ENERGY NORTHWEST

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July 30, 2007
GO2-07-116

10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397 REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATION TO MODIFY REQUIREMENTS REGARDING CONTROL ROOM ENVELOPE HABITABILITY USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS (CLIIP)**

Reference: Letter dated March 2, 2007 from WS Oxenford (Energy Northwest) to the NRC, "Final Response to Generic Letter 2003-01 Control Room Habitability"

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Energy Northwest (EN) hereby requests an amendment to the Columbia Generating Station (Columbia) Operating License (NFP-21). The proposed change would modify Technical Specification (TS) 3.7.3, "Control Room Emergency Filtration (CREF) System," and TS 5.5, "Programs and Manuals," using the Consolidated Line Item Improvement Process (CLIIP). The changes are consistent with Nuclear Regulatory Commission (NRC) approved TS Task Force (TSTF) Traveler 448, Revision 3. The availability of this CLIIP TS improvement was published in the *Federal Register* on January 17, 2007 (72 FR 2022).

Attachment 1 provides a description and assessment of the proposed change, the requested confirmation of applicability, and plant-specific verifications. Attachment 2 provides the existing TS pages marked up to show the proposed change. Attachment 3 provides revised (clean) TS pages. Attachment 4 provides the proposed TS Bases pages for information only. Upon approval of the requested amendment, these TS Bases changes will be implemented concurrently with the TS change in accordance with the Columbia TS Bases Control Program.

There are no new regulatory commitments contained in this request.

Approval of this amendment application is requested by July 31, 2008. Once approved, this amendment will be implemented within 120 days.

A102
NRR

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Washington State Official.

Should you have any questions or require additional information regarding this matter, please contact Mr. GV Cullen, Licensing Supervisor, at (509) 377-6105.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the date of this letter.

Respectfully,

SK Gambhir
Vice President, Technical Services

Attachments: 1. Description and Assessment
2. Proposed Technical Specification Changes (mark-up)
3. Proposed Technical Specification Changes (clean)
4. Proposed Technical Specification Bases Changes (mark-up)

cc: BS Mallett – NRC RIV
CF Lyon – NRC NRR
NRC Sr. Resident Inspector – 988C
RN Sherman –BPA – 1399
WA Horin – Winston & Strawn
RR Cowley – WDOH
JO Luce – EFSEC

Description and Assessment

Subject: Energy Northwest Application to Revise Technical Specifications Regarding Control Room Envelope Habitability in Accordance with TSTF-448, Revision 3, Using the Consolidated Line Item Improvement Process (CLIIP)

1.0 DESCRIPTION

Pursuant to 10 CFR 50.90, Energy Northwest (EN) hereby requests an amendment to the Columbia Generating Station (Columbia) Operating License (NFP-21). The proposed change would modify Technical Specification (TS) 3.7.3, "Control Room Emergency Filtration (CREF) System," and add new TS 5.5.14, "Control Room Envelope Habitability Program," to Section 5.5, "Programs and Manuals."

In support of these proposed changes, the associated TS Bases sections will be revised. The proposed Bases changes are provided in Attachment 4 for information only and do not require Nuclear Regulatory Commission (NRC) approval.

The changes are consistent with NRC approved TS Task Force (TSTF) Traveler 448, Revision 3, "Control Room Habitability." The availability of this TS improvement was published in the *Federal Register* on January 17, 2007 as part of the consolidated line item improvement process (CLIIP).

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

Energy Northwest has reviewed the safety evaluation dated January 17, 2007 as part of the CLIIP. This review included a review of the NRC staff's evaluation, as well as the supporting information provided to support TSTF-448. Energy Northwest has concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff is applicable to Columbia, and justify this amendment for the incorporation of the changes to the Columbia TS.

