Designated Original

Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

OCT 2 6 2007

TVA-WBN-TS-07-14

10 CFR 50.90

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

Gentlemen:

In the Matter of the Tennessee Valley Authority	))	Docket No. 50-390

WATTS BAR NUCLEAR PLANT (WBN) - UNIT 1 - TECHNICAL SPECIFICATIONS CHANGE 07-14 - "APPLICATION TO REVISE TECHNICAL SPECIFICATIONS REGARDING CONTROL ROOM ENVELOPE HABITABILILITY IN ACCORDANCE WITH TECHNICAL SPECIFICATION TASK FORCE (TSTF)-448, REVISION 3, USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS"

Pursuant to 10 CFR 50.90, Tennessee Valley Authority (TVA) is submitting a request for a Technical Specification (TS) change (TS-07-14) to License NPF-90 for WBN Unit 1. The proposed amendment would modify TS requirements related to control room envelope habitability in accordance with TSTF-448, Revision 3.

Attachment 1 provides a description of the proposed changes, the requested confirmation of applicability, and plant-specific verifications. Attachment 2 provides the existing TS pages marked up to show the proposed changes. Attachment 3 provides existing TS Bases pages marked up to show the proposed changes.

In accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and attachments to the Tennessee State Department of Public Health.

TVA requests routine processing of this TS change by NRC and that the implementation of the revised TS be within 60 days of NRC approval.

Rec'd DCD 12/04/07
A001
NRR

OCT 2 6 2007

There are no commitments in this submittal.

If you have any questions about this change, please contact me at 423-365-1824.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 26th day of October 2007.

Sincerely,

M. K. Brandon
Manager, Site Licensing and
Industry Affairs

Attachments:

1. TVA Evaluation of the Proposed Changes
2. Proposed Technical Specification Changes (mark-up)
3. Proposed Technical Specification Bases Changes (mark-up)

cc: See page 3

Attachments
cc (Attachments):

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ATTACHMENT 1

TENNESSEE VALLEY AUTHORITY (TVA)
WATTS BAR NUCLEAR PLANT (WBN)
UNIT 1

TVA Evaluation of the Proposed Changes

1.0 DESCRIPTION

This letter is a request to amend Operating License NPF-90 for WBN Unit 1. The proposed amendment would modify technical specification (TS) requirements related to control room envelope habitability in TS 3.7.10, "Control Room Emergency Ventilation System (CREVS)," and TS Section 5, "Administrative Controls."

The changes are consistent with Nuclear Regulatory Commission (NRC) approved Industry/Technical Specification Task Force (TSTF) STS change TSTF-448 Revision 3. 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

TVA 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. TVA has concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff are applicable to WBN Unit 1 and justify this amendment for the incorporation of the changes to the WBN TS.

2.2 Optional Changes and Variations

TVA is proposing the following variations or deviations from the TS changes described in the TSTF-448, Revision 3, or the applicable parts of the NRC staff's model safety evaluation dated January 17, 2007:

1. The current title to LCO 3.7.10 for WBN is "Control Room Emergency Ventilation System (CREVS)." This term is used in this amendment request in lieu of the terms "Control Room Envelope Emergency Ventilation System (CREEVS)" and Control Room Emergency Filtration System (CREFS) used in the model safety evaluation and in TSTF-448.

2. NRC's letter to the Technical Specifications Task Force dated May 12, 2006, (ADAMS accession number ML061310293) documented the basis for several suggested changes to TSTF-448. The fifth suggested change clarified that quantitative limits on exposure to smoke do not exist and outlined how smoke will be addressed in the Control Room Envelope Habitability Program (CREHP) in the Administrative section of the TS. Consistent with this, WBN proposes to

modify the wording to action B.2 of LCO 3.7.10 to that shown below from what was provided in the CLIIP:

> "Verify mitigating actions ensure CRE occupant exposures to radiological and chemical hazards will not exceed limits and CRE occupants are protected from smoke hazards."

Section 3.3 of the model SE contains variations based on the plant-specific design and existing TS requirements. The proposed change for WBN utilizes Evaluations 2, 4, and 6 of Section 3.3 of the model SE.

