900, "Operability." The determination that a system is OPERABLE or inoperable may be based on an evaluation, a test or partial test. It is not necessary nor desirable to perform a Regulatory Guide 1.197 inleakage test whenever there has been any change that may affect the boundary. Existing NRC guidance on OPERABILITY determination is sufficient to address this issue.

10. The NRC model TS, paragraph b.2.(c)(3) states that inleakage testing shall be performed following an event that challenges the boundary if the resulting

conditions lead to a change in an SSC's operating mode, alignment, or response that could result in a new limiting condition. This requirement does not appear in TSTF-448, Revision 2. If an SSC's operating mode, alignment, or response to an event is modified for whatever reason (an event or otherwise), an evaluation of system OPERABILITY is required. Establishment of OPERABILITY following the modification is required by SR 3.0.1, which requires Surveillances to be met at all times the Specification is applicable. Whether a Regulatory Guide 1.197 inleakage test is needed to establish OPERABILITY will depend on the change to the system and should not be required for every configuration change.

11. The NRC model TS, paragraph c, states that the program shall control the preventive and corrective maintenance of the control room boundary. TSTF-448, Revision 2, states that the program shall control the preventive maintenance of the control room boundary. The purpose of corrective maintenance is to restore the SSC to the design condition. There is no unique aspect of control room boundary corrective maintenance that would warrant TS controls separate from and in addition to the normal plant corrective maintenance program.

12. The NRC model TS, paragraph c, states that the program shall control the intermittent opening of the ventilation boundary under administrative controls. The administrative controls shall include proceduralized controls. TSTF-448, Revision 2, contains equivalent statements in the Bases that describe the LCO Note that allows opening in the control room boundary under administrative control. TSTF-448, Revision 2, adds a requirement not in the TSTF model TS that requires proceduralized controls for intermittent opening of the boundary other than doors.

13. The NRC model TS, paragraph d, describes mitigating actions to be taken when the control room boundary is inoperable. This information has been moved to the Bases description of Required Action B.1, which requires implementing mitigating actions during the 24 hours allowed to restore the boundary before requiring a plant shutdown. Regulatory Guide 1.197 and NEI 99-03 provide guidance on the use of compensatory actions. This is the preferred location for this type of guidance.

14. The NRC model TS, paragraphs e.1 and e.2, state that differential pressure measurements must be taken at representative locations for each external area adjacent to the CRB and with the ventilation systems operating in the limiting alignment for each accident or event and required that a determination be made whether those measurements have changed since the last control room inleakage test. Also for each alignment, the system flow balance must be determined in accordance with ASME N510 or ASTM E2029-99. The NRC model TS, paragraph f.2 provides additional details on the performance and evaluation of the differential pressure tests. Paragraph g requires an assessment of any change in differential pressure or flow rate to determine whether the unfiltered inleakage may have changed.

    TSTF-448, Revision 2, paragraph e, requires that differential pressure measurement(s) be taken concurrent with the inleakage testing. However, the testing

requirement in TSTF-448, Revision 2, is consistent with the differential pressure testing required by the current Technical Specifications and does not include the additional testing points, alignments, system flow balances, and testing methods discussed in the NRC model TS. This difference is discussed in Section 4.0, Key Principle #3.

15. The NRC model TS, paragraph e.2, implies that the control room inleakage test will be performed in accordance with ASTM E741. TSTF-448, Revision 2, specifies that the testing will be performed in accordance with Regulatory Guide 1.197. Regulatory Guide 1.197 states that ASTM E741 is an appropriate test method for determining the total leakage for all CRE designs (Regulatory Position 1.1). Therefore, referencing E741 in the TS is unnecessary and overly restrictive and is not included in TSTF-448, Revision 2.

16. The NRC model TS, paragraph f.1 specifies numerical limits on control room unfiltered inleakage. TSTF-448, Revision 2, paragraph f, does not contain numerical limits but states that quantitative limits on unfiltered air inleakage past the control room boundary into the control room envelope must be in the program. Paragraph f also states that the limits shall be stated in a manner to allow direct comparison to the unfiltered inleakage measured by the testing and the unfiltered air inleakage limits must demonstrate that radiation dose and hazardous chemical exposure to the control room occupants will be within the assumptions in the licensing basis.

    The NRC has directed the NRC Staff to pursue performance-based regulations. In the January 25, 2005 letter the NRC moved away from the performance-based approach proposed in Regulatory Guide 1.196 and TSTF-448, Revision 1, and included prescriptive limits on control room inleakage. The safety function being protected is control room habitability, not control room inleakage. Inleakage above a particular numerical limit in the TS does not necessarily mean that control room habitability is compromised. As stated in NEI 99-03, Section 7.1, "unfiltered air inleakage is one of numerous assumptions used in radiological and toxic gas evaluations." An evaluation of the measured inleakage, taking into consideration other parameters such as assumed radioactive or chemical sources, wind direction and velocity, release points, environmental conditions, and system alignment may reasonably determine that the control room remains habitable. Furthermore, as discussed in Regulatory Guide 1.196, Section 2.3.2, "Identification of the Limiting Condition," the largest air inleakage assumed in the accident analysis may not result in the largest effect on control room habitability. Therefore, it is difficult - if not impossible - to select a value or reasonable set of values that satisfy the 10 CFR 50.36 definition of a "limiting condition for operability."

    Providing specific limits in the Technical Specifications on unfiltered air inleakage would artificially require declaring the CREFS system inoperable when those limits were exceeded, even if control room habitability is maintained. As discussed in NEI 99-03, there are many methods to address higher than expected control room inleakage through analytical improvements, procedural and system configuration

changes, or design changes. Providing specific limits on control room inleakage places the emphasis on meeting an arbitrary limit and ignores the central issue of maintaining control room habitability.

This approach is also consistent with NRC guidance on this subject. A letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2005, "NEI Draft White Paper, Use of the Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability" (References 13), states, "In summary, NRC staff finds that, subject to the limitations described below, if control room envelope inleakage is greater than the amount assumed in the licensing basis radiological consequence analysis, the licensee may use AST analytical methods in performing its operability determination to verify that the control room ventilation system can accomplish its specified safety function."

17. The NRC model TS, paragraph h, provides direction when unfiltered inleakage into the control room has increased. It requires an assessment of the licensing basis analyses and of the ability to control the reactor from the control room in an event. It also requires, on determining that the licensing basis analyses are no longer valid, declaring the control room boundary or CREFS train inoperable. TSTF-448, Revision 2, does not contain a similar requirement. The appropriate evaluation to be performed when control room inleakage has increased is whether the CREFS is OPERABLE. If the CREFS is inoperable, the TS provide appropriate actions to be taken. If the CREFS is OPERABLE, no technical specification ACTIONS are applicable. For the case when the CREFS is OPERABLE but degraded or nonconforming, TSTF-448, Revision 2, paragraph g, provides additional direction.

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 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. ~~Two~~ One or more CREFS trains inoperable due to inoperable control room boundary in MODE 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions. AND B.~~1~~2 Restore control room boundary to OPERABLE status.	Immediately 24 hours
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. AND C.2 Be in MODE 5.	6 hours 36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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.	D.1 ----------NOTE---------- [Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable.] ---------- Place OPERABLE CREFS train in emergency mode.	Immediately
	OR	
	D.2 Suspend movement of [recently] irradiated fuel assemblies.	Immediately
E. Two CREFS trains inoperable [in MODE 5 or 6, or] during movement of [recently] irradiate fuel assemblies. OR One or more CREFS trains inoperable due to inoperable control room boundary [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.	E.1 Suspend movement of [recently] irradiated fuel assemblies.	Immediately
F. Two CREFS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each CREFS train for ~~≧~~10 continuous hours with the heaters operating or (for systems without heaters)≥15 minutes].	31 days
SR 3.7.10.2	Perform required CREFS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].	In accordance with the [VFTP]
SR 3.7.10.3	Verify each CREFS train actuates on an actual or simulated actuation signal.	[18] months
~~SR 3.7.10.4~~	~~Verify one CREFS train can maintain a positive pressure of≥[0.125] inches water gauge, relative to the adjacent [turbine building] during the pressurization mode of operation at a makeup flow rate of≤[3000] cfm.~~	~~[18] months on a STAGGERED TEST BASIS~~
SR 3.7.10.4	Perform required control room unfiltered air inleakage testing in accordance with the Control Room Habitability Program.	In accordance with the Control Room Habitability Program

5.5 Programs and Manuals

5.5.16 Containment Leakage Rate Testing Program (continued)

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] 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 Habitability Program

A Control Room Habitability Program shall be established and implemented to ensure that control room habitability is maintained such that, with an OPERABLE Control Room Emergency Filtration System (CREFS), control room 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 from outside the control room envelope. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the control room under accident 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 control room envelope and the control room boundary;

b. Requirements for maintaining control room boundary integrity, including configuration control, management of breaches, and preventive maintenance.

c. Requirements for assessing control room habitability at the frequencies specified in Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003.

d. Requirements for determining the unfiltered air inleakage past the control room boundary into the control room envelope in accordance with the testing methods and at the frequencies specified in Regulatory Guide 1.197, Revision 0, May 2003.