2.2 Optional Changes and Variations

Energy Northwest is not proposing any significant variations or deviations from the TS changes described in TSTF-448, Revision 3, or the applicable parts of the NRC staff's model safety evaluation dated January 17, 2007. A plant specific listing of differences is provided below. These differences reflect adjustments, as needed, to account for the Columbia-specific control room habitability design, current licensing basis, or differences due to plant-specific TS wording. Additionally, the parts of Section 3.0 of the model safety evaluation that are applicable to Columbia are stated below.

A. The following proposed changes to Columbia TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Revision 3, Model Safety Evaluation, Section 3.0.

1. To acknowledge that an inoperable control room envelope (CRE) boundary, depending upon the location of the associated degradation, could cause just one, instead of both CREF subsystems to be inoperable, Energy Northwest proposes to revise the action requirements of TS 3.7.3. This is accomplished by revising Condition A to exclude Condition B by stating "one CREF subsystem inoperable for reasons other than Condition B" and revising Condition B to address one or more CREF subsystems by stating, "One or more CREF subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3." Furthermore, Energy Northwest proposes to replace existing Required Action B.1, "Restore control room boundary to OPERABLE status," which has a 24-hour Completion Time, with Required Action B.1, to immediately initiate action to implement mitigating actions; Required Action B.2, to verify, within 24 hours, that in the event of a design basis accident (DBA), CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke; and Required Action B.3, to restore CRE boundary to operable status within 90 days. These proposed changes are consistent with TSTF-448, Revision 3. (Model Safety Evaluation, Section 3.3 – Evaluation 1.)

2. Energy Northwest proposes to delete the CRE pressurization Surveillance Requirement (SR) 3.7.3.4 that requires verification that each CREF subsystem can maintain a positive pressure of ≥ 1/8 inches water gauge relative to the adjacent areas during the pressurization mode of operation at a flow rate of ≤ 1000 cfm. The deletion of this SR is proposed because measurements of unfiltered air inleakage into the CRE at numerous reactor facilities, has demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting this SR by achieving the required CRE pressure is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In Reference 1 it was stated that positive pressure surveillance testing does not confirm CRE integrity using specific inleakage values and that some inleakage appears to be the optimal method for confirming boundary integrity. Therefore, Energy Northwest proposed to address this issue through adoption of TSTF-448, as appropriate. (Model Safety Evaluation, Section 3.3 – Evaluation 6).

3. In place of the pressurization SR, Energy Northwest proposes to revise SR 3.7.3.4 to state, "Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 5.5.14 (described below), requires that the program include requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in

Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. Energy Northwest proposes to follow this method. (Model Safety Evaluation, Section 3.3 - Evaluation 6.)

4. Energy Northwest proposes a new administrative control program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 5.5.14, "Control Room Habitability Program." This program is intended to ensure the operability of the CRE boundary, which as part of an operable CREF system will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. This program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The Columbia CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

5. Energy Northwest proposes editorial changes to TS 3.7.3 to establish standard terminology, such as "control room envelope (CRE)" in place of "control room," except for the plant-specific name of the CREF system, and "radiological, chemical, and smoke hazards (or challenges)" in place of various phrases to describe the hazards that CRE occupants are protected from by the CREF system. These proposed changes improve usability and quality of the TS presentation and do not have an impact on safety. This language is adopted consistent with TSTF-448, Revision 3.

B. To account for Columbia specific control room habitability design, current licensing basis, or differences due to plant specific TS wording, the following adjustments have been incorporated into the proposed TS mark-up:

1. Energy Northwest proposes to add a new Condition to Action F of TS 3.7.3 that states, "One or more CREF subsystems inoperable due to inoperable CRE boundary during OPDRVs." This change is consistent with Model Safety Evaluation, Section 3.3 – Evaluation 5 with one minor difference. TSTF-448, Revision 3 includes the phrase "during movement of irradiated fuel assemblies." In a letter dated November 27, 2006 (Reference 2), the NRC issued Amendment No. 199 approving the use of an alternative source term (AST) in design basis radiological analyses pursuant to 10 CFR 50.67 at Columbia. As the revised Fuel Handling Accident (FHA) analysis no longer credits CREF for mitigation, the need to ensure CREF operability during fuel handling activities is not required. Reference to TS controls on CREF operability during fuel movement was

eliminated as part of AST implementation. This has also resulted in minor differences within the proposed Columbia TS Bases language when compared to TSTF-448 TS Bases language. The specified Required Action is the same as for the existing Action F which states, "Two CREF subsystems inoperable during OPDRVs." Therefore, the new condition is stated with the other condition in Action F using the logical connector "OR" in accordance with the Standard TS Writer's Guide. This new condition in Action F is needed because the proposed Action B will only apply in Modes 1, 2, and 3. The addition of the new condition to Action F will ensure that the Actions table continues to specify a condition for an inoperable CRE boundary during refueling.

The proposed TS Bases have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. Nonetheless, a few minor differences exist associated with Columbia-specific control room habitability design, current licensing basis, or differences due to plant specific TS wording. These changes will be processed in accordance with the Columbia TS Bases Control Program.

2.3 License Condition Regarding Initial Performance of New Surveillance and Assessment Requirements

Energy Northwest proposes the following as license conditions to support implementation of the proposed TS changes:

Upon implementation of this amendment adopting TSTF-448, Revision 3, the determination of CRE unfiltered air inleakage as required by SR 3.7.3.4, in accordance with TS 5.5.14.c.(i), the assessment of CRE habitability as required by Specification 5.5.14.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.14.d, shall be considered met. Following implementation:

(a) The first performance of SR 3.7.3.4, in accordance with Specification 5.5.14.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from November 6, 2003, the date of the most recent successful tracer gas test, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.14.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from November 6, 2003, the date of the most recent successful tracer gas test, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.14.d, shall be within 24 months, plus the 184 days allowed

by SR 3.0.2, as measured from March 23, 2006, the date of the most recent successful pressure measurement test, or within 184 days if not performed previously.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

Energy Northwest has reviewed the proposed no significant hazards consideration determination (NSHCD) published in the *Federal Register* as part of the CLIIP. Energy Northwest has concluded that the proposed NSHCD presented in the *Federal Register* notice is applicable to Columbia, and is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

3.2 Commitments

There are no new regulatory commitments contained in this request.

4.0 ENVIRONMENTAL EVALUATION

Energy Northwest has reviewed the environmental evaluation included in the model safety evaluation dated January 17, 2007 as part of the CLIIP. Energy Northwest has concluded that the staff's findings presented in that evaluation are applicable to Columbia, and the evaluation is hereby incorporated by reference for this application.

5.0 REFERENCES

1. Letter dated March 2, 2007 from WS Oxenford (Energy Northwest) to the NRC, "Final Response to Generic Letter 2003-01 Control Room Habitability."

2. Letter dated November 27, 2006 from BJ Benney (NRC) to JV Parrish (Energy Northwest), "Issuance of Amendment Re: Alternative Source Term (TAC No. MC4570)."

REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS TO MODIFY REQUIREMENTS REGARDING CONTROL ROOM ENVELOPE HABITABILITY USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS (CLIIP)
Attachment 2

Proposed Technical Specification Changes (mark-up)

REVISED TECHNICAL SPECIFICATION PAGES

3.7.3-1
3.7.3-2
3.7.3-3
5.5-13

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Filtration (CREF) System

LCO 3.7.3 Two CREF subsystems shall be OPERABLE.

envelope (CRE)

---NOTE---
The control room boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREF subsystem inoperable. (for reasons other than Condition B)	A.1 Restore CREF subsystem to OPERABLE status.	7 days
B. Two CREF subsystems inoperable due to inoperable control room boundary in MODES 1, 2, and 3. (INSERT TS-1)	B.1 Restore control room boundary to OPERABLE status.	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