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

TVA proposes the following as a license condition to support implementation of the proposed TS changes:

> Upon implementation of Amendment No. xx adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by SR 3.7.10.4, in accordance with TS 5.7.2.20.c.(i), the assessment of CRE habitability as required by Specification 5.7.2.20.c.(ii), and the measurement of CRE pressure as required by Specification 5.7.2.20.d, shall be considered met. Following implementation:
>
> (a) The first performance of SR 3.7.10.4, in accordance with Specification 5.7.2.20.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from April 5, 2004, the date of the most recent successful tracer gas test, as stated in the August 4, 2004, letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.
>
> (b) The first performance of the periodic assessment of CRE habitability, Specification 5.7.2.20.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from April 5, 2004, the date of the most recent successful tracer gas test, as stated in the August 4, 2004 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.
>
> (c) The first performance of the periodic measurement of CRE pressure, Specification 5.7.2.20.d, shall be within 18 months, plus the 138 days allowed by SR 3.0.2, as measured from May 10, 2007, the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

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

4.0 ENVIRONMENTAL EVALUATION

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

ATTACHMENT 2

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT (WBN)
UNIT 1

Proposed Technical Specification Changes (mark-up)

I. AFFECTED PAGE LIST

3.7-22
3.7-23
3.7-24
5.0-25

II. MARKED PAGES

See attached.

The "inserts" below are annotated to reflect the changes and additions that are based on TSTF-448. The deletions are shown as strikethrough text and the additions are shown as bold-italicized text.

Insert 1:

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

Insert 2:

ACTIONS

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

(continued)

Insert 3:

ACTIONS (continued)

CONDITION		REQUIRED ACTION		COMPLETION TIME
~~C~~B.	Required Action and associated Completion Time of Condition A ***or B*** not met in MODE 1, 2, 3, or 4.	~~C~~B.1	Be in MODE 3.	6 hours
		AND		
		~~C~~B.2	Be in MODE 5.	36 hours
~~D~~C.	Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of irradiated fuel assemblies.	~~D~~C.1	Place OPERABLE CREVS train in emergency mode.	Immediately
		OR		
		~~D~~C.2	Suspend movement of irradiated fuel assemblies.	Immediately
~~E~~D.	Two CREVS trains inoperable in MODE 1, 2, 3, or 4 due to actions taken as a result of a tornado warning.	~~E~~D.1	Restore one CREVS train to OPERABLE status.	8 hours
~~F~~E.	Two CREVS trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.	~~F~~E.1	Suspend movement of irradiated fuel assemblies.	Immediately
OR				
	One or more CREVS trains inoperable due to inoperable CRE boundary in Mode 5 or 6, or during movement of irradiated fuel assemblies.			

(continued)

Insert 4:

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~*GF*~~. Two CREVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition ***B or E***~~D~~.	~~*GF*~~.1 Enter LCO 3.0.3.	Immediately

Insert 5:

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each CREVS train for ≥ 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 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 outside atmosphere and adjacent areas during the pressurization mode of operation at a makeup flow rate of ≤ 711 cfm and a recirculation flow rate ≥ 2960 and ≤ 3618 cfm.~~ ***Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Habitability Program.***	~~18 months on a STAGGERED TEST BASIS~~ ***In accordance with the Control Room Envelope Habitability Program***

Insert 6:

5.2.7.20 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Ventilation System (CREVS), CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem whole body or its equivalent to any part of the body 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 train of the CREVS, operating at the flow rate defined in the Ventilation Filter Testing Program (VFTP), at a Frequency of 18 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 18 month assessment of the CRE boundary.

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

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

3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Ventilation System (CREVS)

LCO 3.7.10 Two CREVS trains shall be OPERABLE.