5.5 Programs and Manuals

5.5.18 Control Room Habitability Program (continued)

[The following are exceptions to Regulatory Guide 1.197, Revision 0:

1. ; and]

e. Measurement of the control room envelope positive pressure relative to the adjacent [turbine building] during the pressurization mode of operation by one train of the CREFS every [18] months on a STAGGERED TEST BASIS. The results shall be trended and compared to the positive pressure measurements taken or to be taken during control room inleakage testing. These evaluations shall be used as part of an assessment of control room boundary integrity between control room inleakage tests.

f. The quantitative limits on unfiltered air inleakage past the control room boundary into the control room envelope. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph d. The unfiltered air inleakage limits must demonstrate that radiation dose and hazardous chemical exposure to the control room occupants will be within the assumptions in the licensing basis.

g. Limitations on the use of compensatory measures to consider the CREFS OPERABLE when there are degraded or nonconforming conditions that result in unfiltered air inleakage past the control room boundary into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses. Compensatory measures are interim actions used to maintain OPERABILITY of the CREFS until full qualification of the control room boundary is restored. Degraded or nonconforming conditions affecting the control room boundary integrity should be resolved in a time frame commensurate with the safety significance of the condition. The program shall place additional limits on the use of compensatory measures which address a degraded or nonconforming control room barrier that results in unfiltered air inleakage into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses for the following two conditions:

1. When such compensatory measures may adversely affect the ability of the control room occupants to respond to an accident (including, but not limited to, the use of personal air filtration or bottled air systems), their use may be credited to support OPERABILITY of the CREFS until the next entry into MODE 2 following a refueling outage or for a maximum of 12 months, whichever is greater; and

5.5 Programs and Manuals

5.5.18 Control Room Habitability Program (continued)

2. When such compensatory measures may complicate the response of the control room occupants to an accident (including, but not limited to, the use of potassium iodine, temporary system configurations, or manual actions), their use may be credited to support OPERABILITY of the CREFS for a maximum of 36 months.

The provisions of SR 3.0.2 are applicable to the control room inleakage testing frequencies.

B 3.7 PLANT SYSTEMS

B 3.7.10 Control Room Emergency Filtration System (CREFS)

BASES

BACKGROUND

The CREFS provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke from outside the control room envelope ~~[, chemicals, or toxic gas]~~.

The CREFS consists of two independent, redundant trains that recirculate and filter the air in the control room envelope ~~air~~ and a control room boundary which limits the inleakage of unfiltered air. Each CREFS train consists of a prefilter or demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system, as well as demisters to remove water droplets from the air stream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter bank.

The control room envelope is the area within the confines of the control room boundary that contain the spaces that control room occupants inhabit to control the unit for normal and accident conditions. The control room envelope is protected for normal operation, natural events, and accident conditions. The control room boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the control room envelope. The integrity of the control room boundary must be maintained to limit the inleakage of unfiltered air into the control room envelope. The control room envelope and the control room boundary are defined in the Control Room Habitability Program.

The CREFS is an emergency system, parts of which may also operate during normal unit operations in the standby mode of operation. Upon receipt of the actuating signal(s), normal air supply to the control room envelope is isolated, and the stream of ventilation air is recirculated through the system filter trains. The prefilters or demisters remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers. Continuous operation of each train for at least 10 hours per month, with the heaters on, reduces moisture buildup on the HEPA filters and adsorbers. Both the demister and heater are important to the effectiveness of the charcoal adsorbers.

BASES

BACKGROUND (continued)

Actuation of the CREFS places the system in either of two separate states (emergency radiation state or toxic gas isolation state) of the emergency mode of operation, depending on the initiation signal. Actuation of the system to the emergency radiation state of the emergency mode of operation, closes the unfiltered outside air intake and unfiltered exhaust dampers, and aligns the system for recirculation of the air within the control room envelope ~~air~~ through the redundant trains of HEPA and the charcoal filters. The emergency radiation state also initiates pressurization and filtered ventilation of the air supply to the control room envelope.

Outside air is filtered, diluted with building air from the electrical equipment and cable spreading rooms, and added to the air being recirculated from the control room envelope. Pressurization of the control room envelope ~~prevents~~ minimizes infiltration of unfiltered air through the control room boundary from the surrounding areas of the building. The actions taken in the toxic gas isolation state are the same, except that the signal switches ~~control room ventilation~~the CREFS to an isolation alignment to prevent outside air from entering the control room envelope through the control room boundary.

The air entering the control room envelope is continuously monitored by radiation and toxic gas detectors. One detector output above the setpoint will cause actuation of the emergency radiation state or toxic gas isolation state, as required. The actions of the toxic gas isolation state are more restrictive, and will override the actions of the emergency radiation state.

A single CREFS train will pressurize the control room envelope to about [0.125] inches water gauge. The CREFS operation in maintaining the control room envelope habitable is discussed in the FSAR, Section [~~6~~9.4] (Ref. 1).

Redundant supply and recirculation trains provide the required filtration should an excessive pressure drop develop across the other filter train. Normally open 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 CREFS is designed in accordance with Seismic Category I requirements.

The CREFS is designed to maintain a habitable environment in the control room envelope ~~environment~~ for 30 days of continuous occupancy after a Design Basis Accident (DBA) without exceeding a [5 rem whole body dose or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)].

APPLICABLE SAFETY ANALYSES

The CREFS components are arranged in redundant, safety related ventilation trains. The location of components and ducting within the control room envelope ensures an adequate supply of filtered air to all areas requiring access. The CREFS provides airborne radiological protection for the control room ~~operators~~occupants, as demonstrated by the control room occupant ~~accident~~ dose analyses for the most limiting design ~~basis loss of coolant accident~~basis accident~~,~~ fission product release presented in the FSAR, Chapter [15] (Ref. 2).

The analysis of toxic gas releases demonstrates that the toxicity limits are not exceeded in the control room envelope following a toxic chemical release, as presented in Reference 1.

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

The CREFS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant CREFS trains are required to be OPERABLE to ensure that at least one is available assuming a single failure disables the other train. Total system failure or loss of control room boundary integrity could result in exceeding a dose of [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] to the control room ~~operator~~ occupants in the event of a large radioactive release.

The CREFS is considered OPERABLE when the individual components necessary to limit operator exposure are OPERABLE~~ in both trains~~. A CREFS 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. Heater, demister, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

In order for the CREFS trains to be considered OPERABLE, the integrity of the control room boundary must be maintained such that control room occupant dose from a large radioactive release does not exceed [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] and the control room occupants are protected from hazardous chemicals and smoke from outside the control room boundary.

~~In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.~~

BASES

LCO (continued)

The LCO is modified by a Note allowing the control room boundary to be opened intermittently under administrative controls. This Note only applies to openings in the control room 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 control room operators. This individual will have a method to rapidly close the opening and to restore the control room boundary to a condition equivalent to the design condition when a need for control room envelope isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, 4, [5, and 6,] and during movement of [recently] irradiated fuel assemblies, the CREFS must be OPERABLE to ensure that the control room envelope will remain habitable ~~control operator exposure~~ during and following a DBA.

In [MODE 5 or 6], the CREFS is required to cope with the release from the rupture of an outside waste gas tank.

During movement of [recently] irradiated fuel assemblies, the CREFS must be OPERABLE to cope with the release from a fuel handling accident [involving handling recently irradiated fuel]. [The CREFS 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), due to radioactive decay.]

ACTIONS

A.1

When one CREFS train is inoperable for reasons other than an inoperable control room boundary, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREFS train is adequate to perform the control room protection function. However, the overall reliability is reduced because a single failure in the OPERABLE CREFS train could result in loss of CREFS 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~~

~~REVIEWER'S NOTE~~

~~Adoption of Condition B is dependent on a commitment from the licensee to have written procedures available describing compensatory measures to be taken in the event of an intentional or unintentional entry into Condition B.~~

~~If the control room boundary is inoperable in MODE 1, 2, 3, or 4, the CREFS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE control room boundary within 24 hours. During the period that the control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures.~~

BASES

ACTIONS (continued)

B.1, and B.2

If the unfiltered inleakage of potentially contaminated air past the control room boundary and into the control room envelope can result in occupants of the control room envelope receiving doses greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals or smoke from outside the control room boundary, the control room boundary is inoperable. Actions must be taken to restore an OPERABLE control room boundary within 24 hours.

During the period that the control room boundary is inoperable, action must be initiated to implement mitigating actions to lessen the effect on control room occupants from the potential hazards of a radiological or chemical event or a challenge from smoke external to the control room envelope. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable control room boundary) should be preplanned for implementation upon entry into the condition. 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.

BASES

ACTIONS (continued)

C.1 and C.2

In MODE 1, 2, 3, or 4, if the inoperable CREFS train or the control room 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 6 hours, and in MODE 5 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.

D.1 and D.2

[In MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies, if the inoperable CREFS train cannot be restored to OPERABLE status within the required Completion Time, action must be taken to immediately place the OPERABLE CREFS train 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 would 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 control room envelope. This places the unit in a condition that minimizes 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 toxic gas protection mode if automatic transfer to the toxic gas protection mode is inoperable.

