

October 8, 2008

Mr. William R. Campbell, Jr.  
Chief Nuclear Officer and  
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6A Lookout Place  
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SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 1 – ISSUANCE OF AMENDMENT  
REGARDING CONTROL ROOM ENVELOPE HABITABILITY  
(TAC NO. MD7474)

Dear Mr. Campbell:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 70 to Facility Operating License No. NPF-90 for Watts Bar Nuclear Plant, Unit 1. This amendment is in response to your application dated October 26, 2007 (ML073380948).

The amendment revises the Technical Specifications (TS) to adopt TS Task Force (TSTF) Change Traveler TSTF-448, Revision 3, "Control Room Envelope Habitability." This technical specification improvement was made available by the NRC on January 17, 2007 (72 FR 2022) as part of the consolidated line item improvement process.

A copy of the safety evaluation is also enclosed. Notice of issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

**/RA/**

John G. Lamb, Senior Project Manager  
Watts Bar Special Projects Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-390

Enclosures: 1. Amendment No. 70 to NPF-90  
2. Safety Evaluation

cc w/enclosures: See next page

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William R. Campbell, Jr.  
Tennessee Valley Authority

**WATTS BAR NUCLEAR PLANT**

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TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-390

WATTS BAR NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 70  
License No. NPF-90

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated October 26, 2007, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-90 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 70, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance, and shall be implemented no later than 60 days from the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

**/RA/**

L. Raghavan, Chief  
Watts Bar Special Projects Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Operating License and  
Technical Specifications

Date of Issuance: October 8, 2008

ATTACHMENT TO AMENDMENT NO. 70  
FACILITY OPERATING LICENSE NO. NPF-90  
DOCKET NO. 50-390

Replace Page 3 of Operating License NPF-90 with the attached Page 3.

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

Remove Pages

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

Insert Pages

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



SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 70 TO FACILITY OPERATING LICENSE NO. NPF-90  
TENNESSEE VALLEY AUTHORITY  
WATTS BAR NUCLEAR PLANT, UNIT 1  
DOCKET NO. 50-390

## 1.0 INTRODUCTION

By letter dated October 26, 2007 (ML073380948), the Tennessee Valley Authority (TVA or the licensee), submitted a request for changes to the Watts Bar Nuclear Plant (WBN), Unit 1, Technical Specifications (TSs). The requested changes would modify TS requirements related to control room envelope habitability in accordance with Technical Specifications Task Force (TSTF) Revision 3, "Control Room Envelope Habitability." The staff's proposed no significant hazards consideration determination was published in the *Federal Register* on August 29, 2008 (73 FR 51014).

On August 8, 2006, the commercial nuclear electrical power generation industry owners group TSTF submitted a proposed change, TSTF-448, Revision 3, to the improved standard technical specifications (STs) (NUREGs 1430-1434) on behalf of the industry (TSTF-448, Revisions 0, 1, and 2 were prior draft iterations). TSTF-448, Revision 3, is a proposal to establish effective and appropriate action, surveillance, and administrative STS requirements related to ensuring the habitability of the control room envelope (CRE).

In NRC Generic Letter (GL) 2003-01, "Control Room Habitability," dated June 12, 2003 (ML031620248), licensees were alerted to findings at facilities that existing TS surveillance requirements (SRs) for the Control Room Envelope Emergency Ventilation System (CREEVS) may not be adequate. Specifically, the results of American Society for Testing and Materials (ASTM) E741, "Standard Test Method for Determining Air Change in a Single Zone by Means of a Tracer Gas Dilution," 2000, tracer gas tests to measure CRE unfiltered leakage at facilities indicated that the differential pressure surveillance is not a reliable method for demonstrating CRE boundary operability. Licensees were requested to address existing TS as follows:

Provide confirmation that your technical specifications verify the integrity [i.e., operability] of the CRE [boundary], and the assumed [unfiltered] leakage rates of potentially contaminated air. If you currently have a differential pressure surveillance requirement to demonstrate CRE [boundary] integrity, provide the basis for your conclusion that it remains adequate to demonstrate CRE integrity in light of the ASTM E741 testing results. If you conclude that your differential pressure surveillance requirement is no longer adequate, provide a schedule for:

- 1) revising the surveillance requirement in your technical specification to reference an acceptable surveillance methodology (e.g., ASTM E741), and
- 2) making any necessary modifications to your CRE boundary so that compliance with your new surveillance requirement can be demonstrated.