Insert 1

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

~~ACTIONS~~

~~CONDITION~~	~~REQUIRED ACTION~~	~~COMPLETION TIME~~
~~A. One CREVS train inoperable.~~	~~A.1 Restore CREVS train to OPERABLE status.~~	~~7 days~~
~~B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours~~
~~C. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of irradiated fuel assemblies.~~	~~C.1 Place OPERABLE CREVS train in emergency mode.~~ ~~OR~~ ~~C.2 Suspend movement of irradiated fuel assemblies.~~	~~Immediately~~ ~~Immediately~~

~~(continued)~~

Insert 2

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two CREVS trains inoperable in MODE 1, 2, 3, or 4 due to actions taken as a result of a tornado warning.	D.1 Restore one CREVS train to OPERABLE status.	8 hours
E. Two CREVS trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies.	E.1 Suspend movement of irradiated fuel assemblies.	Immediately
F. Two CREVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition D.	F.1 Enter LCO 3.0.3.	Immediately

Insert 3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each CREVS train for ≥ 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 VFTP

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.10.3	Verify each CREVS train actuates 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 outside atmosphere and adjacent areas during the pressurization mode of operation at a makeup flow rate of ≤ 711 cfm and a recirculation flow rate ≥ 2960 and ≤ 3618 cfm.	18 months on a STAGGERED TEST BASIS

Insert 5

Insert 4

5.7 Procedures, Programs, and Manuals

5.7.2.19 Containment Leakage Rate Testing Program (continued)

Leakage rate acceptance criteria are:

a. Containment overall leakage rate acceptance criterion is $\leq 1.0\ L_a$. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $< 0.60\ L_a$ for the combined Type B and Type C tests, and $\leq 0.75\ L_a$ for Type A tests.

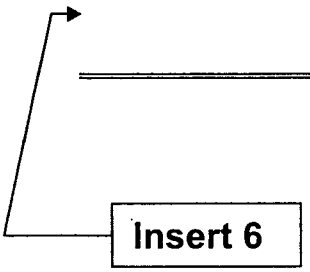
b. Air lock testing acceptance criteria are:

1) Overall air lock leakage rate is $\leq 0.05\ L_a$ when tested at $\geq P_a$.

2) For each door, leakage rate is $\leq 0.01\ L_a$ when pressurized to ≥ 6 psig.

The provisions of SR 3.0.2 do not apply to the test frequencies specified in the Containment Leakage Rate Testing Program.

The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.



ATTACHMENT 3

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT (WBN)
UNIT 1

Proposed Technical Specification Bases Changes (mark-up)

Note:
The Bases for LCO 3.7.10 are annotated to reflect the changes and additions that are based on TSTF-448. The deletions are shown as strikethrough text and the additions are shown as bold-italicized text.

I. AFFECTED PAGE LIST

B 3.7-51
B 3.7-52
B 3.7-53
B 3.7-54
B 3.7-55
B 3.7-56
B 3.7-57

II. MARKED PAGES

See attached.

WBN Technical Specification (TS) Change TS-07-14
Inserts for Proposed Bases Changes

Bases Insert 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 during 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 during 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 Insert 2:

The CREVS provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 1 and 2). 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. 1 and 2).

Bases Insert 3:

In order for the CREVS trains 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.

The LCO is modified by a Note allowing the CRE boundary to be opened intermittently under administrative controls. 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. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the operators in the CRE. This individual will have a method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for CRE isolation is indicated.

Bases Insert 4:

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to 5 rem whole body or its equivalent to any part of the body), 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.

Bases Insert 4 (continued):

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

Bases Insert 5:

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 whole body or its equivalent to any part of the body 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 OPERABLE 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.

Bases Insert 6:

2. Watts Bar FSAR, Section 9.4, "Air Conditioning, Heating, Cooling, and Ventilation Systems."

3. Watts Bar FSAR, Section 3.7.3.18, "Seismic Qualification of Main Control Room Suspended Ceiling and Air Delivery Components."

4. NRC Safety Evaluation dated February 12, 2004, for License Amendment 50.

Bases Insert 6 (continued):

5. Watts Bar FSAR, Section 15.5.3, "Environmental Consequences of a Postulated Loss of Coolant Accident."

6. Regulatory Guide 1.52, Revision 2, "Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water Cooled Nuclear Power Plants."

7. Regulatory Guide 1.196, Revision 0, "Control Room Habitability at Light-Water Nuclear Power Reactors"

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).