BASES

ACTIONS (continued)

E.1

[In MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies, with two CREFS trains inoperable or with one or more CREFS trains inoperable due to an inoperable control room boundary, action must be taken immediately to suspend activities that could result in a release of radioactivity that might enter the control room envelope. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

F.1

If both CREFS trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable control room 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 REQUIREMENTS

SR 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 availability.

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].

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.10.3

This SR verifies that each CREFS train starts and operates on an actual or simulated actuation signal. The Frequency of [18] months is based on industry operating experience and is consistent with the typical refueling cycle. ~~The Frequency of [18] months is specified in Regulatory Guide 1.52 (Ref. 3).~~

SR 3.7.10.4

~~This SR verifies the integrity of the control room enclosure, and the assumed inleakage rates of the potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper functioning of the CREFS. During the emergency mode of operation, the CREFS is designed to pressurize the control room ≥[0.125] inches water gauge positive pressure with respect to adjacent areas in order to prevent unfiltered inleakage. The CREFS is designed to maintain this positive pressure with one train at a makeup flow rate of [3000] cfm. The Frequency of [18] months on a STAGGERED TEST BASIS is consistent with the guidance provided in NUREG-0800 (Ref. 4).~~

This SR verifies the integrity of the control room boundary by testing for unfiltered air inleakage past the control room boundary and into the control room envelope. The details of the testing are specified in the Control Room Habitability Program.

Unfiltered air inleakage through the control room boundary and into the control room envelope greater than the amount assumed in the licensing basis accident analyses results in the control room boundary being inoperable when control room habitability is not maintained (i.e., accident dose is greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals or smoke.) However, the control room boundary may be considered OPERABLE, but degraded or nonconforming, when unfiltered air inleakage is greater than assumed in the licensing basis accident analyses if compensatory measures can ensure that the control room remains habitable for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section 2.7.3, (Ref. 3) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 4). Temporary analytical methods may also be used as compensatory measures (Ref. 5). The Control Room Habitability Program provides limits on the use of compensatory measures to maintain the control room boundary OPERABLE but degraded or nonconforming when the unfiltered air inleakage is greater

than that assumed in the licensing basis analyses. When those limits are exceeded, Condition B must be entered.

REFERENCES

1. FSAR, Section [~~6~~9.4].

2. FSAR, Chapter [15].

~~3. Regulatory Guide 1.52, Rev. [2].~~

3. Regulatory Guide 1.196.

4. NEI 99-03, "Control Room Habitability Assessment," March 2003.

5. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2005, "NEI Draft White Paper, use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability."

~~4. NUREG-0800, Section 6.4, Rev. 2, July 1981.~~

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 boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, and 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. ~~Two~~ One or more CREVS trains inoperable due to inoperable control room boundary in MODE 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions. AND B.~~1~~2 Restore control room boundary to OPERABLE status.	Immediately 24 hours
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. AND C.2 Be in MODE 5.	6 hours 36 hours

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each CREVS train for [≥ 10 continuous hours with the heaters operating or (for system without heaters) ≥ 15 minutes].	31 days
SR 3.7.10.2	Perform required CREVS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].	In accordance with the [VFTP]
SR 3.7.10.3	Verify [each CREVS train actuates] [or the control room isolates] on an actual or simulated actuation signal.	[18] months
~~SR 3.7.10.4~~	~~Verify one CREVS train can maintain a positive pressure of ≥ [0.125] inches water gauge relative to the adjacent [area] during the [pressurization] mode of operation at a flow rate of ≤ [3300] cfm.~~	~~[18] months on a STAGGERED TEST BASIS~~
SR 3.7.10.4	Perform required control room unfiltered air inleakage testing in accordance with the Control Room Habitability Program.	In accordance with the Control Room Habitability Program
SR 3.7.10.5	[Verify the system makeup flow rate is ≥ [270] and ≤ [330] cfm when supplying the control room with outside air.	[18] months]

5.5 Programs and Manuals

5.5.16 Containment Leakage Rate Testing Program (continued)

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] 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 Habitability Program

A Control Room Habitability Program shall be established and implemented to ensure that control room habitability is maintained such that, with an OPERABLE Control Room Emergency Ventilation System (CREVS), control room 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 from outside the control room envelope. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the control room under accident 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 control room envelope and the control room boundary;

b. Requirements for maintaining control room boundary integrity, including configuration control, management of breaches, and preventive maintenance.

c. Requirements for assessing control room habitability at the frequencies specified in Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003.

d. Requirements for determining the unfiltered air inleakage past the control room boundary into the control room envelope in accordance with the testing methods and at the frequencies specified in Regulatory Guide 1.197, Revision 0, May 2003.

5.5 Programs and Manuals

5.5.18 Control Room Habitability Program (continued)

[The following are exceptions to Regulatory Guide 1.197, Revision 0:

1. ; and]

e. Measurement of the control room envelope positive pressure relative to the adjacent [turbine building] during the pressurization mode of operation by one train of the CREVS every [18] months on a STAGGERED TEST BASIS. The results shall be trended and compared to the positive pressure measurements taken or to be taken during control room inleakage testing. These evaluations shall be used as part of an assessment of control room boundary integrity between control room inleakage tests.

f. The quantitative limits on unfiltered air inleakage past the control room boundary into the control room envelope. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph d. The unfiltered air inleakage limits must demonstrate that radiation dose and hazardous chemical exposure to the control room occupants will be within the assumptions in the licensing basis.

g. Limitations on the use of compensatory measures to consider the CREVS OPERABLE when there are degraded or nonconforming conditions that result in unfiltered air inleakage past the control room boundary into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses. Compensatory measures are interim actions used to maintain OPERABILITY of the CREVS until full qualification of the control room boundary is restored. Degraded or nonconforming conditions affecting the control room boundary integrity should be resolved in a time frame commensurate with the safety significance of the condition. The program shall place additional limits on the use of compensatory measures which address a degraded or nonconforming control room barrier that results in unfiltered air inleakage into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses for the following two conditions:

1. When such compensatory measures may adversely affect the ability of the control room occupants to respond to an accident (including, but not limited to, the use of personal air filtration or bottled air systems), their use may be credited to support OPERABILITY of the CREVS until the next entry into MODE 2 following a refueling outage or for a maximum of 12 months, whichever is greater; and

5.5 Programs and Manuals

5.5.18 Control Room Habitability Program (continued)

2. When such compensatory measures may complicate the response of the control room occupants to an accident (including, but not limited to, the use of potassium iodine, temporary system configurations, or manual actions), their use may be credited to support OPERABILITY of the CREVS for a maximum of 36 months.

The provisions of SR 3.0.2 are applicable to the control room inleakage testing frequencies.

B 3.7 PLANT SYSTEMS

B 3.7.10 Control Room Emergency Ventilation System (CREVS)

BASES

BACKGROUND

The CREVS provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke from outside the control room envelope[, chemicals, or toxic gas].

The CREVS consists of two independent, redundant, trains that recirculate and filter the air in the control room envelope and a control room boundary which limits the inleakage of unfiltered airfan filter assemblies. Each CREVS filter train consists of a roughing filter, a high efficiency particulate air (HEPA) filter, and a charcoal filter for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system.train consists of a roughing filter, a high efficiency particulate air (HEPA) filter, and a charcoal filter.

The control room envelope is the area within the confines of the control room boundary that contain the spaces that control room occupants inhabit to control the unit for normal and accident conditions. The control room envelope is protected for normal operation, natural events, and accident conditions. The control room boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the control room envelope. The integrity of the control room boundary must be maintained to limit the inleakage of unfiltered air into the control room envelope. The control room envelope and the control room boundary are defined in the Control Room Habitability Program.

The CREVS is an emergency system. Upon receipt of the activating signal(s), the normal control room ventilation system is automatically shut down and the CREVS can be manually started. The roughing filters and water condensing units remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA and charcoal filters.

A single CREVS train will pressurize the control room with a 1.5 ft^2 LEAKAGE area envelope to about 1/8 inch water gauge. The CREVS operation in maintaining the control room envelope habitable is discussed in the FSAR, Section [9.4] (Ref. 1).

BASES

BACKGROUND (continued)

The CREVS is designed to maintain a habitable environment in the control room envelope for 30 days of continuous occupancy after a Design Basis Accident (DBA), without exceeding a [5 rem whole body dose or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)].

APPLICABLE SAFETY ANALYSES

The CREVS components are arranged in redundant safety related ventilation trains. The location of components and ducting within the control room envelope ensures an adequate supply of filtered air to all areas requiring access. The CREVS provides airborne radiological protection for the control room ~~operators~~ occupants as demonstrated by the control room ~~accident~~ occupant dose analyses for the most limiting design basis ~~loss of coolant~~ accident fission product release presented in the FSAR, Chapter [15] (Ref. 2).

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

[For this unit, there are no sources of toxic gases or chemicals that could be released to affect control room habitability.]

The CREVS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant CREVS trains are required to be OPERABLE to ensure that at least one is available if a single failure disables the other train. Total system failure or loss of control room boundary integrity could result in exceeding a dose of [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] to the control room ~~operators~~ occupants in the event of a large radioactive release.