If your facility does not currently have a technical specification surveillance requirement for your CRE integrity, explain how and at what frequency you confirm your CRE integrity and why this is adequate to demonstrate CRE integrity.

To promote standardization and to minimize the resources that would be needed to create and process plant-specific amendment applications in response to the concerns described in the GL, the industry and the NRC proposed revisions to CRE habitability system requirements contained in the STSs, using the STS change traveler process. This effort culminated in Revision 3 to traveler TSTF 448, "Control Room Habitability," which the U.S. Nuclear Regulatory Commission (NRC) staff approved on January 17, 2007.

Consistent with the traveler as incorporated into NUREG 1431, the licensee proposed revising action and SRs in Specification 3.7.10, "Control Room Emergency Ventilation System (CREVS)," and adding a new administrative controls program, Specification 5.2.7.20, "Control Room Envelope Habitability Program." The purpose of the changes is to ensure that CRE boundary operability is maintained and verified through effective surveillance and programmatic requirements, and that appropriate remedial actions are taken in the event of an inoperable CRE boundary.

Some editorial and plant-specific changes were incorporated into this safety evaluation resulting in minor deviations from the model safety evaluation text in TSTF-448, Revision 3.

## 2.0 REGULATORY EVALUATION

### 2.1 Control Room and Control Room Envelope

NRC Regulatory Guide 1.196, "Control Room Habitability at Light-water Nuclear Power Reactors," Revision 0, May 2003 (ML031490611), uses the term "control room envelope" in addition to the term "control room" and defines each term as follows:

*Control Room: The plant area, defined in the facility licensing basis, in which actions can be taken to operate the plant safely under normal conditions and to maintain the reactor in a safe condition during accident situations. It encompasses the instrumentation and controls necessary for a safe shutdown of the plant and typically includes the critical document reference file, computer room (if used as an integral part of the emergency response plan), shift supervisor's office, operator wash room and kitchen, and other critical areas to which frequent personnel access or continuous occupancy may be necessary in the event of an accident.*

*Control Room Envelope: The plant area, defined in the facility licensing basis, that in the event of an emergency, can be isolated from the plant areas and the environment external to the CRE. This area is served by an emergency ventilation system, with the intent of maintaining the habitability of the control room. 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.*

NRC Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003 (ML031490664), also contains these definitions, but uses the term CRE to mean both. This is because the protected environment provided for

operators varies with the nuclear power facility. At some facilities this environment is limited to the control room; at others, it is the CRE. In this safety evaluation, consistent with the proposed changes to the STSs, the CRE will be used to designate both environments as defined above. For consistency, facilities should use the term CRE with an appropriate facility-specific definition derived from the above CRE definition.

## 2.2 Control Room Emergency Ventilation System (CREVS)

The CREVS (the term used at WBN, Unit 1 for the CREEVS provides a protected environment from which operators can control the unit, during airborne challenges from radioactivity, hazardous chemicals, and fire byproducts, such as fire-suppression agents and smoke, during both normal and accident conditions.

The CREVS is designed to maintain a habitable environment in the CRE for 30 days of continuous occupancy after a Design Basis Accident (DBA) without exceeding a 5 rem total effective dose equivalent (TEDE).

The CREVS consists of two independent, redundant trains, each capable of maintaining the habitability of the CRE. Each CREVS train is considered operable when the individual components necessary to limit CRE occupant exposure are operable. A CREVS train is considered operable when the associated:

- Fan is operable;
- High efficiency particulate air (HEPA) filters and charcoal adsorbers are not excessively restricting flow, and are capable of performing their filtration functions;
- Ductwork, valves, and dampers are operable, and air circulation can be maintained; and
- CRE boundary is operable (the single boundary supports both trains).

The CRE boundary is considered operable when the measured unfiltered air inleakage is less than or equal to the inleakage value assumed by the licensing basis analyses of design basis accident consequences to CRE occupants.

## 2.3 Regulations Applicable to Control Room Habitability

In Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," General Design Criteria (GDC) 1, 2, 3, 4, 5, and 19 apply to CRE habitability. A summary of these GDCs follows.

GDC 1, "Quality Standards and Records," requires that structures, systems, and components (SSCs) important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions performed.