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~~ ***occupants*** can control the unit following an uncontrolled release of radioactivity***, hazardous chemicals, or smoke***.

The CREVS consists of two independent, redundant trains that recirculate and filter the ***air in the*** control room ***envelope (CRE)*** ~~air~~ ***and a CRE boundary that limits the inleakage of unfiltered air***. Each ***CREVS*** train consists of 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.

Bases Insert 1 →

The CREVS is an emergency system, parts of which also operate during normal unit operations.

Actuation of the CREVS occurs automatically upon receipt of a safety injection signal in either unit or upon indication of high radiation in the outside air supply. Actuation of the system to the emergency mode of operation, closes the unfiltered outside air intake and unfiltered exhaust dampers, and aligns the system for recirculation of the ~~control room~~ air ***within the CRE*** through the redundant trains of air handling units, with a portion of the stream of air directed through HEPA and the charcoal filters. The emergency mode also initiates pressurization and filtered ventilation of the air supply to the ***CRE*** ~~control room~~. Pressurization of the ***CRE*** ~~control room~~ prevents infiltration of unfiltered air from the surrounding areas of the building.

A single ***CREVS*** train ***operating at a flow rate of 4000 cubic feet per minute plus or minus 10 percent (includes less than or equal to 711 cubic feet per minute pressurization flow)*** will pressurize the ***CRE*** ~~control room~~ to a minimum 0.125 inches water gauge ~~with respect to the outside atmosphere and adjacent areas~~ ***relative to external areas adjacent to the CRE boundary***. The CREVS operation in maintaining the ***CRE*** ~~control room~~ habitable is discussed in the FSAR, Section 6.4 (Ref. 1).

Redundant supply and recirculation trains provide the required filtration should an excessive pressure drop develop across the other filter train. Normally open

(continued)

BASES

BACKGROUND (continued)

isolation dampers are arranged in series pairs so that the failure of one damper to shut will not result in a breach of isolation. A portion of the CREVS supply air ducting serving the main control room consists of round flexible ducting, triangular ducting constructed of duct board, and connecting metallic flow channels called air bars. These components are qualified to Seismic Category 1(L) requirements, which will ensure 1) the ducting will remain in place, 2) the physical configuration will be maintained such that flow will not be impeded, and 3) the ducting pressure boundary will not be lost during or subsequent to a SSE (Ref. ~~5~~***3***). The remaining portions of CREVS are designed in accordance with Seismic Category I requirements (Ref. ~~6~~***4***).

The CREVS is designed to maintain ***a habitable environment in the CRE*** ~~the control room 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.

APPLICABLE SAFETY ANALYSES

The CREVS components are arranged in redundant, safety related ventilation trains. The location of components and ducting within the ***CRE*** ~~control room envelope~~ ensures an adequate supply of filtered air to all areas requiring access. The CREVS provides airborne radiological protection for the ***CRE occupants*** ~~control room operators~~, as demonstrated by the ***CRE*** ~~control room accident dose~~ ***occupant dose*** analyses for the most limiting design basis loss of coolant accident, fission product release presented in the FSAR, Section 15.5.3 (Ref. ~~2~~***5***).

Bases Insert 2 →

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

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

The CREVS satisfies Criterion 3 of the NRC Policy Statement.

LCO

Two independent and redundant CREVS trains are required to be OPERABLE to ensure that at least one is available ~~assuming~~ ***if*** a single ***active*** failure disables the other train. Total system failure***, such as from a loss of both ventilation trains or from an inoperable CRE boundary,*** could result in exceeding a dose of 5 rem ***whole body or its equivalent to any part of the body to the CRE occupants*** ~~to the control room operator~~ in the event of a large radioactive release.

(continued)

BASES

LCO (continued)

~~The~~ ***Each*** CREVS ***train*** is considered OPERABLE when the individual components necessary to limit ***CRE occupant*** ~~operator~~ exposure are OPERABLE ~~in both trains~~. A CREVS train is OPERABLE when the associated:

a. Fan is OPERABLE;

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

c. Ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

Bases Insert 3 →

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

APPLICABILITY

In MODES 1, 2, 3, 4, 5, and 6 and during movement of irradiated fuel assemblies, ***the*** CREVS must be OPERABLE to ***ensure that the CRE will remain habitable*** ~~control operator exposure~~ during and following a DBA.