The CREVS is considered OPERABLE when the individual components necessary to control operator exposure are OPERABLE ~~in both trains~~. A CREVS train is considered OPERABLE when the associated:

a. Fan is OPERABLE,

b. HEPA filter and charcoal absorber are not excessively restricting flow, and are capable of performing their filtration functions, and

c. Heater, demister, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

BASES

LCO (continued)

In order for the CREVS trains to be considered OPERABLE, the integrity of the control room boundary must be maintained such that control room occupant dose from a large radioactive release does not exceed [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] and the control room occupants are protected from hazardous chemicals and smoke from outside the control room boundary.

~~In addition, the control room boundary, including the integrity of the walls, floors, ceilings, ductwork, and access doors, must be maintained within the assumptions of the design analysis.~~

The LCO is modified by a Note allowing the control room boundary to be opened intermittently under administrative controls. This Note only applies to openings in the control room 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 control room operators. This individual will have a method to rapidly close the opening and to restore the control room boundary to a condition equivalent to the design condition when a need for control room envelope isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, ~~and~~ 4 [5, and 6,]~~,~~ and during movement of [recently] irradiated fuel assemblies, the CREVS must be OPERABLE to ensure that the control room envelope will remain habitable during and following a DBA.

During movement of [recently] irradiated fuel assemblies, the CREVS must be OPERABLE to cope with a release due to a fuel handling accident [involving handling recently irradiated fuel. Due to radioactive decay, CREVS is only required to mitigate fuel handling accidents 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 CREVS train inoperable for reasons other than an inoperable control room 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 control room ~~radiation~~ protection function. However, the overall reliability is reduced because a single 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

BASES

ACTIONS (Continued)

DBA occurring during this time period, and ability of the remaining train to provide the required capability.

~~B.1~~

~~----------REVIEWER'S NOTE----------~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have written procedures available describing compensatory measures to be taken in the event of an intentional or unintentional entry into Condition B.~~
~~----------~~

~~If the control room boundary is inoperable in MODE 1, 2, 3, or 4, the CREVS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE control room boundary within 24 hours. During the period that the control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the control room boundary.~~

BASES

ACTIONS (Continued)

B.1, and B.2

If the unfiltered inleakage of potentially contaminated air past the control room boundary and into the control room envelope can result in occupants of the control room envelope receiving doses greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals or smoke from outside the control room boundary, the control room boundary is inoperable. Actions must be taken to restore an OPERABLE control room boundary within 24 hours.

During the period that the control room boundary is inoperable, action must be initiated to implement mitigating actions to lessen the effect on control room occupants from the potential hazards of a radiological or chemical event or a challenge from smoke external to the control room envelope. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable control room boundary) should be preplanned for implementation upon entry into the condition. 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.

C.1 and C.2

In MODE 1, 2, 3, or 4, if the inoperable CREVS train or the control room 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 6 hours, and in MODE 5 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)

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

An alternative to Required Action D.1 is to immediately suspend activities that could release radioactivity that might require isolation of the control room 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.]

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 or with one or more CREVS trains inoperable due to an inoperable control room boundary, action must be taken immediately to suspend activities that could release radioactivity that might require isolation of the control room 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.]

F.1

If both CREVS trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable control room 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.

BASES

SURVEILLANCE REQUIREMENTS

SR 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 severe, testing each train once every month adequately checks this system. Monthly heater operations dry out any moisture that has accumulated in the charcoal because 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.] The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.10.2

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

SR 3.7.10.3

This SR verifies that [each CREVS train starts] [or the control room isolates] and operates on an actual or simulated actuation signal. The Frequency of [18] months is based on industry operating experience and is consistent with the typical refueling cycle. ~~The Frequency of [18] months is consistent with that specified in Reference 3.~~

~~SR 3.7.10.4~~

~~This SR verifies the integrity of the control room enclosure and the assumed inleakage rates of the potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify that the CREVS is functioning properly. During the emergency mode of operation, the CREVS is designed to pressurize the control room ≥ [0.125] inches water gauge positive pressure, with respect to adjacent areas, to prevent unfiltered inleakage. The CREVS is designed to maintain this positive pressure with one train at a flow rate of ≤ [3300] cfm. This value includes [300] cfm of outside air. The Frequency of [18] months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration SRs.~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.10.4

This SR verifies the integrity of the control room boundary by testing for unfiltered air inleakage past the control room boundary and into the control room envelope. The details of the testing are specified in the Control Room Habitability Program.

Unfiltered air inleakage through the control room boundary and into the control room envelope greater than the amount assumed in the licensing basis accident analyses results in the control room boundary being inoperable when control room habitability is not maintained (i.e., accident dose is greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals and smoke.) However, the control room boundary may be considered OPERABLE, but degraded or nonconforming, when unfiltered air inleakage is greater than assumed in the licensing basis accident analyses if compensatory measures can ensure that the control room remains habitable for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section 2.7.3, (Ref. 3) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 4). Temporary analytical methods may also be used as compensatory measures (Ref. 5). The Control Room Habitability Program provides limits on the use of compensatory measures to maintain the control room boundary OPERABLE but degraded or nonconforming when the unfiltered air inleakage is greater than that assumed in the licensing basis analyses. When those limits are exceeded, Condition B must be entered.

SR 3.7.10.5

This SR verifies the CREVS can supply the control room with outside air to meet the design requirement. The Frequency of [18] months is consistent with industry practice and other filtration SRs.

REFERENCES

1. FSAR, Section [9.4].

2. FSAR, Chapter [15].

~~3. Regulatory Guide 1.52, Rev. [2].~~
3. Regulatory Guide 1.196.

4. NEI 99-03, "Control Room Habitability Assessment," March 2003.

5. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2005, "NEI Draft White Paper, use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability."

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 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. ~~Two~~ One or more CREACS trains inoperable due to inoperable control room boundary in MODE 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions. AND B.~~1~~2 Restore control room boundary to OPERABLE status.	Immediately 24 hours
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. AND C.2 Be in MODE 5.	6 hours 36 hours

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.11.1	Operate each CREACS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes].	31 days
SR 3.7.11.2	Perform required CREACS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].	In accordance with the [VFTP]
SR 3.7.11.3	Verify each CREACS train actuates on an actual or simulated actuation signal.	[18] months
~~SR 3.7.11.4~~	~~Verify one CREACS train can maintain a positive pressure of ≥ [0.125] inches water gauge, relative to the adjacent [area] during the emergency radiation state of the emergency mode of operation at a emergency ventilation flow rate of ≤ [3000] cfm.~~	~~[18] months on a STAGGERED TEST BASIS~~
SR 3.7.11.4	Perform required control room unfiltered air inleakage testing in accordance with the Control Room Habitability Program.	In accordance with the Control Room Habitability Program

5.5 Programs and Manuals

5.5.16 Containment Leakage Rate Testing Program (continued)

2. Air lock testing acceptance criteria are:

a) Overall air lock leakage rate is ≤ [0.05 L_a] when tested at ≥ P_a.

b) For each door, leakage rate is ≤ [0.01 L_a] when pressurized to [≥10 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] 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 Habitability Program

A Control Room Habitability Program shall be established and implemented to ensure that control room habitability is maintained such that, with an OPERABLE Control Room Emergency Air Cleanup System (CREACS), control room 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 from outside the control room envelope. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the control room under accident 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 control room envelope and the control room boundary;

b. Requirements for maintaining control room boundary integrity, including configuration control, management of breaches, and preventive maintenance.

5.5 Programs and Manuals

5.5.18 Control Room Habitability Program (continued)

c. Requirements for assessing control room habitability at the frequencies specified in Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003.

d. Requirements for determining the unfiltered air inleakage past the control room boundary into the control room envelope in accordance with the testing methods and at the frequencies specified in Regulatory Guide 1.197, Revision 0, May 2003.

[The following are exceptions to Regulatory Guide 1.197, Revision 0:

1. ; and]

e. Measurement of the control room envelope positive pressure relative to the adjacent [turbine building] during the pressurization mode of operation by one train of the CREACS every [18] months on a STAGGERED TEST BASIS. The results shall be trended and compared to the positive pressure measurements taken or to be taken during control room inleakage testing. These evaluations shall be used as part of an assessment of control room boundary integrity between control room inleakage tests.

f. The quantitative limits on unfiltered air inleakage past the control room boundary into the control room envelope. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph d. The unfiltered air inleakage limits must demonstrate that radiation dose and hazardous chemical exposure to the control room occupants will be within the assumptions in the licensing basis.

g. Limitations on the use of compensatory measures to consider the CREACS OPERABLE when there are degraded or nonconforming conditions that result in unfiltered air inleakage past the control room boundary into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses. Compensatory measures are interim actions used to maintain OPERABILITY of the CREACS until full qualification of the control room boundary is restored. Degraded or nonconforming conditions affecting the control room boundary integrity should be resolved in a time frame commensurate with the safety significance of the condition. The program shall place additional limits on the use of compensatory measures which address a degraded or nonconforming control room barrier that results in unfiltered air inleakage into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses for the following two conditions:

5.5 Programs and Manuals

5.5.18 Control Room Habitability Program (continued)

1. When such compensatory measures may adversely affect the ability of the control room occupants to respond to an accident (including, but not limited to, the use of personal air filtration or bottled air systems), their use may be credited to support OPERABILITY of the CREACS until the next entry into MODE 2 following a refueling outage or for a maximum of 12 months, whichever is greater; and

2. When such compensatory measures may complicate the response of the control room occupants to an accident (including, but not limited to, the use of potassium iodine, temporary system configurations, or manual actions), their use may be credited to support OPERABILITY of the CREACS for a maximum of 36 months.