GDC 2, "Design Basis for Protection Against Natural Phenomena," requires that SSCs important to safety be designed to withstand the effects of earthquakes and other natural hazards.

GDC 3, "Fire Protection," requires SSCs important to safety be designed and located to minimize the effects of fires and explosions.

GDC 4, "Environmental and Dynamic Effects Design Bases," requires SSCs important to safety to be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents (LOCAs).

GDC 5, "Sharing of Structures, Systems, and Components," requires that SSCs important to safety not be shared among nuclear power units unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, the orderly shutdown and cooldown of the remaining units.

GDC 19, "Control Room," requires that a control room be provided from which actions can be taken to operate the nuclear reactor safely under normal conditions and to maintain the reactor in a safe condition under accident conditions, including a LOCA. Adequate radiation protection is to be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of specified values.

Prior to incorporation of TSTF-448, Revision 3, the STS requirements addressing CRE boundary operability resided only in the following CRE ventilation system specifications:

- NUREG-1431, TS 3.7.10, "Control Room Emergency Filtration System (CREFS)."

In these specifications, the SR associated with demonstrating the operability of the CRE boundary requires verifying that one CREEVS train can maintain a positive pressure relative to the areas adjacent to the CRE during the pressurization mode of operation at a makeup flow rate. Facilities that pressurize the CRE during the emergency mode of operation of the CREEVS have similar SRs. Regardless, the results of ASTM E741 tracer gas tests to measure CRE unfiltered inleakage at facilities indicated that the differential pressure surveillance is not a reliable method for demonstrating CRE boundary operability. That is, licensees were able to obtain differential pressure and flow measurements satisfying the SR limits even though unfiltered inleakage was determined to exceed the value assumed in the safety analyses.

In addition to an inadequate SR, the action requirements of these specifications were ambiguous regarding CRE boundary operability in the event CRE unfiltered inleakage is found to exceed the analysis assumption. The ambiguity stemmed from the view that the CRE boundary may be considered operable but degraded in this condition, and that it would be deemed inoperable only if calculated radiological exposure limits for CRE occupants exceeded a licensing basis limit (e.g., as stated in GDC-19) even while crediting compensatory measures.

NRC Administrative Letter (AL) 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety," (AL 98-10) states that "the discovery of an improper or inadequate TS value or required action is considered a degraded or nonconforming condition," which is defined in NRC Inspection Manual Chapter 9900; see latest guidance in Regulatory Issue Summary (RIS) 2005-20 (ML073440103). "Imposing administrative controls in response to an improper or inadequate TS is considered an acceptable short-term corrective action. The NRC staff expects that, following the imposition of administrative controls, an amendment to the inadequate TS, with appropriate justification and schedule, will be submitted in a timely fashion."

Licensees that have found unfiltered inleakage in excess of the limit assumed in the safety analyses and have yet to either reduce the inleakage below the limit or establish a higher bounding limit through re-analysis, have implemented compensatory actions to ensure the

safety of CRE occupants, pending final resolution of the condition, consistent with RIS 2005-20.

However, based on GL 2003-01 and AL 98-10, the NRC staff expects each licensee to propose TS changes that include a surveillance to periodically measure CRE unfiltered inleakage in order to satisfy 10 CFR 50.36(d)(3), which requires a facility's TS to include SRs, which it defines as "requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and *that limiting conditions for operation will be met.*" (Emphasis added.)

The NRC staff also expects facilities to propose unambiguous remedial actions, consistent with 10 CFR 50.36(d)(2), for the condition of not meeting the limiting condition for operation (LCO) due to an inoperable CRE boundary. The action requirements should specify a reasonable completion time to restore conformance to the LCO before requiring a facility to be shut down. This completion time should be based on the benefits of implementing mitigating actions to ensure CRE occupant safety and sufficient time to resolve most problems anticipated with the CRE boundary, while minimizing the chance that operators in the CRE will need to use mitigating actions during accident conditions.

#### 2.4 Adoption of TSTF-448 Revision 3

Adoption of TSTF-448, Revision 3, will assure that a facility's TS LCO for the CREVS is met by demonstrating unfiltered leakage into the CRE is within limits (i.e., the operability of the CRE boundary). In support of this surveillance, which specifies a test interval (frequency) described in Regulatory Guide 1.197, TSTF-448 also adds TS administrative controls to assure the habitability of the CRE between performances of the ASTM E741 test. In addition, adoption of TSTF-448 will establish clearly stated and reasonable required actions in the event CRE unfiltered inleakage is found to exceed the analysis assumption.