In MODE***S*** 5 ***and*** ~~or~~ 6, the CREVS is required to cope with the release from the rupture of a waste gas decay tank.

During movement of irradiated fuel assemblies, the CREVS must be OPERABLE to cope with the release from a fuel handling accident.

ACTIONS

A.1

When one CREVS train is inoperable, ***for reasons other than an inoperable CRE boundary,*** action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREVS train is adequate to perform the ***CRE occupant*** ~~control room~~ 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 DBA occurring during this time period, and ability of the remaining train to provide the required capability.

(continued)

ACTIONS
(continued)

B.1, ***B.2*** and B.~~2~~***3***

Bases Insert 4

C.1 and C.2

In MODE 1, 2, 3, or 4, if the inoperable CREVS train ***or the CRE boundary*** cannot be restored to OPERABLE status within the required Completion Time, the plant must be placed in a MODE that minimizes accident risk. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

~~C~~***D***.1 and ~~C~~***D***.2

In MODE 5 or 6, or during movement of irradiated fuel assemblies, if the inoperable CREVS train cannot be restored to OPERABLE status within the required Completion Time, action must be taken to immediately place the OPERABLE CREVS 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 C.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the ***CRE*** ~~control room~~. This places the unit in a condition that minimizes ***the accident*** risk. This does not preclude the movement of fuel to a safe position.

~~D~~***E***.1

If both CREVS trains are inoperable in MODE 1, 2, 3, or 4, due to actions taken as a result of a tornado, the CREVS may not be capable of performing the intended function because of loss of pressurizing air to the control room. At least one train must be restored to OPERABLE status within 8 hours or the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The 8 hour restoration time is considered reasonable considering the low probability of occurrence of a design basis accident concurrent with a tornado warning.

The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES

ACTIONS

~~E~~*F*.1

In MODE 5 or 6, or during movement of irradiated fuel assemblies with two CREVS trains inoperable ***or with one or more CREVS trains inoperable due to an inoperable CRE boundary***, action must be taken immediately to suspend activities that could result in a release of radioactivity that might ~~enter~~ ***require isolation of*** the ***CRE*** ~~control room~~. 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~~*G*.1

If both CREVS trains are inoperable in MODE 1, 2, 3, or 4, for reasons other than ***Condition B or*** Condition ~~D~~***E*** the CREVS may not be capable of performing the intended function and the plant 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. The systems 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 CREVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The CREVS filter tests are in accordance with Regulatory Guide 1.52 (Ref. ~~3~~***6***). 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.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.10.3

This SR verifies that each CREVS 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).~~

Bases Insert 5

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 CREVS. 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 the outside atmosphere and adjacent areas in order to prevent unfiltered inleakage. The CREVS is designed to maintain this positive pressure with one train at a makeup flow rate ≤ 711 cfm and a recirculation flow rate ≥ 2960 and ≤ 3618 cfm. The Frequency of 18 months on a STAGGERED TEST BASIS is consistent with the guidance provided in NUREG-0800 (Ref. 4).~~

REFERENCES

Bases Insert 6

1. Watts Bar FSAR, Section 6.4, "Habitability Systems."

2. ~~Watts Bar FSAR, Section 15.5.3, "Environmental Consequences of a Postulated Loss of Coolant Accident."~~

(continued)

BASES

REFERENCES (continued)

~~3. Regulatory Guide 1.52, Rev. 2, "Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water Cooled Nuclear Power Plants."~~

~~4. NUREG-0800, Standard Review Plan, Section 6.4, "Control Room Habitability System," Rev. 2, July 1981.~~

~~5. Watts Bar FSAR, Section 3.7.3.18, "Seismic Qualification of Main Control Room Suspended Ceiling and Air Delivery Components."~~

~~6. NRC Safety Evaluation dated February 12, 2004, for License Amendment 50.~~