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met during OPDRVs.	D.1 Place OPERABLE CREF subsystem in pressurization mode. OR D.2 Initiate action to suspend OPDRVs.	Immediately Immediately
E. Two CREF subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.	E.1 Enter LCO 3.0.3.	Immediately
F. Two CREF subsystems inoperable during OPDRVs. OR One or more CREF subsystems inoperable due to inoperable CRE boundary during OPDRVs.	F.1 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CREF subsystem for $\geq$ 10 continuous hours with the heaters operating.	31 days
SR 3.7.3.2	Perform required CREF filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.3.3	Verify each CREF subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.7.3.4	Verify each CREF subsystem can maintain a positive pressure of ≥ 1/8 inches water gauge relative to the radwaste and turbine buildings during the pressurization mode of operation at an outside air flow rate of ≤ 1000 cfm.	24 months on a STAGGERED TEST BASIS

Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.

In accordance with the Control Room Envelope Habitability Program

5.5 Programs and Manuals

5.5.13 Battery Monitoring and Maintenance Program (continued)

b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the top of the plates; and

c. Actions to verify that the remaining cells are $\geq$ 2.07 V when a cell or cells have been found to be < 2.13 V.

INSERT TS-2

INSERT TS-1

B.	One or more CREF subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1	Initiate action to implement mitigating actions.	Immediately
		AND		
		B.2	Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours
		AND		
		B.3	Restore CRE boundary to OPERABLE status.	90 days

INSERT TS-2

5.5.14 Control Room Envelope Habitability Program

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

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

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one subsystem of the CREF System, operating at the flow rate required by the VFTP, at a Frequency of 24 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 24 month assessment of the CRE boundary.

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses for DBA consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.

REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS TO MODIFY REQUIREMENTS REGARDING CONTROL ROOM ENVELOPE HABITABILITY USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS (CLIIP)
Attachment 3

Proposed Technical Specification Changes (clean)

REVISED TECHNICAL SPECIFICATION PAGES

3.7.3-1
3.7.3-2
3.7.3-3
3.7.3-4
5.5-13
5.5-14

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Filtration (CREF) System

LCO 3.7.3 Two CREF subsystems shall be OPERABLE.

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

APPLICABILITY: MODES 1, 2, and 3,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

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

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two CREF subsystems inoperable during OPDRVs. OR One or more CREF subsystems inoperable due to inoperable CRE boundary during OPDRVs.	F.1 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CREF subsystem for $\geq$ 10 continuous hours with the heaters operating.	31 days
SR 3.7.3.2	Perform required CREF filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

(continued)

5.5 Programs and Manuals

5.5.13 Battery Monitoring and Maintenance Program (continued)

b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the top of the plates; and

c. Actions to verify that the remaining cells are $\geq$ 2.07 V when a cell or cells have been found to be < 2.13 V.

5.5.14 Control Room Envelope Habitability Program

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

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

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

(continued)

REQUEST FOR AMENDMENT TO TECHNICAL SPECIFICATIONS TO MODIFY REQUIREMENTS REGARDING CONTROL ROOM ENVELOPE HABITABILITY USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS (CLIIP)
Attachment 4

Proposed Technical Specification Bases Changes (mark-up)

REVISED TECHNICAL SPECIFICATION BASES PAGES

B 3.7.7-1
B 3.7.3-2
B 3.7.3-3
B 3.7.3-4
B 3.7.3-5
B 3.7.3-6
B 3.7.3-7

B 3.7 PLANT SYSTEMS

B 3.7.3 Control Room Emergency Filtration (CREF) System

BASES

BACKGROUND

The CREF System provides a radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA).

protected environment from which occupants can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke.