The changes made by TSTF-448 to the STS requirements for the CREVS and the CRE boundary conform to 10 CFR 50.36(d)(2) and 10 CFR 50.36(d)(3). Their adoption will assure that a plant's CRE will remain habitable during normal operation and DBA conditions. The staff has, therefore, concluded that these changes are acceptable for adoption by licensees.

### 3.0 TECHNICAL EVALUATION

The NRC staff reviewed the proposed changes against the corresponding changes made to the STSs by TSTF-448, Revision 3, which the NRC staff has found to satisfy applicable regulatory requirements, as described above in Section 2.0. The emergency operational mode of the CREVS at the WBN, Unit 1 pressurizes the CRE to minimize unfiltered air inleakage. The proposed changes are consistent with this design.

#### 3.1 Proposed Changes

The proposed amendment would strengthen CRE habitability TS requirements by changing TS 3.7.10, "Control Room Emergency Ventilation System" and adding a new TS administrative controls program on CRE habitability. Accompanying the proposed TS changes are appropriate conforming technical changes to the TS Bases. The proposed revision to the Bases also includes editorial and administrative changes to reflect applicable changes to the corresponding STS Bases, which were made to improve clarity, conform with the latest information and references, correct factual errors, and achieve more consistency among the STS NUREGs. Except for plant-specific differences, all of these changes are consistent with STSs as revised

by TSTF-448, Revision 3. The NRC staff compared the proposed TS changes to the STSs and the STS markups and evaluations in TSTF-448. The staff verified that differences from the STSs were adequately justified on the basis of plant-specific design or retention of current licensing basis. The NRC staff also reviewed the proposed changes to the TS Bases for consistency with the STS Bases and the plant-specific design and licensing bases, although approval of the Bases is not a condition for accepting the proposed amendment. However, TS 5.6, "Technical Specifications Bases Control Program," provides assurance that the licensee has established and will maintain the adequacy of the Bases. The proposed Bases for TS 3.7.10 refer to specific guidance in Nuclear Energy Institute document NEI 99-03, "Control Room Habitability Assessment Guidance," Revision 0, dated June 2001, which the NRC staff has formally endorsed, with exceptions, through Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors," dated May 2003 (ML031490611).

### 3.2 Editorial Changes

The licensee proposed editorial changes to TS 3.7.10, "Control Room Emergency Ventilation System," to establish standard terminology, such as "control room envelope (CRE)" in place of "control room," except for the plant-specific name for the CREEVS (CREVS), and "radiological, chemical, and smoke hazards" in place of various phrases to describe the hazards that CRE occupants are protected from by the CREVS. These changes improve the usability and quality of the presentation of the TS, have no adverse impact on safety, and therefore, are acceptable.

### 3.3 TS 3.7.10, "Control Room Emergency Ventilation System"

The licensee proposed to revise the action requirements of TS 3.7.10, "Control Room Emergency Ventilation System," to acknowledge that an inoperable CRE boundary, depending upon the location of the associated degradation, could cause just one, instead of both CREVS trains to be inoperable. This is accomplished by revising Condition A to exclude Condition B, and revising Condition B to address one or more CREVS trains, as follows:

- Condition A One required CREVS train inoperable for reasons other than Condition B.
- Condition B One or more CREVS trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4.

This change clarifies how to apply the action requirements in the event just one CREVS train is unable to ensure CRE occupant safety within licensing basis limits because of an inoperable CRE boundary. It enhances the usability of Conditions A and B with a presentation that is more consistent with the intent of the existing requirements. This change is an administrative change because it neither reduces nor increases the existing action requirements, and, therefore, is acceptable.

New Required Action B.1 requires the licensee to immediately initiate action to implement mitigating actions. New Required Action B.2 requires the licensee to verify, within 24 hours, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, CRE occupant exposure to chemical hazards will not exceed limits, and that CRE occupants are protected from smoke hazards. New Required Action B.3 requires the licensee to restore CRE boundary to operable status within 90 days.

The 24-hour Completion Time of new Required Action B.2 is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions as directed by Required Action B.1. The 90-day Completion Time of new Required Action B.3 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. The 90-day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most anticipated problems with the CRE boundary. Therefore, proposed Actions B.1, B.2, and B.3 are acceptable.