The provisions of SR 3.0.2 are applicable to the control room inleakage testing frequencies.

B 3.7 PLANT SYSTEMS

B 3.7.11 Control Room Emergency Air Cleanup System (CREACS)

BASES

BACKGROUND

The CREACS provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke from outside the control room envelope[~~chemicals, or toxic gas~~].

The CREACS consists of two independent, redundant trains that recirculate and filter the air in the control room ~~air~~envelope and a control room boundary which limits the inleakage of unfiltered air. Each CREACS train consists of a prefilter and demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodine), and a fan. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system, as do demisters that remove water droplets from the air stream. A second bank of HEPA filters follows the adsorber section to collect carbon fines, and to back up the main HEPA filter bank if it fails.

The control room envelope is the area within the confines of the control room boundary that contain the spaces that control room occupants inhabit to control the unit for normal and accident conditions. The control room envelope is protected for normal operation, natural events, and accident conditions. The control room boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the control room envelope. The integrity of the control room boundary must be maintained to limit the inleakage of unfiltered air into the control room envelope. The control room envelope and the control room boundary are defined in the Control Room Habitability Program.

The CREACS is an emergency system, part of which may also operate during normal unit operations in the standby mode of operation. Upon receipt of the actuating signal(s), normal air supply to the control room envelope is isolated, and the stream of ventilation air is recirculated through the filter trains of the system. The prefilters and demisters remove any large particles in the air, and any entrained water droplets present to prevent excessive loading of the HEPA filters and charcoal adsorbers. Continuous operation of each train for at least 10 hours per month with the heaters on reduces moisture buildup on the HEPA filters and adsorbers. Both the demister and heater are important to the effectiveness of the charcoal adsorbers.

BASES

BACKGROUND (continued)

Actuation of the CREACS places the system into either of two separate states of the emergency mode of operation, depending on the initiation signal. Actuation of the system to the emergency radiation state of the emergency mode of operation closes the unfiltered outside air intake and unfiltered exhaust dampers, and aligns the system for recirculation of the air within the control room ~~air~~ envelope through the redundant trains of HEPA and charcoal filters. The emergency radiation state initiates pressurization and filtered ventilation of the air supply to the control room envelope.

Outside air is filtered, [diluted with building air from the electrical equipment and cable spreading rooms,] and then added to the air being recirculated from the control room envelope. Pressurization of the control room envelope ~~prevents~~ minimizes infiltration of unfiltered air through the control room boundary from the surrounding areas of the building. The actions taken in the toxic gas isolation state are the same, except that the signal switches ~~control room ventilation~~the CREACS to an isolation mode, preventing outside air from entering the control room envelope through the control room boundary.

The air entering the control room envelope is continuously monitored by radiation and toxic gas detectors. One detector output above the setpoint will cause actuation of the emergency radiation state or toxic gas isolation state as required. The actions of the toxic gas isolation state are more restrictive, and will override the actions of the emergency radiation state.

A single CREACS train will pressurize the control room envelope to about [0.125] inches water gauge, and provides an air exchange rate in excess of 25% per hour. The CREACS operation in maintaining the control room envelope habitable is discussed in the FSAR, Section [9.4] (Ref. 1).

Redundant supply and recirculation trains provide the required filtration should an excessive pressure drop develop across the other filter train. Normally open 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 CREACS is designed in accordance with Seismic Category I requirements.

The CREACS is designed to maintain a habitable environment in the control room envelope ~~environment~~ for 30 days of continuous occupancy after a Design Basis Accident (DBA) without exceeding a [5 rem whole body dose or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)].

BASES

APPLICABLE SAFETY ANALYSES

The CREACS components are arranged in redundant safety related ventilation trains. The location of components and ducting within the control room envelope ensures an adequate supply of filtered air to all areas requiring access.

The CREACS provides airborne radiological protection for the control room ~~operators~~occupants, as demonstrated by the control room ~~accident~~ occupant dose analyses for the most limiting design basis ~~loss of coolant~~ accident fission product release presented in the FSAR, Chapter [15] (Ref. 2).

The analysis of toxic gas releases demonstrates that the toxicity limits are not exceeded in the control room envelope following a toxic chemical release, as presented in Reference 1.

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

The CREACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant trains of the CREACS are required to be OPERABLE to ensure that at least one is available, assuming that a single failure disables the other train. Total system failure or loss of control room boundary integrity could result in ~~a~~ the control room ~~operator~~ occupants receiving a dose in excess of [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] in the event of a large radioactive release.

The CREACS is considered OPERABLE when the individual components necessary to control operator exposure are OPERABLE ~~in both trains~~. A CREACS train is considered OPERABLE when the associated:

a. Fan is OPERABLE,

b. HEPA filters and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration functions, and

c. Heater, demister, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

In order for the CREACS trains to be considered OPERABLE, the integrity of the control room boundary must be maintained such that control room occupant dose from a large radioactive release does not exceed [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] and the control room occupants are protected from hazardous chemicals and smoke from outside the control room boundary.

BASES

LCO (continued)

~~In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.~~

The LCO is modified by a Note allowing the control room boundary to be opened intermittently under administrative controls. This Note only applies to openings in the control room 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 control room operators. This individual will have a method to rapidly close the opening and to restore the control room boundary to a condition equivalent to the design condition when a need for control room envelope isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, ~~and~~ 4, [5, and 6,], and during movement of [recently] irradiated fuel assemblies, the CREACS must be OPERABLE to ensure that the control room envelope will remain habitable ~~limit operator exposure~~ during and following a DBA.

In MODES [5 and 6], the CREACS is required to cope with the release from a rupture of an outside waste gas tank.

During movement of [recently] irradiated fuel assemblies, the CREACS must be OPERABLE to cope with the release from a fuel handling accident. [Due to radioactive decay, CREACS is only required to cope with fuel handling accidents 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 CREACS train inoperable for reasons other than an inoperable control room boundary, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREACS subsystem is adequate to perform the control room ~~radiation~~ protection function. However, the overall reliability is reduced because a single 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.

BASES

ACTIONS (continued)

~~B.1~~

~~REVIEWER'S NOTE~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have written procedures available describing compensatory measures to be taken in the event of an intentional or unintentional entry into Condition B.~~

~~If the control room boundary is inoperable in MODES 1, 2, 3, and 4, the CREACS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE control room boundary within 24 hours. During the period that the control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the control room boundary.~~

B.1, and B.2

If the unfiltered inleakage of potentially contaminated air past the control room boundary and into the control room envelope can result in occupants of the control room envelope receiving doses greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals or smoke from outside the control room boundary, the control room boundary is inoperable. Actions must be taken to restore an OPERABLE control room boundary within 24 hours.

BASES

ACTIONS (continued)

During the period that the control room boundary is inoperable, action must be initiated to implement mitigating actions to lessen the effect on control room occupants from the potential hazards of a radiological or chemical event or a challenge from smoke external to the control room envelope. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable control room boundary) should be preplanned for implementation upon entry into the condition. 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.

C.1 and C.2

If the inoperable CREACS or the control room boundary cannot be restored to OPERABLE status within the associated Completion Time in MODE 1, 2, 3, or 4, the unit must be placed in a MODE that minimizes the accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 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)

D.1 and D.2

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

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 control room envelope. 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 automatic transfer to the toxic gas protection mode is inoperable.

E.1

When [in MODES 5 and 6, or] during movement of [recently] irradiated fuel assemblies, with two CREACS trains inoperable or with one or more CREACS trains inoperable due to an inoperable control room boundary, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the control room 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.

F.1

If both CREACS trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable control room 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.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.11.1

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on 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 known reliability of the equipment, and the two train redundancy available.

SR 3.7.11.2

This SR verifies that the required CREACS 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].

SR 3.7.11.3

This SR verifies each CREACS train starts and operates on an actual or simulated actuation signal. The Frequency of [18] months is based on industry operating experience and is consistent with the typical refueling cycle.~~The Frequency of [18] months is consistent with that specified in Reference 3~~.

~~SR 3.7.11.4~~

~~This SR verifies the integrity of the control room enclosure and the assumed inleakage rates of potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper function of the CREACS. During the emergency radiation state of the emergency mode of operation, the CREACS is designed to pressurize the control room ≥ [0.125] inches water gauge positive pressure with respect to adjacent areas in order to prevent unfiltered inleakage. The CREACS is designed to maintain this positive pressure with one train at an emergency ventilation flow rate of [3000] cfm. The Frequency of [18] months on a~~

~~STAGGERED TEST BASIS is consistent with the guidance provided in NUREG-0800, Section 6.4 (Ref. 4).~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.11.4

This SR verifies the integrity of the control room boundary by testing for unfiltered air inleakage past the control room boundary and into the control room envelope. The details of the testing are specified in the Control Room Habitability Program.