The safety related function of the CREF System used to control radiation exposure consists of two independent and redundant high efficiency air filtration subsystems for treatment of outside supply air. Each subsystem consists of an electric heater, a prefilter, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section, a filter unit fan, a control room recirculation fan, and the associated ductwork and dampers. The electric heater is used to limit the relative humidity of the air entering the filter train. 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.

and a Control Room Envelope (CRE) boundary that limits the inleakage of unfiltered air.

valves or

, doors, barriers, and instrumentation.

which

INSERT TSB-1

The safety related CREF System is a standby system, but most of the ductwork is common to the Control Room Heating, Ventilation, and Air Conditioning (HVAC) System, which is operated to maintain the control room environment during normal operation. Upon receipt of the initiation signal(s) (indicative of conditions that could result in radiation exposure to control room personnel), the CREF System automatically switches to the pressurization mode of operation to prevent infiltration of contaminated air into the control room. A system of dampers isolates the control room (from the normal intake and exhaust), and control room outside air flow is redirected and processed through either of the two filter subsystems.

CRE

CRE occupants

minimize

CRE

CRE

CRE

The CREF System is designed to maintain the control room environment for a 30 day continuous occupancy after a DBA, without exceeding a 5 rem total effective dose equivalent (TEDE) dose. CREF System operation in maintaining the control room habitability is discussed in the FSAR, Sections 6.4.1 and 9.4.1 (Refs. 1 and 2, respectively).

a habitable environment in the CRE

CRE

(continued)

INSERT TSB-1

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

BASES (continued)

APPLICABLE SAFETY ANALYSES

The ability of the CREF System to maintain the habitability of the control room is an explicit assumption for the DBA LOCA analysis presented in the FSAR, Chapters 6, and 15 (Refs. 3 and 4, respectively). The pressurization mode of the CREF System is assumed to operate following a loss of coolant accident. The radiological doses to control room personnel as a result of the various DBAs are summarized in Reference 4. No single active failure will cause the loss of outside or recirculated air from the control room.

The CREF System satisfies Criterion 3 of Reference 5.

LCO

Two redundant subsystems of the CREF 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 could result in exceeding a dose of 5 rem to the control room operators in the event of a DBA.

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

a. Filter unit fan is OPERABLE;

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

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

d. Control room recirculation fan is OPERABLE.

In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors, such that the pressurization of SR 3.7.3.4 can be met. However, it is acceptable for access doors to be opened for normal control room entry and exit and not consider it to be a failure to meet the LCO. The

(continued)

INSERT TSB-2

The CREF System provides protection to the CRE occupants from smoke or hazardous chemical releases internal to the Radiological Controlled Area but external to the CRE. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 5). The evaluation of a smoke challenge demonstrates that it will not result in the inability of the CRE occupants to control the reactor either from the control room or from the remote shutdown panels (Ref. 6).

INSERT TSB-3

Two redundant subsystems of the CREF System are required to be OPERABLE to ensure that at least one is available if a single active failure disables the other subsystem. Total CREF System failure, such as from a loss of both ventilation subsystems or from an inoperable CRE boundary, could result in exceeding a dose of 5 rem TEDE to CRE occupants in the event of a DBA.

Each CREF subsystem is considered OPERABLE when the individual components necessary to limit CRE occupant exposure are OPERABLE. A subsystem is considered OPERABLE when its associated:

INSERT TSB-4

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

BASES

LCO (continued)

LCO is modified by a Note allowing the control room boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering and exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for control room boundary integrity is required.

CRE

INSERT TSB-5

should be proceduralized and

operators in the CRE

and to restore the CRE boundary to a condition equivalent to the design condition

CRE

APPLICABILITY

In MODES 1, 2, and 3, the CREF System must be OPERABLE to control operator exposure during and following a DBA, since the DBA could lead to a fission product release.

ensure that the CRE will remain habitable

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 CREF System OPERABLE is not required in MODE 4 or 5, except during operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

A.1

for reasons other than an inoperable CRE boundary

With one CREF subsystem inoperable, the inoperable CREF subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE CREF subsystem is adequate to perform control room radiation protection. However, the overall reliability is reduced because a single failure in the OPERABLE subsystem could result in loss of CREF 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.

the CRE occupant

function

B.1

If the control room boundary is inoperable in MODES 1, 2, and 3, the CREF trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE control room boundary within 24 hours. During the period

(continued)

INSERT TSB-5

This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels.