To distinguish new Condition B from the existing condition for two CREVS trains inoperable, Condition F (renumbered as Condition G), is revised to state, "Two CREVS trains inoperable during MODE 1, 2, 3, or 4 for reasons other than Condition B or E." The changes to existing Condition F are less restrictive because these Conditions will no longer apply in the event one or two CREVS trains are inoperable due to an inoperable CRE boundary during unit operation in Mode 1, 2, 3, or 4. This is acceptable because the new Action B establishes adequate remedial measures in this condition. With the addition of a new Condition B, existing Condition B, C, D, E, and F are re-designated C, D, E, F, and G, respectively.

The licensee also proposed to modify the CREVS LCO by adding a NOTE allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the LCO Bases, 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 controls 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 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." The allowance of this NOTE is acceptable because the administrative controls will ensure that the opening will be quickly sealed to maintain the validity of the licensing basis analyses of DBA consequences.

The licensee proposed to add a new condition to Action E (renumbered as Condition F) of TS 3.7.10 that states, "One or more CREVS trains inoperable due to an inoperable CRE boundary in Mode 5 or 6, or during movement of irradiated fuel assemblies." The specified Required Action proposed for this condition is the same as for the existing condition of Action E, which states, "Two CREVS trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies." Accordingly, the new condition is stated with the other condition in Action E using the logical connector "OR". The practical result of this presentation in format is the same as specifying two separately numbered Actions, one for each condition. Its advantage is to make the TS Actions table easier to use by avoiding having an additional numbered row in the Actions table. The new condition in Action E is needed because proposed Action B will only apply in Modes 1, 2, 3, and 4. As such, this change will ensure that the Actions table continues to specify a condition for an inoperable CRE boundary during Modes 5 and 6 and during refueling. Therefore, this change is administrative and acceptable.

In the emergency mode of operation, the CREVS isolates unfiltered ventilation air supply intakes, filters the emergency ventilation air supply to the CRE, and pressurizes the CRE to minimize unfiltered air inleakage past the CRE boundary. The licensee proposed to delete the CRE pressurization SR. This SR requires verifying that one CREVS train, operating in the emergency mode, can maintain a 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  $\leq 711$  cfm and a recirculation flow rate  $\geq 2960$  and  $\leq 3618$  cfm. The deletion of this SR is proposed because measurements of unfiltered air leakage into the CRE at numerous reactor facilities demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Hence, 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 its response to GL 2003-01, the licensee reported in a letter dated August 4, 2004 (ML042230173) that it had determined the WBN CRE pressurization surveillance, SR 3.7.10.4, was not adequate to demonstrate the operability of the CRE boundary, and proposed to replace it with an inleakage measurement SR and a CRE Habitability Program in TS Section 5.2.7.20, in accordance with the approved version of TSTF-448. Based on the adoption of TSTF-448, Revision 3, the licensee's proposal to delete SR 3.7.10.4 is acceptable.

The proposed CRE inleakage measurement SR states, "Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Habitability Program." The CRE Habitability Program TS, proposed TS 5.2.7.20, 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 (ML031490664). This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. The licensee has proposed to follow this method. Therefore, the proposed CRE inleakage measurement SR is acceptable.

#### 3.4 TS 5.5.14, "Control Room Envelope Habitability Program"

The proposed administrative controls program TS is consistent with the model program TS in TSTF-448, Revision 3. In combination with SR 3.7.10.4, this program is intended to ensure the operability of the CRE boundary, which as part of an operable CREVS will ensure that 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. The program shall 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 TEDE for the duration of the accident.

A CRE Habitability Program TS acceptable to the NRC staff requires the program to contain the following elements:

##### *Definitions of CRE and CRE boundary.*

This element is intended to ensure that these definitions accurately describe the plant areas that are within the CRE, and also the interfaces that form the CRE boundary, and are consistent with the general definitions discussed in Section 2.1 of this safety evaluation. Establishing what is meant by the CRE and the CRE boundary will preclude ambiguity in the implementation of the program.

##### *Configuration control and preventive maintenance of the CRE boundary.*

This element is intended to ensure the CRE boundary is maintained in its design condition. Guidance for implementing this element is contained in Regulatory Guide 1.196, which endorsed, with exceptions, NEI 99-03, Rev. 0. Maintaining the

CRE boundary in its design condition provides assurance that its leak-tightness will not significantly degrade between CRE inleakage determinations.