Unfiltered air inleakage through the control room boundary and into the control room envelope greater than the amount assumed in the licensing basis accident analyses results in the control room boundary being inoperable when control room habitability is not maintained (i.e., accident dose is greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals and smoke.) However, the control room boundary may be considered OPERABLE, but degraded or nonconforming, when unfiltered air inleakage is greater than assumed in the licensing basis accident analyses if compensatory measures can ensure that the control room remains habitable for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section 2.7.3, (Ref. 3) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 4). Temporary analytical methods may also be used as compensatory measures (Ref. 5). The Control Room Habitability Program provides limits on the use of compensatory measures to maintain the control room boundary OPERABLE but degraded or nonconforming when the unfiltered air inleakage is greater than that assumed in the licensing basis analyses. When those limits are exceeded, Condition B must be entered.

REFERENCES

1. FSAR, Section [9.4].

2. FSAR, Chapter [15].

~~3. Regulatory Guide 1.52, Rev. [2].~~

3. Regulatory Guide 1.196.

4. NEI 99-03, "Control Room Habitability Assessment," March 2003.

5. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2005, "NEI Draft White Paper, use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability."

~~4. NUREG-0800, Section 6.4, Rev. 2, July 1981.~~

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 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. ~~Two~~ One or more [MCREC] subsystems inoperable due to inoperable control room boundary in MODE 1, 2, or 3.	B.1 Initiate action to implement mitigating actions. AND B.2~~1~~ Restore control room boundary to OPERABLE status.	Immediately 24 hours
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. AND C.2 Be in MODE 4.	12 hours 36 hours

ACTIONS (continued)

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two [MCREC] subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs. OR One or more [MCREC] subsystems inoperable due to inoperable control room boundary during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- F.1 Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment. AND F.2 Initiate action to suspend OPDRVs.	 Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Operate each [MCREC] subsystem for [≥ 10 continuous hours with the heaters operating or (for systems without heaters) ≥ 15 minutes].	31 days
SR 3.7.4.2	Perform required [MCREC] filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].	In accordance with the [VFTP]
SR 3.7.4.3	Verify each [MCREC] subsystem actuates on an actual or simulated initiation signal.	[18] months
~~SR 3.7.4.4~~	~~[Verify each [MCREC] subsystem can maintain a positive pressure of ≥ [0.1] inches water gauge relative to the [turbine building] during the [pressurization] mode of operation at a flow rate of~~	~~[18] months on a STAGGERED TEST BASIS]~~

SURVEILLANCE		FREQUENCY
	~~≤ [400] cfm.~~	
SR 3.7.4.4	Perform required control room unfiltered air inleakage testing in accordance with the Control Room Habitability Program.	In accordance with the Control Room Habitability Program

5.5 Programs and Manuals

5.5.13 Primary Containment Leakage Rate Testing Program (continued)

1. Containment leakage rate acceptance criterion is ≤ 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] [≤ 0.75 L_a for Option B Type A tests].

2. Air lock testing acceptance criteria are:

   a) Overall air lock leakage rate is ≤ [0.05 L_a] when tested at ≥ P_a.

   b) For each door, leakage rate is ≤ [0.01 L_a] when pressurized to ≥ [10] psig.

e. The provisions of SR 3.0.3 are applicable to the Primary 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.

5.5.14 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 Habitability Program

A Control Room Habitability Program shall be established and implemented to ensure that control room habitability is maintained such that, with an OPERABLE [Main Control Room Environmental Control (MCREC) System], control room 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 from outside the control room envelope. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the control room under accident 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:

5.5 Programs and Manuals

5.5.15 Control Room Habitability Program (continued)

a. The definition of the control room envelope and the control room boundary;

b. Requirements for maintaining control room boundary integrity, including configuration control, management of breaches, and preventive maintenance.

c. Requirements for assessing control room habitability at the frequencies specified in Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003.

d. Requirements for determining the unfiltered air inleakage past the control room boundary into the control room envelope in accordance with the testing methods and at the frequencies specified in Regulatory Guide 1.197, Revision 0, May 2003.

[The following are exceptions to Regulatory Guide 1.197, Revision 0:

1. ; and]

e. Measurement of the control room envelope positive pressure relative to the adjacent [turbine building] during the pressurization mode of operation by one subsystem of the [MCREC] System every [18] months on a STAGGERED TEST BASIS. The results shall be trended and compared to the positive pressure measurements taken or to be taken during control room inleakage testing. These evaluations shall be used as part of an assessment of control room boundary integrity between control room inleakage tests.

f. The quantitative limits on unfiltered air inleakage past the control room boundary into the control room envelope. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph d. The unfiltered air inleakage limits must demonstrate that radiation dose and hazardous chemical exposure to the control room occupants will be within the assumptions in the licensing basis.

g. Limitations on the use of compensatory measures to consider the [MCREC] System OPERABLE when there are degraded or nonconforming conditions that result in unfiltered air inleakage past the control room boundary into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses. Compensatory measures are interim actions used to maintain OPERABILITY of the [MCREC] System until full qualification of the control room boundary is restored. Degraded or nonconforming conditions affecting the control room boundary integrity should be resolved in a time frame commensurate with the safety

5.5 Programs and Manuals

5.5.15 Control Room Habitability Program (continued)

significance of the condition. The program shall place additional limits on the use of compensatory measures which address a degraded or nonconforming control room barrier that results in unfiltered air inleakage into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses for the following two conditions:

1. When such compensatory measures may adversely affect the ability of the control room occupants to respond to an accident (including, but not limited to, the use of personal air filtration or bottled air systems), their use may be credited to support OPERABILITY of the [MCREC] System until the next entry into MODE 2 following a refueling outage or for a maximum of 12 months, whichever is greater; and

2. When such compensatory measures may complicate the response of the control room occupants to an accident (including, but not limited to, the use of potassium iodine, temporary system configurations, or manual actions), their use may be credited to support OPERABILITY of the [MCREC] System for a maximum of 36 months.

The provisions of SR 3.0.2 are applicable to the control room inleakage testing frequencies.

B 3.7 PLANT SYSTEMS

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

BASES

BACKGROUND

The [MCREC] System provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke from outside the control room envelope~~radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA)~~.

The safety related function of [MCREC] System includes two independent and redundant high efficiency air filtration subsystems for emergency treatment of recirculated air or outside supply air and a control room boundary which limits the inleakage of unfiltered air. Each subsystem consists of a demister, an electric heater, a prefilter, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section, a second HEPA filter, a booster fan, an air handling unit (excluding the condensing unit), and the associated ductwork, ~~and~~ dampers, doors, barriers, and instrumentation. Demisters remove water droplets from the airstream. Prefilters and HEPA filters remove particulate matter, which may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay.

The control room envelope is the area within the confines of the control room boundary that contain the spaces that control room occupants inhabit to control the unit for normal and accident conditions. The control room envelope is protected for normal operation, natural events, and accident conditions. The control room boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the control room envelope. The integrity of the control room boundary must be maintained to limit the inleakage of unfiltered air into the control room envelope. The control room envelope and the control room boundary are defined in the Control Room Habitability Program.

The [MCREC] System is a standby system, parts of which also operate during normal unit operations to maintain the control room envelope environment. Upon receipt of the initiation signal(s) (indicative of conditions that could result in radiation exposure to the control room ~~personnel~~occupants), the [MCREC] System automatically switches to the pressurization mode of operation to prevent infiltration of contaminated air into the control room envelope. A system of dampers isolates the control room envelope, and a part of the recirculated air is routed through either of the two filter subsystems. Outside air is taken in at the normal ventilation intake and is mixed with the recirculated air before being passed through one of the charcoal adsorber filter subsystems for removal of airborne radioactive particles.

BASES

BACKGROUND (continued)

The [MCREC] System is designed to maintain a habitable environment in the control room ~~environment~~ envelope for a 30 day continuous occupancy after a DBA without exceeding [5 rem whole body dose or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)]. A single [MCREC] subsystem will pressurize the control room envelope to about [0.1] inches water gauge to ~~prevent~~ minmize infiltration of air from surrounding buildings. [MCREC] System operation in maintaining control room habitability is discussed in the FSAR, Chapters [6] and [9], (Refs. 1 and 2, respectively).

APPLICABLE SAFETY ANALYSES

The ability of the [MCREC] System to maintain the habitability of the control room envelope is an explicit assumption for the safety analyses presented in the FSAR, Chapters [6] and [15] (Refs. 1 and 3, respectively). The pressurization mode of the [MCREC] System is assumed to operate following a ~~loss of coolant~~design basis accident (DBA), fuel handling accident [involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)], main steam line break, and control rod drop accident, as discussed in the FSAR, Section [6.4.1.2.2] (Ref. 4). The radiological doses to control room ~~personnel~~ occupants as a result of the various DBAs are summarized in Reference 3. No single active or passive failure will cause the loss of outside or recirculated air from the control room envelope.

The [MCREC] System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two redundant subsystems of the [MCREC] System are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other subsystem. Total system failure or loss of control room boundary integrity could result in exceeding a dose of [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] to the control room ~~operators~~ occupants in the event of a DBA.

The [MCREC] System is considered OPERABLE when the individual components necessary to ~~control~~ limit operator exposure are OPERABLE ~~in both subsystems~~. A subsystem is considered OPERABLE when its associated:

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorbers are not excessively restricting flow and are capable of performing their filtration functions, and

c. Heater, demister, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

BASES

LCO (continued)

In order for the [MCREC] subsystems to be considered OPERABLE, the integrity of the control room boundary must be maintained such that control room occupant dose from a large radioactive release does not exceed [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] and the control room occupants are protected from hazardous chemicals and smoke from outside the control room boundary.