BASES

ACTIONS

B.1 (continued)

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 the time period, and the use of compensatory measures. The 24 hour Completion Time is typically a reasonable time to diagnose, plan and possibly repair, and test most problems with the control room boundary.

INSERT TSB-6

C.1 and C.2

CRE

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.

required

accident

D.1 and D.2

During OPDRVs, if the inoperable CREF subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CREF 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.

(continued)

INSERT TSB-6

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

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

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

BASES

ACTIONS

D.1 and D.2 (continued)

An alternative to Required Action D.1 is to immediately 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 CREF subsystems are inoperable in MODE 1, 2, or 3, for reasons other than an inoperable ~~control room~~ CRE boundary (i.e., Condition B) the CREF System may not be capable of performing the intended function and the unit is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

F.1

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the Required Actions of Condition F are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

or with one or more CREF subsystems inoperable due to an inoperable CRE boundary

During OPDRVs, with two CREF subsystems inoperable, action must be taken immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until the OPDRVs are suspended.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1

Operating (from the control room) each CREF subsystem for $\geq$ 10 continuous hours ensures that both subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation with the heaters on (automatic heater cycling to maintain humidity) for $\geq$ 10 continuous hours every 31 days reduces moisture on the adsorbers and HEPA filters. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

SR 3.7.3.2

This SR verifies that the required CREF testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The CREF filter tests are in accordance with Regulatory Guide 1.52 (Ref. 6). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, 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 CREF subsystem starts and operates on an actual or simulated initiation signal. This SR also includes ensuring the control room isolates (i.e., the normal intake dampers close and the exhaust fan trips and associated discharge damper closes). The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.7.1 overlaps this SR to provide complete testing of the safety function. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was found to be acceptable from a reliability standpoint.

SR 3.3.7.1.4

INSERT TSB-7

(continued)

INSERT TSB-7

The Frequency of 24 months is based on industry operating experience and is consistent with the typical refueling cycle.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.3.4

INSERT TSB-8

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 CREF System. During the pressurization mode of operation, the CREF System is designed to slightly pressurize the control room to 0.125 inches water gauge positive pressure with respect to the radwaste and turbine buildings (as measured in the radwaste building cable spreading room) to prevent unfiltered inleakage. The CREF System is designed to maintain this positive pressure at an outside air flow rate of $\leq$ 1000 cfm through the control room in the pressurization mode. The Frequency of 24 months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration system SRs.

REFERENCES

INSERT TSB-9

1. FSAR, Section 6.4.1.
2. FSAR, Section 9.4.1.
3. FSAR, Chapter 6.
4. FSAR, Chapter 15.
5. 10 CFR 50.36(c)(2)(ii).
6. Regulatory Guide 1.52, Revision 2, March 1978.

INSERT TSB-8

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than 5 rem TEDE and the CRE occupants are protected from hazardous chemicals and smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analyses of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. 7) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 8). These compensatory measures may also be used as mitigating actions as required by Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 9). Options for restoring the CRE boundary to OPERALE status include changing the licensing basis DBA consequence analysis, repairing the CRE boundary, or a combination of these actions. Depending upon the nature of the problem and the corrective action, a full scope inleakage test may not be necessary to establish that the CRE boundary has been restored to OPERABLE status.

INSERT TSB-9

1. FSAR, Section 6.4.1.
2. FSAR, Section 9.4.1.
3. FSAR, Chapter 6.
4. FSAR, Chapter 15.
5. FSAR, Section 6.4.
6. FSAR, Section 9.5.
7. Regulatory Guide 1.196, May 2003.
8. NEI 99-03, "Control Room Habitability Assessment," June 2001.
9. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability," (ADAMS Accession No. ML040300694).