*Assessment of CRE habitability at the frequencies stated in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0, and measurement of unfiltered air leakage into the CRE in accordance with the testing methods and at the frequencies stated in Sections C.1 and C.2 of Regulatory Guide 1.197.*

This element is intended to ensure that the plant assesses CRE habitability consistent with Sections C.1 and C.2 of Regulatory Guide 1.197. Assessing CRE habitability at the NRC accepted frequencies provides assurance that significant degradation of the CRE boundary will not go undetected between CRE inleakage determinations. Determination of CRE inleakage using test methods acceptable to the NRC staff assures that test results are reliable for ascertaining CRE boundary operability. Determination of CRE inleakage at the NRC accepted frequencies provides assurance that significant degradation of the CRE boundary will not occur between CRE inleakage determinations.

*Measurement of CRE pressure with respect to all areas adjacent to the CRE boundary at designated locations for use in assessing the CRE boundary at a frequency of 18 months on a staggered test basis (with respect to the CREVS trains).*

This element is intended to ensure that CRE differential pressure is regularly measured to identify changes in pressure warranting evaluation of the condition of the CRE boundary. Obtaining and trending pressure data provides additional assurance that significant degradation of the CRE boundary will not go undetected between CRE inleakage determinations.

*Quantitative limits on unfiltered inleakage.*

This element is intended to establish the CRE inleakage limit as the CRE unfiltered infiltration rate assumed in the CRE occupant radiological consequence analyses of design basis accidents. Having an unambiguous criterion for the CRE boundary to be considered operable in order to meet LCO 3.7.10 will ensure that associated action requirements will be consistently applied in the event of CRE degradation resulting in inleakage exceeding the limit.

*Consistent with TSTF-448, Revision 3, the program states that the provisions of SR 3.0.2 are applicable to the program frequencies for performing the activities required by program paragraph number c, parts (i) and (ii) (assessment of CRE habitability and measurement of CRE inleakage), and paragraph d (measurement of CRE differential pressure).*

This statement is needed to avoid confusion. SR 3.0.2 is applicable to the surveillance that references the testing in the CRE 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, and is acceptable. Consistent with TSTF-448, Revision 3, proposed TS 5.5.14 states that (1) a CRE Habitability Program shall be established and implemented, (2) the program shall include all of the NRC-staff required elements, as described above, and (3) the provisions of SR 3.0.2 shall apply to program frequencies. Therefore, TS 5.5.14, which is consistent with the model program TS approved by the NRC staff in TSTF-448, Revision 3, is acceptable.

### 3.5 Implementation of New Surveillance and Assessment Requirements by the Licensee

The licensee has proposed license conditions regarding the initial performance of the new surveillance and assessment requirements. The new license conditions adopted the conditions in section 2.3 of the model application published in the *Federal Register* on January 17, 2007 (72 FR 2022). Plant specific changes were made to these proposed license conditions. The proposed plant specific license conditions are consistent with the model application, and are acceptable.

### 3.6 Adoption of TSTF-448 Revision 3 by the WBN, Unit 1

The changes made by TSTF-448 to the STS requirements for the CREVS and the CRE boundary conform to 10 CFR 50.36(d)(2) and 10 CFR 50.36(d)(3). The proposed plant-specific adoption of the changes also conform to regulatory requirements of 10 CFR 50.36(d)(2) and 10 CFR 50.36(d)(3) and will better assure that the WBN's CRE will remain habitable during normal operation and design basis accident conditions. The staff has therefore concluded that these changes are acceptable for adoption by WBN, Unit 1.

### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee state official was notified of the proposed issuance of the amendment. The State official had no comments.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no-significant-hazards considerations, and there has been no public comment on the finding *Federal Register* dated August 29, 2008 (73 FR 51014). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and (c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

### 6.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

#### 6.1 Background

The Commission issued a "Notice of Consideration of Issuance of Amendment to Facility Operating License, Proposed No Significant Hazards Consideration Determination and Opportunity for a Hearing" for the proposed amendment in the *Federal Register* on August 29, 2008 (73 FR 51014). This Notice provided 60 days for the public to request a hearing.

The Commission's regulations in 10 CFR 50.91(a)(2)(i) state that:

The Commission may publish in the *Federal Register* under §2.105 an individual notice of proposed action for an amendment for which it makes a proposed determination that no significant hazards consideration is involved . . . .

Pursuant to 10 CFR 50.91(a)(2)(ii), the notice will contain the staff's proposed 10 CFR 50.92 determination, provide a brief description of the amendment and the facility involved, solicit public comments thereon, and provide for a 30-day comment period. The Commission issued a "Notice of Consideration of Issuance of Amendment to Facility Operating License, Proposed No Significant Hazards Consideration Determination and Opportunity for a Hearing" for the proposed amendment in the *Federal Register* on August 29, 2008 (73 FR 51014). There were no comments received.

Pursuant to 10 CFR 50.91(a)(3), the Commission does not publish a final determination on no significant hazards consideration, unless it receives a request for a hearing.

The Commission's regulations in 10 CFR 50.91(a)(4) state that:

Where the Commission makes a final determination that no significant hazards consideration is involved and that the amendment should be issued, the amendment will be effective on issuance, even if adverse public comments have been received and even if an interested person meeting the provisions for intervention called for in §2.309 of this chapter has filed a request for a hearing.

The Commission need hold any required hearing only after it issues an amendment, unless it determines that a significant hazards consideration is involved, in which case the Commission will provide an opportunity for a prior hearing.

The Commission's regulations in 10 CFR 50.92(c) state that the Commission may make a final determination that a proposed license amendment involves no significant hazards consideration (NSHC) if the operation of the facility in accordance with the proposed amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

Pursuant to 10 CFR 50.91, the NRC staff made a proposed determination that the WBN, Unit 1 amendment request involves NSHC. A "Notice of Consideration of Issuance of Amendment to Facility Operating License, Proposed No Significant Hazards Consideration Determination and Opportunity for a Hearing" was issued in the *Federal Register* on August 29, 2008 (73 FR 51014). The notice provided a 30-day opportunity for public comment. The NRC staff did not receive comments on the proposed NSHC determination.

## 6.2 Final NSHC Determination

The NRC staff has completed its evaluation of the licensee's proposed amendment as discussed above. Based on its evaluation, the staff has made a final determination that the proposed amendment does not involve a significant increase in the probability or consequences

of an accident previously evaluated; does not create the possibility of a new or different kind of accident from any accident previously evaluated; and does not involve a significant reduction in a margin of safety. The following evaluation in relation to the three standards of 10 CFR 50.92(c) explains the staff's final NSHC determination.

### 6.3 First Standard

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

Response: No

The proposed change does not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or configuration of the facility. The proposed change does not alter or prevent the ability of SSCs to perform their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits. The proposed change revises the TS for the CRE emergency ventilation system, which is a mitigation system designed to minimize unfiltered air leakage into the CRE and to filter the CRE atmosphere to protect the CRE occupants in the event of accidents previously analyzed. An important part of the CRE emergency ventilation system is the CRE boundary. The CRE emergency 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 to verify the operability of the CRE boundary and implementing a program to assess and maintain CRE habitability ensure that the CRE emergency ventilation system is capable of adequately mitigating radiological consequences to CRE occupants during accident conditions, and that the CRE emergency ventilation system will perform as assumed in the consequence analyses of design basis accidents. Thus, the consequences of any accident previously evaluated are not increased. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

### 6.4 Second Standard

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

Response: No

The proposed change does not impact the accident analysis. The proposed change does not alter the required mitigation capability of the CRE emergency ventilation system, or its functioning during accident conditions as assumed in the licensing basis analyses of design basis accident radiological consequences to CRE occupants. No new or different accidents result from performing the new surveillance or following the new program. The proposed change does 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 proposed change does not alter any safety analysis assumptions and is consistent with current plant operating practice. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

#### 6.5 Third Standard

Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed change does not alter the manner in which safety limits, limiting safety system settings or limiting conditions for operation as determined. The proposed change does not affect safety analysis acceptance criteria. The proposed change will not result in plant operation in a configuration outside the design basis for an unacceptable period of time without compensatory measures. The proposed change does not adversely affect systems that respond to safely shut down the plant and to maintain the plant in a safe shutdown condition. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

#### 6.6 Conclusion

On the basis of the above evaluation, the NRC staff has made a final determination that the proposed amendment does not involve a significant hazards consideration.

#### 7.0 CONCLUSION

The Commission has concluded, on the basis of the considerations discussed above, that (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 issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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