~~In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.~~

The LCO is modified by a Note allowing the main control room boundary to be opened intermittently under administrative controls. This Note only applies to openings in the control room 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 ~~main~~ control room operators. This individual will have a method to rapidly close the opening and to restore the control room boundary to a condition equivalent to the design condition when a need for ~~main~~ control room envelope isolation is indicated.

APPLICABILITY

In MODES 1, 2, and 3, the [MCREC] System must be OPERABLE to ensure that the control room envelope will remain habitable ~~to control operator exposure~~ during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced because of the pressure and temperature limitations in these MODES. Therefore, maintaining the [MCREC] System OPERABLE is not required in MODE 4 or 5, except for the following situations under which significant radioactive releases can be postulated:

a. During operations with potential for draining the reactor vessel (OPDRVs) and

b. During movement of [recently] irradiated fuel assemblies in the [secondary] containment. [Due to radioactive decay, the MCREC 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).]

BASES

ACTIONS

A.1

With one [MCREC] subsystem inoperable for reasons other than an inoperable control room boundary, the inoperable [MCREC] subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE [MCREC] subsystem is adequate to perform the control room ~~radiation~~ protection function. However, the overall reliability is reduced because a single failure in the OPERABLE subsystem could result in a loss of ~~in reduced~~ [MCREC] System function~~capability~~. 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~~

~~REVIEWER'S NOTE~~

~~Adoption of Condition B is dependent on a commitment from the licensee to have written procedures available describing compensatory measures to be taken in the event of an intentional or unintentional entry into Condition B.~~

~~If the main control room boundary is inoperable in MODE 1, 2, or 3, the MCREC subsystems cannot perform their intended functions. Actions must be taken to restore an OPERABLE main control room boundary within 24 hours. During the period that the main control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the main control room boundary.~~

BASES

ACTIONS (continued)

B.1, and B.2

If the unfiltered inleakage of potentially contaminated air past the control room boundary and into the control room envelope can result in occupants of the control room envelope receiving doses greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals or smoke from outside the control room boundary, the control room boundary is inoperable. Actions must be taken to restore an OPERABLE control room boundary within 24 hours.

During the period that the control room boundary is inoperable, action must be initiated to implement mitigating actions to lessen the effect on control room occupants from the potential hazards of a radiological or chemical event or a challenge from smoke external to the control room envelope. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable control room boundary) should be preplanned for implementation upon entry into the condition. 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.

BASES

ACTIONS (continued)

C.1 and C.2

In MODE 1, 2, or 3, if the inoperable [MCREC] subsystem or the control room boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE that minimizes 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.

D.1, D.2.1 and D.2.2

The Required Actions of Condition D 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 [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 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 control room envelope. This places the unit in a condition that minimizes 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.

BASES

ACTIONS (continued)

E.1

If both [MCREC] subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable control room 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 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 [secondary] containment or during OPDRVs, with two [MCREC] subsystems inoperable or with one or more [MCREC] subsystems inoperable due to an inoperable control room boundary, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the control room envelope. This places the unit in a condition that minimizes 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 OPDRVRs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

BASES

SURVEILLANCE REQUIREMENTS

SR 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].

SR 3.7.4.3

This SR verifies that on an actual or simulated initiation signal, each [MCREC] subsystem starts and operates. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.5 overlaps this SR to provide complete testing of the safety function. The Frequency of [18] months is based on industry operating experience and is consistent with the typical refueling cycle. ~~The [18] month Frequency is specified in Reference 5.~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[SR 3.7.4.4~~

~~This SR verifies the integrity of the control room enclosure and the assumed inleakage rates of potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas (the turbine building), is periodically tested to verify proper function of the [MCREC] System. During the emergency mode of operation, the [MCREC] System is designed to slightly pressurize the control room ≥ [0.1] inches water gauge positive pressure with respect to the turbine building to prevent unfiltered inleakage. The [MCREC] System is designed to maintain this positive pressure at a flow rate of ≤ [400] cfm to the control room in the pressurization mode. The Frequency of [18] months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration systems SRs.]~~

SR 3.7.4.4

This SR verifies the integrity of the control room boundary by testing for unfiltered air inleakage past the control room boundary and into the control room envelope. The details of the testing are specified in the Control Room Habitability Program.

Unfiltered air inleakage through the control room boundary and into the control room envelope greater than the amount assumed in the licensing basis accident analyses results in the control room boundary being inoperable when control room habitability is not maintained (i.e., accident dose is greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals and smoke.) However, the control room boundary may be considered OPERABLE, but degraded or nonconforming, when unfiltered air inleakage is greater than assumed in the licensing basis accident analyses if compensatory measures can ensure that the control room remains habitable for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section 2.7.3, (Ref. 5) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 6). Temporary analytical methods may also be used as compensatory measures (Ref. 7). The Control Room Habitability Program provides limits on the use of compensatory measures to maintain the control room boundary OPERABLE but degraded or nonconforming when the unfiltered air inleakage is greater than that assumed in the licensing basis analyses. When those limits are exceeded, Condition B must be entered.

REFERENCES

1. FSAR, Chapter [6].

2. FSAR, Chapter [9].

3. FSAR, Chapter [15].

4. FSAR, Section [6.4.1.2.2].

~~5. Regulatory Guide 1.52, Rev. [2].~~
5. Regulatory Guide 1.196.

6. NEI 99-03, "Control Room Habitability Assessment," March 2003.

7. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2005, "NEI Draft White Paper, use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability."

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 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. ~~Two~~ One or more [CRFA] subsystems inoperable due to inoperable control room boundary in MODE 1, 2, or 3.	B.1 Initiate action to implement mitigating actions. AND B.2~~1~~ Restore control room boundary to OPERABLE status.	Immediately 24 hours
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. AND C.2 Be in MODE 4.	12 hours 36 hours

ACTIONS (continued)

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

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two [CRFA] subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs. OR One or more [CRFA] subsystems inoperable due to inoperable control room boundary during movement of [recently] irradiated fuel assemblies in the [primary or secondary containment] or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- F.1 Suspend movement of [recently] irradiated fuel assemblies in the [primary and secondary containment]. AND F.2 Initiate action to suspend OPDRVs.	 Immediately Immediately

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
~~SR 3.7.3.4~~	~~[Verify each [CRFA] subsystem can maintain a positive pressure of ≥ [ ] inches water gauge relative to [adjacent buildings] during the [isolation] mode of operation at a flow rate of ≤ [ ] cfm.~~	~~[18] months on a STAGGERED TEST BASIS]~~

SURVEILLANCE		FREQUENCY
SR 3.7.3.4	Perform required control room unfiltered air inleakage testing in accordance with the Control Room Habitability Program.	In accordance with the Control Room Habitability Program

5.5 Programs and Manuals

5.5.13 Primary Containment Leakage Rate Testing Program (continued)

f. Nothing in these Technical Specifications shall be construed to modify the testing Frequencies required by 10 CFR 50, Appendix J.

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 Habitability Program

A Control Room Habitability Program shall be established and implemented to ensure that control room habitability is maintained such that, with an OPERABLE [Control Room Fresh Air (CRFA) System], control room 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 from outside the control room envelope. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the control room under accident 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 control room envelope and the control room boundary;

b. Requirements for maintaining control room boundary integrity, including configuration control, management of breaches, and preventive maintenance.

c. Requirements for assessing control room habitability at the frequencies specified in Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003.

5.5 Programs and Manuals

5.5.15 Control Room Habitability Program (continued)

d. Requirements for determining the unfiltered air inleakage past the control room boundary into the control room envelope in accordance with the testing methods and at the frequencies specified in Regulatory Guide 1.197, Revision 0, May 2003.

[The following are exceptions to Regulatory Guide 1.197, Revision 0:

1. ; and]

e. Measurement of the control room envelope positive pressure relative to the adjacent [turbine building] during the pressurization mode of operation by one subsystem of the [CRFA] System every [18] months on a STAGGERED TEST BASIS. The results shall be trended and compared to the positive pressure measurements taken or to be taken during control room inleakage testing. These evaluations shall be used as part of an assessment of control room boundary integrity between control room inleakage tests.

f. The quantitative limits on unfiltered air inleakage past the control room boundary into the control room envelope. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph d. The unfiltered air inleakage limits must demonstrate that radiation dose and hazardous chemical exposure to the control room occupants will be within the assumptions in the licensing basis.

g. Limitations on the use of compensatory measures to consider the [CRFA] System OPERABLE when there are degraded or nonconforming conditions that result in unfiltered air inleakage past the control room boundary into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses. Compensatory measures are interim actions used to maintain OPERABILITY of the [CRFA] System until full qualification of the control room boundary is restored. Degraded or nonconforming conditions affecting the control room boundary integrity should be resolved in a time frame commensurate with the safety significance of the condition. The program shall place additional limits on the use of compensatory measures which address a degraded or nonconforming control room barrier that results in unfiltered air inleakage into the control room envelope greater than the unfiltered air inleakage assumed in the licensing basis analyses for the following two conditions:

5.5 Programs and Manuals

5.5.15 Control Room Habitability Program (continued)

1. When such compensatory measures may adversely affect the ability of the control room occupants to respond to an accident (including, but not limited to, the use of personal air filtration or bottled air systems), their use may be credited to support OPERABILITY of the [CRFA] System until the next entry into MODE 2 following a refueling outage or for a maximum of 12 months, whichever is greater; and

2. When such compensatory measures may complicate the response of the control room occupants to an accident (including, but not limited to, the use of potassium iodine, temporary system configurations, or manual actions), their use may be credited to support OPERABILITY of the [CRFA] System for a maximum of 36 months.

The provisions of SR 3.0.2 are applicable to the control room inleakage testing frequencies.

B 3.7 PLANT SYSTEMS

B 3.7.3 [Control Room Fresh Air (CRFA)] System

BASES

BACKGROUND

The [CRFA] System provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke from outside the control room envelope~~a radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA).~~

The safety related function of the [CRFA] System used to control radiation exposure consists of two independent and redundant high efficiency air filtration subsystems for treatment of recirculated air or outside supply air and a control room boundary which limits the inleakage of unfiltered air. Each subsystem consists of a demister, an electric heater, a prefilter, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section, a second HEPA filter, a fan, and the associated ductwork, ~~and~~ dampers, doors, barriers, and instrumentation. Demisters remove water droplets from the airstream. Prefilters and HEPA filters remove particulate matter that may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay.

The control room envelope is the area within the confines of the control room boundary that contain the spaces that control room occupants inhabit to control the unit for normal and accident conditions. The control room envelope is protected for normal operation, natural events, and accident conditions. The control room boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the control room envelope. The integrity of the control room boundary must be maintained to limit the inleakage of unfiltered air into the control room envelope. The control room envelope and the control room boundary are defined in the Control Room Habitability Program.

In addition to the safety related standby emergency filtration function, parts of the [CRFA] System are operated to maintain the control room envelope environment during normal operation. Upon receipt of the initiation signal(s) (indicative of conditions that could result in radiation exposure to the control room ~~personnel~~occupants), the [CRFA] System automatically switches to the isolation mode of operation to prevent infiltration of contaminated air into the control room envelope. A system of dampers isolates the control room envelope, and control room envelope air flow is recirculated and processed through either of the two filter subsystems.

BASES

BACKGROUND (continued)

The [CRFA] System is designed to maintain a habitable environment in the control room ~~environment~~ envelope for a 30 day continuous occupancy after a DBA, without exceeding a [5 rem whole body dose or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)]. [CRFA] System operation in maintaining the control room habitability is discussed in the FSAR, Sections [6.5.1] and [9.4.1] (Refs. 1 and 2, respectively).

APPLICABLE SAFETY ANALYSES

The ability of the [CRFA] System to maintain the habitability of the control room envelope is an explicit assumption for the safety analyses presented in the FSAR, Chapters [6] and [15] (Refs. 3 and 4, respectively). The isolation mode of the [CRFA] System is assumed to operate following a ~~loss of coolant~~design basis accident (DBA), main steam line break, fuel handling accident [involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)], and control rod drop accident. The radiological doses to control room ~~personnel~~ occupants as a result of the various DBAs are summarized in Reference 4. No single active or passive failure will cause the loss of outside or recirculated air from the control room envelope.

The [CRFA] System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two redundant subsystems of the [CRFA] System are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other subsystem. Total system failure or loss of control room boundary integrity could result in exceeding a dose of [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] to the control room ~~operators~~ occupants in the event of a DBA.

The [CRFA] System is considered OPERABLE when the individual components necessary to ~~control~~ limit operator exposure are OPERABLE ~~in both subsystems~~. A subsystem is considered OPERABLE when its associated:

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow and are capable of performing their filtration functions, and

c. Heater, demister, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

BASES

LCO (continued)

In order for the [CRFA] subsystems to be considered OPERABLE, the integrity of the control room boundary must be maintained such that control room occupant dose from a large radioactive release does not exceed [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] and the control room occupants are protected from hazardous chemicals and smoke from outside the control room boundary.

~~In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.~~

The LCO is modified by a Note allowing the control room boundary to be opened intermittently under administrative controls. This Note only applies to openings in the control room 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 control room operators. This individual will have a method to rapidly close the opening and to restore the control room boundary to a condition equivalent to the design condition when a need for control room envelope isolation is indicated.

APPLICABILITY

In MODES 1, 2, and 3, the [CRFA] System must be OPERABLE to ensure that the control room envelope will remain habitable ~~to control operator exposure~~ during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced due to the pressure and temperature limitations in these MODES. Therefore, maintaining the [CRFA] System OPERABLE is not required in MODE 4 or 5, except for the following situations under which significant radioactive releases can be postulated:

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).]

BASES

ACTIONS

A.1

With one [CRFA] subsystem inoperable for reasons other than an inoperable control room 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 control room ~~radiation~~ protection function. However, the overall reliability is reduced because a single 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~~

~~REVIEWER'S NOTE~~

~~Adoption of Condition B is dependent on a commitment from the licensee to have written procedures available describing compensatory measures to be taken in the event of an intentional or unintentional entry into Condition B.~~

~~If the control room boundary is inoperable in MODE 1, 2, or 3, the CRFA subsystems cannot perform their intended functions. Actions must be taken to restore an OPERABLE control room boundary within 24 hours. During the period that the control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the control room boundary.~~

B.1, and B.2

If the unfiltered inleakage of potentially contaminated air past the control room boundary and into the control room envelope can result in occupants of the control room envelope receiving doses greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals or smoke from outside the control room boundary, the control room boundary is inoperable. Actions must be taken to restore an OPERABLE control room boundary within 24 hours.

BASES

ACTIONS (continued)

During the period that the control room boundary is inoperable, action must be initiated to implement mitigating actions to lessen the effect on control room occupants from the potential hazards of a radiological or chemical event or a challenge from smoke external to the control room envelope. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable control room boundary) should be preplanned for implementation upon entry into the condition. 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.

C.1 and C.2

In MODE 1, 2, or 3, if the inoperable [CRFA] subsystem or the control room boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE that minimizes 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)

D.1, D.2.1 and D.2.2

The Required Actions of Condition D 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, if the inoperable [CRFA] subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE [CRFA] subsystem may be placed in the isolation 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, 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 control room envelope. This places the unit in a condition that minimizes 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. Also, 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.

E.1

If both [CRFA] subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable control room 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.

BASES

ACTIONS (continued)

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 or with one or more [CRFA] subsystems inoperable due to an inoperable control room boundary, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the control room envelope. This places the unit in a condition that minimizes 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 REQUIREMENTS

SR 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 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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.3.2

This SR verifies that the required CRFA 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].

SR 3.7.3.3

This SR verifies that each [CRFA] subsystem starts and operates on an actual or simulated initiation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.5 overlaps this SR to provide complete testing of the safety function. The Frequency of [18] months is based on industry operating experience and is consistent with the typical refueling cycle. ~~The [18] month Frequency is specified in Reference 5.~~

~~SR 3.7.3.4~~

~~This SR verifies the integrity of the control room enclosure and the assumed inleakage rates of potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper function of the [CRFA] System. During the emergency mode of operation, the [CRFA] System is designed to slightly pressurize the control room to [0.1] inches water gauge positive pressure with respect to adjacent areas to prevent unfiltered inleakage. The [CRFA] System is designed to maintain this positive pressure at a flow rate of [500] cfm to the control room in the isolation mode. The Frequency of [18] months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration system SRs.~~

SR 3.7.3.4

This SR verifies the integrity of the control room boundary by testing for unfiltered air inleakage past the control room boundary and into the control room envelope. The details of the testing are specified in the Control Room Habitability Program.

Unfiltered air inleakage through the control room boundary and into the control room envelope greater than the amount assumed in the licensing basis accident analyses results in the control room boundary being

SURVEILLANCE REQUIREMENTS (continued)

inoperable when control room habitability is not maintained (i.e., accident dose is greater than [5 rem whole body or its equivalent to any part of the body] [5 rem TEDE] or the control room occupants are not protected from hazardous chemicals and smoke.) However, the control room boundary may be considered OPERABLE, but degraded or nonconforming, when unfiltered air inleakage is greater than assumed in the licensing basis accident analyses if compensatory measures can ensure that the control room remains habitable for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section 2.7.3, (Ref. 5) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 6). Temporary analytical methods may also be used as compensatory measures (Ref. 7). The Control Room Habitability Program provides limits on the use of compensatory measures to maintain the control room boundary OPERABLE but degraded or nonconforming when the unfiltered air inleakage is greater than that assumed in the licensing basis analyses. When those limits are exceeded, Condition B must be entered.

BASES

REFERENCES

1. FSAR, Section [6.5.1].
2. FSAR, Section [9.4.1].
3. FSAR, Chapter [6].
4. FSAR, Chapter [15].
5. ~~Regulatory Guide 1.52, Rev. [2].~~
5. Regulatory Guide 1.196.
6. NEI 99-03, "Control Room Habitability Assessment," March 2003.
7. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2005, "NEI Draft White Paper, use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability."